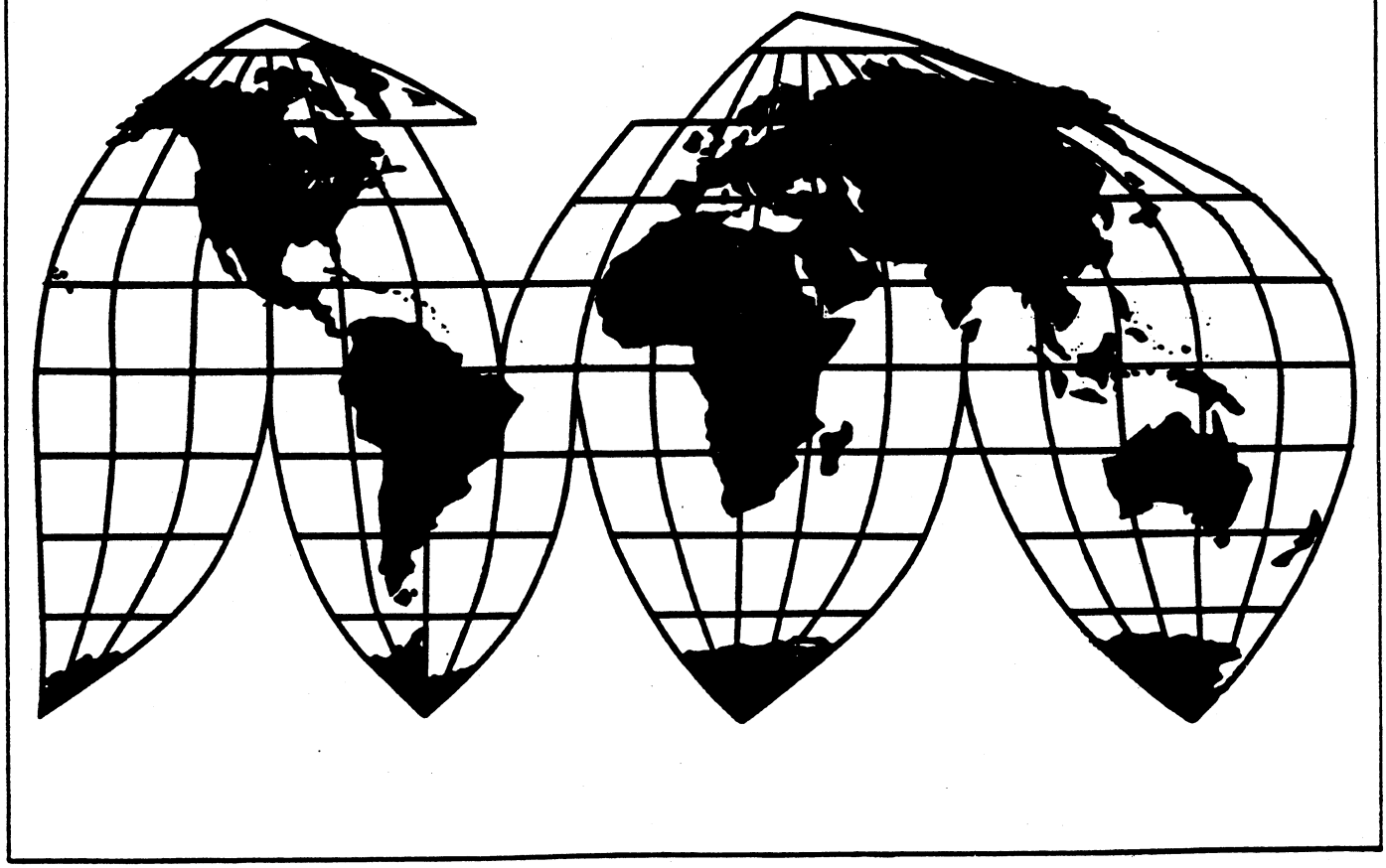
Steel: Semiannual Monitoring Report

Special Focus: U.S. Industry Conditions

Investigation No. 332-327

Publication 2655 **June 1993**

U.S. International Trade Commission



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PREFACE

On July 9, 1992, at the request of the Committee on Ways and Means, U.S. House of Representatives, and in accordance with the provisions of section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332 (g)), the United States International Trade Commission instituted investigation No. 332-327, Steel: Semiannual Monitoring Report. The purpose of these reports is to provide information concerning the status of, and prospects for, the U.S. steel industry in the post-Voluntary Restraint Agreement (VRA) competitive environment, from January 1991 through December 1994. An overview of the structure of this report and notes on its product coverage and methodology are presented in appendix A. The study request letter from the Chairman of the House Committee on Ways and Means and the notice of the Commission's investigation are presented in appendixes B and C, respectively.

This report, which analyzes current conditions in the U.S. industry, is the second in a series of six requested semiannual reports. The analysis of current conditions includes information on recent developments in steel consumption, trade, capacity, production, capital expenditures, environmental expenditures, spending on research and development, employment, and financial performance. The analysis is based on data developed from secondary sources and questionnaires sent to 230 producers of steel mill products. Responses were received from 159 producers, which account for virtually all raw steel production (more than 95 percent) and include a substantial percentage of steel converters surveyed (i.e., companies that purchase certain steel mill products for conversion into other steel mill products).

The products covered in this report were subject to import quotas under VRAs in effect from late 1984 through March 31, 1992. The President undertook the VRA program after the U.S. International Trade Commission made an affirmative determination under section 201 of the Trade Act of 1974 (19 U.S.C. 2251) with respect to imports of certain carbon steel products.[1] After receiving the Commission's report on that investigation, the President announced that he was not taking action under section 203 of the Trade Act but instead would negotiate bilateral restraints with steel-exporting countries to limit U.S. imports of steel and to pursue a more vigorous policy of enforcement of the laws against unfair trade practices.[2] Congress later passed the Steel Stabilization Act (title VII of the Trade and Tariff Act of 1984), which granted the President authority, for the 5-year period ending September 30, 1989, to enforce the terms of the bilateral steel agreements but set certain conditions for such authority. The President was required to make an annual affirmative determination that major steel companies were committing substantially all of their net cash-flow from steel operations to reinvestment and modernization of their steel operations and that a certain level of funds was being committed to worker retraining.[3] In July 1989 the President proposed a 2-1/2 year extension of the program. Congress later enacted the Steel Trade Liberalization Program Implementation Act extending the President's enforcement authority through March 31, 1992.[4]

As part of the Steel Trade Liberalization Program and the Bilateral Consensus Agreements that were 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 by eliminating tariffs, nontariff measures such as quotas, and most subsidies in the steel sector. The United States and 34 other countries have participated in negotiations for an MSA under the general auspices of the General Agreement on Tariffs and Trade. The MSA negotiations were suspended on March 31, 1992, the same day that the VRA program expired. Negotiations resumed in December 1992 and the next round of meetings are tentatively scheduled for July 1993. Since the end of the VRAs, unfair trade petitions have been filed on numerous items including wire rope, bar, steel rail, pipe and tube, and other steel products once covered by the VRAs. In addition, a large number of petitions were filed by the domestic industry on flat-rolled steel products from 21 countries. A list showing the status of unfair trade cases filed on steel products and raw materials since late 1991 is presented in appendix D.

The information and analysis 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 other statutory authority covering the same or similar matter.

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[1] U.S. International Trade Commission, *Carbon and Certain Alloy Steel Products,* (investigation No. TA-201-51), USITC publication 1553, July 1984.

[2] Executive Communication 4046, Sept. 18, 1984 (H. Doc. 98-263).

[3] Pub. L. 98-573, Oct. 30, 1984, (98 Stat. 3043).

[4] Pub. L. 101-221, Dec. 12, 1989, (103 Stat. 1886) (19 U.S.C. 2253 note).

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Structural Steel Industry Challenges Global Competitors and Competing Materials to Capture Domestic Market Share

A recent publication by the U.S. International Trade Commission, *Industry and Trade Summary: Heavy Structural Steel Shapes*,[1] reports that the segment of the steel industry producing heavy structural steel shapes has undergone significant changes over the last 5 years. Aggressive pricing and innovative production practices have allowed low-cost minimills to capture increased market share at the expense of both domestic and foreign integrated mills. Industry promotional efforts have also enabled steel to compete more effectively against concrete in the construction industry, gaining market share in bridges and four- to seven-story buildings. Despite steel's success in winning a larger share of the construction market, producers of heavy structurals have experienced a general deterioration of the market over the past few years, largely due to the recession.

The unfavorable U.S. market conditions and the improved cost position of domestic mills drove down imports by 11 percent in 1992 to $166.1 million, and by 69 percent during 1987-92. Minimills have led the way in an aggressive pursuit of foreign markets, contributing to a 26-percent increase in U.S. exports of heavy structurals in 1991 to $188.7 million. Exports surged by 567 percent between 1987 and 1991 but declined by 24 percent in 1992 because of recessionary economic conditions in many foreign markets. Rising exports and declining imports led to a slight U.S. trade surplus for these products in 1992, including a significant decline in the trade deficit with Japan and the European Community. However, the balance reverted to a deficit of $23.7 million in 1992.

Stephanie Kaplan
202-205-3199

[1] USITC, *Industry and Trade Summary: Heavy Structural Steel Shapes*, USITC publication 2587, January 1993. Copies of the report may be obtained by calling 202-205-1809 or by writing the Office of the Secretary, U.S. International Trade Commission, 500 E Street, SW., Washington, DC 20436. Requests may also be made by fax to 202-205-2186.

Recent Trade Cases on Flat-Rolled Steel From the United States

After the U.S. industry filed unfair trade cases on flat-rolled steel from 21 countries, including Canada and Mexico, producers in both those countries initiated their own dumping complaints against certain flat-rolled products from the United States.

Canada

On August 24, 1992, Revenue Canada initiated an investigation into exports of non-heat-treated and heat-treated, hot-rolled carbon steel plate and high strength low alloy plate from the United States and other sources. In May 1993 the Canadian International Trade Tribunal (CITT) determined that plate imports from the United States, which amounted to 62,385 metric tons in 1991 (approximately 10 percent of total U.S. exports of carbon plate that year) were not a cause of material injury, and the case was terminated.

On September 16, 1992, Revenue Canada initiated an investigation into imports of certain hot-rolled carbon steel sheet products, also from several sources, including 206,677 metric tons from the United States (8 percent of total U.S. exports of carbon sheet and strip that year). A final dumping determination, released April 29, 1993, found the margin of dumping by U.S. hot-rolled producers to range from 8 to 13 percent. The CITT determined in June 1993 that U.S. hot-rolled products were not a cause of material injury to the Canadian industry and the hot-rolled case was terminated. On November 16, 1992, Revenue Canada initiated an investigation into imports of cold-rolled steel sheet, including 192,927 short tons from the United States in 1991 (7 percent of total U.S. exports of carbon sheet and strip). A final dumping determination on cold-rolled products is due June 30, 1993, with the CITT scheduled to make its injury determination 30 days later.

Mexico

The Mexican steel industry initiated antidumping cases on flat-rolled steel products from the United States on May 30, 1992. In the Diario Oficial of April 28, 1993, the Mexican Government announced final determinations on antidumping duties to be placed on products from the United States. These duties ranged from 5.32 to 81 percent on cut-to-length plate; 4.18 to 39.92 percent on plate in coils; 17.66 to 38.13 percent on hot-rolled sheet; and 2.73 to 12.88 percent on cold-rolled sheet products. Also announced April 28, 1993, were provisional or preliminary antidumping duties ranging from 5.85 to 29 percent on

corrosion-resistant steel from the United States.[2] U.S. exports of carbon plate to Mexico in 1992 totaled 66,617 short tons and accounted for 40 percent of total U.S. exports of carbon plate that year. U.S. exports of carbon sheet and strip to Mexico were 751,139 short tons in 1992, 39 percent of total U.S. carbon sheet and strip exports.

Nancy Fulcher
202-205-3434

Steel Trade Agreements and Trade Petitions Against Foreign Producers

U.S. Trade Petitions Against Foreign Producers

In June 1992 84 antidumping and countervailing duty petitions were filed by the domestic industry on flat-rolled steel products from 21 countries.[3] In August 1992 the Commission determined, in 72 of the 84 investigations, that there is a reasonable indication of material injury to the domestic industry producing flat-rolled steel by reason of the alleged dumped and subsidized imports. The Department of Commerce (Commerce) made preliminary antidumping and countervailing duty determinations in November 1992 and January 1993, respectively, and is scheduled to announce its final determinations in June 1993.

In late May 1993 Commerce initialed suspension agreements covering flat-rolled steel imports from 10 countries, which could lead to the agency's termination of unfair trade investigations against these countries:[4] Argentina, Australia, Austria, Brazil, Finland, Germany, Mexico, Sweden, Poland, and New Zealand. Most of the agreements were initialed with foreign steelmakers, although a few were initialed with foreign governments. The proposed agreements suggest that if foreign suppliers either raise their prices or limit their shipments to the United States, Commerce will terminate the investigations that could lead to antidumping and countervailing duties on their shipments. Reportedly, after receiving public comment and within 30 days of the date these proposals were initialed, Commerce will rule on whether to agree to them.

Nancy Fulcher
202-205-3434

Multilateral Steel Agreement

The President authorized, in July 1989, the negotiation of a multilateral agreement to prohibit subsidies for the steel industry, eliminate tariffs on steel products, and eliminate most nontariff barriers to steel trade while providing an effective dispute settlement mechanism. This agreement was to be incorporated within the General Agreement on Tariffs and Trade (GATT) through the Multilateral Steel Agreement which was being negotiated with most major steel-producing countries. On March 31, 1992, however, the MSA negotiations were suspended without agreement. Negotiations resumed in December 1992 and the next round of meetings is tentatively scheduled for July 1993.

Peg MacKnight
202-205-3431

Brazil Continues to Privatize Steel Firms

Following a 3-month halt to the country's general privatization program, the new President of Brazil, Itamar Franco, is beginning to permit the privatization of steel and other state-owned firms under revised regulations designed to increase the President's control over the process. In addition, the regulations are intended to provide more flexibility, transparency, and security to the process by mandating independent accounting audits, requiring buyers to pay off company debts owed to the social security agency, and prohibiting the use of pension funds from state-owned companies to finance the privatizations.[5]

State-owned steel firms sold under former Brazilian President Collor de Mello added over $2 billion to the Brazilian national balance sheet in a combination of cash and assumption of Government debt,[6] and included the following:

- Usinas Siderurgicas de Minas Gerais (Usiminas) in October 1991;
- Cia Siderurgica do Nordeste (Cosinor) in November 1991;
- Acos Finos Piratini in February 1992;

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[2] U.S. Department of State, message reference No. 3490, prepared by U.S. Embassy, Mexico City, Apr. 28, 1993.

[3] See appendix D for details on the status of steel-related antidumping and countervailing duty cases.

[4] The fact that Commerce initialed the agreements does not make them final. Rather, it indicates Commerce's intent to consider the proposed agreements.

[5] *American Metal Market,* various issues, 1993.

[6] See USITC, "Privatization in the Latin American Steel Industry," *Steel: Semiannual Monitoring Report,* USITC publication 2558, Sept. 1992.

- Cia Siderurgica de Tuberso (CST) in July 1992; and
- Companhia Acos Especialais Itabira (Acesita) in October 1992.

During April 1993, under the new Brazilian President and new regulations, controlling interest in Cia Siderurgica Nacional (CSN), Latin America's largest steel mill, was purchased by an investment group for $1.05 billion, of which $40.1 million was in cash.[7] Preliminary figures show CSN reaching a profit of $100 million in 1992, with about one-half of its production being exported.[8]

Two additional state-owned steel firms are expected to be privatized during July 1993:

- Cia Siderurgica Paulista (Cosipa); and
- Acos Minas Gerais (Acominas).

