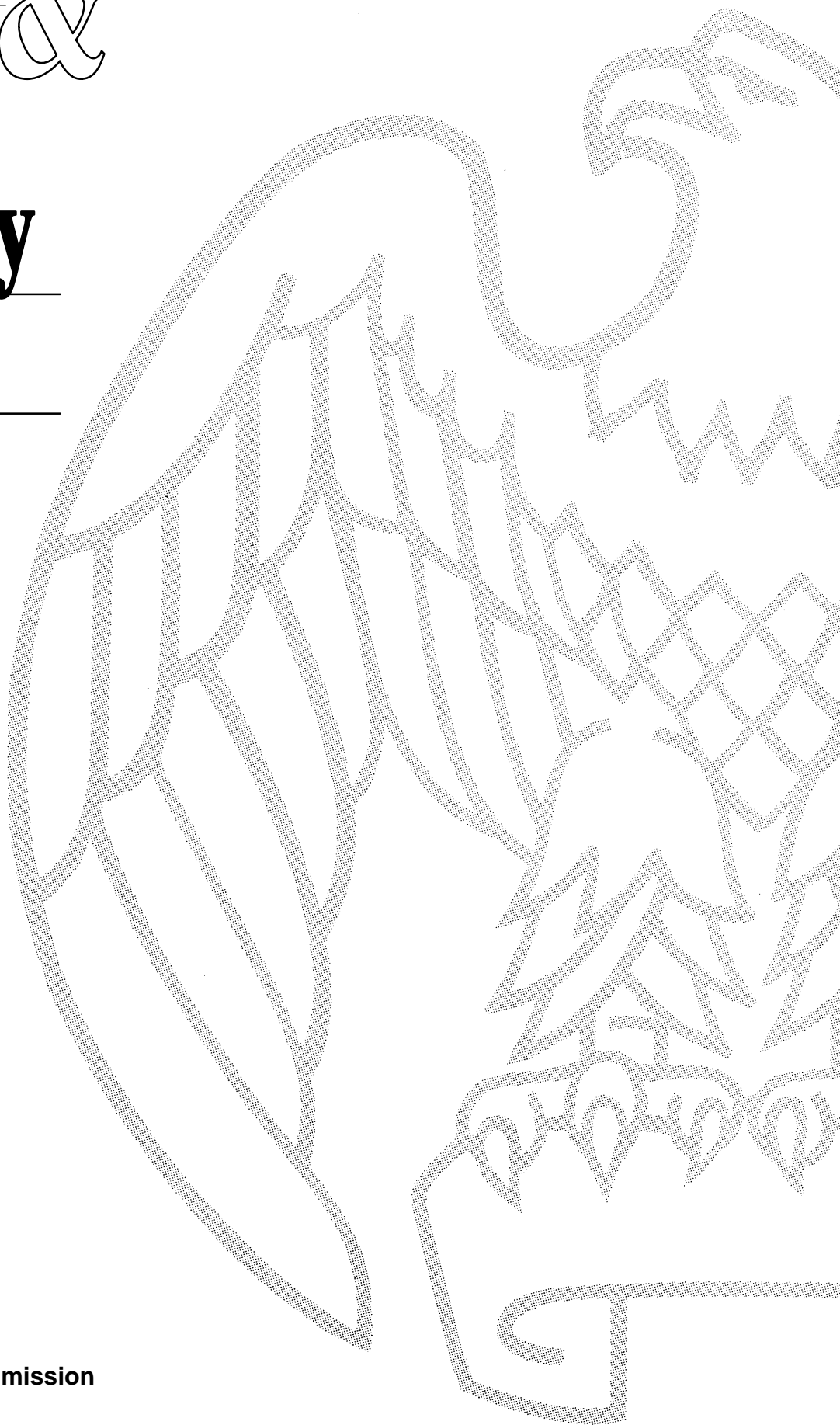


Industry & Trade Summary

**Stainless Steel Mill
Products**

**USITC Publication 2880
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**OFFICE OF INDUSTRIES
U.S. International Trade Commission
Washington, DC 20436**



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PREFACE

In 1991 the United States International Trade Commission initiated its current *Industry and Trade Summary* series of informational reports on the thousands of products imported into and exported from the United States. Each summary addresses a different commodity/industry area and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as those bearing on the competitiveness of U.S. industries in domestic and foreign markets.¹

This report on stainless steel mill products covers the period 1989 through 1993 and represents one of approximately 250 to 300 individual reports to be produced in this series during the first half of the 1990s. Listed below are the individual summary reports published to date on the minerals, metals, and miscellaneous manufactures sector.

<i>USITC publication number</i>	<i>Publication date</i>	<i>Title</i>
2426	November 1991	Toys and models
2475	July 1992	Fluorspar and certain other mineral substances
2476	January 1992	Lamps and lighting fittings
2504	November 1992	Ceramic floor and wall tiles
2523	June 1992	Prefabricated buildings
2546	August 1992	Agricultural and horticultural machinery
2570	November 1992	Electric household appliances and certain heating equipment
2587	January 1993	Heavy structural steel shapes
2623	April 1993	Copper
2633	June 1993	Textile machinery and parts
2653	June 1993	Glass containers
2692	November 1993	Refractory ceramic products
2694	November 1993	Flat glass and certain flat glass products
2706	April 1994	Aluminum
2738	February 1994	Structural ceramic products
2742	March 1994	Fiberglass products
2748	March 1994	Brooms, brushes, and hair- grooming articles
2756	March 1994	Air-conditioning equipment and parts
2757	March 1994	Builders hardware
2758	March 1994	Semifinished steel
2765	April 1994	Metalworking machine tools and accessories
2872	May 1995	Abrasives
2857	May 1995	Industrial food-processing machinery and related equipment
2858	May 1995	Precious metals
2880	June 1995	Stainless steel mill products

¹ The information and analysis provided in this report are for the purpose of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under statutory authority covering the same or similar subject matter.

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INTRODUCTION¹

This summary examines the stainless steel mill products industry from 1989 to 1993.² During this 5-year period the structure of the industry changed substantially as global market forces placed increasing competitive pressures on U.S. producers. U.S. producers responded, in part, by undertaking a number of mergers and acquisitions, both foreign and domestic, and by expanding and intensifying their capital expenditure programs. These efforts are especially prominent in the flat-rolled segment of the industry.

The report is broadly divided into four sections. The first section describes the products covered and their significance in terms of imports and shipments, the processes and materials used to make stainless steel mill products, and principal end uses. The second section describes the U.S. stainless steel mill products industry and in particular the major changes that have occurred within the industry during the period covered by this summary. Also included in this section is an overview of foreign industries. The third section presents information relating to U.S. and foreign trade measures. The final section presents information on consumption, production, import, and export levels and trends for stainless steel mill products in domestic and foreign markets.

This report covers stainless steel mill products, which include semifinished products (ingots, blooms, billets, and slabs), plate, sheet and strip, bars and certain shapes (including angles), wire rod, wire, and pipe and tube. Stainless steel is defined in the *Harmonized Tariff Schedules of the United States* (HTS) as any alloy steel that contains by weight 1.2 percent or less of carbon and 10.5 percent or more of chromium, with or without other elements. Stainless steel, which is a higher-valued product than carbon steel, has the strength, durability, and malleability of carbon steel, is corrosion-resistant in many harsh environments, maintains its strength at high operating temperatures, and can be finished to meet demanding surface appearance requirements. Stainless steels are more resistant to rusting and staining than are plain carbon and other alloy steels. In general, the basic ingredients in stainless steel are nickel, chromium, and

¹ In this report, italicized words and phrases are defined in App. A, Glossary of Technical Terms.

² Stainless steel, alloy tool steel, silicon electrical steels, and high-temperature and high-strength alloy steels are often referred to in the industry as specialty steel. In 1993, stainless steel is believed to have accounted for more than 80 percent, in terms of quantity, of domestic specialty steel production. Some domestic producers of stainless steel mill products also produce alloy tool steel and other specialty steel products. However, no tool steel or other alloy steel products are covered by this report.

iron in various percentages; the presence of chromium ensures the steel's superior corrosion resistance. Stainless steels are generally classified according to their microstructure into two main grades: *austenitic and ferritic*. Stainless accounts for approximately 2 percent of total steel industry shipment tonnage, but more than 10 percent of the value of total shipments.³

In 1993, total U.S. shipments of these products were 1.5 million tons.⁴ Imports of stainless steel mill products the same year were 668,857 tons, worth \$321.0 million and representing 32 percent of apparent U.S. consumption. Stainless sheet and strip account for the bulk of U.S. shipments (76 percent in 1993) and U.S. imports (54 percent) of stainless steel mill products.

U.S. demand for stainless steel is expected to continue to increase as stainless becomes more widely used in automobiles, appliances, and construction.⁵ Global demand for stainless steel is also expected to continue to increase.⁶ Analysts indicate that growing demand in Europe and Japan could raise stainless prices in these countries and could contribute to a reduction in these countries' exports to the United States.⁷ Industry sources predict that further restructuring and streamlining of U.S. production operations, cost-cutting, and increased capital spending will occur as existing producers of stainless steel face increasing competition from relatively new entrants in the U.S. stainless market.

Manufacturing Processes

In general, there are four stages of production for stainless steel mill products, as shown in figure 1: (1) melting or refining raw steel, (2) casting the raw steel into semifinished forms, (3) hot-rolling the semifinished forms into flat-rolled products or long products, (4) cold-rolling the hot-rolled products.

The production of stainless steel mill products begins with the melting of the raw material (usually selected scrap) in an electric furnace.⁸ The resultant liquid steel is further refined (also known as secondary steelmaking) in an *argon-oxygen decarburization (AOD)* vessel in which oxygen, gradually replaced by

³ Robert E. Heaton, President and Chief Operating Officer, Washington Steel Corp., and Chairman, Board of Directors, Specialty Steel Industry of the United States, Testimony Before the Congressional Steel Caucus, Mar. 2, 1993.

⁴ Compiled by USITC staff from data of the American Iron & Steel Institute (AISI).

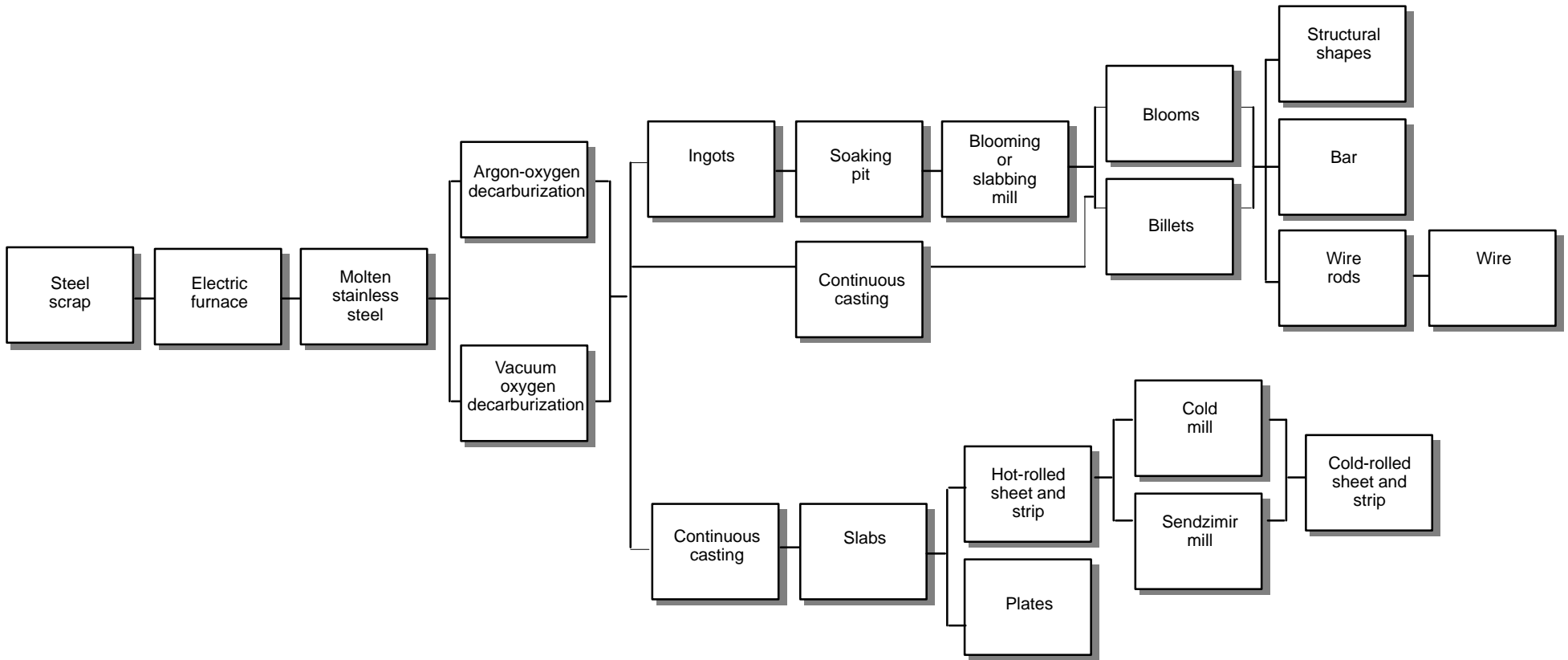
⁵ J.P. Morgan Securities Inc., "Stainless Steel Industry: Outlook for U.S. Flat Rolled Producers," Apr. 15, 1994, p. 15.

⁶ Ibid.

⁷ Ibid., pp. 1 and 14.

⁸ In Japan, there is limited production of stainless steel in basic-oxygen furnaces, although the bulk of Japan's stainless is produced in electric furnaces.

Figure 1
Stainless steel mill products: The production process



Source: Compiled by staff of the U.S. International Trade Commission.

argon, is blown through the molten steel, eliminating impurities. An alternate method of removing impurities from molten stainless steel is to use *vacuum oxygen decarburization (VOD)*, in which the molten metal is placed in a vacuum while oxygen is bubbled through it. The molten liquid is then poured into preheated ladles, which transfer it to *continuous slab, bloom, or billet casters* for solidification into semifinished shapes. Slabs are wide semifinished products from which flat-rolled products (plate, sheet and strip) are made, whereas blooms and billets are used in the production of long products (bars, wire rods, wire, and other non-flat steel products). Flat-rolled stainless products accounted for about 75 percent of annual U.S. consumption of stainless steel mill products in 1993; long products accounted for 14 percent; and semifinished stainless slabs accounted for 7 percent. Stainless pipe and tube made up the remainder.

Slabs enter the rolling process at the hot-strip mill where a series of rolling stands reduces the slab's thickness to the desired thickness of the hot-rolled plate, sheet, or strip.⁹ In the production of stainless sheet and strip, slabs are conditioned and rolled into coil form on the hot-strip mill. The coil is then *annealed* and *pickled* to restore the steel's ductility, and *cold-rolled* (in a Sendzimir mill or a tandem mill) to reduce the steel's thickness, after which it may be polished to achieve certain surface characteristics. The coil is then cut to specified lengths.

Bars are generally produced by hot-rolling, forging, or extruding billets to the desired dimensions. *Cold finished* bars are produced from hot finished bars by additional operations to achieve closer tolerances and improved surface finish or mechanical properties. The manufacturing process for stainless steel wire rods is very similar to that of stainless bars, except that the hot-rolled billets are coiled after they are reduced to the specific diameter required. The coil may then be coated with a lubricant that facilitates the cold-drawing of the rod into wire. Stainless steel mill products are generally inspected for imperfections, and are tested for specified metallurgical properties prior to shipment.

Principal End Uses

Stainless steel is essential for many applications in both the capital goods and consumer durables sectors of the economy. It possesses technical properties and unique physical characteristics that make it particularly suitable for use in extreme environments that demand exceptional hardness, toughness, strength, and resistance to heat, corrosion or abrasion. Stainless steel

⁹ Because the slabs are fed into the mill at an elevated temperature, the mill is known as a "hot-strip mill."

is used extensively in both industrial and consumer product applications, including the automotive, appliance, food-processing, chemical, oil and gas, medical, pulp and paper, and pollution control industries.

U.S. INDUSTRY PROFILE

The U.S. stainless steel industry has undergone considerable structural change in recent years as a result of competition from imports, the entry of new producers into the domestic market, and growing demand for stainless steel products. In response to consumer demand for higher-quality products, firms in the industry have made substantial investments in new plant and equipment and have introduced innovative production technology. At the same time, firms have reduced employment and increased worker productivity. The composition of the industry has been affected by changes in ownership, consolidations, exits, and new entrants. These changes have contributed to lower production costs, more efficient production processes, and improved product quality and have helped to improve significantly the cost competitiveness of the U.S. stainless steel mill products industry in both domestic and foreign markets. One outcome of these efforts is that the stainless steel industry as a whole has maintained its profitability in recent years.¹⁰

Industry Structure

The principal raw materials, producer types, major products, and end users for the U.S. stainless steel mill products industry are shown in figure 2.¹¹ Producers are generally classified as either electric-furnace producers or rollers. Electric-furnace producers are those that produce molten steel and then cast and roll it. Rolling mill producers (rollers) are those that acquire stainless slabs or hot-rolled sheet for cold-rolling; these producers do not melt steel.

For the most part, firms producing stainless steel do not produce carbon steel. Of the 33 companies identified in appendix B as stainless steel producers, only two — Armco, Inc. and Nucor Corp. — were also significant producers of carbon steel during 1989-93.¹² The vast majority of stainless steel plants are located in Pennsylvania, Ohio, and Indiana.

¹⁰ For further information, see U.S. International Trade Commission, *Steel Semiannual Monitoring Report* (investigation No. 332-327), various issues.

¹¹ Stainless steel mill products are included in the following Standard Industrial Classification (SIC) categories: SIC 3312, Blast Furnaces and Steel Mills; SIC 3315, Steel Wire and Related Products; SIC 3316, Cold Finishing of Steel Shapes; and SIC 3317, Steel Pipes and Tubes.

¹² Armco, in an effort to concentrate on its specialty steel operations, has recently spun off its carbon steel operations as independent entities.