Cosipa, with nearly 3 million tons in annual output, is Brazil's fourth-largest steelmaker. Its privatization has been delayed, in part because of its financial difficulties. The firm must renegotiate over $1 billion in debt owed to Brazilian State and Federal Governments, and an additional $600 million in debt must be assumed by buyers. For the first half of 1992 Cosipa showed a loss of $30 million.[9] Acominas, the other firm scheduled to be sold in 1993, also has an outstanding debt to be negotiated with authorities; $485 million arising from the purchase of rolling mills. With an annual output of over 2 million tons, Acominas is the seventh-largest steel firm in Latin America.[10]

Peg MacKnight
202-205-3431

Large-Scale Enterprise Restructuring and Privatization in Central and Eastern Europe

In many former non-market-economy countries, the model of the past, state ownership, is being replaced by a system of market structures and requirements. However, the commercialization and privatization of large-scale industrial enterprises has been delayed, and the pace of privatization and other reforms represents a very important policy debate in these countries. An article examining the strategies and obstacles to reform, foreign investment, and performance of the steel industries in Bulgaria, the Czech Republic, Hungary, Poland, Romania, and the Slovak Republic during 1988-92 appears in the Commission's recent publication, *Industry Trade and Technology Review*,[11] February 1993.

Charles Yost
202-205-3432

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[7] U.S. Department of State, message reference No. 6441, prepared by U.S. Consulate, Rio de Janeiro, Apr. 6, 1993.

[8] U.S. Department of State, message reference No. 00352, prepared by U.S. Consulate, Rio de Janeiro, Jan. 25, 1993.

[9] U.S. Department of State, message reference No. 00134, prepared by U.S. Consulate, Sao Paulo, Jan. 12, 1993.

[10] *Metal Bulletin*, Feb. 11, 1993.

[11] Copies of the report may be obtained by calling 202-205-1809 or by writing the Office of the Secretary, U.S. International Trade Commission, 500 E Street, SW., Washington, DC 20436. Requests may also be made by fax to 202-205-2186.

Figure 1
U.S. average annual and monthly steel shipments, 1988-92

1,000 short tons

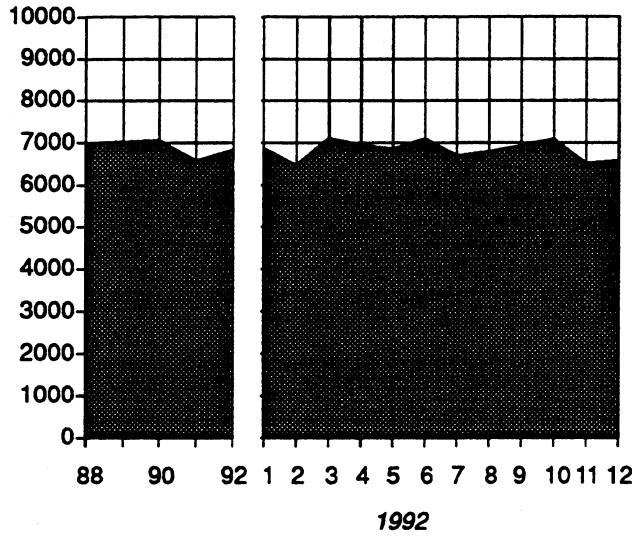


Figure 2
U.S. average annual and monthly steel imports, 1988-92

1,000 short tons

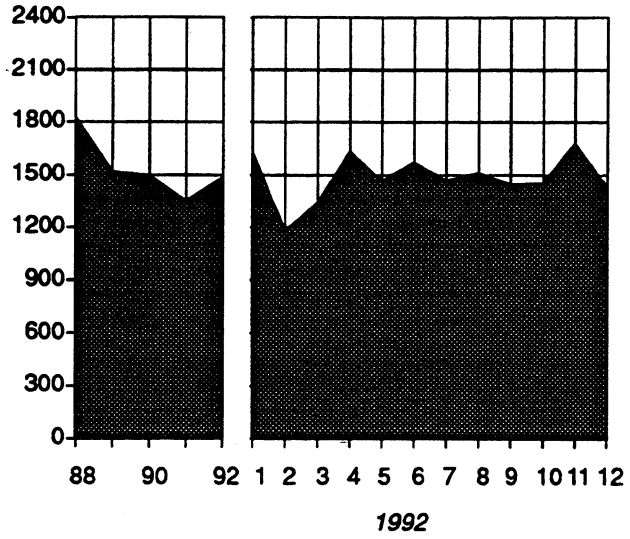


Figure 3
U.S. average annual and monthly steel exports, 1988-92

1,000 short tons

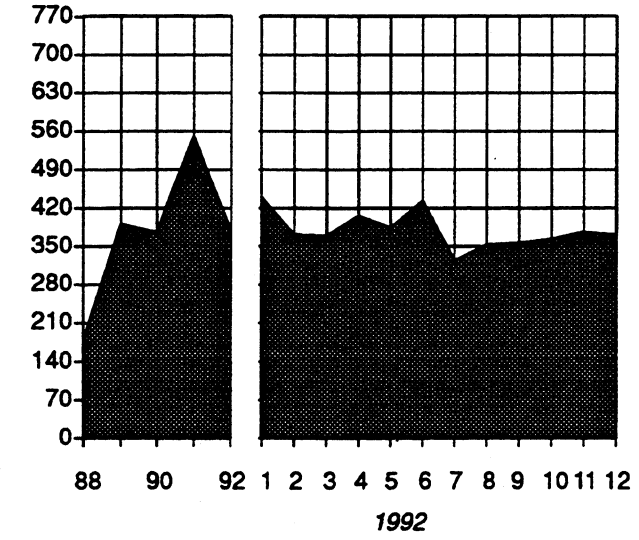
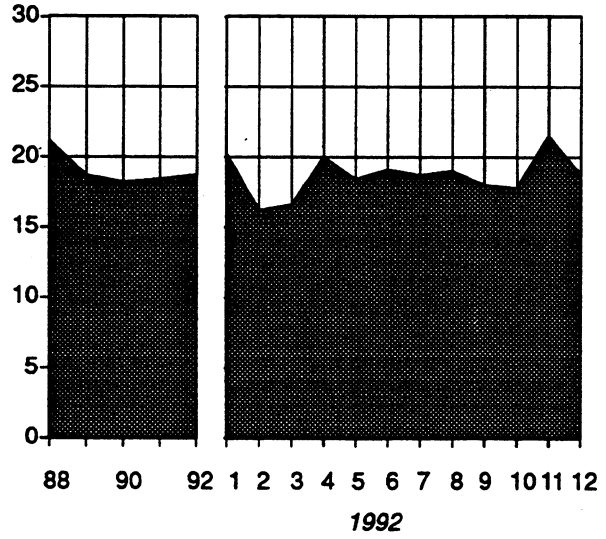


Figure 4
U.S. average annual and monthly steel import penetration,[1] 1988-92

Percent



[1] Import penetration is defined as the percent of apparent consumption represented by imports.

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

Figure 5
Raw steel: Geographic distribution of world production, 1992

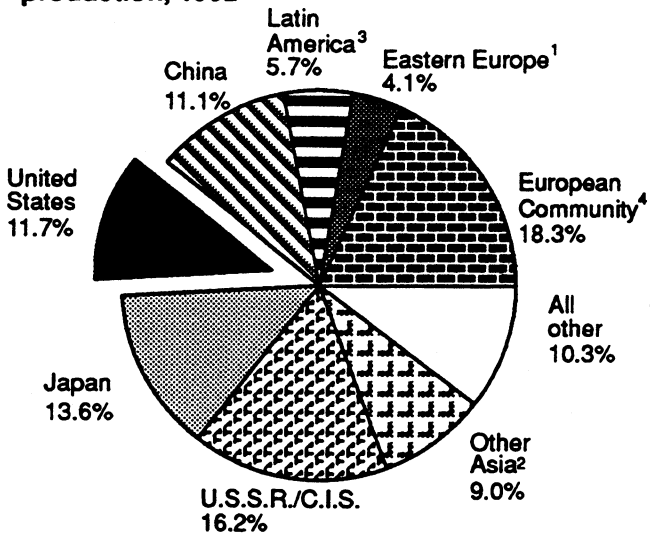
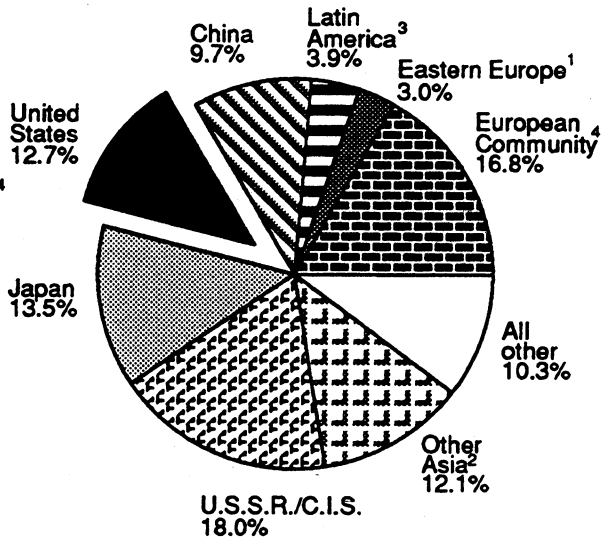


Figure 6
Raw steel: Geographic distribution of world apparent consumption, 1991[5]



[1] Includes Albania, Bulgaria, Czechoslovakia, Hungary, Poland, and Romania.
[2] All Asian countries excluding Japan, China, North Korea, and the Middle East region.
[3] Includes Mexico, Central America, South America and the Caribbean (including Cuba).
[4] Includes former German Democratic Republic.
[5] Data for 1991 are the most recent data available.

Source: International Iron and Steel Institute.

Table 1
Raw Steel: Production of top 20 steelmakers, 1982 and 1992

Company	Country	1982	1992	Volume change 1982-92	Percent change 1982-92
		Million metric tons			
Nippon Steel	Japan	28.3	25.1	(3.2)	(11.3)
Usinor Sacilor	France	[1]17.7	21.1	3.4	19.2
Posco	South Korea	8.8	20.0	11.2	127.3
British Steel	United Kingdom	11.4	12.4	1.0	8.8
NKK	Japan	12.0	10.9	(1.1)	(9.2)
ILVA	Italy	[2]13.3	10.6	(2.7)	(20.3)
Thyssen	Germany	10.1	10.1	–	–
Kawasaki	Japan	10.9	10.0	(0.9)	(8.3)
Sumitomo	Japan	10.9	10.0	(0.9)	(8.3)
SAIL	India	6.7	9.7	3.0	44.8
Bethlehem	United States	9.5	9.6	0.1	1.1
USS	United States	11.0	9.5	(1.5)	(13.6)
Iscor	South Africa	6.4	7.7	1.3	20.3
LTV Steel	United States	[3]10.5	7.5	(3.0)	(28.6)
BHP	Australia	6.3	6.7	0.4	6.3
China Steel	Taiwan	([4])	6.2	([4])	([4])
Kobe Steel	Japan	6.4	5.8	(0.6)	(9.4)
National Steel	United States	5.0	4.9	(0.1)	(2.0)
Hoogovens	Netherlands	4.1	4.8	0.7	17.1
CSN	Brazil	([4])	4.4	([4])	([4])

[1] Represents combined production of Usinor and Sacilor, which merged to form Usinor-Sacilor in 1987.
[2] Represents production of FINSIDER, many of whose facilities were taken over by ILVA in early 1989.
[3] Represents combined production of Jones & Laughlin Steel and Republic Steel, which merged to form LTV Steel in 1984.
[4] Not available.

Source: Metal Bulletin.

Table 2
Raw steel: Average annual production, by specified countries/regions, by specified 5-year periods, 1958-92

Period	United States	European Community-12	Japan	Principal steel-producing developing countries[1]	World total
			Million metric tons		
1958-62	86.06	92.37	21.34	18.98	326.88
1963-67	114.15	113.08	44.48	24.49	448.70
1968-72	119.37	141.04	85.57	36.46	581.43
1973-77	120.93	150.66	109.71	51.73	678.46
1978-82	105.27	141.27	105.30	81.13	706.35
1983-87	79.14	129.09	100.97	110.53	708.33
1988-92	86.42	136.81	120.55	154.99	757.61
			Percent of world		
1958-62	26.33	28.26	6.53	5.81	100.00
1963-67	25.44	25.20	9.91	5.46	100.00
1968-72	20.53	24.26	14.72	6.27	100.00
1973-77	17.82	22.21	16.17	7.62	100.00
1978-82	14.90	20.00	14.91	11.49	100.00
1983-87	11.17	18.23	14.25	15.60	100.00
1988-92	11.41	18.06	15.91	20.46	100.00

[1] Includes Brazil, People's Republic of China, India, Republic of Korea, Mexico, and Taiwan.

Source: United Kingdom Iron and Steel Statistics Bureau and International Iron and Steel Institute.

Table 3
Raw steel: Production, by specified countries/regions, 1987-92

Country/region	1987	1988	1989	1990	1991	1992	Percent Change 1987-92
			1,000 metric tons				
Taiwan	5,771	8,288	9,047	9,747	10,973	10,705	85.5
Korea	16,782	19,118	21,873	23,125	26,002	28,054	67.2
Turkey	7,044	7,982	7,799	9,322	9,336	10,254	45.6
China	56,280	59,430	61,590	66,349	70,436	80,037	42.2
India	13,121	14,309	14,608	14,963	17,100	18,117	38.1
Australia	6,100	6,387	6,735	6,676	6,141	6,877	12.7
Mexico	7,642	7,779	7,851	8,726	7,883	8,436	10.4
Brazil	22,228	24,657	25,055	20,567	22,617	23,895	7.5
EC-12	126,537	137,829	140,142	136,758	137,449	132,279	4.5
United States	80,877	90,650	88,834	89,723	79,738	84,322	4.3
Japan	98,513	105,681	107,909	110,339	109,649	98,132	(0.4)
Canada	14,737	14,866	15,458	12,281	12,987	13,933	(5.5)
Czechoslovakia	15,416	15,379	15,466	14,877	12,071	11,140	(27.7)
USSR/CIS	161,874	163,037	160,096	154,414	132,839	116,827	(27.8)
Poland	17,145	16,873	15,094	13,625	10,439	9,785	(42.9)
Total selected countries/regions	650,067	692,265	697,557	691,492	665,660	652,793	0.4
All other	86,394	87,832	88,641	78,588	69,597	68,470	(20.7)
World total	736,461	780,097	786,198	770,080	735,257	721,263	(2.1)

Source: Compiled from statistics of the International Iron and Steel Institute.

Table 4
Steel mill products: Average annual exports, by countries/regions of origin, by specified periods, 1972-91[1]

Period	United States	European Community-12[2]	Japan	Principal steel-producing developing countries[3]	Other	World
			1,000 metric tons			
1972-76	3,432	55,821	28,577	2,325	27,224	117,377
1977-81	2,660	63,995	30,613	5,987	34,972	138,227
1982-86	1,083	64,902	30,336	14,221	43,508	154,050
1987-91	3,345	71,308	20,562	21,143	50,369	166,728
			Percent of world exports			
1972-76	2.9	47.6	24.3	2.0	23.2	100.0
1977-81	1.9	46.3	22.1	4.3	25.3	100.0
1982-86	0.7	42.1	19.7	9.2	28.2	100.0
1987-91	2.0	42.8	12.3	12.7	30.2	100.0
			Percent of shipments[4]			
1972-76	3.8	46.6	31.8	6.5	([5])	22.5
1977-81	3.2	54.6	32.7	10.2	16.3	24.3
1982-86	1.8	60.4	32.4	17.5	19.0	26.9
1987-91	4.5	57.9	20.5	17.3	20.2	24.9

[1] Includes intra-EC trade. Data for 1991 are the most recent data available.
[2] Includes all 12 countries for all years.
[3] Includes Brazil, China, India, Korea, Mexico, and Taiwan.
[4] Derived by staff of the U.S. International Trade Commission.
[5] Not available.

Source: Calculated from statistics of the International Iron and Steel Institute and the United Kingdom Iron and Steel Statistics Bureau, except as noted.

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			1,000 metric tons			
1972-76	3,432	28,861	28,577	2,325	27,224	90,417
1977-81	2,660	35,295	30,613	5,987	34,972	109,527
1982-86	1,083	34,682	30,336	14,221	43,508	123,830
1987-91	3,345	28,154	20,562	21,143	50,369	123,574
			Percent of world exports			
1972-76	3.8	31.9	31.6	2.6	30.1	100.0
1977-81	2.4	32.2	28.0	5.5	31.9	100.0
1982-86	0.9	28.0	24.5	11.5	35.1	100.0
1987-91	2.7	22.8	16.6	17.1	40.8	100.0
			Percent of shipments[4]			
1972-76	3.8	24.4	31.8	6.5	([5])	17.3
1977-81	3.2	30.1	32.7	10.2	16.3	19.3
1982-86	1.8	32.3	32.4	17.5	19.0	21.6
1987-91	4.5	22.8	20.5	17.3	20.2	18.5

[1] Excludes intra-EC trade. Data for 1991 are the most recent data available.
[2] Includes all 12 countries for all years.
[3] Includes Brazil, China, India, Korea, Mexico, and Taiwan.
[4] Derived by staff of the U.S. International Trade Commission.
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Source: Calculated from statistics of the International Iron and Steel Institute, and the United Kingdom Iron and Steel Statistics Bureau, except as noted.

Table 6
Steel mill products: Average annual imports, by countries/regions of origin, by specified periods, 1972-91[1]

Period	United States	European Community-12[2]	Japan	Principal steel-producing developing countries[3]	Other	World
			1,000 metric tons			
1972-76	13,326	38,180	163	10,190	55,237	117,096
1977-81	16,664	41,250	955	14,831	64,726	138,426
1982-86	18,649	42,000	2,994	19,926	69,580	153,148
1987-91	16,706	56,852	7,076	21,106	65,697	167,437
			Percent of world imports			
1972-76	11.4	32.6	0.1	8.7	47.2	100.0
1977-81	12.0	29.8	0.7	10.7	46.8	100.0
1982-86	12.2	27.4	2.0	13.0	45.4	100.0
1987-91	10.0	34.0	4.2	12.6	39.2	100.0
			Percent of apparent consumption of finished steel			
1972-76	13.3	37.4	0.3	23.3	25.9	22.5
1977-81	17.1	43.7	1.5	21.9	26.4	24.3
1982-86	23.6	49.7	4.5	22.9	27.2	26.8
1987-91	19.0	52.3	8.1	17.2	24.8	25.0

[1] Includes intra-EC trade. Data for 1991 are the most recent data available.
[2] Includes all 12 countries for all years.
[3] Includes Brazil, China, India, Korea, Mexico, and Taiwan.

Source: Calculated from statistics of the International Iron and Steel Institute.

Table 7
Steel mill products: Average annual imports by countries/regions of origin, by specified periods, 1972-91[1]

Period	United States	European Community-12[2]	Japan	Principal steel-producing developing countries[3]	Other	World
			1,000 metric tons			
1972-76	13,326	11,220	163	10,190	55,237	90,136
1977-81	16,664	12,550	955	14,831	64,726	109,726
1982-86	18,649	11,780	2,994	19,926	69,580	122,928
1987-91	16,706	13,698	7,076	21,106	65,697	124,283
			Percent of world imports			
1972-76	14.8	12.4	0.2	11.3	61.3	100.0
1977-81	15.2	11.4	0.9	13.5	59.0	100.0
1982-86	15.2	9.6	2.4	16.2	56.6	100.0
1987-91	13.4	11.0	5.7	17.0	52.9	100.0
			Percent of apparent consumption of finished steel			
1972-76	13.3	11.0	0.3	23.3	25.9	17.3
1977-81	17.1	13.3	1.5	21.9	26.4	19.3
1982-86	23.6	13.9	4.5	22.9	27.2	21.5
1987-91	19.0	12.6	8.1	17.2	24.8	18.5

[1] Excludes intra-EC trade. Data for 1991 are the most recent data available.
[2] Includes all 12 countries for all years.
[3] Includes Brazil, China, India, Korea, Mexico, and Taiwan.

Source: Calculated from statistics of the International Iron and Steel Institute.

Market Conditions

Carbon and Certain Alloy Steel

U.S. apparent consumption of carbon and certain alloy steel in 1992 increased by 8 percent compared with consumption in 1991 (table 8), which was well below historical levels because of an economic recession that curtailed demand for products containing steel. The increase in 1992 consumption was supplied by increases in domestic shipments and imports of carbon and certain alloy steel products. Shipments and imports increased in equal proportions. Shipments to the principal steel-consuming industries, the automotive and construction/contractors' products industries, increased by 14 percent and 7 percent, respectively. Steel consumption by the U.S. automobile industry increased in 1992 because of higher vehicle production and the increased steel content of some vehicles, partially because some automobile parts that were designed in plastic have returned to steel. Other industries receiving increased steel shipments include rail transportation (up by 5.4 percent); shipbuilding (14.3 percent); oil and gas (8 percent); and appliances, utensils, and cutlery (8.9 percent). Industries receiving decreased shipments include aircraft and aerospace (down by 16.8 percent); agriculture (5.4 percent); and containers, packaging, and shipping materials (7.1 percent).[12]

Stainless and Alloy Tool Steel

U.S. apparent consumption of stainless and alloy tool steel in 1992 increased by 9 percent compared with 1991 (table 8), reaching the highest level during 1989-92. The increase in consumption was met with an increase in domestic shipments and imports in equal proportions. Shipments to the automotive industry, where stainless steel is used in catalytic converter systems and certain trim, increased by 24 percent, accounting for most of the increase in shipments. Other industries with significant increases include construction and contractors' products (up by 9 percent); mining, quarrying, and lumbering (where stainless is used largely in processing equipment) (276 percent); restaurant and hotel cooking equipment (18 percent); and containers, packaging, and shipping materials (33 percent). Shipments to the following industries decreased sharply: rail transportation (down 83 percent); shipbuilding and marine equipment (59 percent); aircraft and aerospace (27 percent); and agriculture (37 percent).[13]

[12] Compiled from data of the American Iron and Steel Institute.

[13] Ibid.

Market Impact of U.S. Trade

The market for steel and, accordingly, U.S. imports and exports of steel mill products and certain fabricated steel products were influenced by the U.S. economic recession, which began in early 1991 and appeared to recede in mid-1992, and by a late-1991 economic recession in other major steel consuming nations, notably Far East Asian countries. Reflecting this, U.S. exports as a share of shipments for all steel products declined from 9 percent in 1991 (the highest level in 20 years) to 6 percent in 1992. This decline in exports, coupled with increased imports caused the deficit in steel products to increase by 37 percent in volume from 1991 to 1992. Despite increased imports in 1992, import penetration in the U.S. market remained at 19 percent in 1991-92, as domestic shipments increased as well. The data discussed in the remainder of this section are based on the data contained at various levels of detail in appendix E.

Imports

Carbon and certain alloy steel

The expiration of the VRAs on March 31, 1992, appears not to have led to a surge in imports from most former VRA countries.[14] Excluding Canada, imports from the world in 1992 increased by less than 1 percent compared with 1991. For example, imports from Japan decreased by 6 percent in 1992 and may have been affected by a Japanese Government program urging Japanese producers not to exceed the limits of the expired VRAs. On the other hand, imports from Korea, which also took steps to limit certain post-VRA exports to the United States, increased by 11 percent in 1992.

A lingering recession in the Canadian market and a modest recovery in U.S. automobile production largely contributed to a 41-percent increase in U.S. imports from Canada of carbon and certain alloy steel products from 1991 to 1992. Canada is the largest U.S. supplier, accounting for 26 percent of total carbon and certain alloy steel imports in 1992, representing an increase from 20 percent in 1991.

On a regional basis, East Asia, the EC, and Latin America are the largest import suppliers, accounting for 26 percent, 26 percent, and 12 percent, respectively, of carbon and certain alloy steel imports in 1992. These shares decreased slightly from 1991 because of the increase in imports from Canada.

On a product basis, imports in most product categories in 1992 increased from 1991, with the most significant change occurring in sheet and strip imports, which increased by over 1.6 million tons. The notable exception was a decline in imports of pipe and tube of almost 1.2 million tons in 1992, likely to be partially the result of the imposition of antidumping duties on imports from Korea and Brazil in 1992.

[14] Canada did not participate in the VRA program.

Table 8
Steel: U.S. shipments, imports, exports, apparent consumption, import penetration, exports as a percent of shipments, and trade balance, 1989-92

Year	U.S. shipments	Imports	Exports	Apparent consumption[1]	Import penetration[2]	Exports/ shipments	Trade balance	
							Volume	Value
	1,000 short tons				*Percent*		*1,000 short tons*	*Million dollars*
	Carbon and certain alloy steel							
1989	82,720	17,948	4,657	96,011	18.7	5.6	(13,291)	(6,036)
1990	83,407	17,727	4,718	96,416	18.4	5.7	(13,008)	(5,386)
1991	77,341	15,953	6,537	86,758	18.4	8.5	(9,416)	(3,788)
1992	80,776	17,305	4,410	93,671	18.5	5.5	(12,895)	(4,548)
	Stainless and alloy tool steel							
1989	1,539	397	121	1,815	21.9	7.9	(275)	(716)
1990	1,503	417	122	1,798	23.2	8.1	(295)	(637)
1991	1,500	428	175	1,754	24.4	11.6	(254)	(535)
1992	1,578	475	135	1,918	24.8	8.6	(340)	(653)

[1] Apparent consumption is defined as shipments plus imports minus exports.
[2] Import penetration is defined as imports as a percent of apparent consumption.

Note.—Because of rounding, figures may not calculate to the results shown. Import penetration and exports/shipments percentages are based on quantity figures.

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

Stainless and alloy tool steel

Imports of stainless and alloy tool steel increased by 11 percent from 1991 to 1992. The increase, which occurred in most product categories, was spread among a number of countries, although Mexico accounted for a relatively large increase, of almost 10,000 tons. Mexico's share of total U.S. steel imports increased from 4 percent in 1989 to 9 percent in 1992, due in part to the efforts of the country's largest stainless steel producer to increase its exports to the United States. A recession in Europe contributed to more imports from the EC and other Western European countries.

On a product basis, stainless sheet and strip, bars and shapes, and wire rod, used primarily in the automotive, construction, and food-processing industries, accounted for most of the increase in imports. Imports of stainless pipe and tube and alloy tool steel declined in 1992.

Exports

Carbon and certain alloy steel

U.S. exports of carbon and certain alloy steel decreased by 33 percent from 1991 to 1992 primarily because of worsening economic conditions in several East Asian markets. Exports to Japan and Korea declined by 80 percent and 85 percent, respectively. In Japan, beginning in late 1991, demand for steel was off sharply, especially in the construction sector, because capital spending declined. Furthermore, consumer purchases of durables in Japan declined. In Korea, construction activity was down sharply in 1992 because of Government policies to slow down this overheated sector. Exports to Korea also likely declined because of the country's expanded steel sheet and strip capacity.

The Latin American region is the largest export market and continues to grow as a destination for U.S. exports. Exports to this region increased by 10 percent in 1992. Mexico accounts for most of these exports, but Ecuador, Colombia, and Venezuela are significant markets.

Although U.S. exports to the depressed EC market continued a downward trend, decreasing by 26 percent from 1991 to 1992, this region accounted for just 4 percent of total U.S. exports in 1992.

Stainless and alloy tool steel

U.S. exports of stainless and alloy tool steel declined by 23 percent from 1991 to 1992, as the recessions in East Asian and EC countries also caused demand for specialty steel products to decline. Although exports to Mexico declined significantly, attributed largely to that country's new capacity, Mexico is still the largest market for U.S. exports.

Latin America is also the largest market for U.S. stainless steel exports, accounting for 38 percent of exports in 1992. However, unlike exports of carbon products, specialty steel exports to Latin America declined by 14 percent from 1991 to 1992.

Factors influencing producers' exports

Respondents to the Commission's annual survey provided information on the quantity and value of their exports for 1991-92 and identified new country markets supplied in these years. Respondents were asked to rank factors affecting their ability to expand exports, to determine whether their exports had been adversely affected by nontariff barriers, and to rank the relative importance of government policy factors that may affect their ability to expand exports. A total of 132 respondents provided information, presented in tables 9-11, although not all respondents completed each section.

Attempts by steel producers to develop new export markets appear to be significant, as 62 respondents reported exporting to new country markets in 1991 or 1992. These respondents listed 163 countries as new markets, as shown by the following tabulation (in percent):

New market	Number of times cited
Mexico	15
Canada	6
Saudi Arabia	4
Taiwan	4
Colombia	4
Australia	4
Brazil	3
Japan	3
Venezuela	3
All other	54

On a regional basis most of the new markets were countries in Latin America (36 percent), Western Europe (18 percent), and East Asia (17 percent), although new markets were reported in virtually every region of the world. U.S. exports of steel mill products by questionnaire respondents were 4.7 million short tons ($2.1 billion) in 1991 and 3 million short tons ($1.5 billion) in 1992, representing 70 percent and 66 percent of total U.S. steel exports (based on quantity), respectively.

Among those factors identified as "very important" in influencing respondents' ability to expand steel mill product exports, relative prices were the most significant (table 9). In contrast, capacity constraints as a factor restraining export sales were cited as unimportant by over half of the respondents, which is consistent with other data indicating that the steel industry has been operating at approximately 79 percent capacity. Respondents also cited high freight costs as a major factor affecting their exports.

Table 9
U.S. producers' perceptions of the factors influencing their ability to expand steel mill product export levels: Share of respondents choosing each level of importance, and share of total questionnaire respondents that commented on each factor

(Percent)

Export factor	Very important	Important	Somewhat important	Unimportant	Percent response
Capacity constraints	12	12	26	51	99
Customer product specifications	17	30	30	23	97
Exchange rates	31	36	22	10	98
Home-market demand	25	24	28	22	98
Relative price[1]	70	21	5	3	99
Nontariff barriers	25	22	22	31	97
Tariff barriers	33	26	21	20	96
Other[2]	74	11	5	11	15

[1] Relative to prices in other markets.
[2] In most cases, respondents cited high freight costs.

Note.—Because of rounding, shares may not total to 100 percent.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Nontariff barriers (NTBs) apparently did not pose problems for most of the respondents (table 10). Government procurement policies were cited as the most common NTBs, although they were reported by only 14 percent of total respondents. Minimum domestic content and licensing requirements were the only other NTBs cited by a significant number of respondents. Some respondents cited other NTBs that hinder U.S. companies, such as cartel practices by foreign producers, that hinder sales by U.S. companies.

Respondents were asked to rank the importance of the implementation of the U.S.-Canada Free-Trade Agreement (FTA), the implementation of the proposed North American Free Trade Agreement (NAFTA), the expected outcome of the MSA[15] negotiations, and the expected outcome of the Uruguay Round negotiations on their ability to expand exports. Also, each respondent was asked to determine the nature of the effect as positive, negative, or no discernible effect.

The majority of respondents perceived each of these government policy initiatives as having either a positive effect or no discernible effect (table 11). A large majority of the respondents ranked the U.S.-Canada FTA and implementation of NAFTA as having an important positive effect on exports, which ranking is logical, because Canada and Mexico are among the largest trading partners with the United States in steel products. The majority of respondents ranked the expected outcome of MSA negotiations and the Uruguay Round negotiations as having no effect on their ability to expand steel exports. Respondents also cited excess U.S. government regulation and foreign government ownership as very important obstacles to steel exports and proposed changes in U.S. investment incentives as very important facilitators.

[15] See section on Recent Steel Industry Developments: Steel Trade Agreements and Trade Petitions Against Foreign Producers for information on the status of the MSA negotiations.

Production, Capacity, and Capacity Utilization

U.S. raw steelmaking capacity increased by about 1 percent to 117.6 million tons during 1991-92, continuing a pattern of capacity expansion (table 12). Increases in electric furnace capacity by minimills,[16] such as Nucor Steel, were partially offset by both temporary and permanent removal of open hearth furnace and electric furnace capacity by integrated steel companies, resulting in only a slight rise in overall capacity. Such closures include Geneva Steel's replacement of its open hearth furnaces with basic oxygen furnaces, USX Corp.'s closure of its South Works (electric furnace-based) and Bethlehem Steel Corp.'s shutdown of its Johnstown Works (electric furnace-based).

Raw steel production increased proportionally more than did capacity, rising by about 4 percent during 1992 to 92.9 million tons, in response to increased demand from the automotive and appliance industries. As a result, capacity utilization rose from 76 percent to 79 percent during 1991-92.

[16] As steelmaking technology has developed, the distinction between minimills and integrated mills has blurred. This blurring has come about because of major changes in steelmaking technology, particularly trends toward decreasing the minimum efficient scale of production and the convergence of integrated and nonintegrated production processes. U.S. International Trade Commission, *Certain Hot-Rolled Lead and Bismuth Carbon Steel Products from Brazil, France, Germany, and the United Kingdom,* investigation Nos. 731-TA-552 thru 555 (Final), USITC publication 2611, pp. I-34-I-35, Mar. 1993.