Figure 2
U.S. stainless steel mill products industry: Principal raw materials, producer types, major products, and principal consumers

U.S. stainless steel mill products industry			
Principal raw materials	Producer types	Major products	Principal consumers
<ul style="list-style-type: none"> • Iron/steel scrap • Nickel • Chromium 	<ul style="list-style-type: none"> • Electric furnace • Cold-rolling mills 	<ul style="list-style-type: none"> • Semifinished • Plate • Sheet and strip • Bars • Wire rod • Wire • Structurals • Pipe and tube 	<ul style="list-style-type: none"> • Automotive industry • Food processing and preparation industries • Pulp and paper processing equipment • Medical equipment • Chemical industry • Pollution control equipment

Source: Compiled by the staff of the U.S. International Trade Commission.

Restructuring

Numerous firms in the industry have been involved in acquisitions, mergers, and joint ventures over the past decade. Figure 3 details major restructuring efforts since 1983. Producers have taken these steps for a number of reasons, including to meet rising customer demand for certain products, to meet import competition, to maintain market share, or to move into new markets. Figures 4 and 5 illustrate the growth in demand for stainless steel flat-rolled and long products and the growth in imports' share of consumption over the past 10 years.

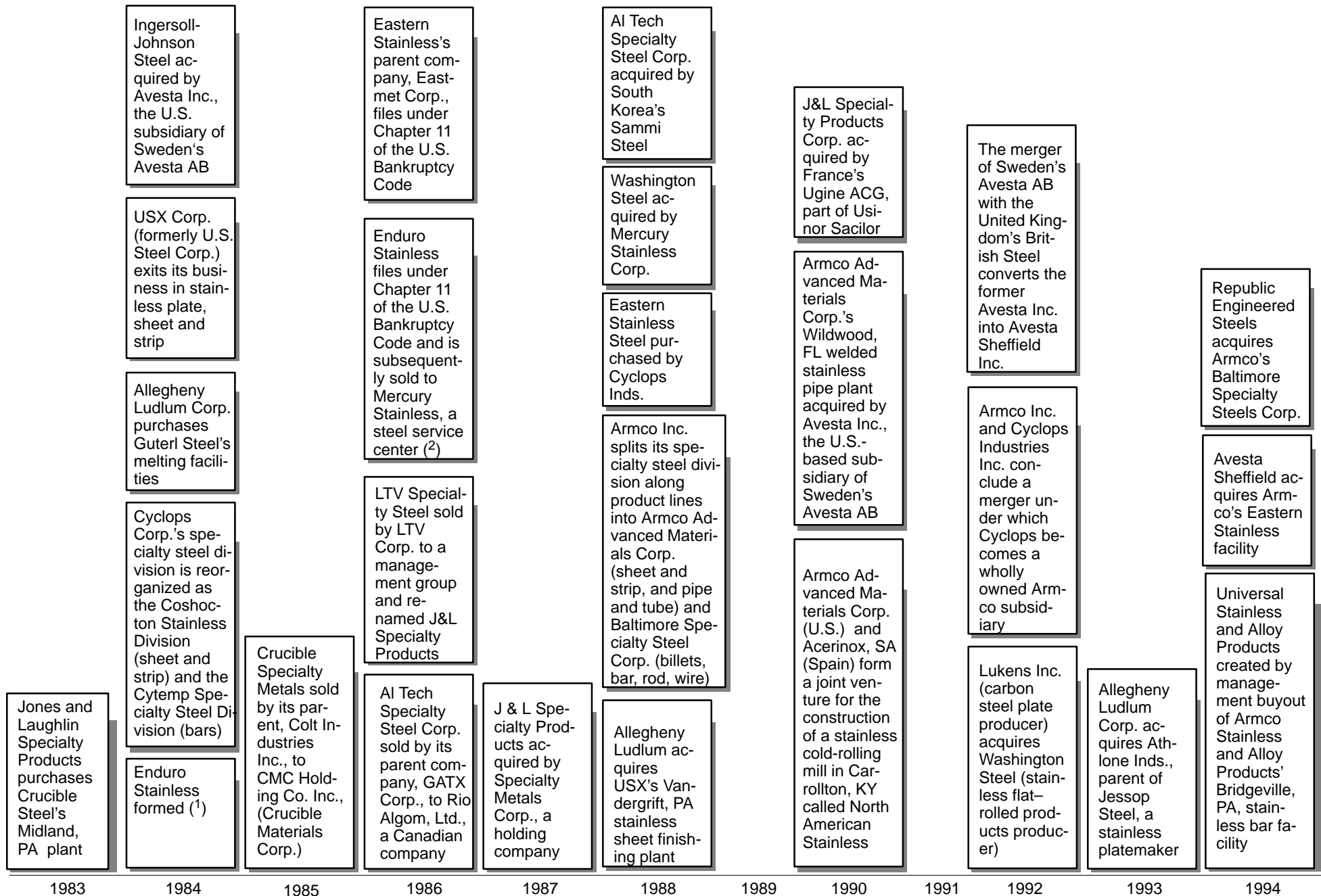
One of the primary goals of company restructuring efforts has been to enhance production synergies in order to lower production costs and to consolidate market advantages.¹³ Much of this restructuring, which often focuses on specific product niches, has resulted in the vertical integration of operations between companies. For example, the merger between

Armco and Cyclops was reportedly designed to make the resulting company a more competitive global producer by strengthening its export and domestic markets and by promoting operating efficiencies through the melding of complementary production operations¹⁴ — Armco Advanced Material Corp.'s melt shop supplies slab to Cyclops' Coshocton Stainless finishing facility. Similarly, the acquisition of Washington Steel by Lukens Inc. gives Lukens an in-house, low-cost source of stainless for its plate cladding operations, and enables Washington to expand its product line of stainless sheet, strip, and coiled plate by shipping its stainless slabs to Lukens for conversion to heavy plate.¹⁵ Allegheny Ludlum's merger with Athlone Industries Inc. added the stainless sheetmaking and platemaking capacity of Jessop Steel Co. to Allegheny's sizeable sheet production facilities.¹⁶ Republic Engineered Steels' purchase of Armco Stainless and Alloy Products' stainless bar plant in

¹³ "U.S. Stainless Shapes Up But Stays Defensive," *Metal Bulletin Monthly*, Sept. 1993.

¹⁴ Ibid.
¹⁵ American Metal Market, Feb. 17, 1992.
¹⁶ "Mergers Reshape the Ranks of Specialty Steelmakers," *Iron Age*, Sept. 1993.

Figure 3
Stainless steel mill products: Timeline of major events affecting industry structure



See footnotes on following page.

Figure 3—Footnotes

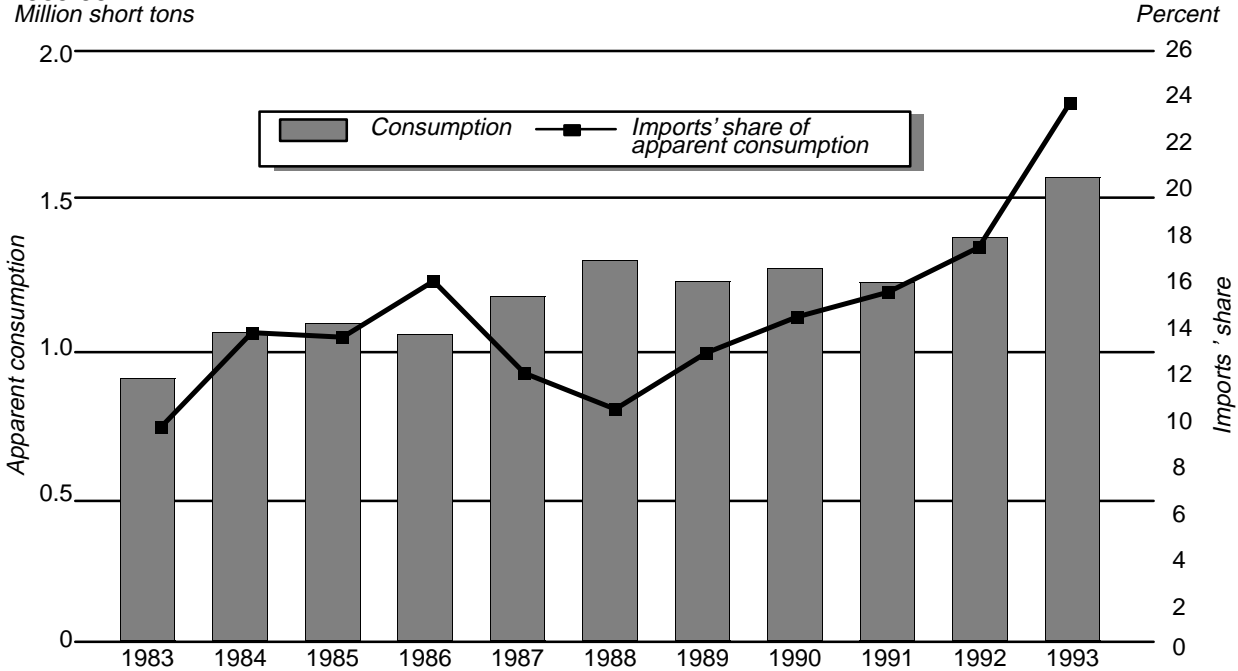
Stainless steel mill products: Timeline of major events affecting industry structure

¹ On March 21, 1984, the U.S. Department of Justice approved a merger between LTV Corp. (J&L) and Republic Steel, which formed LTV Steel. To meet the U.S. Department of Justice's initial objections to the merger with respect to the extent of industry concentration that would result, LTV Steel sold Republic's stainless steel plant in Massillon, OH. This plant became Enduro Stainless Inc.

² On November 22, 1985, Enduro Stainless ceased its stainless rerolling operations in Massillon, OH, as a result of a dispute with its former owner, LTV Steel, over LTV's supplies of stainless hot band for the works. In February 1986, Enduro filed for protection under Chapter 11 of the U.S. Bankruptcy Code. In October 1986, Enduro was purchased by Mercury Stainless Corp. of Wheeling, IL, a steel service center.

Source: U.S. International Trade Commission, *Annual Survey on Certain Stainless Steel and Alloy Tool Steel*, (investigation No. 332-167), various issues; and information developed by USITC staff.

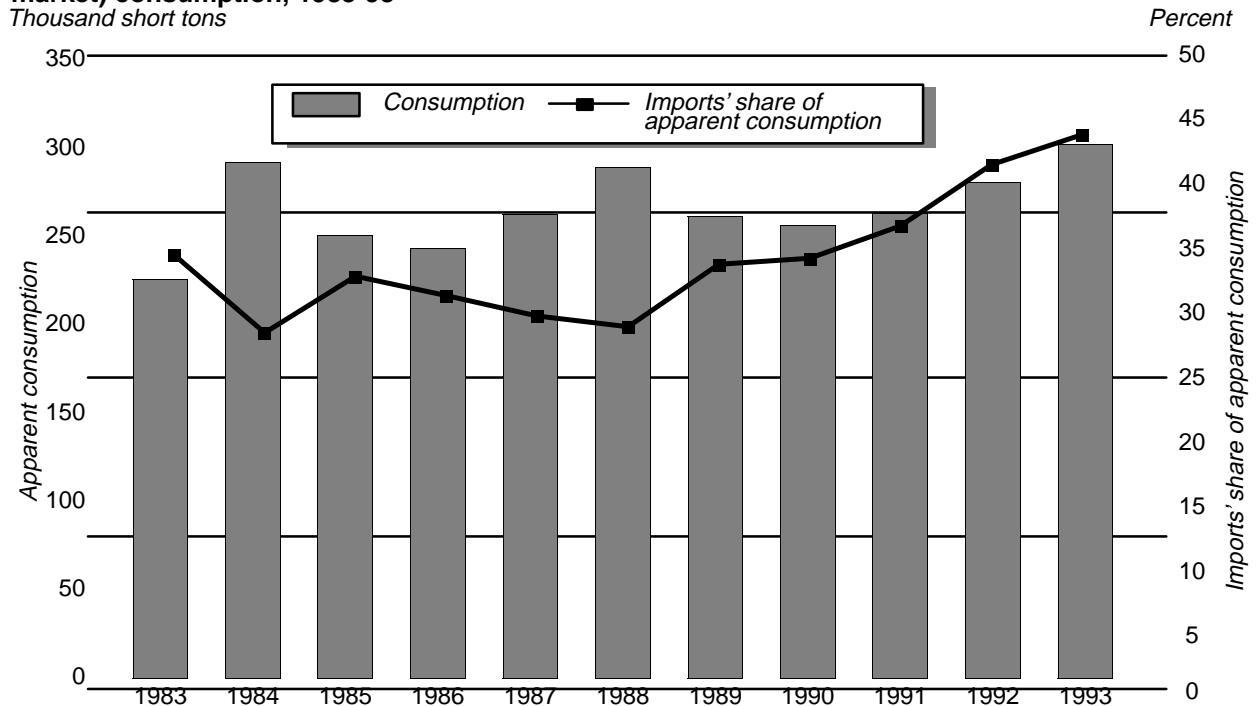
Figure 4
Stainless steel flat-rolled products¹: Apparent consumption and imports' share of apparent (open market) consumption, 1983-93



¹ Includes stainless plate, sheet, and strip.

Source: Compiled from data of the American Iron and Steel Institute and from official statistics of the U.S. Department of Commerce.

Figure 5
Stainless steel long products¹: Apparent consumption and imports' share of apparent (open market) consumption, 1983-93



¹ Includes stainless steel bars and certain shapes, wire rod, and wire.

Source: Compiled from data of the American Iron and Steel Institute and from official statistics of the U.S. Department of Commerce.

Baltimore, MD will reportedly enable Republic to utilize the Armco plant's hot-rolling and finishing equipment to augment production at its underutilized Canton, OH melt shop and to strengthen its presence in the specialty steel long products market.¹⁷ Avesta Sheffield's acquisition of Armco's Eastern Stainless facility provides Avesta with a domestic source of raw steel to replace its slab imports.¹⁸

Despite the restructuring, the degree of concentration in the stainless steel mill products industry has remained fairly stable over the past 10 years, with the four largest producers accounting for about 65 percent of raw stainless steelmaking capacity in both 1983 and 1993.¹⁹ In the flat-rolled products segment of the domestic stainless steel industry, four producers accounted for more than 85 percent of U.S. stainless flat-rolled production in 1993.²⁰ The long products segment (bars and shapes, and wire rods) is not as concentrated; the top four producers accounted for about 55 percent of production in 1993.²¹

Investment

The global market forces that have caused producers to restructure have also motivated them to expand and increase their capital expenditure programs to improve operating efficiency. Existing firms are undertaking major investments in equipment, processes, technology, and new facilities. U.S. stainless steelmakers raised their level of capital spending during 1989-93 from \$82 per ton in 1989 to \$87 per ton in 1993.²² Table 1 lists some of the more recent investments.

The three most recent acquisitions all were followed by substantial investments in facilities to expand product lines and improve production efficiencies and product quality. For example, when Lukens purchased Washington Steel Corp., it announced plans to spend \$16 million to upgrade and expand the melt shop at Washington's Houston, PA

stainless plant by mid-1995.²³ Lukens also announced that it would build a stainless coil processing system at Washington Steel's Massillon, OH plant that would produce coiled plate up to 96 inches in width and hot-rolled sheet of 60 or more inches in width.²⁴ The trend toward wider stainless sheet was reinforced by J&L Specialty Products Corp.'s plans to expand stainless melting, casting, and finishing operations for the production of 60-inch-wide sheet.²⁵ Avesta Inc. has announced plans to install a new wide pickling and annealing line at its New Castle, IN, mill that will give the company entry into the coiled wide stainless plate market.²⁶ Customer demand is driving the movement toward wide sheet and plate production. In certain applications, such as in the chemical, pulp and paper, construction, and food and beverage industries, greater widths reduce the need for welding in the manufacture of the finished product and are therefore more economical for end-users.²⁷

Other investments include the installation of thin-slab casters and thin-strip casters by producers of stainless flat-rolled steel.²⁸ For example, Allegheny Ludlum is working with an Austrian equipment maker to develop a direct-strip casting process, and Armco has announced plans to install a thin-slab continuous caster at the Mansfield, OH plant of Cyclops Steel (Empire-Detroit Division).²⁹

Several new companies have entered the stainless steel industry during the past decade. Some of these companies have constructed greenfield³⁰ facilities and others have entered the industry by converting existing facilities to stainless production. Nucor Steel, a carbon steel *minimill* producer, represents a new kind of stainless producer specializing in the commodity bulk grades of stainless. Nucor has been producing limited quantities of grade 409 stainless steel (a commodity

¹⁷ "Stainless Bar Makers Help Fill Import Void," *American Metal Market*, Sept. 8, 1994; and "Republic Engineered Embraces Baltimore," *American Metal Market*, Sept. 8, 1994.

¹⁸ "Avesta Buys Eastern Stainless," *33 Metal Producing*, Nov. 1994.

¹⁹ Calculated by staff of the U.S. International Trade Commission.

²⁰ *Ibid.*

²¹ *Ibid.*

²² Compiled on the basis of data contained in U.S. International Trade Commission, *Steel Industry Annual Report*, (investigation No. 332-289), USITC publication 2316, Sept. 1990 and in U.S. International Trade Commission, *Steel Semiannual Monitoring Report*, (investigation No. 332-327), USITC publication 2759, Apr. 1994.

²³ "Lukens Expands Stainless Melting Shop to Boost Slab Output," *Metal Bulletin*, May 2, 1994; and "Lukens Stainless Projects Move Ahead," *Metal Bulletin*, Oct. 3, 1994.

²⁴ *Ibid.*, and Brian Leslie, Director of Market Development of the Specialty Steel Industry of the United States, remarks presented in INCO, *World Stainless Steel Statistics*, 1993 edition.

²⁵ "J&L Specialty Plans for 60-Inch Stainless," *American Metal Market*, Oct. 4, 1993.

²⁶ "New Line Will Take Avesta Into U.S. Coiled Plate Market," *Metal Bulletin*, Mar. 31, 1994.