Table 10
Share of total questionnaire respondents that have reportedly encountered nontariff barriers to steel mill product exports[1]

(Percent)

Nontariff barriers	Share of respondents
Government procurement policies	14
Licensing requirements	9
Minimum domestic content requirements	11
Quotas	4
Restrictions on foreign direct investment	3
Other[2]	8

[1] There were 156 questionnaire respondents.
[2] Respondents cited Japanese cartel practices and product approval requirement.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Continuously cast production is steadily increasing as a share of total U.S. steel production. Continuous casting generates less scrap and provides significant time, labor, and energy savings relative to ingot casting. More than 73 percent of the steel produced in the United States during 1992 was continuously cast, compared with almost 72 percent in 1991, as shown in the following tabulation of data received in response to Commission questionnaires:[17]

Item	1991	1992
Total raw steel production (million tons)	89.0	92.9
Continuously cast production (million tons)	63.7	68.2
Share of production continuously cast (percent)	71.6	73.4

The United States' continuous casting ratio remains lower than that achieved in other major producing countries, including Canada (84 percent continuously cast in 1991); the European Community (90 percent); Japan (94 percent); and Korea (96 percent).[18] Although the U.S. industry has invested in continuous casting, a relatively greater share of its capital expenditures have been directed toward other production processes.

Carbon and Certain Alloy Steel

Among carbon steel products, capacity utilization during 1992 was highest among sheet and strip products (75 percent) (table 13), principally as a result of high capacity utilization at galvanizing facilities (79 percent) and other coating facilities (86 percent) serving consumers such as the automotive and appliance industries (table 12). (See appendix F for a description of the products subject to this investigation and definitions of certain terms.) Capacity utilization during 1992 was also high for bars and light structurals (81 percent) and wire rods (82 percent), of which the construction industry is a major consumer. Capacity utilization was lowest for pipes and tubes (57 percent) and rails and rail products (53 percent), items for which markets generally were unattractive in recent years.

Although integrated steel producers remained the primary producers of flat products — sheet, strip, and plate — during 1991-92, they were not the principal suppliers of other steel mill products. This reflects the movement of minimills and converters into markets such as medium and heavy structurals, which were once predominantly supplied by the integrated mills. The production of merchant bars, structurals, and wire rods was dominated by minimills during 1991-92, with minimills accounting for more than 80 percent of total medium and heavy structural production in 1992.[19]

Minimills are also expanding into sheet production, spurred by the success of Nucor Corp.'s thin-slab-casting facilities in Crawfordsville, IN, and Hickman, AR. Nucor has announced plans to add 1.4 million tons of capacity to its two existing thin-slab facilities and to enter a joint venture with Oregon Steel Mills Inc. to construct a 1.0 million-ton-per-year mill on the West coast. Dofasco Inc., Canada's leading integrated steelmaker, has announced a joint venture with Co-Steel, a Canadian minimill firm, to build a thin-slab casting facility in the United States. Acme Metals Inc., Birmingham Steel Corp., Chaparral Steel Co., IPSCO Inc. (Canada) and North Star Steel Co. have all indicated an interest in construction of thin-slab facilities in the near future. Steel

[17] The continuous casting ratio for the United States, calculated on the basis of data supplied by questionnaire respondents, may be slightly understated in comparison with ratios published in other sources. This is because some respondents included utilization figures for primary mills (such as ingot breakdown mills) with their continuous casting data.

[18] International Iron and Steel Institute (IISI), *Steel Statistical Yearbook 1991* (Brussels, Belgium), 1991. The IISI reported a continuous casting ratio of 75.7 percent for the United States in 1991.

[19] Derived from data submitted in response to questionnaires of the U.S. International Trade Commission. Integrated producers dominated production of special-quality bars.

Table 11
U.S. producers' perceptions of the effect of Government policy on their ability to expand steel mill product export levels, number of respondents choosing each effect, and the share of respondents choosing each level of importance for each effect

Government policy	Positive effect					Negative effect					No discernible effect				
	No. of respondents	Very important	Important	Somewhat important	Unimportant	No. of respondents	Very important	Important	Somewhat important	Unimportant	No. of respondents	Very important	Important	Somewhat important	Unimportant
		Percent					Percent					Percent			
Implementation of the U.S.-Canada Free-Trade Agreement	63	35	41	22	2	7	29	57	14	0	29	0	7	41	52
Implementation of the North American Free-Trade Agreement	59	34	42	20	3	12	25	42	17	17	29	3	10	34	52
Multilateral Steel Agreement negotiations	32	53	38	9	0	6	33	50	17	0	54	2	7	26	65
Uruguay Round negotiations	24	42	29	29	0	9	56	11	33	0	57	0	9	26	65
Other[1]	2	100	0	0	0	2	67	33	0	0	0	0	0	0	0

[1] For positive effect, respondents cited proposed revisions to U.S. tax policy and regulations; for negative effect, respondents cited excess U.S. Government regulation and foreign government ownership of production facilities.

Note.—Because of rounding, shares may not total to 100 percent.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 12
Steel: U.S. producers' and converters' reported capacity, production, and capacity utilization, 1991 and 1992

Item	Capacity		Production		Capacity utilization		Percentage change	
	1991	1992	1991	1992	1991	1992	Capacity	Production
	1,000 tons				*Percent*			
Carbon and certain alloy steel:								
Cokemaking	24,911	25,911	19,738	20,584	79	79	4	4
Ironmaking	67,086	66,335	49,082	50,889	73	77	(1)	4
Steelmaking:								
Basic oxygen process & other	73,017	72,733	55,104	58,438	75	80	(1)	6
Electric furnace	41,025	42,040	31,747	32,179	77	77	2	1
Products:								
Sheet and strip:								
Hot-rolled	64,934	67,566	47,200	51,732	73	77	4	10
Cold-rolled	39,207	39,750	25,604	28,061	65	71	1	10
Galvanized	12,724	13,250	9,680	10,498	76	79	4	8
Other coated	5,746	5,635	4,787	4,822	83	86	(2)	1
Plates	7,301	6,928	4,747	4,535	65	65	(5)	(4)
Bars and light structurals:								
Hot-finished	15,682	15,509	11,683	12,627	74	81	(1)	8
Cold-finished	2,409	2,420	1,850	1,975	77	82	(1)	7
Medium and heavy structurals[2]	8,539	8,506	5,554	5,944	65	70	(1)	7
Pipes and tubes:								
Seamless pipes and tubes	2,253	2,253	1,407	1,238	62	55	(1)	(12)
Welded pipes and tubes	6,664	6,924	4,183	3,964	63	57	4	(5)
Rails and rail products	1,307	1,311	616	701	47	53	(1)	14
Wire rods	6,495	6,491	5,277	5,352	81	82	(1)	1
Wire	3,263	3,293	2,137	2,210	65	67	1	3
Wire products	1,713	1,931	951	1,123	56	58	13	18
Stainless and alloy tool steel:								
Electric furnace	2,792	2,810	2,162	2,259	77	80	1	4
Products:								
Sheet and strip:								
Hot-rolled	2,034	2,063	1,326	1,187	65	58	1	(10)
Cold-rolled	1,685	1,705	1,006	1,136	60	67	1	13
Plates	222	228	111	111	50	49	3	(1)
Bars and light structurals:								
Hot-finished	127	130	74	67	58	52	2	(10)
Cold-finished	220	221	114	107	52	49	1	(6)
Pipes and tubes	95	95	61	63	64	66	(1)	3
Wire rods	70	69	23	21	33	30	(1)	(12)
Wire and wire products	43	48	31	34	73	72	13	12

[1] Less than 0.5 percent.
[2] Structural shapes with a cross-section exceeding 3 inches.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 13
Carbon and certain alloy steel: Weighted average capacity utilization among major product groups, 1991 and 1992

(Percent)

Item	1991	1992
Sheet and strip	71	75
Plate	65	65
Bars and light structurals	75	81
Medium and heavy structurals[1]	65	70
Pipes and tubes	63	57
Rails and rail products	47	53
Wire rod, wire, and wire products	73	74

[1] Structural shapes with a cross-section exceeding 3 inches.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

converters,[20] finding their niche in less capital-intensive product markets, were the leading producers of fabricated steel mill products such as pipe and tube, and wire products during 1991-92.

Stainless and Alloy Tool Steel

Capacity to produce stainless and alloy tool steel products remained relatively stable in most product categories during 1991-92 (table 12). In general, capacity utilization in the stainless sector was somewhat lower than that in the carbon segment. Declines in capacity utilization generally reflected reduced production stemming from inventory buildups. The low level of capacity utilization for stainless wire rod has been attributed by the domestic industry to the increase in imports of this product (table E-2). In response to increased imports, U.S. producers filed antidumping petitions against stainless wire rod from Brazil, France, and India in February 1993 (appendix D). Capacity utilization for stainless cold-rolled sheet and strip rose by 7 percentage points from 1991 to 1992, reflecting in part increased demand for such steel in auto exhaust systems.

Labor Conditions, Compensation, and Productivity

Labor contracts between the United Steel Workers of America (USWA) and four major integrated steel companies, Armco Inc., Bethlehem Steel, Inland Steel Industries, and National Steel Corp., expire on July 31, 1993. The USWA/U.S. Steel contract expires on February 1, 1994. Nonwage issues such as manning reductions, craft combinations, work rule changes, and managed health care have been identified as taking precedence over wage issues. As a guideline, the companies are reportedly using the labor pact negotiated in 1992 by LTV Steel. The USWA has indicated an interest in discussing these issues but is seeking in return early retirement initiatives and security agreements.[21]

Total workers employed by the steel industry declined by 5 percent during 1991-92, to 187,500 workers (table 14). Nominal hourly compensation for workers in the industry rose by 7 percent during that period. In 1992, steel industry workers received about 1.5 times the level of compensation of manufacturing workers as a whole. A comparison of workers' 1992 nominal hourly earnings shows that the $15.89 per hour paid to steel workers was 1.4 times that of workers in manufacturing industries in general. As the industry downsized and invested in new capital equipment, significant improvements were made in worker productivity, as measured in output per employee hour. Steel industry productivity rose by 78 percent from 1982 to 1991 (compared with 28 percent for all manufacturing).

Capital Expenditures

Respondents surveyed itemized their capital investments for 1991-92 for each product facility, providing data on capital expenditures for environmental control purposes and total capital expenditures and reasons for the expenditures. The principal reasons given for investment were for facility maintenance and replacement, increasing capacity, improvements in operating efficiency, improved responsiveness to customer demand for higher quality products and better service, and Government regulation requirements. Responses were grouped by product type (i.e., carbon and certain alloy steel and stainless and alloy tool steel) and by producer type (i.e., integrated, minimill, specialty, and steel processor) as discussed below.

[20] Steel converters purchase steel mill products for conversion into other steel mill products.

[21] United Steelworkers of America, *Steelabor*, Pittsburgh, PA, March/April 1993.

Table 14
Employment: Average annual employment of the steel industry, and productivity, nominal earnings, and nominal compensation for workers in steel and all manufacturing industries, 1991 and 1992

Year	Number of workers		Productivity index[1]		Nominal earnings[2]		Nominal compensation[3]	
	Total	Production	Steel	Manufacturing	Steel	Manufacturing	Steel[4]	Manufacturing
					Dollars per hour			
1991	260,500	196,600	177.5	128.1	15.37	11.18	27.64	19.46
1992	246,900	187,500	([5])	131.9	15.89	11.45	29.57	19.89

[1] 1982=100.
[2] Including overtime earnings.
[3] 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.
[4] American Iron and Steel Institute.
[5] Not available.

Source: Compiled from official statistics of the U.S. Department of Labor, Bureau of Labor Statistics, except as noted.

Carbon and Certain Alloy Steel

Carbon steel producers reported capital expenditures of $2.5 billion in 1992, 18 percent lower than 1991 reported capital expenditures of $3.1 billion (table 15). Environmental expenditures accounted for 13 percent and 11 percent of total capital expenditures in 1991 and 1992, respectively.

Cokemaking facilities accounted for the largest portion of total capital expenditures—13 percent in both 1991 and 1992, reflecting the industry's effort to modernize and meet new emission regulations. Continuous casting facilities received a greater share of total investment (12 percent in 1992, up from 7 percent in 1991), reflecting the ongoing conversion to this method of producing semifinished steel, which has resulted in major improvements in costs and efficiency over the ingot-teeming process of producing semifinished steel. Investments in sheet and strip mills, including hot-rolled, cold-rolled, and coating operations, accounted for 26 to 28 percent of expenditures in 1991-92, reflecting new capacity additions as well as facility improvements.

Despite the lower level of capital expenditures, the continuing modernization effort by the industry is focused on facility maintenance and replacement and improvements in operating efficiency, by far the most frequently reported purposes for expenditures.[22] Investments to improve product quality and service and to meet Government regulation requirements are more secondary objectives according to survey results.

[22] Table G-1 shows the frequency of response for the reasons given for each product category expenditure as reported by carbon steel respondents.

Stainless and Alloy Tool Steel

Specialty steel producers reported an increase in capital expenditures to $133 million in 1992 from 1991 reported capital expenditures of $106 million (table 16). Although environmental expenditures rose to 8 percent of the total in 1992 from 3 percent in 1991, such investments are much less than for the carbon producers since the stainless producers do not operate cokemaking and ironmaking facilities that have required significant environmental compliance expenditures to control emissions.

Continuous casting facilities were the largest category of total investment (15 percent in 1992, up from 7 percent in 1991), followed by electric furnace facilities (11 percent in 1992), and cold-rolling facilities (9 percent). Facility maintenance and replacement, and improvements in operating efficiency were also the principal reasons for specialty steel investments. Producers reported that Government regulation requirements and the need to increase capacity were secondary objectives.[23]

Integrated Producers

Capital expenditures by the integrated producers accounted for 61 percent ($1.6 billion) of all capital expenditures reported to the Commission by steel producers in 1992.[24] Expenditures in 1992 were 29

[23] Table G-2 shows the frequency of response for the reasons given for each product category expenditure as reported by specialty steel respondents.
[24] Derived from data submitted in response to questionnaires of the U.S. International Trade Commission.

percent lower than in 1991. In contrast, expenditures by all other producer types increased from 1991 to 1992, reflecting their somewhat better financial performance. Investments were concentrated in sheet and strip facilities (33 percent), cokemaking facilities (20 percent), and continuous casting facilities (19 percent) in 1992. Over 13 percent of expenditures were for environmental control purposes, most of which were spent on cokemaking facilities and basic oxygen furnaces. Significant investments were also made in upgrading blast furnaces (10 percent of total expenditures in 1992 and 15 percent in 1991), reflecting in part the installation of pulverized coal injection equipment, which lowers coke consumption.[25] The most often-cited reason for investment was facility maintenance and replacement, followed by improvements in product quality and customer service.

[25] Norman L. Samways, "Developments in the North American Iron and Steel Industry—1992," *Iron and Steel Engineer,* Feb. 1993, p. D-2.

Minimill Steel Producers

Capital expenditures by the minimill industry segment accounted for 27 percent ($729 million) of all capital expenditures by steel producers in 1992, according to survey results.[26] These expenditures were 17 percent more than in 1991. Electric furnace investment accounted for more than 18 percent of

[26] Derived from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 15
Carbon and certain alloy steel: U.S. producers' and converters' capital expenditures,[1] 1991 and 1992

Item	1991		1992		Percentage change	
	Environmental	Total	Environmental	Total	Environmental	Total
	Thousand dollars					
Cokemaking facilities	249,428	391,750	107,273	325,928	(57)	(17)
Ironmaking facilities	19,930	335,474	25,376	169,080	27	(50)
Raw steelmaking facilities:						
Basic oxygen process	41,607	298,247	50,405	91,057	21	(69)
Electric furnace	24,481	117,872	41,895	138,802	71	18
Continuous casting	(2)	217,605	5,305	304,609	(2)	40
Secondary steelmaking facilities[3]	1,309	3,544	(2)	1,717	(2)	(52)
Flat-rolled products:						
Plate mills	2,181	58,871	1,064	26,473	(51)	(55)
Sheet and strip:						
Hot strip mills	2,408	350,801	(2)	235,846	(2)	(33)
Cold-rolled sheet mills	9,944	199,675	10,141	164,450	2	(18)
Galvanizing facilities	2,320	225,106	5,810	203,166	150	(10)
Other coating facilities	2,634	87,246	2,404	57,466	(9)	(34)
Bars, shapes, and light structural mills:						
Hot-finished	326	94,772	64	72,703	(80)	(23)
Cold-finished	1,218	4,481	712	2,977	(42)	(34)
Medium and heavy structural mills[4]	537	112,397	(2)	26,167	(2)	(77)
Rail mills	0	4,516	0	4,079	0	(10)
Wire rod mills	(2)	12,994	(2)	6,436	1,169	(50)
Wire drawing machines	1,306	28,964	2,793	22,103	114	(24)
Wire products	2,484	30,571	854	27,712	(66)	(9)
Pipes and tubes:						
Seamless pipe mills	273	14,511	1,022	35,266	274	143
Welded pipe mills	1,118	38,473	4,245	38,707	280	1
Other[5]	28,656	468,298	22,405	581,193	(22)	24
Total	392,515	3,096,168	287,281	2,535,937	(27)	(18)

[1] Includes expenditures for the specific type of facility as well as related facilities. Also includes expenditures for plant and equipment, land and land improvement, occupational safety and health, and environmental control.
[2] Not shown.
[3] Includes ladle treatment (heat balance, alloy addition, degassing, decarburization, etc.) and other secondary refining processes (vacuum arc remelt, electroslag remelting, etc.).
[4] Structural shapes with a cross-section exceeding 3 inches.
[5] Includes expenditures that companies could not allocate to product groups.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 16
Stainless and alloy tool steel: U.S. producers' and converters' capital expenditures,[1] 1991 and 1992

Item	1991		1992		Percentage change	
	Environmental	Total	Environmental	Total	Environmental	Total
	Thousand dollars					
Raw steelmaking facilities:						
Electric furnace	703	10,943	2,105	14,344	199	31
Continuous casting	0	7,763	(2)	19,922	(3)	157
Secondary steelmaking facilities[4]	(2)	(2)	(2)	832	217	(2)
Flat-rolled products:						
Plate mills	(2)	7,772	(2)	2,132	(99)	(73)
Sheet and strip:						
Hot strip mills	0	(2)	(2)	(2)	(3)	113
Cold-rolled sheet mills	284	13,860	611	12,338	115	(11)
Bars and shapes:						
Hot-finished	(2)	(2)	(2)	389	(84)	(2)
Cold-finished	(2)	1,356	(2)	834	(82)	(39)
Wire rod mills	(2)	(2)	0	(2)	(100)	257
Wire drawing machines	(2)	1,027	(2)	1,488	1,384	45
Pipes and tubes:						
Seamless pipe mills	0	0	0	(2)	0	(3)
Welded pipe mills	0	3,405	2,382	5,357	(3)	57
Other[5]	1,204	55,778	2,984	71,013	148	27
Total	3,003	105,647	10,141	132,784	238	26

[1] Includes expenditures for the specific type of facility as well as related facilities. Also includes expenditures for plant and equipment, land and land improvement, occupational safety and health, and environmental control.
[2] Not shown.
[3] Not meaningful.
[4] Includes ladle treatment (heat balance, alloy addition, degassing, decarburization, etc.) and other secondary refining processes (vacuum arc remelt, electroslag remelting, etc.).
[5] Includes expenditures that companies could not allocate to product groups.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

expenditures in 1992. Modernization of bar production facilities has also been a leading investment area (6 to 8 percent of total expenditures in 1991-92); reportedly, three new bar mills commenced production in 1992. Significant investments were made in medium and heavy structural mills, indicating an effort by the minimills to broaden their product lines. Facility maintenance and replacement and improvements in operating efficiency were the most common reasons cited for minimill investment.

Specialty Steel Producers

Capital expenditures by the specialty steel producers (those who make primarily stainless and alloy tool steel) accounted for 5 percent ($133 million) of all capital expenditures by steel producers in 1992.[27] Investment in 1992 increased by 15 percent compared with 1991. Casting facilities accounted for a large part of expenditures (15 percent in 1992), reflecting the specialty producers' attempts to increase strip width capability. Expenditures in cold-rolling equipment (9 percent of total in 1992 and 10 percent in 1991) reflect the addition of mills that produce higher quality products. Facility maintenance and replacement, and improvements in operating efficiency were the reasons for investment that the specialty steel producers cited most often.

[27] Ibid.

Steel Processors[28]

Capital expenditures by the steel processors accounted for 7 percent ($175 million) of all capital expenditures by steel producers in 1992, according to survey results.[29] This level represents an increase of 10 percent over expenditures in 1991. Investment in galvanizing facilities accounted for 39 percent of these expenditures in 1992. Other investment areas were welded pipe mills (17 percent), wire fabricated products (15 percent), and wire drawing machines (11

[28] The terms steel "processors" and steel "converters" are used interchangeably in this report. Both terms refer to companies that purchase certain steel mill products for conversion into other steel mill products.
[29] Ibid.

percent). The most common reasons cited for these investments were facility maintenance and replacement, and improvements in operating efficiency.

Environmental Control and Related Expenditures

The enactment of major environmental statutes related to air quality, water quality, and solid waste control has required the investment of billions of dollars of capital and has imposed significant operating and maintenance costs on the U.S. steel industry, according to an official of the American Iron and Steel Institute. The 1990 Clean Air Act amendments specifically regulated coke oven emissions and will lead to increasingly stringent standards on other air toxins. Efforts to impose uniform and stringent water quality standards in the Great Lakes region have left the iron and steel industry facing large potential costs, and restrictions on growth. Regulations on solid waste and the processing and recycling of secondary materials continue to multiply.[30]

U.S. steel producers' expenditures on environmental controls continued to account for a significant portion of total capital expenditures in 1991 and 1992. Environmental capital expenditures by carbon and certain alloy steel producers fell by 27 percent from 1991 to 1992 but accounted for about 14 percent of total capital expenditures in each year (table 17). Spending on air quality control dominated total environmental capital expenditures, accounting for 63 percent in 1992 (81 percent in 1991), followed by water quality and solid waste control. Environmental capital expenditures by carbon and certain alloy steelmakers in 1992 were directed primarily at cokemaking facilities, basic oxygen furnace facilities, and electric furnace facilities, largely reflecting the industry's efforts to comply with stricter emission regulations.

Capital expenditures on environmental controls by stainless and alloy tool steel producers increased significantly from 1991 to 1992, rising by 238 percent (table 18). Despite this absolute increase, expenditures on environmental control remained relatively lower compared with similar expenditures by carbon and certain alloy steelmakers, accounting for 3 percent ($3 million) and nearly 8 percent ($10 million) of total capital expenditures in 1991 and 1992, respectively. Spending on water quality control dominated spending by specialty steelmakers, accounting for 50 percent in 1992 (48 percent in 1991) and rising by 252 percent over the period. Spending on air quality and solid waste control also increased significantly over the period. Environmental capital expenditures by specialty steelmakers in 1992 were directed primarily at welded pipe mills, electric furnace facilities, and hot strip mills.

[30] Bruce A. Steiner, vice president, Environment and Energy, American Iron and Steel Institute, "Environmental Issues Facing the Iron and Steel Industry," speech presented at *Metals and the Environment*, sponsored by *Iron Age*, Jan. 27, 1993, Washington, DC.

Table 17
Carbon and certain alloy steel: U.S. producers' expenditures on environmental control, 1991 and 1992

Item	1991	1992	Percentage change
	$1,000		
Capital expenditures:			
Air	317,522	182,108	(43)
Water	64,069	73,89	15
Solid waste	10,924	31,274	186
Subtotal	392,516	287,280	(27)
Operating expenditures:			
Air	328,561	324,814	(1)
Water	208,957	199,519	(5)
Solid waste	110,020	110,420	(1)
Subtotal	647,538	634,753	(2)
Environmental fines	6,257	12,141	94
Environmental litigation costs	7,744	8,131	5

[1] Less than 0.5 percent.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 18
Stainless and alloy tool steel: U.S. producers' expenditures on environmental control, 1991 and 1992

Item	1991	1992	Percentage change
	$1,000		
Capital expenditures:			
Air	1,328	2,385	80
Water	1,438	5,064	252
Solid waste	237	2,692	1,036
Subtotal	3,003	10,141	238
Operating expenditures:			
Air	14,158	16,162	14
Water	30,468	23,275	(24)
Solid waste	14,760	17,098	16
Subtotal	59,386	56,535	(5)
Environmental fines	1,164	367	(68)
Environmental litigation costs	1,586	4,080	157

Note.—Because of rounding, figures may not add to totals shown.
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

U.S. steelmakers' expenditures to operate environmental equipment decreased slightly from 1991 to 1992, falling by 2 percent for carbon and certain alloy steel producers, to $635 million, and by 5 percent for specialty steel producers, to $56.5 million. Operating expenditures for air quality control continued to dominate spending by carbon and certain alloy steelmakers, accounting for 51 percent of their total environmental operating expenditures in 1992, whereas water quality and solid waste control accounted for 31 and 17 percent, respectively. Expenditures on air and water quality fell slightly over the period. Specialty steelmakers continued to focus operating expenditures on water quality control, which accounted for 41 percent of their total environmental operating spending in 1992. Solid waste and air quality control accounted for 30 and nearly 29 percent, respectively. Increases in operating costs for both air quality and solid waste control were offset by a decrease in operating costs for water quality control.

The number of environmental fines levied on carbon and certain alloy steel producers decreased by 32 percent from 1991 to 1992,[31] but their value increased by 94 percent, to $12 million. The portion of fines assessed by type of pollution changed significantly over the period. Fines assessed for air pollution accounted for 75 percent of the total in 1992 (39 percent in 1991), 20 percent for water (34 percent in 1991), and 5 percent for solid waste (27 percent in 1991). Carbon and certain alloy steelmakers' expenditures on environmental litigation costs, as reported in the Commission's survey, increased by 5 percent, to more than $8 million from 1991 to 1992. Data on the nature of litigation were not specified.

Although the number of environmental fines levied on specialty steelmakers remained constant from 1991 to 1992,[32] the costs plummeted by 68 percent, to $367,000. Fines assessed for air pollution accounted for 8 percent of the total in 1992 (88 percent in 1991), 85 percent for water (11 percent in 1991), and 7 percent for solid waste (1 percent in 1991). Stainless and alloy tool steelmakers' expenditures on environmental litigation costs more than doubled from 1991 to 1992, to over $4 million.

Research and Development

As reported in the Commission's survey, steel industry expenditures for research and development (R&D) declined by about 8 percent, to $158.0 million, from 1991 to 1992 (table 19). Expenditures for R&D represented 0.37 percent of net sales for the industry as a whole, somewhat lower than for other metals industries. The industry segment producing stainless and alloy tool steels expended relatively more on research and development (1.1 percent of net sales in 1992) than did producers of carbon steels (0.29 percent), reflecting the greater profitability and generally stronger financial condition of specialty steel producers. Integrated producers of carbon and certain alloy steel spent more, both overall and in relation to their net sales, than did their minimill counterparts.

In the stainless and alloy tool segment of the steel industry, R&D expenditures for the production of cold-rolled stainless sheet accounted for over 50 percent ($24.8 million) of total R&D expenditures in 1992 (table 19). R&D expenditures in the carbon steel

[31] Derived from data submitted in response to questionnaires of the U.S. International Trade Commission.

[32] Ibid.

Table 19
Research and development expenditures, by process and products, 1991 and 1992

Item	1991		1992		Percentage change	
	Carbon and certain alloy steel	Stainless and alloy tool steel	Carbon and certain alloy steel	Stainless and alloy tool steel	Carbon and certain alloy steel	Stainless and alloy tool steel
	(1,000 dollars)					
Cokemaking facilities	5,079	(1)	4,097	(1)	(19)	(2)
Ironmaking facilities	5,482	(1)	5,930	(1)	8	(2)
Raw steelmaking facilities:						
Basic oxygen process & other	8,916	(1)	8,226	(1)	(8)	(2)
Electric furnace	9,539	801	7,767	510	(19)	(36)
Continuous casting	5,947	0	6,449	0	8	(2)
Secondary steelmaking facilities[3]	1,077	(4)	362	(4)	(66)	(17)
Flat-rolled products:						
Plate mills	5,551	(4)	5,599	(4)	1	2
Sheet and strip:						
Hot strip mills	7,588	(4)	7,153	(4)	(6)	(5)
Cold-rolled sheet mills	17,514	(4)	17,946	24,816	2	(4)
Galvanizing facilities	9,327	(1)	8,580	(1)	(8)	(2)
Other coating facilities	19,075	(1)	16,417	(1)	(14)	(2)
Bars, shapes, and light structural mills:						
Hot-finished	5,286	(4)	2,766	(4)	(48)	530
Cold-finished	(4)	(4)	(4)	(4)	100	(7)
Medium and heavy structural mills[5]	(4)	(1)	(4)	(1)	(51)	(2)
Rail mills	(4)	(1)	(4)	(1)	42	(2)
Wire rod mills	819	(4)	742	(4)	(9)	15
Wire drawing machines	511	(4)	339	(4)	(34)	(54)
Wire products	(4)	(1)	(4)	(1)	(6)	(2)
Pipes and tubes:						
Seamless pipe and tube mills	(4)	(4)	(4)	(4)	(47)	50
Welded pipe and tube mills	963	(4)	873	(4)	(9)	(23)
Other[7]	18,327	15,893	13,595	16,663	(26)	(5)
Total	128,542	43,175	111,499	46,533	(14)	8

[1] None reported.
[2] Not applicable.
[3] Includes ladle treatment (heat balance, alloy addition, degassing, decarburization, etc.) and other secondary refining processes (vacuum arc remelt, electroslag remelting, etc.).
[4] Not shown.
[5] Structural shapes with a cross-section exceeding 3 inches.
[6] Less than 0.5 percent.
[7] Includes expenditures that could not be effectively allocated to product groups.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

segment in 1992 focused on improving cokemaking and ironmaking ($10 million), steelmaking ($16 million), coating lines ($25 million), and rolling mills ($25 million). The steel industry continues to utilize cooperative research programs to spread the cost of such programs and more widely disseminate the information gained. Study and implementation of various programs are under way through consortia involving steelmakers, equipment suppliers, universities, and Federal research laboratories.[33]

[33] See Don Walkowicz, "The Case for Cooperative Research," *American Metal Market*, Apr. 14, 1993, for some examples of cooperative research between automobile manufacturers, materials' suppliers, and the national laboratories. Also, Allan M. Rathbone, general manager-Research, U.S. Steel, "Agenda 2000—AISI Research for the 21st Century," speech at the American Iron and Steel Institute general meeting, New York, May 20, 1993, which lists three "Foundation Projects": AISI/DOE, "Advanced Process Control Program"; AISI/DOE "Direct Steelmaking Project"; and AISI/U.S. Bureau of Mines, "Steel Plant Waste Oxide Recycling and Resource Recovery."

The focus of most steel industry R&D is to reduce the capital cost of new plant (i.e., lowering the minimum efficient economic scale); raise energy efficiencies and in-process yields, and reduce cycle times; improve processes to environmentally cost-effective levels; and improve steel quality to meet competition from alternative materials.[34] A number of technologies under development or being adopted have the potential to spur large changes in the way steel products are made. These technologies have as their focus the development of processes that are more continuous, less batch-oriented, and more closely controlled. As part of this work on improving the cost and efficiency of steelmaking and rolling operations, development is proceeding on implementing advanced and expert system controls and new sensor technology. In addition, operators are modifying some electric furnaces to utilize advances in that technology, and development continues on new sources of cleaner inputs in response to pollution and steelmaking concerns.