²⁷ "Armco-Acerinox JV Starts Rolling," *Metal Bulletin Monthly*, Mar. 1993.

²⁸ This involves casting steel as near as possible to the net shape of the finished product to avoid or reduce rolling operations and costs.

²⁹ "Steelmakers Look at Slimming Down," *American Metal Market*, Stainless Steel Supplement, Aug. 18, 1993; and "Flush Times in Stainless," *New Steel*, Oct. 1993.

³⁰ A greenfield facility is one built on an entirely new site.

Table 1
Stainless steel mill products: Recent modernization investments

Company	Project	Startup date	Investment amount
			<i>Million dollars</i>
Allegheny Ludlum Corp.	Installation of a commercial-size, prototype CoilCast thin-strip casting machine at Lockport, NY.	1992	(¹)
	Expansion of rolling mill capacity at Wallingford, CT and Waterbury, CT and installation of new shape-enhancing equipment.	(¹)	(¹)
	Installation of annealing/pickling line and a temper cold-rolling mill at Vandergrift, PA.	(¹)	56.0
Avesta Inc.	Installation of wide pickling and annealing line at New Castle, IN.	(¹)	(¹)
Armco Inc.'s Empire-Detroit Steel	Installation of thin slab caster at Mansfield, OH.	1995	100.0
Carpenter Technology	Installation of a rotary forge at Reading, PA.	1995	12.0
J&L Specialty Products Corp.	Upgrade of melt shop (installation of direct cold-rolling/anneal and pickle line) at Midland, PA and upgrade of finishing facilities at Louisville, OH and Detroit, MI.	1996	175.0
	Expansion of continuous caster to cast slabs up to 62 inches wide.	(¹)	10.0
Lukens Steel	Installation of vacuum oxygen decarburization unit capable of processing both stainless and carbon steel at Coatesville, PA melt shop.	(¹)	14.5
North American Stainless	Installation of a second Sendzimir cold-rolling mill and upgrade of finishing facilities.	1996	70.0
Nucor	Installation of an argon-oxygen decarburization vessel.	1994	8.0
Talley Metals Technology	Installation of pickling line.	1993	(¹)
Washington Steel	Conversion of 56-inch bright anneal line into a 50-inch annealing and pickling line at Massillon, OH facility.	1993	10.2
	Installation of alloy addition system to unload, store, weigh, convey and add alloys to the plant's argon-oxygen decarburization vessel at Houston, PA facility.	1995	7.0
	Expansion and modernization of emission control system at Houston, PA facility.	1995	9.0
	Installation of sequence casting capability (including ladle transfer car and larger tundishes) at Houston, PA.	1995	6.4
	Installation of coil processing unit for stainless steel at Massillon, OH. Unit will contain cut-to-length line that will provide levelling, edge-trimming, slitting and stacking capabilities.	1996	57.0

¹ Not available.

Source: *American Metal Market, Metal Bulletin*, various issues.

grade of stainless used primarily in the production of automotive exhaust systems) at its Crawfordsville, IN plant since 1993. Nucor is upgrading product quality by installing an AOD vessel to refine more efficiently the stainless steel's chemistry. Once the AOD is installed (planned for early 1995), the mill's annual capacity for stainless production reportedly will reach 100,000 tons.³¹ The production of finished stainless sheet would also require Nucor to modify its cold-rolling mills and install an anneal and pickle line, or seek a partner or tolling agreement for these services. This is seen as a significant departure from its concentration on carbon steel products.³²

North American Stainless (NAS), a new stainless steel cold-rolling and finishing plant in Carrollton, KY, began production of various grades of Type 300 stainless steel in 1993. NAS is a 50-50 joint venture between Armco Steel and Spain's Acerinox.³³ The mill's annual capacity is believed to be about 150,000 tons. A portion of NAS's output will be 60-inch wide sheet; prior to NAS's production, imports supplied most U.S. demand for 60-inch wide stainless sheet.³⁴ Construction has begun on Nebraska Chrome Steel, a joint venture between Chrome Corp. of America (a subsidiary of Australia's Boulder Gold NL) and International Steel Alloys Ltd. (Denver, CO). The plant is located in Sidney, NE, and will have the capacity to produce about 30,000 tons-per-year of stainless billets, wire rod, and wire.³⁵

Production costs

Labor

As a result of the modernization and restructuring that occurred in the industry during 1989-93, employment at mills producing stainless steel mill products is believed to have declined during the period, but hourly compensation is believed to have

³¹ "Nucor Set To Enter Stainless Market," *American Metal Market*, Apr. 18, 1994.

³² See, for example, J.P. Morgan Securities Inc., Equity Research, "Stainless Steel Industry: Outlook for U.S. Flat Rolled Producers," Apr. 15, 1994.

³³ Armco has announced plans to sell most of its equity interest in North American Stainless to Acerinox. Armco plans to retain a 5-percent share in the plant ("Armco Sells Interest in Stainless Venture," *American Metal Market*, July 19, 1994.)

³⁴ "Sheet Makers Grab a Piece of the 60-Inch Pie," *American Metal Market*, Stainless Steel Supplement, Apr. 12, 1994. Previously, 60-inch wide sheet was produced by the former Mercury Stainless Inc. at its mill in Massillon, OH, but the quality of this product was reportedly unsatisfactory. The mill was closed in 1991.

³⁵ "Nebraska Stainless Mini-Mill Nears Construction Start," *American Metal Market*, Aug. 16, 1993; and "1993 in Review," *33 Metal Producing*, Dec. 1993.

increased.³⁶ Separate employment and wage data are not available for stainless steel producers. Nominal hourly compensation³⁷ for all steel workers rose by 30 percent during that period.³⁸ In 1993, nominal hourly earnings³⁹ for all steel workers were \$16.39 per hour, about 1.4 times the level of nominal earnings per hour of manufacturing workers as a whole. Steelworkers' nominal hourly earnings increased by 9 percent from 1989 to 1993, whereas nominal hourly earnings paid to workers in manufacturing industries in general rose by 12 percent during the period. Employment costs in the stainless steel industry are believed to account for a much lower percentage of total production costs than for carbon steel because raw materials in stainless steel production are relatively more expensive.⁴⁰

During the time that the steel industry (including stainless) has downsized and invested in new capital equipment, significant improvements have been made in worker productivity, as measured in output-per-employee-hour. Based on the most recent data of the U.S. Department of Labor, overall steel industry productivity doubled from 1982 to 1992, compared with an increase of 30 percent for all manufacturing.

The stainless steel industry experienced one significant labor dispute during 1994 when workers at Allegheny Ludlum Corp., represented by the United Steelworkers of America (USWA), staged a 2-month strike against the company. The settlement that was reached reportedly provides increased profit-sharing percentages for workers, a new fund for retiree health and insurance benefits, and higher pension levels. The agreement also calls for Allegheny Ludlum to discuss capital investment plans with the USWA. The USWA sought but did not obtain a board seat.⁴¹

Raw materials costs

The raw materials in stainless steel are primarily a combination of stainless scrap, carbon scrap, and chrome, and can account for 50-60 percent of total costs. Most stainless steel also has nickel content,

³⁶ Estimated by staff of the U.S. International Trade Commission.

³⁷ Compensation, as defined in the national income and products account, includes both direct and indirect payments to workers. Direct payments include payment for time worked (e.g., wages), payment for time not worked (e.g., vacation and holiday pay), bonuses, and other incentive or special pay. Indirect payments include employer contributions to insurance programs and contractual and private benefit plans.

³⁸ Data provided by American Iron and Steel Institute.

³⁹ Earnings include overtime earnings.

⁴⁰ Estimated by staff of the U.S. International Trade Commission.

⁴¹ "Details Told for A-L Labor Pact," *American Metal Market*, June 10, 1994; and "A.L. Pact Shows Worker Increases," *American Metal Market*, June 15, 1994.

which makes the steel easier to fabricate. Nickel units are either from the scrap or are added as primary nickel. Although the nickel content of the average stainless steel mill product is considerably smaller than the chromium or steel content, nickel's significantly higher price-per-pound and price volatility make it the key raw material in terms of its effect on stainless production levels and prices.⁴² Global nickel prices are closely tied to global demand trends for stainless steel as approximately 60 to 70 percent of nickel use is in the manufacture of stainless steel.⁴³

The addition of chromium gives stainless its corrosion-resistant properties. Stainless steel by definition contains 10.5 percent or more chromium content. Depending on the product specifications, the chromium units can come from ferrochrome, which is part chromium and part iron, or pure chromium. At mid-1994 prices, the chromium input into a ton of typical nickel-chrome stainless product was about \$60-\$85.⁴⁴ Every \$0.05-per-pound increase in the price of chromium raises the cost of an average ton of stainless by \$18, or about 1 percent-per-ton at current prices.⁴⁵

Base prices for stainless steel mill products average roughly \$2000 per ton and are determined largely by the nickel, chromium, and stainless scrap content of the steel. Extra charges may be added to the base price for orders requiring special processing and packaging, for nonstandard widths, and for certain types of surface finish.⁴⁶ Producers worldwide face similar competitive conditions in purchasing their metallic raw materials in that most buy nickel at prices linked to the London Metal Exchange (LME) and chromium at prices related to world market conditions.⁴⁷ The relative parity in global prices for metallic raw materials is believed to be an important factor in stainless steel producers' efforts to implement new production technology and processes (e.g., thin slab casting) to lower their costs for converting raw steel into finished products,

⁴² Kidder, Peabody & Co., Inc., "Industry Report: Stainless Steel Focus," July 27, 1994. For example, at \$2.50 per pound of nickel, an average ton of stainless, valued at about \$2,000, will have \$400 of nickel content. Every \$0.50-per-pound change in the nickel price must be accompanied by an \$80 per ton increase in average stainless prices, or a 4-percent increase, in order for stainless margins to remain constant.

⁴³ Kidder, Peabody, & Co., Inc., *Equity Research: Japan* (Industry Report on Stainless Steel), Nov. 8, 1994.

⁴⁴ Kidder, Peabody & Co., Inc., "Industry Report: Stainless Steel Focus," July 27, 1994.

⁴⁵ Ibid.

⁴⁶ "Stainless Plate Mills Go for New Price Rise," *Metal Bulletin*, June 13, 1994.

⁴⁷ World Bureau of Metal Statistics and Inco Europe Limited, *World Stainless Steel Statistics*, 1993 edition, pp. 9-10. An exception to this pattern of purchasing raw materials is Finland's Outokumpu, which has its own nickel and chromium mines.

thereby improving their overall competitiveness. However, North American stainless steel producers reportedly have a competitive advantage over many of their foreign competitors with respect to the availability and price of stainless scrap metal.⁴⁸

Environmental considerations

Environmental regulations are widely believed by the industry to be a major competitive factor in the stainless steel mill products industry, because the cost of compliance reportedly adds a greater burden to U.S. producers than to many foreign producers.⁴⁹ In the United States, numerous Federal and State regulations apply to the industry, including the Clean Air Act, the Clean Water Act, and the Solid Waste Disposal Act (also known as the Resource Conservation and Recovery Act). These regulations add significant capital and operating costs to the industry. Total capital and operating expenditures on environmental control by stainless steel producers in 1993 were approximately \$65 million (accounting for about 2 percent of the total cost of goods sold); operating expenditures accounted for more than 90 percent of this total.⁵⁰

The more stringent environmental regulations have also benefitted the industry by spurring demand for stainless steel products for use in pollution control equipment. Pollution control equipment generally contains materials with corrosion resistant properties, such as stainless steel. Stainless steel is currently less costly than many of the superalloys and accordingly is the preferred material by many producers of pollution control equipment.⁵¹

Globalization

The steel industry has historically had a global character in the sense that finished steel mill products, technology, and raw material inputs have long been traded among nations. However, until recent years, cross-border ownership of steelmaking assets was relatively limited. Recently, certain producers and steel traders have globalized their operations through the full or partial acquisition of assets that produce, process, or distribute steel.

⁴⁸ "The Spending Gap: Has It Gone Too Far?," *American Metal Market*, Stainless Steel Supplement, Apr. 12, 1994.

⁴⁹ "Stainless Steel - A U.S. Viewpoint," Statement by Robert E. Heaton, Chairman, SSINA and Vice Chairman, Stainless Group Lukens Inc., presented at Metal Bulletin's 6th International Stainless Steel Conference in Stockholm, Sweden, Sept. 11-13, 1994.

⁵⁰ For further information, see U.S. International Trade Commission, *Steel Semiannual Monitoring Report* (investigation No. 332-327), USITC publication 2759, Apr. 1994, pp. 26-28.

⁵¹ "The 'Super' Grades Are Gaining Ground," *American Metal Market*, Stainless Steel Supplement, Apr. 12, 1994.

In some instances, the formation of joint ventures with foreign firms has provided U.S. steelmakers with greater access to capital and new technology necessary for modernization and has provided foreign partners with increased access to the U.S. market and distribution network.⁵² Foreign firms have found joint ventures an attractive means to supply traditional clients who have facilities in the United States. Other factors reportedly contributing to the decision of foreign producers to participate in the U.S. steel industry are exchange-rate changes, which have made investment in the United States relatively less expensive; the uncertainty of access to the U.S. market posed by trade measures, such as the voluntary restraint arrangements (VRAs), which imposed limits on certain countries' steel exports to the United States between October 1984 and March 1992; and the filing of antidumping and countervailing duty investigations on stainless steel mill products.⁵³

There was no ownership of foreign facilities by U.S. companies until 1993 when Carpenter Technology Corp. entered into a joint venture with Taiwan's Walsin Lihwa Corp., a wire and cable manufacturer, to produce stainless steel long products in southern Taiwan for distribution in the North American, European, and Asian markets. According to Carpenter, the venture will facilitate the company's ability to match product mix with regional market opportunities.⁵⁴ Carpenter also established a steel service center in England to distribute stainless and other specialty steel products, and acquired a stainless steel long products distributor in Mexico.⁵⁵

Several U.S. producers have been acquired by or entered into joint ventures with foreign companies in the domestic stainless steel mill products market over the past 10 years. For example, as presented in figure 3, in 1984 Sweden's Avesta AB acquired Ingersoll-Johnson Steel; in 1986, Rio Algom, Ltd., a Canadian company, acquired Al Tech Specialty Steel Corp; in 1988, the Republic of Korea's (Korea's) Sammi Steel acquired Al Tech from Rio Algom; and in

⁵² Most stainless steel mill products are marketed either directly by the producer or through a steel service center. Many stainless steel producers rely increasingly on steel service centers and distributors for final distribution of their products to end markets due to their more specialized, lower volume markets. Sourcing from service centers rather than from producers means that fabricators can reduce inventories by relying on centers for just-in-time delivery.

⁵³ For further information on foreign investment in the U.S. steel industry, see U.S. International Trade Commission, *Steel Industry Annual Report* (investigation No. 332-289), USITC publication 2436, Sept. 1991.

⁵⁴ Carpenter Technology Corp., *1994 Annual Report*, p. 15.

⁵⁵ *Ibid.*

1990, France's Ugine ACG acquired J&L Specialty Products Corp. In 1990, the United States' Armco Advanced Materials Corp. and Spain's Acerinox, SA formed a joint venture for the construction of North American Stainless, a stainless steel cold-rolling mill in Carrollton, KY. In 1992, stainless tube producers Sandvik Steel (Sweden) and Sumitomo Metals (Japan) jointly invested \$45 million to create Pennsylvania Extruded Tube Co. (Pexco), which produces stainless seamless tubes from purchased bar.⁵⁶

Consumer Characteristics and Factors Affecting Demand

Stainless steel is used in a wide variety of applications in both industrial and consumer products because of its strength, durability, malleability, corrosion-resistance, and attractive surface appearance. Primary markets for stainless steel include the automotive, appliance, food-processing, and environmental/pollution control industries. The single largest consumer of stainless steel mill products is the automotive market, accounting for 21 percent of shipments in 1993. More than 40 percent of stainless steel mill product shipments in 1993 were to steel service centers, which in turn sell to numerous smaller end users.⁵⁷ The major growth area for consumption of stainless steel over the past 5 years has been in the automotive, appliance, and environmental/pollution control industries.

The automotive industry, long a consumer of carbon steel products, has rapidly expanded its consumption of stainless steel in such uses as exhaust systems (for which chrome, or ferritic, stainless steel is most commonly used) and air bag inflators. In the appliance industry, stainless steel's ability to meet exacting hygiene standards makes it especially useful in sinks, dishwashers, and ranges; the recent introduction of stainless steel washing machines will likely offer good growth potential for stainless flat-rolled products. Another potential growth area for stainless steel usage is in pollution control equipment. The relatively new, more stringent environmental restrictions of the Clear Air Act have resulted in a greater need for stainless steels with increased corrosion resistance.⁵⁸

The Specialty Steel Industry of North America (SSINA)⁵⁹ launched a major marketing effort in 1992

⁵⁶ "Pexco Looks For a Niche Market," *Metal Bulletin Monthly*, Tube & Pipe Supplement, Apr. 1994.

⁵⁷ Data provided by American Iron and Steel Institute.

⁵⁸ "The 'Super' Grades are Gaining Ground," *American Metal Market: Stainless Steel Supplement*, Apr. 12, 1994.

⁵⁹ Formerly the Specialty Steel Industry of the United States (SSIUS). In explaining its name change, the SSINA stated that "we have recently invited specialty steel producers in both Canada and Mexico to join our trade

when it created its Market Development Committee to promote the expanded use and recognition of stainless steel; there appears to be considerable potential for growth—U.S. per capita consumption of stainless steel is about one-half that of many other developed countries.⁶⁰ Some of the major markets that the SSINA promotional campaign has targeted include building and construction, with emphasis on roofing, doors and entryways, wall panels, and structural beams; and infrastructure, with emphasis on bridges and parking decks.⁶¹ In its marketing efforts, the SSINA is promoting the concept of life-cycle costing of input materials, a system that identifies and quantifies all costs (including initial outlay, maintenance and repair, downtime, production losses, and replacement) associated with a construction or manufacturing project over a given period. The SSINA asserts that although stainless steel may initially be a costly raw material, it is often the least expensive material in the long run because its ease of maintenance and better durability and fire resistance contribute to lower repair costs and to a longer service life.⁶² According to the SSINA, stainless steel products can last 45 to 50 years before maintenance is needed, whereas carbon steel lasts about a decade or less before maintenance is required.⁶³

⁵⁹—Continued

association to enable the industry to better address problems in this sector and to maximize commercial opportunities in the North American marketplace.” (Hearing testimony of William J. Pendleton, Director of Corporate Affairs, Carpenter Technology Corp., on Behalf of the Specialty Steel Industry of North America, in connection with “The Economic Effects of Antidumping and Countervailing Duty Orders and Suspension Agreements,” investigation No. 332-344, Sept. 29-30, 1994, transcript, p. 566.)