A major project aims to replace the cokemaking/blast furnace ironmaking processes of the integrated producers (with their associated environmental problems and capital scale costs). This project includes developing an ironmaking process that does not depend on coke or that replaces coke to some degree.[35] For example, injecting pulverized coal as a blast furnace fuel can substitute pound-for-pound for up to 40 percent of the coke used. The 1990 Clean Air Act amendments reportedly have added economic pressure on coke oven operators and increased attention on such alternative fuels. Pulverized coal injection was developed in the United States in 1968, although it fell into disuse as its economic benefits were less attractive than they are now. Currently, US Steel (Gary Works) uses pulverized coal injection, and Inland (Indiana Harbor Works), Bethlehem (Burns Harbor), and USS/Kobe Steel Co. (Lorraine, OH) have announced implementation plans. Bethlehem's project at Burns Harbor is being partially funded by the U.S. Department of Energy. The project's cost is reportedly $144 million.[36]

The American Iron and Steel Institute (AISI), including several of its Canadian members, the U.S. Department of Energy (DOE), and several universities are collaborating on the direct ironmaking and direct steelmaking project.[37] The project has incurred costs of approximately $60 million from its inception and the consortium reportedly plans to build and operate a demonstration plant at either Stelco (Canada) or Geneva Steel (Vineland, UT).[38] Currently this project will employ the coal-based ironmaking process developed under a 1989 cooperative agreement with DOE. This project would improve the economic competitiveness of integrated steelmakers and reportedly would eliminate the pollution problems associated with coke production by completely enclosing the smelting reaction. AISI/DOE data indicate that the process will use 27 percent less energy and will reduce capital and operating costs by approximately $160 per annual ton and $10 per annual ton, respectively, compared with current coke oven blast furnace operations.[39]

Electric furnace operators are examining possible improvements in at least two areas of steelmaking technology that reportedly could reduce capital and operating costs significantly. These efforts involve improving the efficiency of processing and the quality of inputs for electric furnace steelmaking. With respect to the first area, efforts include significant improvements in reducing the energy, time, and amount of electrode consumed in an electric furnace through the direct use of fossil fuels as a supplement to electrical energy, through the use of furnaces based on coal injection (the Korf-energy optimizing furnace), or through continuous melting technologies, which use scrap preheating and continuous charging to reduce electric energy requirements. Efforts also include the development of ultrahigh-powered alternating current (AC) or direct current (DC)-based electric furnace steelmaking, first commercialized in the United States in 1985 by Nucor.[40] The second area is focused on improving scrap recycling, separation, and processing

[34] Rathbone, "Agenda 2000", text of speech, p. 4.

[35] For example, several steelmakers have experimented with "jumbo" coke ovens (the larger size reportedly means the doors fit more securely) and negative pressure coke ovens, which reportedly reduce sulfur dioxide emissions. Some other steelmakers have used natural gas injection, which reportedly may substitute for up to 25 percent of the coke currently used in blast furnace iron production.

[36] George E. Kuebler, "Coke Concerns Fuel Interest in PCI," *33 Metal Producing*, Apr. 1993, p. 16.

[37] The direct ironmaking process consists of adding coal, partially reduced ore, and oxygen to a liquid metal and slag bath in which the ore is reduced and the coal combusted, supplying the energy for reduction and melting. Alternative technologies being pursued abroad include HIsmelt (coal and partially reduced iron ore are injected into an iron bath), being jointly developed by CRA Ltd. (Australia) and Midrex, and direct iron ore smelting (DIOS), which uses slag as the smelting medium and is being developed in Japan.

[38] Rathbone, "Agenda 2000", p. 5.

[39] Egil Aukrust, "AISI Direct Steelmaking Program," presentation to the ISS Ironmaking Conference, Dallas, TX, Mar. 29, 1993, p. 2. The author estimated that it would cost $250 to $500 per annual ton to rebuild coke ovens and blast furnaces.

[40] The DC-furnace reportedly provides a melting technique with reduced electrical power, decreased electrode consumption (up to 50 percent), lower capital and maintenance costs (up to 30 percent less refractory and 5 to 10 percent less energy consumption), and decreased noise levels. There are nine DC-furnaces under construction or in operation in North America. Norman L. Samways, "Developments in the North American Iron and Steel Industry—1992," *Iron and Steel Engineer*, Feb. 1993, pp. D-17.

to reduce residual ("tramp") elements,[41] and the continued development and application of iron-containing substitutes for basic oxygen furnace/electric furnace feedstock such as direct reduced iron and the commercial development of iron carbide.[42]

In the continuous casting stage new technologies and techniques are under development. Efforts include near-net-shape casting, now used by several U.S. companies for structurals, thin slabs, and stainless steel sheet. For example, companies using near-net shape casting to produce structurals are Nucor-Yamato Steel Co. and Chapparal. Nucor and the equipment designer, SMS Concast Inc., commercialized thin-slab casting, leading the way for minimills to begin production of flat-rolled carbon steel products such as sheet and strip. Allegheny Ludlum Corp. has installed a direct caster (called, "CoilCast") at its facility in Lockport, NY, for stainless steel sheet. This caster will reportedly reduce the manufacturing cost of thin stainless steel sheet, making the product more competitive with other materials.[43] With respect to carbon steels, which are more difficult to direct cast, development is progressing on a thin-strip caster using a modified single-wheel process; Armco is reportedly working on a prototype thin-strip caster for carbon steels.[44]

Improved process modeling and computer control is being increasingly applied throughout the production stream, the goal of which is to couple and tightly control energy-efficient processes to reduce inventory-in-process and improve product quality. Process improvements include efforts to reduce variability in process operations, improve quality, lower manufacturing costs, increase yields, and permit less-skilled personnel to operate processes.

During the past 5 years steelmakers have defined critical process control systems they believe are needed to improve their competitiveness, resulting in an AISI/DOE program[45] to develop systems to allow companies to measure steel properties (sensors able to measure and report in real time the chemical, temperature, surface quality, and dimensional data, for example) while the product is still being produced. The AISI/DOE 5-year program is budgeted at $23 million but would reportedly result in annual cost savings of approximately $300 million. The six projects consist of research on optical sensors for more accurate chemical and temperature control, the development of electromagnetic liquid steel flow controls, microstructure engineering in hot strip mills, on-line nondestructive measurement of mechanical properties of steel, and phase and temperature measurements of galvannealed steel.[46]

Financial Conditions

Net operating income[47] generated by the steel industry increased from 1991 to 1992, and the industry as a whole recorded a net operating profit before other expenses and taxes of $51.7 million in 1992 (table 20). Data reported in the Commission's survey indicate that financial performance continued to vary among segments of the iron and steel industry: integrated mills were less unprofitable, the minimills and processors became more profitable, and the specialty steel segment became less profitable on a net operating income basis during 1991-92 (tables 21 and 22). An

[41] Carnegie Mellon University has developed a process to remove copper, one of the most deleterious elements, from scrap but it is not yet commercialized. In general, current EAF steelmaking practice is to dilute residuals (copper, nickel, chromium, molybdenum, and tin) by sorting the scrap, through scrap purchasing practices, or by adding higher quality iron-containing units to the melt.

[42] The production of direct reduced iron (DRI) in the form of pellets or hot-briquetted iron (HBI) has grown rapidly. Nucor has announced its intention to start commercial production of iron carbide, a nonpyrophyric form of nearly pure iron fines that contains higher amounts of carbon (consumed as a fuel), in late 1994 at a plant site in Trinidad. The cost savings of iron carbide over DRI are approximately $10 to $30 per ton, and the capital investment required is approximately one-third that needed for a DRI facility of equivalent size. Joseph K. Stone, "USA Update: Optimism Appears After Two Stagnant Years," *Steel Times International*, Mar. 1993, p. 26, and George W. Hess, "Ironmakers Clean House," *Iron Age*, Dec. 1992, p. 27.

[43] Jo Isenberg-O'Loughlin, "Nearer to Net," *33 Metal Producing*, Jan. 1993, p. 22. The process would achieve cost savings of approximately 30 percent by eliminating ingot or slab breakdown, hot-rolling, and initial cold-reduction of stainless steel sheet. Reportedly, the development of thin sheet stainless steel casting is proceeding abroad as well: Davy International, Pohang Iron and Steel Co., and Korea's Research Institute of Industrial Science and Technology announced the construction and testing of a pilot caster in October 1992.

[44] This work evolved from an earlier consortium with Bethlehem and Weirton and is part of an $8 million program funded largely by the U.S. Department of Energy. Research and development work is proceeding simultaneously in Canada through "Project Bessemer Inc.," a consortium of five Canadian steelmakers and the Industrial Materials Institute of the National Research Council of Canada, utilizing a pilot-scale, twin-roll

[44]—Continued
direct-strip caster. Isenberg-O'Loughlin, "Nearer to Net," p. 22.

[45] Five integrated steelmakers are sponsoring the program: Bethlehem Steel, U.S. Steel, Armco Steel, Inland Steel, and National Steel. DOE is acting under the provisions of the Steel and Aluminum Conservation and Technology Competitiveness Act of 1988. Other participants include the Oak Ridge and Sandia national labs; the National Institute of Standards and Technology; Westinghouse Science and Technology Center (Pittsburgh); the Industrial Materials Institute of Canada; the University of British Columbia; the University of Tennessee; the Jet Propulsion Lab (Pasadena, CA); and Data Measurement Corp.

[46] "Progress Report: New Steel Technologies," *33 Metal Producing*, Oct. 1992, p. 29.

[47] Net operating income is defined as net sales minus the cost of goods sold minus general, selling, and administrative expenses.

Table 20
Financial experience of U.S. steel producers and converters,[1] 1991 and 1992

(1,000 dollars)

Item	Carbon and certain alloy steel		Stainless and alloy tool steel	
	1991	1992	1991	1992
Net sales:				
Excluding intracompany and intercompany transfers	35,647,045	36,204,675	3,722,770	3,748,870
Intracompany and intercompany transfers	2,029,493	1,842,505	417,876	371,310
Total net sales[2]	38,979,868	39,440,189	4,178,792	4,159,107
Cost of goods sold (including intracompany and intercompany transfers):				
Raw materials	11,043,148	10,958,817	1,750,994	1,654,479
Direct labor	5,513,861	5,491,389	459,564	492,750
Other	12,741,322	12,679,728	1,340,922	1,376,128
Total cost of goods sold[2]	37,302,623	37,416,954	3,597,875	3,573,993
Operating income or (loss)	1,677,245	2,023,235	580,917	585,114
General, selling, and administrative expenses	2,128,778	2,272,565	282,221	284,038
Net operating income or (loss)	(451,533)	(249,330)	298,696	301,076
Other income or (expense):				
Net interest income or (expense)	(721,387)	(703,627)	(83,207)	(70,916)
All other income or (expense)[3]	(744,400)	(477,531)	(38,515)	(49,240)
Total other income or (expense)	(1,465,787)	(1,181,158)	(121,722)	(120,156)
Net income or (loss) before taxes	(1,990,410)	(1,494,466)	176,974	180,920
Depreciation and amortization	1,634,721	1,753,156	108,944	112,697

[1] Certain respondents included financial information on related products.
[2] Including nonitemized figures.
[3] Certain respondents reported extraordinary and nonrecurring expenses.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

examination of financial performance on a product basis reveals that the greatest losses occurred in carbon steel oil country tubular goods (OCTG) and stainless steel wire rod. The highest returns were in stainless flat-rolled products (plate, sheet and strip) (table 23). Producers of certain products, including flat-rolled carbon steel, allege that imports of dumped and subsidized products adversely affected their financial performance during the 1991-92 period.[48]

The nascent U.S. economic recovery contributed to modest upturns in shipments, capacity utilization, and operating profits from 1991 to 1992. Modest growth in steel demand was seen in the automotive and appliance sectors, which increased production between 10 and 14 percent. Adding to this growth was a late-year effort to rebuild inventories, which had slipped to low levels. Greater demand in the first half of 1993 may also reflect strike hedge buying in anticipation of labor contract negotiations at five integrated steelmakers.

Other factors influencing corporate financial performance are reported in the categories of "other income or expense" and include the added obligations stemming from the recognition of certain expenses, liabilities, and assets. The change of largest magnitude has been the recognition of liabilities for company retirees, other than pension costs, under Statement of Financial Accounting Standards (SFAS) 106.[49] For

[48] For example, information submitted in connection with *Certain Flat-Rolled Carbon Steel Products from Argentina, Austria, Belgium, Brazil, France, Germany, Italy, Japan, the Republic of Korea, Mexico, the Netherlands, New Zealand, Poland, Romania, Spain, Sweden, and the United Kingdom,* investigation Nos. 701-TA-319-332, 334, 336-342, 344, 347-353 and 731-TA-573-579, 581-592, 594-597, 599-609, and 612-619 (Final).

[49] In 1990, SFAS No. 106, entitled *Employers' Accounting for Postretirement Benefits Other Than Pensions*, was issued. The statement requires companies to begin accruing the cost of providing benefits, most

Table 21
Financial experience of U.S. steel producers and converters,[1] 1991

(1,000 dollars)

Item	Integrated	Minimills	Specialty	Processors
Net sales:				
Excluding intracompany and intercompany transfers	21,801,898	8,325,448	3,938,044	5,304,425
Intracompany and intercompany transfers	1,159,555	590,879	342,861	354,074
Total net sales[2]	22,961,453	10,013,113	4,319,051	5,865,043
Cost of goods sold (including intracompany and intercompany transfers):				
Raw materials	4,841,085	2,767,740	1,671,414	3,513,903
Direct labor	4,071,284	916,191	530,952	454,998
Other	8,492,546	3,065,674	1,484,095	1,039,929
Total cost of goods sold[2]	22,938,471	9,014,571	3,732,856	5,214,600
Operating income or (loss)	22,982	998,542	586,195	650,443
General, selling, and administrative expenses	1,086,785	579,284	288,733	456,197
Net operating income or (loss)	(1,063,803)	419,258	297,462	194,246
Other income or (expense):				
Net interest income or (expense)	(409,415)	(194,504)	(82,390)	(118,285)
All other income or (expense)[3]	(638,286)	(61,707)	(28,083)	(54,839)
Total other income or (expense)	(1,047,701)	(256,211)	(110,473)	(173,124)
Net income or (loss) before taxes	(2,111,504)	89,831	186,989	21,248
Depreciation and amortization	1,040,848	382,665	120,024	200,128

[1] Certain respondents included financial information on related products.
[2] Including nonitemized figures.
[3] Certain respondents reported extraordinary and nonrecurring expenses.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

instance, Bethlehem Steel and USX Corporation (the parent company of US Steel) adopted SFAS 106 for their fiscal years ending December 31, 1992. The two producers posted losses related to SFAS 106 of $745 million and $1.3 billion, respectively, net of the income tax credits.[50]

For many companies, the single largest component of the overall projected cost (actuarially determined in a manner similar to one used to determine pension benefits) is the unfunded transition obligation as of the date SFAS 106 is adopted. The company can either immediately recognize the entire amount, or amortize it over a period of up to 20 years. Prior to the adoption of SFAS 106, many companies recognized the cost of providing these benefits as claims were paid. In other words, they had "pay-as-you-go" systems, with little or no funds required to be set aside to cover the costs. For those companies that immediately recognize the entire amount (a one-time catch-up), SFAS 106 affects a company's balance sheet by increasing liabilities and decreasing shareholder's equity. With respect to the income statement, although recognition of the obligation incurred during the transition to accrual accounting is treated as an accounting change and, therefore, has no effect on operating income, for most companies the obligation is presented as an added expense, thus reducing net income before taxes.[51] The restatement of liabilities under SFAS 106 has not resulted in the downgrading of companies' current credit, stock, or bond ratings, which are based on the

[49]—Continued
notably health care and life insurance, to retired employees. Although SFAS 106 must be adopted no later than any fiscal year beginning on or after December 16, 1992, many companies have implemented it in their 1992 financial statements.

[50] Company annual reports.

[51] Net income before taxes is net operating income minus other income or expense.

Table 22
Financial experience of U.S. steel producers and converters,[1] 1992

(1,000 dollars)

Item	Integrated	Minimills	Specialty	Processors
Total net sales[2]	23,382,764	9,891,204	4,318,344	6,006,984
Cost of goods sold (including intracompany and intercompany transfers):				
Raw materials	4,903,514	2,601,366	1,590,534	3,517,882
Direct labor	4,003,340	925,970	559,700	495,129
Other	8,426,214	3,030,671	1,551,154	1,047,817
Total cost of goods sold[3]	23,066,840	8,892,658	3,751,561	5,279,888
Operating income or (loss)	315,924	998,546	566,783	727,096
General, selling, and administrative expenses	1,222,209	570,048	294,637	469,709
Net operating income or (loss)	(906,285)	428,498	272,146	257,388
Other income or (expense):				
Net interest income or (expense)	(411,840)	(186,546)	(72,684)	(103,473)
All other income or (expense)[4]	(127,677)	(321,752)	(50,630)	(26,712)
Total other income or (expense)	(539,517)	(508,298)	(123,314)	(130,185)
Net income or (loss) before taxes	(1,445,802)	(136,860)	148,832	120,284
Depreciation and amortization	1,131,521	407,024	124,792	202,516

[1] Certain respondents included financial information on related products.
[2] Represents market sales.
[3] Including nonitemized figures.
[4] Certain respondents reported extraordinary and nonrecurring expenses.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

totality of a company's financial and market position.[52] Similarly, any restatement apparently has not, by itself, hindered companies from obtaining investment capital.[53]

In addition to recognizing certain post-retirement costs, several steelmakers reported plant closure and special restructuring expenses that are also included in the categories of "extraordinary expenses," (i.e., below operating income). For example, Bethlehem stated that it wrote off $575 million in assets (including closure of its bar, rod, and wire division) in 1992. US Steel took a restructuring charge of $402 million, with shutdowns at Fairless Works (Pennsylvania) and South Works (Chicago, IL), and National Steel reportedly took a $110 million expense for unusual items.[54]

At the end of 1992 three U.S. steelmakers were operating under protection of the bankruptcy laws: LTV Steel Co. Inc. (since July 1986), CF&I Steel Corp. (since November 1990), and Sharon Specialty Steel Inc. (since November 1992). The principal reasons for the filings were the companies' underfunded pension plan obligations and worker/retiree health insurance costs.[55] In the case of CF&I the bankruptcy court approved a reorganization plan on January 27, 1993, whereby another steelmaker, Oregon Steel (Portland, OR), is to purchase the company and fund certain modernization efforts. A U.S. bankruptcy judge recently rejected Sharon Steel's

[52] SFAS 106 was proposed more than a decade ago, and Standard and Poors and Moody's Investor Services began to factor in such accounting changes before SFAS 106 was adopted. On the other hand, the restatement might have the effect of putting a company in jeopardy of violating its bond or loan covenants. Telephone conversation with a representative of Moody's Investors Services on June 11, 1993.

[53] For example, Bethlehem Steel successfully sold stock and placed bonds during 1992 and early 1993 despite a restatement of liabilities and a downgrading of its bonds. Telephone conversation with a representative of Bethlehem Steel on June 16, 1993.

[54] George W. McManus, "Shutdowns Inflate 4th Quarter Losses," *Iron Age*, Mar. 1992, p. 32.

[55] The costs of health care are the fastest growing component of total costs in the steel industry, increasing at an annual rate of nearly 11 percent and doubling their share of total hourly labor costs between 1981 and 1991. Such costs were estimated at $19 per ton in 1991. David J. Cantor, "Steel Industry Health Benefit Costs and Their Effect on Costs of Production of Steel Mill Products," *Report for Congress*, study prepared by the Congressional Research Service, Library of Congress (Washington, DC, GPO, 1993), Feb. 18, 1993.

Table 23
Steel: Total net sales and net operating income or (loss) as a percentage of sales, by selected products, 1991 and 1992

Item	Total net sales[1]		Net operating income or (loss) as a percent of sales[2]	
	1991	1992	1991	1992
	1,000 dollars			
Carbon and certain alloy steel:				
Semifinished	1,010,494	847,422	(6.69)	(5.79)
Plates	2,318,809	2,115,442	2.13	(1.71)
Sheet and strip:				
Hot-rolled	6,072,968	6,270,979	(9.50)	(6.27)
Cold-rolled	5,376,401	6,007,602	(4.03)	(4.64)
Galvanized	5,312,288	5,846,214	(0.31)	1.06
Other	3,616,953	3,549,335	2.17	3.31
Subtotal, sheet and strip	20,378,610	21,674,130	(3.59)	(2.27)
Bars:				
Hot-finished	4,078,080	4,130,485	0.30	1.84
Cold-finished	499,872	533,482	0.83	2.17
Subtotal, bars	4,577,952	4,663,967	0.35	1.87
Wire rod	1,437,933	1,418,931	0.73	1.83
Wire	967,353	1,025,094	0.29	3.06
Wire products	760,485	756,994	2.45	2.69
Structural shapes and units	2,206,909	2,235,890	5.85	5.20
Rails and related products	322,271	364,897	(4.55)	2.81
Pipe and tube:				
Line	1,039,295	803,555	3.58	1.26
Mechanical	908,274	950,250	4.92	6.44
Oil country tubular goods	633,132	437,528	(2.43)	(10.17)
Structural	268,243	271,269	7.38	8.36
Pressure	142,548	120,660	0.54	(0.20)
Other	1,307,246	1,057,028	7.06	6.29
Subtotal, pipe and tube	4,298,738	3,640,290	4.17	3.18
Subtotal, carbon and certain alloy steel	38,279,554	38,743,057	(1.06)	(0.44)
Stainless and alloy tool steel:				
Semifinished	223,804	209,869	3.19	(1.05)
Plates	470,690	443,995	11.63	10.92
Sheet and strip	2,310,598	2,382,693	7.95	10.69
Bars and shapes	654,021	634,946	3.75	(0.64)
Wire rod	102,636	77,040	(1.74)	(18.04)
Wire	150,096	151,880	7.81	5.05
Pipe and tube	249,719	235,528	6.10	2.29
Subtotal, stainless and alloy tool steel	4,161,564	4,135,951	7.09	7.16
Total	42,441,118	42,879,008	(0.26)	0.29

[1] Represents market sales.
[2] Operating income is defined as total net sales less the cost of goods sold and general, selling, and administrative expenses.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

business plan, which would have permitted executives to reopen the Farrell, PA, steel mill, reportedly terming it "too optimistic."[56] On the other hand, a bankruptcy judge recently approved LTV's reorganization plan. The new LTV Corporation will now consist of LTV Steel and LTV Energy Products Company, and the reorganization plan provides for the resolution of more than $3 billion-worth of unfunded pension liabilities and $6 billion-worth of claims. Under the plan, LTV agreed to make a $1.16 billion contribution to three underfunded defined-benefit steel pension plans.[57]

Outlook

The competitive outlook for steel producers varies by type of producer. The integrated mills continue to

[56] "Judge Keeps Sharon Idle," *American Metal Market*, Apr. 27, 1993, p. 1.

[57] The LTV Corporation, *News Release*, May 27, 1993, and telephone conversation with an official of the Pension Benefit Guaranty Corp. on June 16, 1993.

be challenged by competition from minimills and reconstituted mills (facilities that were sold, generally as a result of bankruptcy, and restarted as lower cost independent companies), by the legacy costs[58] stemming from shrinking employment levels, and by the growing cost of meeting environmental standards. An added uncertainty with potentially significant competitive implications is the negotiation of new labor contracts later this year. Given the steady movement of minimill production into product lines such as flat-rolled steel and heavy structurals that were once the domain of integrated producers, these producers must endeavor to cut costs and further improve efficiency in order to maintain their market share in these product lines. Although the small scale, low cost technology applied by minimills is available to the integrated producers, they are hampered in their efforts to apply it given the long lifespan of their existing plant and equipment, their need to ration scarce capital investment funds, and the technology's unproven performance for certain high quality products.

One opportunity for reducing costs and achieving productivity gains lies in the upcoming labor negotiations at Armco Steel, Bethlehem Steel, Inland Steel, National Steel, and US Steel. Nonwage issues are the focus of labor talks for these integrated companies, among them productivity, employment security, and employee-related legacy costs, which have risen rapidly in recent years. By reducing such costs, these companies hope to enhance their ability to compete with minimills, which have benefited from increased productivity as a result of more flexible labor work rules that enable workers to perform a variety of tasks.

As minimills move into the relatively large hot-rolled sheet market, major integrated producers will be forced to carve out higher value product niches by implementing new cost-saving technology for the production of value-added products such as galvanized sheet. They will also have to continue to improve product quality and customer service. Other important areas of investment for integrated producers will be in casting, rolling, and forming facilities, e.g., thin-slab and direct strip casters, which eliminate certain rolling operations. For example, Allegheny Ludlum's direct strip caster is expected to achieve a cost savings of approximately 30 percent by eliminating ingot or slab breakdown, hot-rolling, and initial cold-reduction of stainless steel sheet. There will likely be growth in electric furnace capacity as minimills expand further into the flat-rolled market. To acquire funds for such expenditures, domestic steel producers of all types are likely to continue to form production and distribution alliances with both domestic and foreign companies to expand their access to needed capital and technology.

[58] Legacy costs typically include pension and group insurance liabilities, payments for leased equipment, and environmental liabilities, such as the cost of addressing environmental violations.

Minimill producers, which make steel from scrap in electric furnaces, could see higher scrap prices, as growing continuous casting capacity reduces scrap availability. One consequence of reduced availability will likely be accelerated development of steel scrap substitutes such as DRI, iron carbide, and Corex. In addition to reduced scrap supply, there is likely to be greater demand for increasingly limited supplies of high-quality scrap as producers further intensify their efforts to make increasingly higher quality steel. Prospects for the continued development and application of iron-containing substitutes for high-quality electric furnace scrap are encouraging.[59]

There is some indication that the volume of U.S. trade in steel will decline over the next few years. For example, U.S. imports may be constrained by duties resulting from unfair trade investigations[60] or other impediments to trade, and U.S. producers are enhancing their ability to compete with imports in certain demanding applications. At the same time, promising upward trends in steel exports could be restrained if economic activity in foreign markets continues to be depressed. Respondents to the Commission's questionnaire considered the implementation of NAFTA as an important boost to exports. Canada and Mexico are among the largest trading partners with the United States in steel products. Despite general support for the market opening goals of the MSA and the Uruguay Round negotiations, respondents considered their successful negotiation as having little or no effect on their ability to expand steel exports. With respect to both the MSA and the Uruguay Round negotiations, the U.S. steel industry has stated that any final agreements must not weaken current U.S. trade laws.

Prospects for increased steel use in new applications have expanded in recent years; improvements in steel quality and in the technology for steel production have helped steel to reclaim customers and applications from other materials. There is growth potential for steel use in the residential construction market, where steel frames for houses are being promoted as lighter weight alternatives to wooden frames. The use of steel roofing systems is also growing. And, increasingly, automobile parts that were designed in plastic have returned to steel, including certain body panels, roofs and hoods, fuel tanks, and fenders. Improved steel formability and lighter weight steels have contributed to this shift.

[59] See section entitled "Research and Development" for a more detailed discussion of scrap substitutes.

[60] For example, domestic producers of lead and bismuth steels obtained antidumping duties of up to 148 percent and countervailing duties of up to 23 percent on imports from Brazil, France, Germany, and the United Kingdom in early 1993. U.S. International Trade Commission, *Certain Hot-Rolled Lead and Bismuth Carbon Steel Products from Brazil, France, Germany, and the United Kingdom,* (investigation Nos. 701-TA-314 thru 317(F)), USITC publication 2611, Mar. 1993.

APPENDIX A
STRUCTURE OF THE REPORT AND NOTES ON PRODUCT COVERAGE AND METHODOLOGY

APPENDIX A
STRUCTURE OF THE REPORT AND NOTES ON PRODUCT COVERAGE AND METHODOLOGY

Structure of the Report

- Submission of this report to the House Ways and Means Committee, originally scheduled for April 30, 1993, was postponed until June 18, 1993, to ensure that the study contained complete survey results. Significant delays in receipt of annual survey data occurred from major steel companies that had obligations to respond to multiple questionnaires for Commission investigations under title VII of the Tariff Act of 1930.
- The section on recent steel industry developments highlights major events in both the U.S. and foreign steel industries.
- The figure illustrations of U.S. steel industry highlights present trends in U.S. average annual and monthly steel shipments, imports, exports, and import penetration.
- The figure illustrations and tables presenting international production and consumption highlight the geographic distribution of world production and apparent consumption.
- The tables on international trade highlights present average annual import and export data for various countries/country groups over a 20-year time period.
- The special focus section analyzes current conditions in the U.S. industry, including information on recent developments in steel consumption, trade, capacity, production, capital expenditures, environmental expenditures, spending on research and development, employment, and financial performance. Data on U.S. industry conditions, compiled primarily from questionnaires, are provided in tables 8 through 23. U.S. shipment and trade data, compiled from secondary sources, are provided in appendix E, tables E-1 through E-37, described below.
- Tables E-1 through E-5 provide data on shipments, imports, exports, apparent consumption, and imports as a percent of apparent consumption by major product for all grades of steel, plus carbon and specialty products separately.
- Tables E-6 through E-26 provide data on the quantity of major carbon and specialty steel imports and exports on a product-by-product basis. The top 15 country suppliers, the top 10 country markets, and major regional groupings are specified.
- Table E-27 provides data on the total value of carbon and specialty steel imports and exports on a product basis.
- Tables E-28 and E-29 provide data on the unit values of selected imports and exports of carbon and specialty steel products.
- Tables E-30 and E-31 provide data on imports and exports of selected carbon and specialty steel products. The tables also provide information which permits an examination of the extent to which shifts in product mix within major product categories is occurring.
- Tables E-32 through E-37 provide data on imports of steel mill products and certain fabricated products, by U.S. customs area.

Notes On Product Coverage And Methodology

Data on foreign trade and domestic shipments are compiled from official statistics of the U.S. Department of Commerce and from statistics of the American Iron and Steel Institute (AISI), respectively.

The products for which foreign trade data are collected generally correspond to those covered by the VRAs. Since the VRAs included certain fabricated products (defined as wire strand, wire ropes, cables, cordage, and fabricated structural units), the data may exceed that compiled by other organizations such as the AISI. The additional tonnage, however, is relatively small. In 1992, AISI reported imports of 17.2 million tons, which compares to the 17.8 million tons indicated in this report. The product categories most affected are structural shapes and units (which includes fabricated structurals in this report) and wire and wire products (which includes wire rope and wire strand).

The regional groupings specified in tables E-6 through E-26 are defined as follows:

East Asia includes Brunei, Burma, Cambodia, China, Hong Kong, Indonesia, Japan, South Korea, Laos, Macao, Malaysia, Philippines, Ryukyu Islands, Singapore, Taiwan, Thailand, and South Vietnam;

EC12 includes Belgium, Luxembourg, Denmark, France, Germany (beginning in 1992, includes what was formerly East Germany), Greece, Ireland, Italy, Netherlands, Portugal, Spain, and the United Kingdom;

Eastern Europe includes Bulgaria, the Czech and Slovak Federal Republic (formerly Czechoslovakia), East Germany (included only through 1991), Hungary, Poland, and Romania;

The Latin American Integration Association (LAIA) is the former LAFTA and includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela.

Trade data include imports under sections 9802.0060 and 9802.0080 of the Harmonized Tariff Schedule. These provisions apply to U.S. merchandise that is exported, processed, and reimported into the United States.

Data on tool steel imports exclude bearing steel products. This is consistent with industry practice and reports, which treat bearing steel as an alloy steel and categorize it according to its end form—either plate, sheet and strip, or rod. Unlike data on imports and shipments, available data on tool steel exports include some bearing steel products. As a result, apparent consumption calculations (see table E-4) are slightly understated in the case of tool steel, and slightly overstated in the case of plate, sheet and strip, and rod. The ITC staff estimates, however, that the degree of understatement/overstatement is minor, as exports of bearing steel products are believed to be relatively low.

Following consultation with the U.S. Department of Commerce, the ITC staff made the following revision to the June, July, and September 1990 export data: 686 tons of June 1990 tool steel exports to Iraq, valued at $1,411,000, have been reclassified as electrical sheet and strip; 1,681 tons of July 1990 tool steel exports to Iraq, valued at $2,360,000, have been similarly reclassified; and 25,122 tons of September 1990 stainless plate exports to France, valued at $9,162,041, have been reclassified as carbon slab exports.

Other data revisions announced by AISI include: 7,609 tons ($1,927,000) of February 1990 tool steel imports from Mexico, which were reclassified as carbon semifinished imports; and 1,258 tons ($1,537,000) of February 1991 tool steel exports to Mexico, which were reclassified as alloy bar exports.

The rails and related products category includes both new and used rails (see appendix F for complete definition). Of the 299,418 tons of rails and related products imported into the United States during 1992, 29 percent (or 85,492 tons) were used rails.

In tables E-28 and E-29, unit values are calculated using unrounded data. Import values are customs value, i.e., the data do not include insurance and freight charges from the country of origin to the United States.