⁶⁰ *New Steel Construction*, Oct. 1993.

⁶¹ Promising growth areas also include automobile exhaust systems and washing machine drums. The use of automotive stainless (chiefly for emission applications) is estimated to grow by about 15 percent over the next 5 years, which could lead to an increase of about 2 percent in U.S. consumption of stainless steel. Other automotive parts in which stainless use could grow are airbags, fuel lines, brake lines, and trim applications. In the appliance industry, the use of stainless steel drums in washing machines is expected to grow, largely in response to environmental difficulties associated with both the production and reclamation of the more traditional enamel or porcelain drums. Industry sources have estimated that growth in this market could result in an increase in consumption of about 1.5 percent. (Kidder, Peabody & Co., Inc., *Industry Report: Stainless Steel Focus*, July 27, 1994.)

⁶² “Hotline,” *Metal Bulletin*, June 21, 1993; and “Promotional Efforts May Recast Industry,” *American Metal Market: Stainless Steel Supplement*, Aug. 18, 1993. The U.S. Intermodal Surface Transportation Efficiency Act (ISTEA) passed in 1991 requires that building-materials costs be assessed by the life cycle cost method.

⁶³ “Market Development Proves an Uphill Battle,” *American Metal Market: Stainless Steel Supplement*, Apr. 12, 1994.

FOREIGN INDUSTRY PROFILE

Japan is the world’s largest producer of stainless steel mill products and accounts for about one-fourth of world production (figure 6). The United States is the second largest producer, followed by Germany. The remainder of non-U.S. production is concentrated in several Western European and Southeast Asian countries, but none of these account for more than about 6 percent of world production.

More favorable global prices and optimistic forecasts for stainless steel consumption have resulted in new entrants into the stainless market (many of which are in developing countries) and in facility expansion by existing producers. Much of the capacity growth has occurred in Southeast Asia where stainless steel consumption has grown especially rapidly in recent years.⁶⁴ Other countries where significant capacity expansion is either planned or underway include South Africa and Brazil. Recent developments in the major stainless steel producing regions are summarized below.

East Asia

East Asia contains significant stainless steel mill product capacity, much of it located in Japan and Korea. However, other countries in the region, most notably Taiwan and Thailand, are expanding production capacity in response to specialty steel consumption growth that averages 5 to 10 percent annually. The outlook is for continued high levels of growth as these countries improve their infrastructures and their quality of life, increasing their consumption of automobiles, appliances, and other products that use stainless steel.⁶⁵

Japan is the world’s largest producer of stainless steel mill products, with six companies⁶⁶ accounting for most of the country’s 3.5 million tons of output in 1992.⁶⁷ Japan exported 28 percent of its output in 1992; of that amount, 10 percent went to the United States, and 77 percent went to other Asian countries.⁶⁸

⁶⁴ “Black Spots Mar Stainless Picture,” *Metal Bulletin*, Sept. 8, 1994.

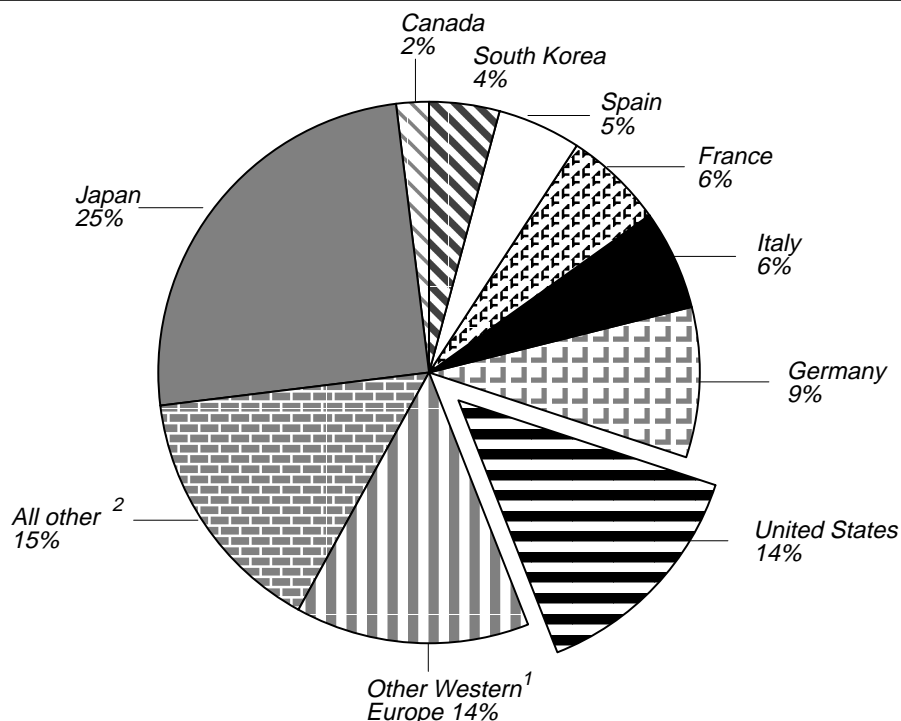
⁶⁵ Carpenter Technology Corporation, *1994 Annual Report*, p. 15.

⁶⁶ The six producers are Kawasaki Steel Corp., Nippon Steel Corp., Nisshin Steel Co., Sumitomo Metal Industries Ltd. (all of which also produce carbon steel), Nippon Yakin Kogyo Co. Ltd., and Nippon Metal Industry Co. Ltd.

⁶⁷ World Bureau of Metal Statistics and Inco Europe Limited, *World Stainless Steel Statistics*, 1993 edition; and “Six Japan Steelmakers Join in on Stainless Mill Being Built in Thailand,” *American Metal Market*, Feb. 22, 1993.

⁶⁸ World Stainless Steel Statistics, World Bureau of Metal Statistics and Inco Europe Limited, 1993 edition.

Figure 6
Stainless steel mill products: Geographic distribution of world production, by selected countries and regions, 1993



¹ Includes Austria, Belgium, Finland, Sweden, United Kingdom, and former Yugoslavia.

² Includes Australia, Brazil, India, South Africa, Taiwan, former Soviet Union, Central Europe, and China.

Source: *World Stainless Steel Statistics*, World Bureau of Metal Statistics and Inco Europe Ltd., 1994 edition.

After several years of strong economic growth that began in the late 1980s, Japan entered an economic recession in 1991 that resulted in reduced private sector investment and declining growth in consumer spending.⁶⁹ The renewed strength of the yen against the U.S. dollar further exacerbated the steel industry's weakened financial position. Although Japan's economy began to show signs of improvement in mid-1994, the continuing strength of the yen against the U.S. dollar could have negative repercussions for steelmakers by causing the prices for their steel exports to rise to uncompetitive levels in the world market.⁷⁰

The potentially detrimental effects of exchange rate fluctuations on Japan's exports can be partly alleviated by Japanese investment in production facilities in other countries. For example, Japan's six major stainless producers recently participated, through capital-sharing, in the construction of a stainless steel cold-rolling mill in Thailand. The companies

reportedly decided to participate in the project because it will enable them to respond more readily to local customer needs.⁷¹ Japan's exports to China, a major market for Japanese stainless sheet, declined significantly during 1994 because of inventory reduction and a shift by Chinese purchasers to less expensive sources for stainless steel.⁷² Japan's exports to Korea and Taiwan may also decline in the near future as those two countries expand their stainless capacity and become better able to supply their needs internally.

Major stainless steel consuming markets in Japan include the construction industry (in particular, non-structural uses such as decorative panelling and interior applications such as elevator doors and walls); the industries producing machinery, major and small electrical appliances, and transportation equipment; and other end-uses such as bathtubs, furniture,

⁶⁹ "Continuing Evolution of Japan's Steel Industry," *Steel Times International*, July 1994.

⁷⁰ "Brighter Horizon in Land of the Rising Yen," *Metal Bulletin Monthly*, Sept. 1994.

⁷¹ "Six Japan Steelmakers Join in on Stainless Mill Being Built in Thailand," *American Metal Market*, Feb. 22, 1993.

⁷² *Japan Metal Bulletin*, Mar. 15, 1993.

tableware, and kitchen equipment.⁷³ To combat the negative effects of the economic recession on domestic steel demand, Japanese producers (like their counterparts in the United States) are implementing technical innovations to produce higher quality steel products. Investments have been made in such equipment as strip casters and rod casters, which reportedly save energy and manpower, shorten lead times, and allow for small-lot production, thereby enabling more customized service.⁷⁴

The stainless steel industry in Korea has experienced rapid growth since the late 1970s. Major producers of stainless steel mill products include Pohang Iron and Steel Company (Posco), Sammi Steel, Inchon Iron and Steel Co., and Kia Steel. Korea's production of stainless steel rose more than five-fold from 1988 to 1992, reaching about 545,000 tons in 1992. The United States received approximately 4 percent of Korea's exports in 1992, whereas other Asian countries (principally China) received about 75 percent of exports that year.⁷⁵

Posco has announced plans to double its stainless production capacity by 1996 with the installation of an additional 400,000 tons-per-year of hot-rolling capacity and an additional 70,000 tons-per-year of cold-rolling capacity.⁷⁶ The expansion is reportedly designed to meet increased demand in the domestic market resulting, in part, from large-scale infrastructure projects.⁷⁷ Sammi Steel began production at a new 30,000 ton-per-year stainless cold-rolling mill in September 1994. The mill will reportedly roll high value-added ultra-thin sheet that Korea had previously imported, primarily from Japan.⁷⁸

Elsewhere in Southeast Asia, Taiwan is rapidly becoming a significant producer of stainless steel. There are at least 10 stainless producers in that country, 5 of which are in various stages of capacity expansion.⁷⁹ As a result, stainless cold-rolling

capacity could more than triple by the end of 1995. The capacity expansion has reportedly been sparked by growth in domestic demand and by demand from the rapidly growing market in China.⁸⁰ Taiwan has also been active in foreign ventures, both inside and outside the country: two Taiwanese companies (Walsin-Lihwa and Hau Eng) are planning to build a stainless mill in Shanghai, China; Walsin-Lihwa has also entered into a joint venture with U.S. producer Carpenter Technology Corp. to produce stainless steel long products in southern Taiwan for distribution in China and other parts of the Pacific Rim.⁸¹

Thailand began producing its first cold-rolled stainless steel in late 1993 with the completion of Thainox Steel's Rayong plant, a joint venture operation involving several Thai partners and one French, one Italian, and six Japanese partners. The joint venture partners supply the hot-rolled sheet (the raw material) required by Thainox, which has about 60,000 tons-per-year capacity to produce cold-rolled sheet and strip.⁸² This capacity is eventually expected to exceed domestic demand, likely making production available for export.⁸³

Western Europe

There are several major producers of stainless steel mill products in Western Europe. The most prominent producer is Avesta Sheffield, created in late 1992 by the merger of British Steel Stainless Group and Sweden's Avesta Steel. The resulting company is one of the largest European producers of cold-rolled stainless steel products. Other major producers include Ugine SA, Ugine Savoie, and Imphy SA in France; Fried Krupp AG and Thyssen Stahl AG in Germany; ALZ NV and Fabrique de Fer Charleroi in Belgium; and ILVA's Terni specialty steel division in Italy.

Western Europe's consumption of stainless steel mill products rose by 9 percent from about 3.15 million tons in 1988 to 3.44 million tons in 1992.⁸⁴ Demand has continued to grow since then, and further growth is expected. The economic recovery in Europe, which has stimulated demand from traditional markets such as the automotive industry, combined with demand from new markets for stainless steel, has contributed to the

⁷³ "Little Comfort for the Japanese," *Metal Bulletin Monthly*, Feb. 1992.

⁷⁴ "Japan Sets Net Formed Stainless," *American Metal Market*, Sept. 30, 1992.

⁷⁵ World Stainless Steel Statistics, World Bureau of Metal Statistics and Inco Europe Limited, 1993 edition.

⁷⁶ "Posco to Double Stainless Steel Capacity," *CRU Monitor*, Industry News, Nov. 1993.

⁷⁷ Ibid, and "Korean Supply Shortfall Is Likely to Continue," *Metal Bulletin*, Sept. 15, 1994.

⁷⁸ "Korea Lifts Capacity for Stainless Steel," *Metal Bulletin*, Nov. 10, 1994.

⁷⁹ "Stainless Steel Flat Products - Industry News," *CRU Monitor*, CRU International Ltd., Sept. 1993.

⁸⁰ "Stainless Steel Flat Products," *CRU Monitor*, CRU International Ltd., Sept. 1993.

⁸¹ "New Stainless Mill Eyed for Shanghai," *American Metal Market*, May 24, 1993.

⁸² "Thailand's Stainless Market Tightens," *Metal Bulletin*, Mar. 14, 1994, p. 31; and "Stainless Steel Flat Products," *CRU Monitor*, CRU International Ltd., Sept. 1993.

⁸³ "Joint Venture Partnerships Push Developments Ahead," *Steel Times International*, July 1992.

⁸⁴ World Stainless Steel Statistics, World Bureau of Metal Statistics and Inco Europe Limited, 1993 edition.

ongoing expansion in consumption.⁸⁵ Producers have also announced plans to expand their exports. For example, the chairman of Ugine SA (France) stated that his company will attempt to expand its market share in the Pacific Rim region.⁸⁶ The importance of the U.S. export market for Western European producers of stainless steel mill products has remained relatively steady over the past 5 years, with exports to the United States representing about 4 percent of total Western European exports during the period.⁸⁷ Reflecting the increase in consumption, prices for stainless steel mill products rose sharply in 1994 from 1993 levels (in some instances, prices in 1994 were 50 percent higher than their year-earlier levels), as mills filled their order books and lead times increased.⁸⁸

As Western European producers attempt to improve their financial performance in the European market, there has been a great deal of strategic maneuvering. Similar to the United States, the European stainless steel industry has undergone considerable restructuring in recent years in an effort to lower costs and increase profitability (stainless steel prices slumped during 1992-93).⁸⁹ In the past 10 years the number of major producers of stainless flat-rolled steel has fallen by about 50 percent to 6, chiefly as the result of mergers.

Significant mergers include the Avesta Sheffield union, resulting in a company with a well-developed distribution network that produces about 600,000 tons-per-year of a wide range of stainless products.⁹⁰ Two major German stainless producers, Krupp Hoesch and Thyssen Steel, merged their stainless flat-rolled product operations to form a new company having an

annual capacity of about 710,000 tons. Krupp-Thyssen's proposed acquisition of a share in Italy's Acciai Speciali Terni (AST) ILVA's Terni specialty steel division) would further boost that entity's capacity and would create Europe's largest stainless steel producer.⁹¹ This acquisition has not yet been approved by the European Commission, which is investigating the AST takeover under both its competition and its merger rules. France's Ugine SA, which will lose its position as Europe's largest stainless steel producer if the Krupp-Thyssen-AST merger is finalized, is pressing the European Commission to stop the merger, stating that it would interfere with competition in the Western European market.⁹² The European Commission adopted proposals to adapt competition rules to encourage mergers as part of the steel industry restructuring plan in 1993, and has favored trans-national link-ups as a way of promoting rationalization in the steel industry.⁹³

Western European producers tend to be at a competitive disadvantage relative to their U.S. counterparts in the availability and price of stainless scrap metal, a fundamental raw material for the production of stainless steel.⁹⁴ To counteract this, European producers have begun to consider joint ventures that would allow them access to more stable supplies of stainless scrap. Ugine SA, for example, finalized an equity-for-raw-materials deal with South Africa's Samancor in July 1994. In exchange for a 3.5 percent share of Ugine, Samancor agreed to supply 10 percent of Ugine's ferrochrome requirements and an average of 50,000 tons-per-year of stainless hot-rolled sheet (the raw material to produce cold-rolled sheet, a major stainless product) for 10 years.⁹⁵

Other Countries

Other increasingly important stainless steel producing countries include South Africa and Brazil. Recent developments in the South African stainless steel industry focus on the expansion of Columbus Stainless Steel (the stainless division of the former Middleburg Stainless and Alloys and the country's sole

⁸⁵ For example, stainless steel is becoming more widely accepted as a construction material for both functional and aesthetic applications such as elevators, stairways, railings, wall cladding, and sculpture. Another growing market is the industry making pollution control equipment; stainless steel is an important component of much of the equipment being introduced to protect the environment. (*Stainless Steel Focus*, Mar. 15, 1993 and Apr. 18, 1994.)

⁸⁶ "Refinancing Sets Up Ugine for Expansion," *Metal Bulletin*, July 18, 1994.

⁸⁷ *World Stainless Steel Statistics*, Inco Europe Limited and World Bureau of Metal Statistics, 1993 edition.

⁸⁸ "Outlook Set Fair for Stainless," *Metal Bulletin*, June 20, 1994. Prices for standard grade 304 cold-rolled sheet in the EU for first quarter 1995 delivery are 50 percent higher than those in the first quarter of 1994. ("Stainless Mills 'Very Conservative,' Says User," *Metal Bulletin*, Sept. 26, 1994.)

⁸⁹ "Solid Foundations for Stainless," and "Refinancing Sets Up Ugine for Expansion," *Metal Bulletin*, July 18, 1994.

⁹⁰ "Avesta Sheffield Is Born Into a Tough Market," *Metal Bulletin Monthly*, Stainless Steel Supplement, Mar. 1993.

⁹¹ "Stainless Steel Flat Products," *CRU Monitor*, Jan. 1994; and "Avesta Sheffield Finds Its Form," *Metal Bulletin Monthly*, Sept. 1994.

⁹² Ugine SA, currently Europe's largest stainless steel producer, lost its bid on Terni (during Terni's privatization) to the German-led group earlier in 1994. "Krupp-Terni Takeover Faces Opposition," *Metal Bulletin*, Sept. 19, 1994; and "Stainless Tie-up Waits on Brussels," *Metal Bulletin*, Oct. 10, 1994.

⁹³ "Krupp-Terni Takeover Faces Opposition," *Metal Bulletin*, Sept. 19, 1994.

⁹⁴ "The Spending Gap: Has It Gone Too Far?" *American Metal Market*, Stainless Steel Supplement, Apr. 12, 1994.

⁹⁵ "Refinancing Sets Up Ugine for Expansion," *Metal Bulletin*, July 18, 1994.

producer of stainless flat-rolled products), which will make that company the world's sixth largest stainless steel producer when construction is completed in 1995.⁹⁶ Columbus is expected to increase its annual capacity to about 500,000 tons of hot- and cold-rolled stainless steel (compared with Middleburg's current capacity of 120,000 tons) by expanding its meltshop and its hot- and cold-rolling facilities. Reportedly, about 85 percent of that output will be exported to a number of countries, likely including the United States.⁹⁷ The Columbus expansion is a joint venture among three South African interests—Samancor Ltd., Highveld Steel & Vanadium, and Industrial Development Corp. (an entity of the South African government).⁹⁸ Columbus will likely have certain competitive advantages over other global producers, including proximity to ferrochrome production, an important raw material (Columbus's ferrochrome will come from the Samancor plant on the same site), moderate energy costs, and complete domestic sourcing of nickel. The company's most significant raw material availability problem will likely be its access to steel scrap, which is currently in short supply in South Africa.⁹⁹

Further expansion plans in South Africa include Iscor's plan to produce stainless steel at its works in Pretoria. The company, which expects to produce about 480,000 tons-per-year of stainless steel by 1996, has not yet announced the types of stainless steel mill products it will make.¹⁰⁰ An Iscor official indicated that all of the additional stainless steel production would be exported.¹⁰¹ Some of those exports could be expected to be to the United States, given the recent trend in U.S. trade; U.S. imports from South Africa quadrupled from 1992 to 1993.¹⁰²

⁹⁶ "Columbus Expansion Details Revealed," *CRU Monitor*, Nov. 1993; and *A Compendium of Worldwide Government Subsidies, Anticompetitive Practices and Market Access Barriers in the Specialty Steel Sector*, Specialty Steel Industry of North America, Oct. 1994, p. 89.

⁹⁷ "Columbus' Sights Set on Boundless Shores," *American Metal Market*, Specialty Steel Supplement, Mar. 4, 1994, p. 10A; and USITC, *Steel Semiannual Monitoring Report*, Publication 2807, Sept. 1994, p. 15.

⁹⁸ *Ibid.*, *American Metal Market*, p. 11A.

⁹⁹ *Ibid.*, and "Columbus Plans Gradual Expansion," *Metal Bulletin*, Mar. 31, 1994.

¹⁰⁰ "Iscor Plans to Move Into Stainless," *Metal Bulletin*, Sept. 5, 1994; and "Hotline," *Metal Bulletin*, Sept. 8, 1994.

¹⁰¹ "South African Stainless Steel Plant to Import 40,000 Tons of Nickel Per Year," *Tribune Business News*, Dec. 5, 1994.

¹⁰² U.S. International Trade Commission, *Steel Semiannual Monitoring Report* (investigation No. 332-327), USITC publication no. 2807, Sept. 1994, table G-26.

In Brazil, Latin America's largest producer of stainless steel, capacity expansion currently underway or planned reflects that country's optimism about growth in demand for stainless from the automotive, the coinage, and the cutlery industries.¹⁰³ In line with the expected growth in demand, Companhia de Aços Especiais Itabira (Acesita), Brazil's largest stainless steelmaker, is raising its capacity for flat-rolled stainless to around 290,000 tons per year (2-1/2 times greater than its current capacity) by the year 2000.¹⁰⁴ Acesita has expanded its involvement in steel elsewhere in Latin America (principally Argentina) with the signing of an industrial cooperation accord with Argentina's Acindar, a bar producer. The accord calls for studies to identify synergies which will guide future investments, sales strategies, and technology interchanges between the two companies.¹⁰⁵ Acesita also signed an agreement with Argentina's Techint steel and engineering group, and with steel company Aceros Emesa, to set up a steel distribution company in Argentina, representing Acesita's first venture into steel distribution outside Brazil.¹⁰⁶

U.S. TRADE MEASURES

Tariff Measures

Classification of relevant products under the Harmonized Tariff Schedule (HTS), column 1 general and special rates of duty for each HTS statistical reporting number, and U.S. exports and imports for 1993 are shown in table 2. For 1993, the aggregate, trade-weighted, average rate of duty for all products covered in this summary was 8.4 percent ad valorem.¹⁰⁷ Several special tariff rates are also in effect. Under the Caribbean Basin Economic Recovery Act (CBERA), the U.S.-Israel Free Trade Agreement, and the Andean Trade Preference Act (ATPA), all stainless steel imports from beneficiary CBERA and ATPA countries and from Israel are eligible to enter free of duty (Appendix C). Stainless steel mill products are not eligible for duty free treatment under the Generalized System of Preferences.

The North American Free Trade Agreement (NAFTA) provides for the phaseout of U.S. duties on stainless steel imports from Mexico over a 6-year period. Mexico is obligated to phase out its duties on imports of such goods from the United States over a 10-year period. The NAFTA became effective for both the United States and Mexico on January 1, 1994.

¹⁰³ "Acesita Set to Expand Stainless Capacity," *Metal Bulletin*, Mar. 28, 1994.

¹⁰⁴ "Acesita Plans Rise in Stainless Output," *Metal Bulletin*, Oct. 31, 1994.

¹⁰⁵ "Brazil, Argentina Team Up in Steel," *American Metal Market*, June 2, 1994.

¹⁰⁶ "Acesita Moves Into Argentina," *Metal Bulletin*, Oct. 4, 1993.

¹⁰⁷ Calculated by USITC staff from official statistics of the U.S. Department of Commerce.

Table 2

Stainless steel mill products: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; and U.S. imports, 1993

HTS subheading	Brief Description	Col. 1 rate of duty as of Jan. 1, 1994		U.S. exports, 1993	U.S. imports, 1993
		General	Special ¹		
7218	Stainless steel in ingots or other primary forms; semifinished products of stainless steel:				
7218.10.00	Stainless steel in ingots and other primary forms	5.2%	Free (E,IL,J); 2% (CA); 4.6% (MX)	11.6	1.4
7218.90.00	Semifinished products of stainless steel	5.2%	Free (E,IL,J); 2% (CA); 4.6% (MX)	17.4	127.8
7219	Flat-rolled products of stainless steel, of a width of 600 mm or more:				
7219.11.00	Not further worked than hot-rolled, in coils, of a thickness exceeding 10 mm	10.1%	Free (E,IL,J,MX); 4% (CA)	1.3	27.6
7219.12.00	Not further worked than hot-rolled, in coils, of a thickness of 4.75 mm or more but not exceeding 10 mm	10.1%	Free (E,IL,J,MX);	1.0	28.1
7219.13.00	Not further worked than hot-rolled, in coils, of a thickness of 3 mm or more but less than 4.75 mm	10.1%	Free (E,IL,J,MX); 4% (CA)	2.0	14.2
7219.14.00	Not further worked than hot-rolled, in coils, of a thickness of less than 3 mm	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	2.6	5.6
7219.21.00	Not further worked than hot-rolled, not in coils, of a thickness exceeding 10 mm	9.6%	Free (E,IL,J); 3.8% (CA); 8.6% (MX)	6.5	15.3
7219.22.00	Not further worked than hot-rolled, not in coils, of a thickness of 4.75 mm or more but not exceeding 10 mm	9.6%	Free (E,IL,J); 3.8% (CA); 8.6% (MX)	6.4	15.0
7219.23.00	Not further worked than hot-rolled, not in coils, of a thickness of 3 mm or more but less than 4.75 mm	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	1.0	4.0
7219.24.00	Not further worked than hot-rolled, not in coils, of a thickness of less than 3 mm	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	1.0	1.1
7219.31.00	Not further worked than cold-rolled (cold-reduced), of a thickness of 4.75 mm or more	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	5.0	6.6
7219.32.00	Not further worked than cold-rolled (cold-reduced), of a thickness of 3 mm or more but less than 4.75 mm	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	1.9	64.0
7219.33.00	Not further worked than cold-rolled (cold-reduced), of a thickness exceeding 1 mm but less than 3 mm	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	23.5	217.8
7219.34.00	Not further worked than cold-rolled (cold-reduced), of a thickness of 0.5 mm or more but not exceeding 1 mm	10.1%	Free (E,IL,J); 4% (CA); 9% (MX)	7.2	119.9

Million dollars

See footnotes at end of table.

Table 2—Continued
Stainless steel mill products: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; and U.S. imports, 1993

HTS subheading	Brief Description	Col. 1 rate of duty as of Jan. 1, 1994		U.S. exports, 1993	U.S. imports, 1993
		General	Special ¹		
7219.35.00	Not further worked than cold-rolled (cold-reduced), of a thickness of less than 0.5 mm	10.1%	Free (E,IL,J): 4% (CA); 9% (MX)	7.4	34.1
7219.90.00	Other	5.9%	Free (E,IL,J): 2.3% (CA); 5.3% (MX)	10.1	24.9
7220	Flat-rolled products of stainless steel, of a width of less than 600 mm:				
7220.11.00	Not further worked than hot-rolled, of a thickness of 4.75 mm or more	10.6%	Free (E,IL,J): 4.2% (CA); 9.5% (MX)	2.0	3.1
7220.12.10	Not further worked than hot-rolled, of a thickness of less than 4.75 mm, of a width of 300 mm or more	10.1%	Free (E,IL,J): 4% (CA); 9% (MX)	16.8	2.7
7220.12.50	Not further worked than hot-rolled, of a thickness of less than 4.75 mm, of a width of less than 300 mm	11.6%	Free (E,IL,J): 4.6% (CA); 10.4% (MX)	(²)	4.6
7220.20	Not further worked than cold-rolled (cold-reduced):				
7220.20.10	Of a width of 300 mm or more	10.1%	Free (E,IL,J): 4% (CA); 9% (MX)	57.3	19.7
7220.20.60	Of a width of less than 300 mm, of a thickness exceeding 1.25 mm	11.6%	Free (E,IL,J): 4.6% (CA); 10.4% (MX)	(³)	5.5
7220.20.70	Of a width of less than 300 mm, of a thickness exceeding 0.25 mm but not exceeding 1.25 mm	10.6%	Free (E,IL,J): 4.2% (CA);	(³)	24.0
7220.20.80	Razor blade steel, of a width of less than 300 mm, of a thickness not exceeding 0.25 mm	5.2%	Free (E,IL,J): 2% (CA); 4.6% (MX)	(³)	9.3
7220.20.90	Other, of a width of less than 300 mm, of a thickness not exceeding 0.25 mm	8.1%	Free (E,IL,J): 3.2% (CA); 7.2% (MX); 5.1% (MX)	(³)	13.8
7220.90.00	Other flat-rolled products of stainless steel, of a width of less than 600 mm	5.7%	Free (E,IL,J): 2.2% (CA);	19.0	9.8
7221.00.00	Bars and rods, hot-rolled, in irregularly wound coils, of stainless steel	4.7%	Free (E,IL,J): 1.8% (CA); 4.2% (MX)	7.8	83.0
7222	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel:				
7222.10.00	Bars and rods, not further worked than hot-rolled, hot-drawn or extruded	10.6%	Free (E,IL,J): 4.2% (CA); 9.5% (MX)	7.9	33.3

See footnotes at end of table.

Table 2—Continued
Stainless steel mill products: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; and U.S. imports, 1993

HTS subheading	Brief Description	Col. 1 rate of duty as of Jan. 1, 1994		U.S. exports, 1993	U.S. imports, 1993
		General	Special ¹		
7222.20.00	Bars and rods, not further worked than cold-formed or cold-finished	10.6%	Free (E,I,L,J): 4.2% (CA); 9.5% (MX)	9.2	78.9
7222.30.00	Other bars and rods	10.6%	Free (E,I,L,J): 4.2% (CA); 9.5% (MX)	7.9	11.6
7222.40.30	Angles, shapes and sections, hot-rolled, not drilled, not punched and not otherwise advanced	2.1%	Free (E,I,L,J): 0.8% (CA); 1.8% (MX)	8.9	31.2
7222.40.60	Other angles, shapes and sections	5.3%	Free (E,I,L,J): 2.1% (CA); 4.7% (MX)	(⁴)	1.4
7223.00	Wire of stainless steel:				
7223.00.10	Round wire	9.1%	Free (E,I,L,J): 3.6% (CA) ⁵ ; 8.1% (MX)	16.3	70.2
7223.00.50	Flat wire	3.3%	Free (E,I,L,J): 1.3% (CA); 2.9% (MX)	(⁶)	3.9
7223.00.90	Other wire	6.3%	Free (E,I,L,J): 2.5% (CA); 5.6% (MX)	(⁶)	4.4
7304.41	Tubes, pipes and hollow profiles, seamless, of circular cross section, of stainless steel, cold-drawn or cold-rolled (cold-reduced):				
7304.41.30	Of an external diameter of less than 19 mm	7.6%	Free (C ⁷ E,I,L,J, MX); 3% (CA) ⁸	16.7	44.4
7304.41.60	Other	7.6%	Free (C ⁷ E,I,L,J, MX); 3% (CA) ⁸	(⁹)	(⁹)
7304.49.00	Other than cold-drawn or cold-rolled	7.6%	Free (C ⁷ E,I,L,J, MX); 3% (CA) ⁸	17.6	59.0
7306.40	Other tubes, pipes and hollow profiles, welded, of circular cross section, of stainless steel:				
7306.40.10	Having a wall thickness of less than 1.65 mm	7.6%	Free (C ⁷ E,I,L,J); 3% (CA) ¹⁰	4.6	13.4
7306.40.50	Having a wall thickness of 1.65 mm or more	5.0%	Free (C ⁷ E,I,L,J); 2% (CA) ¹⁰ ; 4.5% (MX)	23.8	44.5

¹ Programs under which special tariff treatment may be provided, and the corresponding symbols for such programs as they are indicated in the "Special" subcolumn, are as follows: Generalized System of Preferences (A or A¹); Automotive Products Trade Act (B); Agreement on Trade in Civil Aircraft (C); North American Free-Trade Agreement, goods of Canada (CA) and Mexico (MX); Caribbean Basin Economic Recovery Act (E); United States-Israel Free Trade Area (IL); and Andean Trade Preference Act (J).

² Value included under HTS subheading 7220.12.10.

³ Value included under HTS subheading 7220.20.10.

⁴ Value included under HTS subheading 7222.40.30.

⁵ Certain products from Canada under this subheading enter free of duty under provisions of HTS subheading 9905.72.20.

⁶ Value included under HTS subheading 7223.00.10.

⁷ Duty-free treatment under the Agreement on Trade in Civil Aircraft applies only to tubes and pipes with attached fittings, suitable for conducting gases or liquids.

⁸ Certain products from Canada under these subheadings enter free of duty under provisions of HTS subheadings 9905.73.02 and/or 9905.73.04.

⁹ Value included under HTS subheading 7304.41.30.

¹⁰ Certain products from Canada under these subheadings enter free of duty under provisions of HTS subheading 9905.73.06.

Source: USITC, Harmonized Tariff Schedule of the United States (1994). U.S. exports and U.S. imports compiled from official statistics of the U.S. Department of Commerce.

Under the multinational Uruguay Round Agreements (URA), which were completed in December 1993 and entered into force in the United States on January 1, 1995, the United States, the European Union, Japan, Korea, Canada, Austria, Sweden, Finland, and Norway agreed to eliminate tariffs on steel products over a 10-year period. Under the URA, duties are being phased out in stages that began January 1, 1995.

Nontariff Measures

Specialty Steel Import Relief Program

In early 1983, the domestic industry filed a petition for import relief with the U.S. International Trade Commission under section 201 of the Trade Act of 1974 ("Section 201").¹⁰⁸ On July 19, 1983, following an affirmative determination by the Commission¹⁰⁹, the President increased duties on stainless steel sheet and strip and stainless steel plate, and imposed quantitative restrictions on stainless steel bar and wire rod and alloy tool steel for the 4-year period beginning July 19, 1983.¹¹⁰ In July 1987, the President issued a new proclamation extending the increased tariffs and quotas through September 30, 1989, but at reduced levels.¹¹¹

Voluntary Restraint Agreements (VRAs)

On September 18, 1984, following a partial affirmative determination by the Commission in a section 201 investigation involving certain carbon steel products,¹¹² the President established a nine-point program to address the concerns of the overall steel industry. Authority for the President to implement parts of the program was subsequently provided under the Steel Import Stabilization Act of 1984 (Title VIII of the Trade and Tariff Act of 1984).¹¹³ Under this

¹⁰⁸ Under section 201 of the Trade Act of 1974, domestic industries seriously injured by increased imports may petition the Commission for import relief. If the Commission makes an affirmative determination in a section 201 investigation, it recommends to the President relief that would remedy the injury and facilitate industry adjustment to import competition. The President makes the final decision whether to provide relief and the amount of relief.

¹⁰⁹ USITC, *Stainless Steel and Alloy Tool Steel* (investigation No. TA-201-48), USITC publication 1377, May 1983.

¹¹⁰ Presidential Proclamation No. 5074 of July 19, 1983, 48 *FR* 33233.

¹¹¹ Presidential Proclamation No. 5679 of July 16, 1987.

¹¹² Affirmative determinations were made with respect to carbon and certain alloy steel semifinished products, plates, sheets and strip, wire and wire products, and structural shapes and units.

¹¹³ Pub. L. 98-573, Oct. 30, 1984, 98 Stat. 3043. The decision followed an investigation conducted by the Commission under section 201 in which the Commission

program, the President directed the United States Trade Representative (USTR) to reaffirm existing measures limiting steel exports to the United States, such as those applicable to stainless and alloy tool steel, and to negotiate new arrangements (VRAs) to cover a 5-year period (from October 1, 1984 through September 30, 1989) with countries whose exports to the United States had increased significantly in previous years.¹¹⁴ The USTR subsequently concluded VRAs with 19 countries and the EC.¹¹⁵ For the 19 countries and the EC,¹¹⁶ the new VRAs substituted export restraint limits for the higher tariffs on imports of stainless steel sheet, strip, and plate imposed under section 201.¹¹⁷ However, the section 201 tariffs remained in effect on imports of stainless sheet, strip, and plate from countries that did not participate in the VRA program.

On July 25, 1989, the President extended the VRAs for 2-1/2 years, terminating on March 31, 1992. The agreements were modified to include those specialty steel products that were previously subject to relief under section 201. The extension was approved by Congress in December 1989 when it amended the Steel Import Stabilization Act.¹¹⁸ Congress at the same time endorsed "the principles and goals of the steel stabilization program announced by the President on July 25, 1989."¹¹⁹

¹¹³—Continued

found that increased imports of certain carbon and alloy steel products were a substantial cause of serious injury, or threat thereof, to certain domestic industries and recommended to the President that he provide import relief in the form of tariffs and quotas. See, USITC, *Carbon and Certain Alloy Steel Products* (investigation No. TA-201-51), USITC publication 1553, July 1984.

¹¹⁴ Although the structure of the VRAs varied from one country to another, each involved an agreement by the foreign government to limit exports to the United States of certain steel products (including specialty steel). USITC, *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize* (investigation No. 332-209), USITC publication 2226, Oct. 1989, p. I-2; and USITC, *Industry & Trade Summary: Semifinished Steel*, USITC publication 2758, Mar. 1994, p. 15.

¹¹⁵ The countries with which agreements were reached are Australia, Austria, Brazil, Czechoslovakia, the German Democratic Republic, Finland, Hungary, Japan, Mexico, People's Republic of China, Poland, Portugal, the Republic of Korea, Romania, South Africa, Spain, Trinidad and Tobago, Venezuela, Yugoslavia, and the European Communities (Belgium, Denmark, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, the United Kingdom, and West Germany).

¹¹⁶ The exception to this was Finland, whose VRA did not include stainless steel flat-rolled products.

¹¹⁷ The President's authority to impose relief is set forth in section 203 of the Trade Act. To avoid multiple citations, the actions taken are stated as having been taken under section 201, which is the popular citation for sections 201-203 of the Trade Act.

¹¹⁸ Pub. L. 101-221, Dec. 12, 1989, 103 Stat. 1886.

¹¹⁹ Sec. 802(b)(1).

Multilateral Steel Agreement Negotiations

The Steel Import Stabilization Act, as amended in 1989, called for the negotiation of an international consensus through the Uruguay Round of trade negotiations and through bilateral agreements to address subsidies and tariff and nontariff barriers in order to “strengthen the international system and conditions of global steel trade.”¹²⁰ As part of the Bilateral Consensus Agreements negotiated under that umbrella, countries agreed to work towards a Multilateral Steel Agreement (MSA) that would address the underlying causes of unfair trade in steel. An objective of the MSA negotiations is the elimination of most tariffs, such nontariff measures as quotas, and most subsidies in the steel sector. Negotiations have taken place under the general auspices of the GATT and have involved the United States and 34 other countries. Although no final agreement has been concluded, a draft MSA text includes several provisions that, if agreed to multilaterally, would go beyond agreements reached in the URA in several respects. These include providing stricter disciplines on the use of subsidies (prohibiting, for example, regional subsidies to a steel industry, whether or not located in a disadvantaged region), further reducing both government and private sector nontariff steel trade barriers, providing a more global zero-for-zero steel tariff agreement, and providing a faster, more effective method of dispute settlement.¹²¹ Bilateral consultations on the MSA are ongoing although no specific time schedule has been set for general negotiations.

U.S. Government Trade-Related Investigations

The Commission has conducted several investigations of stainless steel mill products under the authority of sections 201 and 203 of the Trade Act of

¹²⁰ Sec. 802(a)(4), 19 U.S.C. 2253 note; Pub. L. 101-221, Dec. 12, 1989, 103 Stat. 1886.

¹²¹ A spokesman for the SSINA stated that “our specialty steel industry strongly supports the negotiation of a Multilateral Steel Agreement to deal with government subsidies.” With respect to the global reduction to zero of specialty steel import duties (zero-for-zero) proposed as part of the GATT Agreement, the spokesman stated that “not all countries have agreed to reduce specialty steel tariffs to zero. Various countries maintain tariff and nontariff barriers designed to protect their domestic markets. Such practices lead to costly litigation and government intervention in the marketplace. We urge the removal of such barriers and the opening of all markets to fair competition.” (“Stainless Steel - A U.S. Viewpoint,” Statement by Robert E. Heaton, Chairman, SSINA and Vice Chairman, Stainless Group Lukens Inc., presented at Metal Bulletin’s 6th International Stainless Steel Conference in Stockholm, Sweden, Sept. 11-13, 1994.)

1974, Title VII of the Tariff Act of 1930,¹²² and section 332(g) of the Tariff Act of 1930.¹²³ As noted in the section entitled “Nontariff Measures: Specialty Steel Import Relief Program,” stainless steel mill products were subject to investigations under section 201 during the 1970s and early- to mid-1980s. The most recent of these investigations resulted in the imposition of specialty steel import relief, which was eventually incorporated into the program of VRAs.

Table 3 lists the investigations under Title VII of the Tariff Act of 1930 that have been conducted during the past 5 years. Because the VRAs limited the filing of unfair trade petitions (the filing of a petition against a particular country nullified the VRA with that country), the bulk of the investigations listed were filed during the post-VRA time period.

In response to a request from the President, the Commission conducted investigation No. 332-167, *Annual and Quarterly Surveys on Certain Stainless Steel and Alloy Tool Steel*, instituted on August 9, 1983. This investigation, conducted under the authority of section 332(g) of the Tariff Act of 1930,¹²⁴ was a 6-year series of surveys of U.S. producers and importers of stainless steel mill products for the purpose of monitoring the effects of temporary duty increases and quantitative limitations on certain stainless steel and alloy tool steel products.

During the period covered by this report, the Commission also conducted several factfinding investigations under section 332(g) that covered all steel mill products, including stainless steel mill products. In response to requests from the USTR, the Commission conducted investigation No. 332-209, *Annual Surveys Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*,¹²⁵ instituted on March 8, 1985, and investigation No. 332-289, *Steel Industry: Annual*

¹²² Under Title VII of the Tariff Act of 1930, U.S. industries may petition the government for relief from imports that are sold in the United States at less than fair value (“dumped”) or which benefit from subsidies provided through foreign government programs. Under the law, the U.S. Department of Commerce determines whether the dumping or subsidizing exists and, if so, the margin of dumping or amount of the subsidy. The Commission determines whether the dumped or subsidized imports materially injure or threaten to materially injure the U.S. industry.

¹²³ Under section 332 of the Tariff Act of 1930, the Commission conducts general investigations on any matter involving tariffs and international trade.

¹²⁴ 19 U.S.C. 1332(g).

¹²⁵ USITC, *Annual Surveys Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize* (investigation No. 332-209), USITC publications 1729, 2019, 2115, and 2226, 1985-89.

Table 3
U.S. International Trade Commission Title VII investigations related to trade in stainless steel mill products, 1990-94

Date	Type of investigation	Product	Petitioner	Respondent/ source country	Final outcome
1990	Antidumping (731-TA-354)	Stainless steel pipe and tube	Specialty Tubing Group (Al Tech Specialty Steel, Allegheny Ludlum Steel, ARMCO-Specialty Steel, Carpenter Technology Corp., Damascus Tubular Products, and Trent Tube Div. of Crucible Materials Corp.)	Sweden	Affirmative vote ¹
1991 ²					
1992	Antidumping (731-TA-540-541)	Stainless steel welded pipes	Avesta Sandvik Tube, Bristol Metals, Damascus Tubular Products, Trent Tube Div. of Crucible Materials Corp., United Steelworkers of America	Korea and Taiwan	Affirmative vote ³
1992	Antidumping (731-TA-563-564) fittings	Stainless steel butt-weld pipe	Flowline Div. of Markovitz Enterprises, Inc.	Korea and Taiwan	Affirmative vote ⁴
1993	Antidumping (731-TA-639-640)	Stainless steel flanges	Flowline Div. of Markovitz Enterprises, Gerlin, Inc. Ideal Forging Corp., Maass Flange	India and Taiwan	Affirmative vote ⁵
1993	Antidumping (731-TA-644)	Stainless steel welded pipe	Avesta Sheffield Pipe, Bristol Metals, Damascus Tube Div. of Nes Bishop Tube Co., Trent Tube Div. of Crucible Materials Corp., United Steelworkers of America	Malaysia	Negative vote ⁶
1993	Antidumping (731-TA-636-638)	Stainless steel wire rod	Al Tech Specialty Steel, Armco Stainless and Alloy Products, Carpenter Technology Corp., Republic Engineered Steels, Talley Metals Technology, United Steelworkers of America	Brazil, France, India	Affirmative vote ⁷

See footnotes at end of table.

Table 3—Continued

U.S. International Trade Commission Title VII investigations related to trade in stainless steel mill products, 1990-94

Date	Type of investigation	Product	Petitioner	Respondent/ source country	Final outcome
1994	Antidumping (731-TA-658)	Class 150 stainless steel threaded pipe fittings	Alloy Stainless Products Co., Capitol Mfg. Co.	Taiwan	(⁸)
1994	Antidumping (731-TA-678- 682)	Stainless steel bar	Al Tech Spec- ialty Steel, Carpenter Tech- nology Corp., Republic Engi- neered Steels, Slater Steels Corp., Talley Metals Technology, United Steel- workers of America	Brazil, India, Italy ⁹ , Japan, Spain	Affirmative vote ¹⁰
1994	Antidumping (731-TA-699)	Stainless steel angles	Slater Steels Corp.	Japan	Negative vote ¹¹

¹ This investigation was remanded to the Commission by the U.S. Court of International Trade. See USITC, *Welded Stainless Steel Pipes and Tubes from Sweden* (Views on Remand in investigation No. 731-TA-354), USITC publication 2304, Aug. 1990. The Commission's original negative final determination concerning welded stainless steel pipes and tubes from Sweden is set forth in *Stainless Steel Pipes and Tubes from Sweden* (investigation No. 731-TA-354 (Final)), USITC publication 2033, Nov. 1987.

² There were no investigations related to trade in stainless steel mill products filed during 1991.

³ USITC, *Certain Welded Stainless Steel Pipes from the Republic of Korea and Taiwan*, (investigations Nos. 731-TA-540 and 541 (Final)), USITC publication 2585, Dec. 1992.

⁴ USITC, *Certain Stainless Steel Butt-Weld Pipe Fittings from Korea* (investigation No. 731-TA-563 (Final)), USITC publication 2601, Feb. 1993; and USITC, *Certain Stainless Steel Butt-Weld Pipe Fittings from Taiwan* (investigation No. 731-TA-564 (Final)), USITC publication 2641, June 1993.

⁵ USITC, *Stainless Steel Flanges From India and Taiwan* (investigations Nos. 731-TA-639 and 640 (Final)), USITC publication 2724, Feb. 1994.

⁶ USITC, *Welded Stainless Steel Pipe From Malaysia* (investigation No. 731-TA-644 (Final)), USITC publication 2744, Mar. 1994.

⁷ USITC, *Stainless Steel Wire Rod From India* (investigation No. 731-TA-638 (Final)), USITC publication 2704, Nov. 1993; and USITC, *Stainless Steel Wire Rod From Brazil and France* (investigations Nos. 731-TA-636 and 637 (Final)), USITC publication 2721, Jan. 1994.

⁸ Petition withdrawn by petitioner during final investigation. Preliminary affirmative findings of the Commission are presented in USITC, *Class 150 Stainless Steel Threaded Pipe Fittings From Taiwan* (investigation No. 731-TA-658 (Preliminary)), USITC publication 2678, Sept. 1993.

⁹ The Commission terminated its investigation (inv. No. 731-TA-680 (Final)) concerning imports from Italy on January 23, 1995, following a determination by the Department of Commerce that imports of stainless steel bar were not being, nor were likely to be, sold at less than fair value.

¹⁰ USITC, *Stainless Steel Bar From Brazil, India, Japan, and Spain* (investigations Nos. 731-TA-678-679 and 681-682 (Final)), USITC publication 2856, Feb. 1995.

¹¹ Preliminary affirmative vote. USITC, *Stainless Steel Angles From Japan* (investigation No. 731-TA-699 (Preliminary)), USITC publication 2777, May 1994. Negative final vote. USITC, *Stainless Steel Angles From Japan* (investigation No. 731-TA-699 (Final)), USITC publication 2887, May 1995.

Source: U.S. International Trade Commission.

*Report on Competitive Conditions in the Industry and Industry Efforts to Adjust and Modernize.*¹²⁶ These studies, which include stainless steel mill products, were 5- and 2-year annual surveys designed to assess changes in international competitive conditions, with particular attention to the position of the U.S. steel industry; analyze current conditions in the U.S. industry; and assess major companies' efforts to adjust and modernize. Both investigations were requested by the USTR to help monitor the effect of the VRA program.

In addition to these annual reports, at the request of the Committee on Ways and Means, U.S. House of Representatives, the Commission instituted investigation No. 332-226, *Monthly Report on the Status of the Steel Industry*, to monitor developments in the steel industry from 1986 through March 1992. As of March 1991, the reports published in conjunction with this investigation were published quarterly. In September 1992 the Commission began publishing *Steel Semiannual Monitoring Report* (investigation No. 332-327), which incorporated much of the data previously included in the annual and monthly reports. The semiannual reports analyze global industry trends and competitiveness issues, focusing on developments and competitive conditions in the U.S. industry during the post-VRA period. They also provide detailed U.S. product trade information and selected international steel industry comparisons.

Investigation No. 332-270, *The Effects of the Steel Voluntary Restraint Agreement on U.S. Steel-Consuming Industries*, was instituted on February 27, 1989, at the request of the House Committee on Ways and Means. *The Western U.S. Steel Market: Analysis of Market Conditions and Assessment of the Effects of Voluntary Restraint Agreements on Steel-Producing and Steel-Consuming Industries*, investigation No. 332-256, was instituted on August 3, 1988, at the request of the Committee on Ways and Means. Both reports provided estimates of the effects of the VRAs on domestic industries.

FOREIGN TRADE MEASURES

Tariff Measures

Duty rates are relatively low on stainless steel mill products for most major U.S. trade partners.¹²⁷ The

¹²⁶ USITC, *Steel Industry: Annual Report on Competitive Conditions in the Industry and Industry Efforts to Adjust and Modernize* (investigation No. 332-289), USITC publication 2316, Sept. 1990, and USITC publication 2436, Sept. 1991.

¹²⁷ Duty rate data compiled from information in the *Official Journal of the European Communities*; *McGoldrick's Canadian Customs Tariff*; *Customs Tariff Schedules of Japan*.

most important export market for U.S. stainless producers is Canada where duty rates range from 1.6 to 4.9 percent ad valorem. U.S. exports to the EU are subject to duty rates that range from 2.5 to 10.0 percent ad valorem. Japan's tariffs on U.S. exports range from 5.8 percent to 6.5 percent.

In the recently concluded GATT Uruguay Round multilateral trade negotiations, the United States, together with the European Union, Japan, Korea, Canada, Austria, Sweden, Finland, and Norway, agreed to eliminate tariffs on steel products over a 10-year period.¹²⁸ Under the NAFTA, tariffs for most steel mill products shipped between the United States and Mexico are to be eliminated in equal stages over a 10-year period. Tariffs on steel trade between the United States and Canada would be phased out under NAFTA as previously agreed under the U.S.-Canada Free-Trade Agreement.

Nontariff measures imposed by foreign countries on U.S. exports of stainless steel mill products reportedly include local content requirements, import-licensing requirements, buy-national policies,¹²⁹ and restrictions on foreign investment.¹³⁰

Foreign government assistance to national steel industries serves as a barrier to U.S. exports of steel, since it gives foreign producers a competitive advantage. According to industry officials, past levels of subsidization have been "substantial" and government ownership in the steel industry was not uncommon.¹³¹ However, moves to privatize state

¹²⁸ The SSINA has stated that the URA and its associated duty reductions could be harmful to U.S. specialty steel producers if it is not accompanied by a multilateral steel agreement that limits steel subsidies. (Testimony of Robert E. Heaton, Chairman of the Board of Directors, Specialty Steel Industry of North America, Before the Committee on Ways and Means, Subcommittee on Trade, U.S. House of Representatives, Feb. 8, 1994.)

¹²⁹ Many governments, including the U.S. Government, have "Buy Domestic" restrictions on certain government purchases.

¹³⁰ Specialty Steel Industry of North America, *A Compendium of Worldwide Government Subsidies, Anticompetitive Practices, and Market Access Barriers in the Specialty Steel Sector*, Oct. 1994.

¹³¹ A more detailed discussion of government aid and assistance to major steel industries is contained in USITC, *Steel Industry Annual Report* (investigation No. 332-289), USITC publication 2436, Sept. 1991, pp. 3-15 through 3-25. With respect to stainless steel, an industry official stated that "specialty steel production has long been characterized by extensive government ownership, substantial subsidization, government-approved anticompetitive practices and other measures that have protected foreign markets." (Hearing testimony of William J. Pendleton, Director of Corporate Affairs, Carpenter Technology Corp., on Behalf of the Specialty Steel Industry of North America, in connection with "The Economic Effects of Antidumping and Countervailing Duty Orders and Suspension Agreements," investigation No. 332-344, Sept. 29-30, 1994, transcript, pp. 568-569.)

industries, including steel, have fundamentally affected the global steel industry, as has the general decline in government assistance. It is generally agreed that this trend favors the U.S. industry in the long term, since it has in the past received only relatively small levels of direct assistance from the U.S. Government.¹³²

U.S. MARKET

Consumption

U.S. apparent consumption of stainless steel mill products declined from 1989 to 1991, then rose by 26 percent to 2.1 million tons in 1993, a 5-year peak (table 4). The growth was supplied increasingly by imports, contributing to a 12-percentage point rise in import penetration from 20 to 32 percent between 1989 and 1993. Shipments to the automotive industry, where stainless steel is used in catalytic converter systems and in certain trim and parts (e.g., air bag inflators), accounted for much of the increase in shipments in recent years. Other industries with significant increases include construction and contractors' products, in which stainless steel is being promoted in roofing, doorway, and wall panel applications. As indicated earlier, producers of stainless steel mill products (under the auspices of the SSINA) have undertaken efforts to promote the expanded use and recognition of stainless steel. The SSINA has selected two major target markets: building and construction, and infrastructure, as offering the greatest potential for increased stainless use.

Domestic and foreign stainless steel mill products compete primarily on the basis of price, quality, and

¹³² For further information, see *Steel Industry Annual Report*, USITC publication 2436, pp. 3-15 through 3-25.

customer service. The stringent and exacting end-use requirements for stainless products mandate the use of the highest-quality steel raw materials. Although stainless steel product quality standards are high throughout the world, U.S. producers are perceived by U.S. purchasers as supplying good-quality products and responsive customer service, according to a recently-completed Commission survey.¹³³

Production

Capacity and production in the stainless steel mill products industry have fluctuated during the past 5 years, reflecting in part the ongoing restructuring and product line realignment. Flat-rolled stainless products, in particular, have shown increases in production, capacity, and capacity utilization in recent years as producers respond to increased demand for these products, especially from the automotive industry.

Imports

Over the past 5 years, imports of stainless steel mill products increased by 92 percent, from 348,300 tons in 1989 to 668,900 tons in 1993 (table 5). The majority of the growth in imports, 72 percent, occurred between 1992 and 1993. This increase occurred despite the announcement by domestic stainless steel producers that they were considering filing antidumping (AD) and countervailing duty (CVD) petitions.¹³⁴ Industry sources have attributed the sharp increase in imports in part to relatively higher U.S. prices for certain stainless

¹³³ For further information, see USITC, *Steel Semiannual Monitoring Report* (investigation No. 332-327), USITC publication 2807, Sept. 1994, pp. 17-29.

¹³⁴ "Specialty Steel Imports Climbing," *American Metal Market*, Oct. 4, 1993.

Table 4
Stainless steel mill products: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1989-93

Year	Producers' shipments	Exports	Imports	Apparent consumption	Ratio of imports to consumption
		1,000 tons			Percent
1989	1,472.2	102.9	348.3	1,717.6	20.3
1990	1,445.5	117.4	377.5	1,705.6	22.1
1991	1,448.8	166.0	383.1	1,665.9	23.0
1992	1,513.9	129.2	437.4	1,822.1	24.0
1993	1,533.8	106.2	668.9	2,096.5	31.9

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 5
Stainless steel mill products: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
Quantity (1,000 tons)					
Japan	89.3	81.7	83.8	86.2	101.0
Canada	48.9	42.1	35.8	45.2	79.0
Mexico	15.6	23.3	32.4	42.1	64.7
Spain	28.3	32.7	28.9	34.9	54.9
United Kingdom	18.2	29.4	24.6	20.6	52.0
Italy	12.8	11.9	17.4	19.4	48.7
France	42.6	35.6	35.2	45.1	47.2
Sweden	31.5	32.9	33.5	32.2	43.5
Germany	24.3	22.5	17.5	23.1	41.0
Korea	14.3	17.6	20.3	20.0	30.4
All other	22.5	47.8	53.7	68.6	106.5
Total	348.3	377.5	383.1	437.4	668.9
Value (1,000 dollars)					
Japan	246.3	198.8	194.9	197.8	216.6
Canada	115.6	88.8	76.3	93.6	139.6
Mexico	35.3	45.1	58.0	72.9	114.5
Spain	53.3	60.0	62.7	64.1	87.7
United Kingdom	50.9	57.0	54.8	49.6	84.2
Italy	36.6	29.9	45.0	42.1	85.6
France	112.9	83.2	83.0	100.4	100.3
Sweden	106.5	88.4	87.5	82.3	94.0
Germany	52.0	41.1	38.8	52.4	70.0
Korea	37.8	38.6	45.5	38.2	56.6
All other	69.3	109.5	115.9	135.3	185.5
Total	916.5	840.4	862.4	928.7	1,234.6
Unit value (per ton)					
Japan	2,758	2,433	2,326	2,295	2,145
Canada	2,364	2,109	2,131	2,071	1,767
Mexico	2,263	1,936	1,790	1,732	1,770
Spain	1,883	1,835	2,170	1,837	1,597
United Kingdom	2,797	1,939	2,228	2,408	1,619
Italy	2,859	2,513	2,586	2,170	1,758
France	2,650	2,337	2,358	2,226	2,125
Sweden	3,381	2,687	2,612	2,556	2,161
Germany	2,140	1,827	2,217	2,268	1,707
Korea	2,643	2,193	2,241	1,910	1,862
All other	3,080	2,291	2,158	1,972	1,742
Average	2,631	2,226	2,251	2,123	1,846

Source: Compiled from official statistics of the U.S. Department of Commerce.

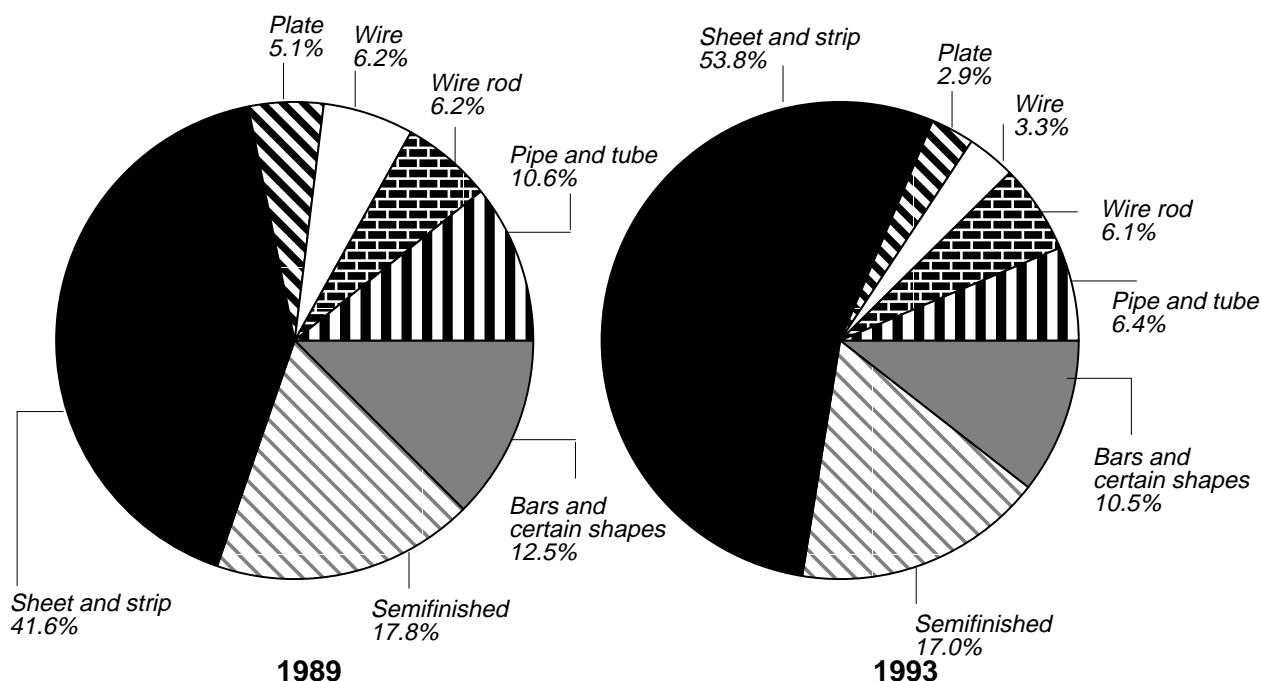
steel products, combined with reduced economic activity in Europe and Japan and the consequent decline in steel demand in those countries.¹³⁵ In addition, the fact that some domestic producers are foreign owned or have set up joint ventures with producers in other countries has contributed to increased intra- and intercompany trade, and increased U.S. imports. (See section entitled "Globalization" for further information on foreign ownership of U.S. mills.)

The import increase occurred in all product categories, with imports of stainless sheet and strip, which account for about half of all stainless steel mill

product imports, showing the largest increase (156 percent) during the period (figure 7). The next largest increase occurred in imports of stainless semifinished products, which are generally hot-rolled into sheet by producers of stainless flat-rolled products; semifinished imports rose by 83 percent during 1989-93. Japan, Canada, and Mexico are the principal country suppliers of stainless steel mill products to the United States, and the EU is the largest regional supplier. Industry sources have attributed the increase in imports from the EU during the early 1990s to excess production capacity for stainless steel in Western Europe because of recessionary economic conditions and reduced demand

¹³⁵ Kidder, Peabody, *Stainless Steel Focus*, Jul. 27, 1994.

Figure 7
Stainless steel mill products: Distribution of U.S. imports, 1989 and 1993



Source: Compiled from official statistics of the U.S. Department of Commerce.

for steel in the EU.¹³⁶ The strengthening of the dollar against a number of European currencies during 1992-93 made European products more competitive in the United States, although subsequent currency movements have diminished the price competitiveness of European steelmakers.

In 1993 approximately 74,000 tons (11 percent of total stainless steel mill product imports) entered at reduced or zero duties, primarily under the NAFTA (goods of Canada).

FOREIGN MARKETS

Foreign Market Profile

Demand for U.S. exports, similar to domestic demand for these products, is largely determined by consumption by the capital goods and consumer durables sectors of foreign economies. World consumption of stainless steel mill products has grown

¹³⁶ J.P. Morgan Securities Inc., "Stainless Steel Industry: Outlook for U.S. Flat Rolled Producers," Apr. 15, 1994.

by more than 60 percent over the past decade,¹³⁷ and is expected to continue to rise, especially in developing countries where improved standards of living will likely lead to greater stainless usage in industries such as automobiles, appliances, medical equipment, and chemical processing. In 1992 and 1993, however, economic sluggishness in Europe and Asia suppressed demand for U.S. exports, but economic strengthening that began in these regions in 1994 could have a positive impact on U.S. export levels in the near term.

Canada and Mexico have historically been the largest markets for U.S. exports, given their geographic proximity to U.S. producers. These two countries together accounted for 54 percent of U.S. exports in 1993. The remaining exports are distributed fairly evenly among the European, Latin American, and Asian markets.

Pacific Rim

U.S. shipments to the Pacific Rim accounted for 16 percent of total U.S. exports of stainless steel mill

¹³⁷ Inco Europe Limited and World Bureau of Metal Statistics, *World Stainless Steel Statistics*, 1993 edition.

products in 1993. Demand for stainless bar, rod, and shapes is reportedly growing rapidly in this part of the world.¹³⁸ In part to supply this growing demand, the Walsin-CarTech Specialty Steel Corp. (the joint venture between U.S.-based Carpenter Technology and Taiwan's Walsin-Lihwa) was initiated to provide Carpenter with a market foothold from which to supply not only Taiwan but other growing Asian markets such as China, where demand for stainless steel long products is 2.5 times greater than in the United States.¹³⁹ Although there is limited overlap between Carpenter's domestic product lines and those of the joint venture,¹⁴⁰ future joint ventures for the purpose of more readily supplying foreign markets could reduce the level of U.S. exports.

Although the United States is not a major supplier of stainless steel mill products to Japan, recent strengthening in demand from that country's construction and consumer goods industries likely contributed to a 129 percent increase in U.S. exports to Japan from 1992 to 1993. The bulk of Japan's imports are from South Korea, Taiwan, and other Asian countries.¹⁴¹ According to a Japanese steel company official, the high cost of shipping U.S.-produced stainless steel to Japan often raises the price of U.S. steel in that country above Japan's domestic market price, making it more economical for Japanese buyers to import steel from sources that have lower freight costs as well as shorter lead times, such as Taiwan.¹⁴²

Canada

Canada is the largest market for U.S. exports of stainless steel mill products, receiving 42 percent of U.S. exports in 1993 (see table 6). Exports to Canada rose 85 percent from 1989 to 1993, with the bulk of the increase accounted for by sheet and strip. The outlook for continued exports to Canada is positive given the recent increase in automobile production in that country and the associated increased demand for stainless flat-rolled products used in exhaust systems, automotive trim, etc. Demand for construction-related steel products is also expected to accelerate¹⁴³ and could lead to increased stainless demand, depending on the extent to which builders incorporate stainless in their projects.

¹³⁸ "Bar Makers Eye Many Paths to Buoy Bottom Line," *American Metal Market*, Stainless Steel Supplement, Aug. 18, 1993; and "Flush Times in Stainless," *New Steel*, Oct. 1993.

¹³⁹ "Taiwanese Joint Venture Rides Regional Growth," *Metal Bulletin Monthly*, Nov. 1994.

¹⁴⁰ *Ibid.*

¹⁴¹ Kidder, Peabody & Co., Inc., *Equity Research: Japan*, "Stainless Steel," Nov. 8, 1994.

¹⁴² "Sumitomo Executive Refutes SSIUS Claim," *American Metal Market*, Apr. 19, 1994.

¹⁴³ DFI Securities, Inc., *Update: Federal Industries Inc.*, June 1994.

Latin America

Mexico is the second largest market for U.S. exports of stainless products. There was a 69-percent drop in exports to Mexico from 1992 to 1993 which contributed to a 63-percent drop in exports to the Latin American region during that period.¹⁴⁴ Reduced exports of stainless sheet and strip accounted for the bulk of the decline in exports to Mexico.

Stainless steel producers are generally optimistic about their prospects for increased exports to Mexico. Growth in that country's automobile production, including the manufacture of exhaust systems and catalytic converters (both of which are end uses for stainless steel), combined with lower tariffs under NAFTA, could increase Mexican demand for U.S. products.¹⁴⁵ In fact, U.S. exports to Mexico of stainless sheet and strip more than doubled during the first 6 months of 1994 over the comparable 1993 time period. However, the late 1994-early 1995 devaluation of the peso could have a negative effect on U.S. exports to Mexico by making them relatively more expensive.

Europe

In 1993, Europe received 13 percent of U.S. exports, the bulk of which were shipped to France, the United Kingdom, and Germany. The European market is emerging from a 3-year period of sluggish steel demand, spurred in part by increased automobile production. Recent restructuring has almost halved the number of European producers, but industry officials indicate that the remaining producers are well able to supply the market and are becoming more cost-effective and are producing a more specialized product line.¹⁴⁶ U.S. producers' ability to capture increased European market share would likely depend on their ability to be price competitive and to supply products not made by European producers.

U.S. Exports

The increasing globalization of the stainless steel industry, in terms of growth in U.S. ownership of foreign production and distribution facilities as well as of increased foreign ownership of U.S. facilities in recent years, also generally helped to boost U.S. exports by spurring intra-company cross-border trade. Countering the positive effects of these developments on exports, U.S. producers of stainless steel have indicated that exports declined from 1991 to 1993 largely because of recessionary economies in major export markets. The recent growth in domestic demand has also curtailed exports.

¹⁴⁴ Calculated on the basis of official statistics of the U.S. Department of Commerce.

¹⁴⁵ "Optimism Over Mexico Knows No Boundaries," *American Metal Market*, Specialty Steel Supplement, Mar. 4, 1994.

¹⁴⁶ "Solid Foundations for Stainless," *Metal Bulletin*, July 18, 1994.

During 1989-93 U.S. exports of stainless steel mill products were highest in 1991 at 166,034 tons valued at \$435 million, and lowest at 106,200 tons valued at \$321 million in 1993 (table 6). Stainless sheet and strip accounted for 58 percent of 1993 exports, followed by stainless pipe and tube (13 percent) (figure 8).

U.S. TRADE BALANCE

The United States ran a trade deficit in stainless steel mill products in all 5 years (1989-93) covered by

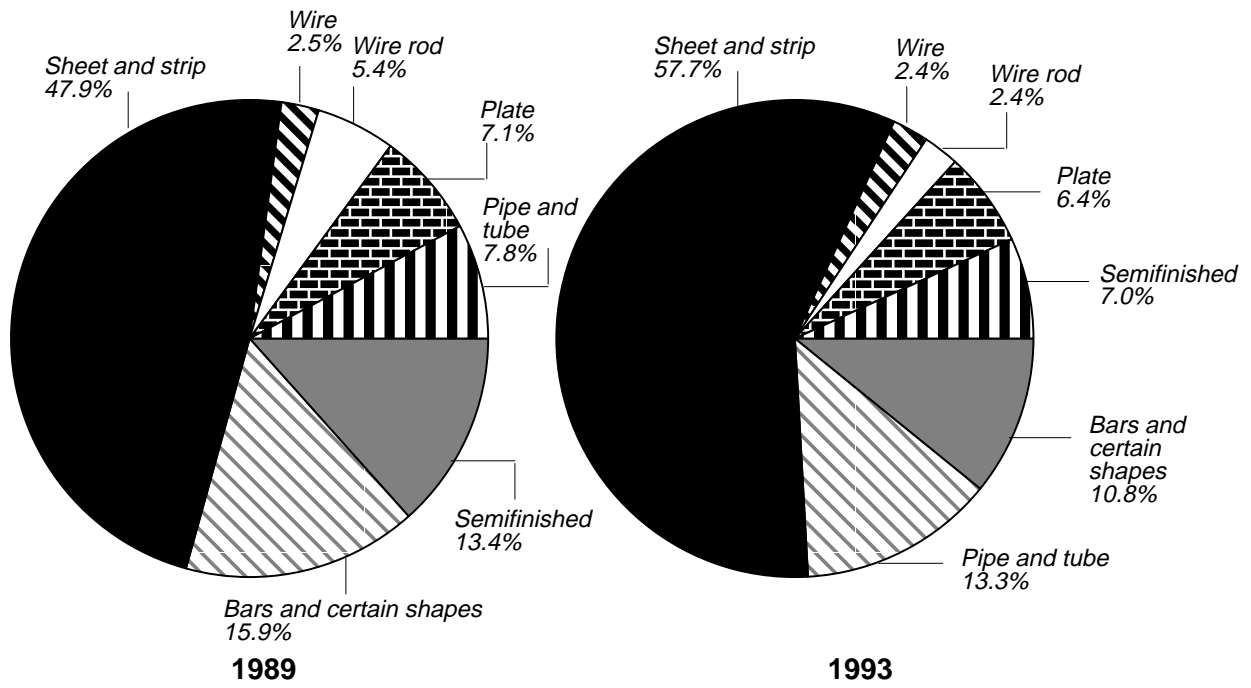
this summary. The deficit was largest at \$913.6 million in 1993 (table 7), more than double the deficit in 1991, the smallest deficit in the 5-year period. The sharp deficit growth is due to both decreased exports and increased imports of stainless steel mill products. Deficits were recorded with every major U.S. trading partner in 1993, representing a shift in the trend for the two principal markets (Canada and Mexico) with which the United States had a trade surplus in 1992.

Table 6
Stainless steel mill products: U.S. exports of domestic merchandise, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
Quantity (tons)					
Canada	23,867	40,661	38,531	39,064	44,242
Mexico	23,544	35,763	49,762	43,890	13,646
France	750	838	4,405	3,282	4,774
United Kingdom	4,571	6,346	6,170	8,503	3,952
Hong Kong	1,492	1,191	4,011	1,641	3,576
Japan	1,980	1,646	2,131	1,534	3,519
Germany	1,491	2,039	7,521	4,289	3,055
Korea	6,873	2,830	13,229	1,581	2,580
Australia	3,253	1,333	1,265	877	2,493
Dominican Republic	2,958	219	395	581	2,466
All other	32,071	24,546	38,614	23,985	21,903
Total	102,850	117,412	166,034	129,227	106,206
Value (1,000 dollars)					
Canada	86,441	126,418	119,341	126,823	124,363
Mexico	50,077	72,436	102,988	104,328	46,014
France	5,302	8,393	13,180	11,230	13,862
United Kingdom	19,276	20,062	23,744	13,028	15,458
Hong Kong	4,300	3,918	10,633	4,222	8,799
Japan	8,008	10,077	10,757	7,548	11,118
Germany	9,993	13,785	21,061	16,986	12,122
Korea	18,576	10,191	31,565	8,481	10,164
Australia	5,607	2,759	4,065	4,206	7,063
Dominican Republic	1,445	188	688	1,405	2,464
All other	83,529	60,266	96,986	75,812	69,580
Total	292,554	328,493	435,008	374,069	321,007
Unit value (per ton)					
Canada	3,622	3,109	3,097	3,247	2,811
Mexico	2,127	2,025	2,070	2,377	3,372
France	7,069	10,016	2,992	3,422	2,904
United Kingdom	4,217	3,161	3,848	1,532	3,911
Hong Kong	2,882	3,290	2,651	2,573	2,461
Japan	4,044	6,122	5,048	4,920	3,159
Germany	6,702	6,761	2,800	3,960	3,968
Korea	2,703	3,601	2,386	5,364	3,940
Australia	1,724	2,070	3,213	4,796	2,833
Dominican Republic	489	858	1,742	2,418	999
All other	2,778	2,455	2,512	3,161	3,177
Average	2,844	2,798	2,620	2,895	3,022

Source: Compiled from official statistics of the U.S. Department of Commerce.

Figure 8
Stainless steel mill products: Distribution of U.S. exports, 1989 and 1993



Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 7
Stainless steel mill products: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries and country groups, 1989-93¹

(Million dollars)

Item	1989	1990	1991	1992	1993
U.S. exports of domestic merchandise:					
Canada	86.4	126.4	119.3	126.8	124.4
Japan	8.0	10.1	10.8	7.5	11.1
Mexico	50.1	72.4	103.0	104.3	46.0
France	5.3	8.4	13.2	11.2	13.9
United Kingdom	19.3	20.1	23.7	13.0	15.5
Sweden	1.6	1.2	1.0	0.6	0.4
Spain	1.7	2.0	7.7	3.9	0.5
Italy	6.0	2.8	2.6	1.8	3.4
Germany	10.0	13.8	21.1	17.0	12.1
Korea	18.6	10.2	31.6	8.5	10.2
All other	85.5	61.1	101.0	79.5	83.5
Total	292.5	328.5	435.0	374.1	321.0
European Union	49.9	55.5	87.6	54.9	52.8
Pacific Rim	59.8	40.4	77.2	42.8	55.9
U.S. imports for consumption					
Canada	115.6	88.8	76.3	93.6	139.6
Japan	246.3	198.8	194.9	197.8	216.6
Mexico	35.3	45.1	58.0	72.9	114.5
France	112.9	83.2	83.0	100.4	100.3
United Kingdom	50.9	57.0	54.8	49.6	84.2
Sweden	106.5	88.4	87.5	82.3	94.0
Spain	53.3	60.0	62.7	64.1	87.7
Italy	36.6	29.9	45.0	42.1	85.6
Germany	52.0	41.1	38.8	52.4	70.0
Korea	37.8	38.6	45.5	38.2	56.6
All other	69.3	109.5	115.9	135.3	185.5
Total	916.5	840.4	862.4	928.7	1,234.6
European Union	328.0	293.5	329.0	344.5	471.5
Pacific Rim	325.1	295.0	316.0	301.9	333.2
U.S. merchandise trade balance					
Canada	-29.2	37.6	43.0	33.2	-15.2
Japan	-238.3	-188.7	-184.1	-190.3	-205.5
Mexico	14.8	27.3	45.0	31.4	-68.5
France	-107.6	-74.8	-69.8	-89.2	-86.4
United Kingdom	-31.6	-36.9	-31.1	-36.6	-68.7
Sweden	-104.9	-87.2	-86.5	-81.7	-93.6
Spain	-51.6	-58.0	-55.0	-60.2	-87.2
Italy	-30.6	-27.1	-42.4	-40.3	-82.2
Germany	-42.0	-27.3	-17.7	-35.4	-57.9
Korea	-19.2	-28.4	-13.9	-29.7	-46.4
All other	16.2	-48.4	-14.9	-55.8	-102.0
Total	-624.0	-511.9	-427.4	-554.6	-913.6
European Union	-278.1	-238.0	-241.4	-289.6	-418.7
Pacific Rim	-265.3	-254.6	-238.8	-259.1	-277.3

¹ Import values are based on customs value; export values are based on f.a.s. value, U.S. port of export. U.S. trade with East Germany is included in "Germany."

Source: Compiled from official statistics of the U.S. Department of Commerce.

APPENDIX A
GLOSSARY OF TECHNICAL TERMS

ANNEAL	Annealing is a process by which, through controlled heating and cooling, ductility (or formability) is restored to steel.
ARGON-OXYGEN DECARBURIZATION (AOD) and VACUUM OXYGEN DECARBURIZATION (VOD)	The AOD and VOD stations reduce the carbon levels in the steel, improve the steel's cleanliness and consistency, and allow for wider raw material choices and efficiency levels during melting. It is at this stage of the production process that alloys are added and the steel's chemistry is fine-tuned to give the stainless steel its desired physical properties. (J.P. Morgan Securities Inc., Equity Research, <i>Stainless Steel Industry: Outlook for U.S. Flat Rolled Producers</i> , Ap. 15, 1994.)
AUSTENITIC	Austenitic grades ("300-series" stainless) are iron-chromium-nickel alloys (containing 4- to 35-percent nickel) and account for about 70 percent of stainless consumption. (<i>Metal Bulletin Monthly</i> , "Stainless Steel", Sept. 1993).
COLD ROLL	Cold rolling refers to any process in which the product is fed into a rolling mill at ambient temperature. Cold rolling can be performed for a variety of reasons, including a desired reduction in product thickness, a need to impart specific mechanical properties, or to impart a specific surface texture.
COLD FINISH	Cold finishing refers to finishing processes such as grinding or smoothing which are performed on a steel product at ambient temperature in order to impart specific mechanical properties or surface texture.
CONTINUOUS CASTING	In continuous casting, semifinished steel shapes are cast directly in the desired cross-sectional dimensions and are cut to desired length following solidification. Continuous casting generates less scrap and provides significant time, labor, and energy savings relative to ingot casting. In the ingot-based process, molten steel is poured or "teemed" into ingot molds. As the steel begins to solidify, the mold is stripped from the ingot and the ingot is transferred to a "soaking pit" where the temperature of the steel is equalized. Following removal from the soaking pit, the ingots are hot-rolled on a primary breakdown mill to slab, bloom, or billet sizes. For further information, see USITC, <i>Steel Semiannual Monitoring Report</i> (investigation No. 332-327), USITC publication 2759, April 1994, p. 19.
FERRITIC	Ferritic grades ("400-series" stainless) are iron-chromium alloys containing no nickel and account for the remaining 30 percent of stainless consumption. Ferritic steel is less expensive to produce than austenitic stainless because it does not contain nickel. However, because ferritic steel is less malleable, it is used in fewer applications. The most typical ferritic grade is 409 stainless, which accounts for about two-thirds of U.S. ferritic stainless production, or about 20 percent of total U.S. stainless production. (<i>Metal Bulletin Monthly</i> , "Stainless Steel", Sept. 1993; and Kidder, Peabody, & Co., Inc., <i>Industry Report: Stainless Steel Focus</i> , Jul. 27, 1994.)

MINIMILLS

Mills that usually bypass the first three steps of steelmaking (ore processing, cokemaking, and ironmaking) and use scrap as the primary raw material in electric arc furnaces.

PICKLE

Pickling involves passing the hot-rolled product through a series of acid baths that remove from the steel's surface oxides formed during the heating process.

APPENDIX B
STAINLESS STEEL MILL PRODUCT PRODUCERS

Table B-1

Stainless steel mill products: Producers, number of works, mill locations, producer type, and products, 1993

Producer	Number of works	Mill locations	Producer type	Products							
				Semi-finished	Plate	Sheet and strip	Bars	Wire rods	Wire	Structurals	Pipe and tube
AI Tech Specialty Steel Corp.	2	NY	Electric furnace				X	X	X		X
Allegheny Ludlum Corp.	8	CT, IN, NY, OK, PA	Electric furnace	X	X	X					X
Armco Advanced Materials Corp.	2	OH, PA	Electric furnace			X					
Avesta Sheffield Inc.	1	IN	Rolling		X						
Bristol Metals Inc.	1	TN	Welded pipe								X
Carpenter Technology Corp.	4	CA, ME PA, SC	Electric furnace	X			X	X	X	X	X
The Champion Steel Co.	1	OH	Electric furnace	X							
Coshocton Stainless Division	1	OH	Rolling			X					
Crucible Specialty Metals	1	NY	Electric furnace	X			X	X			
Cytemp Specialty Steel	1	PA	Electric furnace	X			X				
Eastern Stainless Corp.	1	MD	Electric furnace	X	X	X					

See footnotes at end of table.

Table B-1—Continued

Stainless steel mill products: Producers, number of works, mill locations, producer type, and products, 1993

Producer	Number of works	Mill locations	Producer type	Products							
				Semi-finished	Plate	Sheet and strip	Bars	Wire rods	Wire	Structurals	Pipe and tube
Electralloy Corp.	1	PA	Electric furnace	X			X				
Ellwood Quality Steels	1	PA	Electric furnace	X							
Empire—Detroit Steel Division	1	OH	Electric furnace			X					
First Miss Steel	1	PA	Electric furnace	X							
Indiana Tube Corp.	1	IN	Welded pipe								X
J&L Specialty Products Corp.	3	MI, OH, PA	Electric furnace	X	X	X					
Jessop Steel Co.	1	PA	Electric furnace	X	X						
Jorgenson Forge	1	WA	Electric furnace	X							
LTV Tubular Products Co.	1	OH	Welded pipe								X
Lukens Steel Co.	1	PA	Electric furnace		X						
Maryland Specialty Wire	1	MD	Wire drawer						X		
McDonald Steel Corp.	1	OH	Rolling				X				
National Forge Co.	1	PA	Electric furnace	X							
North American Stainless	1	KY	Rolling			X					

See footnotes at end of table.

Table B-1—Continued

Stainless steel mill products: Producers, number of works, mill locations, producer type, and products, 1993

Producer	Number of works	Mill locations	Producer type	Products							
				Semi-finished	Plate	Sheet and strip	Bars	Wire rods	Wire	Structurals	Pipe and tube
Nucor Corp.	1	IN	Electric furnace			X					
Pennsylvania Extruded Tube Co.	1	PA	Pipe mill								X
Plymouth Tube	7	IL, IN, KY LA, MD, MS PA	Pipe mill								X
Republic Engineered Steels	4	IL, MD, OH	Electric furnace	X			X	X	X		X
Slater Steels, Ft. Wayne Specialty Alloys Division	1	IN	Electric furnace	X			X			X ¹	
Talley Metals	1	SC	Rolling				X	X			
Universal Stainless and Alloy Products	1	PA	Electric furnace	X							
Washington Steel	3	OH, PA	Electric furnace	X	X	X					

¹ Light angles.

Source: Metal Bulletin Books, Ltd., *Stainless Steel Databook*, Second edition, 1991; Association of Iron and Steel Engineers, *Directory: Iron and Steel Plants 1993*, Pittsburgh, 1993; *Metal Bulletin Monthly*.

APPENDIX C
EXPLANATION OF TARIFF AND TRADE AGREEMENT TERMS

The *Harmonized Tariff Schedule of the United States* (HTS) replaced the Tariff Schedules of the United States (TSUS) effective January 1, 1989. Chapters 1 through 97 incorporate the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description and have U.S. product subdivisions at the 8-digit level. Chapters 98 and 99 contain special U.S. classifications and temporary rate provisions, respectively.

Duty rates in the *general* subcolumn of HTS column 1 are most-favored-nation (MFN) rates, many of which have been eliminated or are being reduced as concessions resulting from the Uruguay Round of Multilateral Trade Negotiations. Column 1-general duty rates apply to all countries except those enumerated in HTS general note 3(b) (Afghanistan, Azerbaijan, Cuba, Kampuchea, Laos, North Korea, and Vietnam), which are subject to the rates set forth in *column 2*. Albania, Armenia, Belarus, Bosnia, Bulgaria, the People's Republic of China, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan are accorded MFN treatment. Specified goods from designated MFN-eligible countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the *special* subcolumn of HTS column 1 or in the general notes. If eligibility for special tariff rates is not claimed or established, goods are dutiable at column 1-general rates. The HTS does not enumerate those countries as to which a total or partial embargo has been declared.

The *Generalized System of Preferences* (GSP) affords nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 for 10 years and extended three times thereafter, applies to merchandise imported on or after January 1, 1976 and before the close of July 30, 1995. Indicated by the symbol "A" or "A*" in the special subcolumn, the GSP provides duty-free entry to eligible articles the product of and imported directly from designated beneficiary developing countries, as set forth in general note 4 to the HTS.

The *Caribbean Basin Economic Recovery Act* (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin

area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on or after January 1, 1984. Indicated by the symbol "E" or "E*" in the special subcolumn, the CBERA provides duty-free entry to eligible articles, and reduced-duty treatment to certain other articles, which are the product of and imported directly from designated countries, as set forth in general note 7 to the HTS.

Free rates of duty in the special subcolumn followed by the symbol "IL" are applicable to products of Israel under the *United States-Israel Free Trade Area Implementation Act* of 1985 (IFTA), as provided in general note 8 to the HTS.

Preferential nonreciprocal duty-free or reduced-duty treatment in the special subcolumn followed by the symbol "J" or "J*" in parentheses is afforded to eligible articles the product of designated beneficiary countries under the *Andean Trade Preference Act* (ATPA), enacted as title II of Public Law 102-182 and implemented by Presidential Proclamation 6455 of July 2, 1992 (effective July 22, 1992), as set forth in general note 11 to the HTS.

Preferential or free rates of duty in the special subcolumn followed by the symbol "CA" are applicable to eligible goods of Canada, and those followed by the symbol "MX" are applicable to eligible goods of Mexico, under the *North American Free Trade Agreement*, as provided in general note 12 to the HTS, implemented effective January 1, 1994 by Presidential Proclamation 6641 of December 15, 1993.

Other special tariff treatment applies to particular *products of insular possessions* (general note 3(a)(iv)), goods covered by the *Automotive Products Trade Act* (APTA) (general note 5) and the *Agreement on Trade in Civil Aircraft* (ATCA) (general note 6), *articles imported from freely associated states* (general note 10), *pharmaceutical products* (general note 13), and *intermediate chemicals for dyes* (general note 14).

The *General Agreement on Tariffs and Trade 1994* (GATT 1994), annexed to the Agreement Establishing the World Trade Organization, replaces an earlier agreement (the GATT 1947 [61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786]) as the

primary multilateral system of disciplines and principles governing international trade. Signatories' obligations under both the 1994 and 1947 agreements focus upon most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national (nondiscriminatory) treatment for imported products; the GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, dispute settlement, and other measures. The results of the Uruguay Round of multilateral tariff negotiations are set forth by way of separate schedules of concessions for each participating contracting party, with the U.S. schedule designated as Schedule XX.

Officially known as "The Arrangement Regarding International Trade in Textiles," the *Multifiber Arrangement* (MFA) provides a framework for importing and exporting countries to negotiate bilateral agreements limiting textile and apparel shipments, or for importing countries to take unilateral action in the absence or violation of an agreement. These agreements establish quantitative limits on textiles and apparel of cotton, other vegetable fibers, wool, man-made fibers or silk blends in an effort to prevent or limit market disruption in the importing countries--restrictions that would otherwise be a departure from GATT provisions. The United States has bilateral agreements with many supplying countries, including the four largest suppliers: China, Hong Kong, the Republic of Korea, and Taiwan.