To reflect industry terminology and operations more accurately, coiled plate products are included in the sheet and strip product category rather than the plate product category, effective with the June 1993 report. To adjust import data accordingly, HS subheadings 7208.11.0000, 7208.12.0000, 7208.21.1000, 7208.21.5000, 7208.22.1000, 7208.22.5000, 7211.12.0000, 7211.22.0090, 7225.30.3000, 7225.30.3005, 7225.30.3050, and 7226.91.5000 were transferred from the carbon and certain alloy plate product categories to the hot-rolled carbon and certain alloy sheet categories, and HS subheadings 7219.11.0000, 7219.12.0000, 7219.12.0005, 7219.12.0015, 7219.12.0030, 7219.12.0045, 7219.12.0060, 7219.12.0075, 7219.12.0080, and 7220.11.0000 were transferred from the stainless steel plate category to the stainless steel sheet and strip category. To adjust export data, Schedule B subheadings 7208.11.0000, 7208.12.0000, 7208.21.0000, 7208.22.0000, 7211.12.0000, 7211.22.0000, and 7225.30.0000 were reassigned from the carbon and certain alloy plate category to hot-rolled carbon and certain alloy sheet, and Schedule B subheadings 7219.11.0000, 7219.12.0000, and 7220.11.0000 were transferred from stainless steel plate to stainless steel sheet and strip.

APPENDIX B
REQUEST LETTER FROM THE HONORABLE DAN ROSTENKOWSKI, CHAIRMAN OF THE COMMITTEE ON WAYS AND MEANS, U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515-6348

June 11, 1992

The Honorable Donald Newquist
Chairman
U.S. International Trade Commission
500 E Street, S.W.
Washington, D.C. 20436

Dear Mr. Chairman:

The recent expiration of the Voluntary Restraint Agreements (VRAs), the apparent collapse of the negotiations for a Multilateral Steel Agreement (MSA) and the filing of trade cases by the U.S. industry have combined to create an uncertain future for U.S. steel trade that is a source of continued concern to the Committee on Ways and Means. In light of this, the Committee hereby requests the U.S. International Trade Commission to provide it with semi-annual monitoring reports, under Section 332 of the Tariff Act of 1930, on the the status of, and prospects for, the U.S. steel industry for the period from January 1992 through December 1994.

This series of reports should combine concise analysis of global industry trends and competitiveness issues with key product trade information. They should generally follow the format of, and contain trade data and information similar to that provided in, the reports on all carbon and alloy (including stainless steel) mill products which the Commission has been providing under investigation No. 332-226. In addition, each year one of the reports should contain an annual review focusing primarily on developments and conditions in the U.S. industry and should highlight significant developments in the industry's competitiveness since 1990 (e.g. operating performance, capital expenditures and R&D, technology, and environmental expenditures). Finally, the Committee recognizes that limited primary data gathering, particularly the use of questionnaires, is necessary to examine these developments.

As you know, the Commission's current series of quarterly reports on the steel industry will be completed in June 1992, and will contain data through March 1992, when the recent VRAs expired. The first report under the new series should be published in September 1992 (covering data from January through

June 1992). Subsequent reports should then appear in April and September, with the April report containing an annual review of the domestic industry. I request that the Commission provide the Committee with these semiannual reports through April 1995, at which time the Committee will reevaluate the Commission's monitoring efforts in terms of their relevance to the global steel trade environment.

Thank you for your cooperation in this matter.

Sincerely yours,

Dan Rostenkowski
Chairman

APPENDIX C
NOTICE OF THE COMMISSION'S INVESTIGATION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC

(332-327)

Steel: Semiannual Monitoring Report

AGENCY: United States International Trade Commission

ACTION: Institution of investigation.

EFFECTIVE DATE: July 9, 1992

FOR FURTHER INFORMATION CONTACT: Ms. Nancy Fulcher, Office of Industries/Minerals and Metals Division (202-205-3434), or Mr. Mark Paulson, Office of Industries/Minerals and Metals Division (202-205-3429), U.S. International Trade Commission, Washington, D.C. 20436. Hearing-impaired persons are advised that information on this investigation can be obtained by contacting the Commission's TDD terminal on 202-205-2648.

BACKGROUND AND SCOPE OF INVESTIGATION: Following receipt on June 11, 1992, of a request from the Committee on Ways and Means of the U.S. House of Representatives, the Commission on July 9, 1992, instituted investigation No. 332-327, under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)) concerning the status of, and prospects for, the U.S. steel industry for the period from January 1991 through December 1994.

As requested by the Committee, the Commission will provide semiannual reports in which it will seek to combine concise analysis of global industry trends and competitiveness issues with key product trade information. The reports will generally follow the format of, and contain trade data and information similar to that provided in, the reports on all carbon and alloy (including stainless steel) mill products which the Commission provided under investigation No. 332-226: Quarterly Report on the Status of the Steel Industry. In addition, each year one of the reports will contain an annual review focusing primarily on developments and conditions in the U.S. industry and will highlight significant developments in the industry's competitiveness since 1990 (e.g., operating performance, capital expenditures and R&D, technology, and environmental expenditures).

As requested by the Committee, the Commission intends to submit its first report under the new series no later than September 1992 (covering data from January through June 1992). Subsequent reports will be submitted in April and September, with the April report containing the annual review of the domestic industry. Reports will be provided through April 1995.

WRITTEN SUBMISSIONS: Interested persons are invited to submit written statements concerning the matters to be addressed in the report containing the Commission's annual review of the domestic industry. Commercial or financial information that a party desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. (Generally, submission of separate confidential and public versions of the submission would be appropriate.) All

submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). All written submissions, except for confidential business information, will be made available in the Office of the Secretary of the Commission for inspection by interested persons. To be assured of consideration by the Commission, written statements should be submitted to the Commission at the earliest practical date and should be received no later than February 26, 1993; February 25, 1994; and February 24, 1995. All submissions should be addressed to the Secretary to the Commission at the Commission's Office in Washington, DC.

By order of the Commission.

Paul R. Bardos
Acting Secretary

Issued: July 10, 1992

APPENDIX D
STATUS OF RECENT UNFAIR TRADE CASES ON STEEL PRODUCTS AND RAW MATERIALS

Table D-1
Status of recent unfair trade cases on steel products and raw materials

Product description	Country	AD (731-TA)	CVD (701-TA)	USITC preliminary determination		USITC final determination	
				Date[1]	Outcome	Date[1]	Outcome
Certain carbon steel buttweld pipe fittings	China	520		7-8-91	A	6-24-92	A
	Thailand	521		7-8-91	A	6-24-92	A
Certain circular, welded nonalloy steel pipes and tubes	Brazil	532		11-8-91	A	10-26-92	A
	Korea	533		11-8-91	A	10-26-92	A
	Mexico	534		11-8-91	A	10-26-92	A
	Romania	535		11-8-91	A	10-26-92	N
	Taiwan	536		11-8-91	A	10-26-92	A
	Venezuela	537		11-8-91	A	10-26-92	A
Certain Welded stainless steel pipes	Korea	540		1-2-92	A	12-18-92	A
	Taiwan	541		1-2-92	A	12-18-92	A
Steel wire rope	Korea	546		5-26-92	A	3-15-93	A
	Mexico	547		5-26-92	A	3-15-93	A
Certain hot-rolled lead and bismuth carbon steel products	Brazil	552	314	5-28-92	A	3-10-93	A
	France	553	315	5-28-92	A	3-10-93	A
	Germany	554	316	5-28-92	A	3-10-93	A
	United Kingdom	555	317	5-28-92	A	3-10-93	A
New steel rails	Japan	557		6-15-92	N		
	Luxembourg	558		6-15-92	N		
	United Kingdom	559		6-15-92	A	3-26-93	N
Certain stainless steel buttweld pipe fittings	Korea	563		7-6-92	A	2-16-93	A
	Taiwan	564		7-6-92	A	6-3-93	A
Ferrosilicon	Argentina	565		7-6-92	A	(2)	
	Kazakhstan	566		7-6-92	A	3-23-93	A
	China	567		7-6-92	A	3-4-93	A
	Russia	568		7-6-92	A	6-16-93	A
	Ukraine	569		7-6-92	A	3-23-93	A
	Venezuela	570		7-6-92	A	6-16-93	A
	Brazil	641		2-23-93	A		
	Egypt	642		2-23-93	A		
Special quality carbon and certain alloy hot-rolled steel bars and rods and semi-finished products	Brazil	572		7-24-92	A	7-9-93	

See footnotes at end of table.

Table D-1—Continued
Status of recent unfair trade cases on steel products and raw materials

Product description	Country	AD (731-TA)	CVD (701-TA)	USITC preliminary determination		USITC final determination	
				Date[1]	Outcome	Date[1]	Outcome
Certain hot-rolled carbon steel flat products	Belgium	588	329	8-14-92	A	8-4-93	
	Brazil	589	330	8-14-92	A	8-4-93	
	Canada	590			A	8-4-93	
	France	591	331	8-14-92	A	8-4-93	
	Germany	592	332	8-14-92	A	8-4-93	
	Italy	593	333	8-14-92	N		
	Japan	594		8-14-92	A	8-4-93	
	Korea	595	334	8-14-92	A	8-4-93	
	Netherlands	596		8-14-92	A	8-4-93	
	New Zealand		335	8-14-92	N		
Cold-rolled carbon steel flat products ...	Argentina	597		8-14-92	A	8-4-93	
	Australia	598		8-14-92	N		
	Austria	599	336	8-14-92	A	8-4-93	
	Belgium	600	337	8-14-92	A	8-4-93	
	Brazil	601	338	8-14-92	A	8-4-93	
	Canada	602		8-14-92	A	8-4-93	
	France	603	339	8-14-92	A	8-4-93	
	Germany	604	340	8-14-92	A	8-4-93	
	Italy	605	341	8-14-92	A	8-4-93	
	Japan	606		8-14-92	A	8-4-93	
	Korea	607	342	8-14-92	A	8-4-93	
	Netherlands	608		8-14-92	A	8-4-93	
	New Zealand		343	8-14-92	N		
	Spain	609	344	8-14-92	A	8-4-93	
	Taiwan	610	345	8-14-92	N		
	United Kingdom	611	346	8-14-92	N		
Certain corrosion-resistant carbon steel flat products ...	Australia	612		8-14-92	A	8-4-93	
	Brazil	613	347	8-14-92	A	8-4-93	
	Canada	614		8-14-92	A	8-4-93	
	France	615	348	8-14-92	A	8-4-93	
	Germany	616	349	8-14-92	A	8-4-93	
	Japan	617		8-14-92	A	8-4-93	
	Korea	618	350	8-14-92	A	8-4-93	
	Mexico	619	351	8-14-92	A	8-4-93	
	New Zealand		352	8-14-92	A	8-4-93	
	Sweden		353	8-14-92	A	8-4-93	
	Taiwan	620	354	8-14-92	N		

See footnotes at end of table.

Table D-1—Continued
Status of recent unfair trade cases on steel products and raw materials

Product description	Country	AD (731-TA)	CVD (701-TA)	USITC preliminary determination		USITC final determination	
				Date[1]	Outcome	Date[1]	Outcome
Cut-to-length carbon steel plate	Belgium	573	319	8-14-92	A	8-4-93	
	Brazil	574	320	8-14-92	A	8-4-93	
	Canada	575		8-14-92	A	8-4-93	
	Finland	576		8-14-92	A	8-4-93	
	France	577	321	8-14-92	A	8-4-93	
	Germany	578	322	8-14-92	A	8-4-93	
	Italy	579	323	8-14-92	A	8-4-93	
	Japan	580		8-14-92	N		
	Korea	581	324	8-14-92	A	8-4-93	
	Mexico	582	325	8-14-92	A	8-4-93	
	Poland	583		8-14-92	A	8-4-93	
	Romania	584		8-14-92	A	8-4-93	
	Spain	585	326	8-14-92	A	8-4-93	
	Sweden	586	327	8-14-92	A	8-4-93	
	United Kingdom	587	328	8-14-92	A	8-4-93	
Compact ductile iron waterworks fittings	China	621		8-24-92	A	8-19-93	
Stainless steel wire rod	Brazil	636		2-16-93	A		
	France	637		2-16-93	A		
	India	638		2-16-93	A		
Stainless steel flanges	India	639		2-16-93	A		
	Taiwan	640		2-16-93	A		
Welded stainless steel pipe	Malaysia	644		4-2-93	A		
Carbon steel wire rod	Brazil	646		6-7-93	A		
	Canada	647		6-7-93	A		
	Japan	648		6-7-93	A		
	Trinidad and Tobago	649		6-7-93	N		

[1] Date that the Commission officially reports its determination to the U.S. Department of Commerce. Votes by the Commission take place approximately one week prior to the determination date.
[2] The Department of Commerce reached negative preliminary and final determinations with respect to this case resulting in its termination.

APPENDIX E
STATISTICAL TABLES ON U.S. SHIPMENTS OF AND U.S. TRADE IN STEEL MILL PRODUCTS AND CERTAIN FABRICATED STEEL PRODUCTS, 1989-92

Table E-1
Steel mill products:[1] U.S. producers' shipments, by products and grades of steel, 1989-92

(Short tons)

Item	1989	1990	1991	1992
All grades of steel:				
Semifinished	1,850,245	1,916,575	2,548,961	2,292,847
Plate	4,995,308	5,131,846	4,271,412	4,361,596
Sheet and strip	47,674,782	46,628,513	43,300,206	46,456,874
Bars & certain shapes[2]	14,510,007	14,726,831	12,840,512	13,435,487
Wire rod	4,229,889	4,325,740	4,365,595	4,486,926
Wire	1,005,407	917,950	865,092	880,710
Wire products	(3)	(3)	(3)	(3)
Structural shapes & units	5,438,404	6,092,821	5,675,786	5,716,306
Rails & related products	544,771	518,593	486,185	525,582
Pipe and tube	4,010,591	4,651,570	4,488,014	4,197,881
Total	84,259,404	84,910,439	78,841,763	82,354,209
Carbon & certain alloy[4] steel:				
Semifinished	1,753,249	1,873,588	2,469,217	2,226,029
Plate	4,890,734	5,016,698	4,174,312	4,266,415
Sheet and strip	46,652,371	45,577,983	42,254,291	45,325,716
Bars & certain shapes	14,304,189	14,531,409	12,654,917	13,236,284
Wire rod	4,193,118	4,291,153	4,331,673	4,457,404
Wire	980,707	894,750	841,602	856,252
Wire products	(3)	(3)	(3)	(3)
Structural shapes & units	5,438,404	6,092,821	5,675,786	5,716,306
Rails & related products	544,771	518,593	486,185	525,582
Pipe and tube	3,962,470	4,610,197	4,453,781	4,166,362
Total	82,720,013	83,407,192	77,341,764	80,776,350
Stainless & alloy tool steel:				
Stainless steel:				
Semifinished	96,996	42,987	79,744	66,818
Plate	104,574	115,148	97,100	95,181
Sheet and strip	1,022,411	1,050,530	1,045,915	1,131,158
Bars & certain shapes	138,618	137,717	134,405	135,293
Wire rod	36,771	34,587	33,922	29,522
Wire	24,700	23,200	23,490	24,458
Pipe and tube	48,121	41,373	34,233	31,519
Tool steel (all forms)	67,200	57,705	51,190	63,910
Total stainless & tool	1,539,391	1,503,247	1,499,999	1,577,859

[1] Shipment data compiled by AISI exclude certain fabricated products (wire strand, wire ropes, cables, cordage, and fabricated structural units).

[2] Includes tool steel.

[3] Not applicable. Shipment and apparent consumption data for wire and wire products have been combined and reported in the category designated "wire."

[4] "Certain alloy" refers to alloy steel other than stainless or tool steel.

Source: Compiled from data of the American Iron & Steel Institute (AISI).

Table E-2
Steel mill products and certain fabricated steel products: U.S. imports, by products and grades of steel, 1989-92

(Short tons)

Item	1989	1990	1991	1992
All grades of steel:				
Semifinished	2,197,811	2,362,820	2,045,572	2,344,321
Plate	917,625	933,290	792,605	893,403
Sheet and strip	7,088,507	7,697,057	7,107,749	8,793,326
Bars & certain shapes[1]	1,356,035	1,119,085	1,041,496	1,152,617
Wire rod	1,150,116	979,241	846,923	1,146,420
Wire	494,303	432,336	391,804	430,981
Wire products	703,602	660,325	511,839	586,916
Structural shapes & units	1,640,361	1,020,593	604,361	589,613
Rails & related products	322,985	349,555	303,596	299,418
Pipe and tube	2,472,802	2,589,409	2,735,372	1,543,490
Total	18,344,147	18,143,711	16,381,316	17,780,504
Carbon & certain alloy[2] steel:				
Semifinished	2,135,690	2,301,998	1,996,610	2,307,144
Plate	906,965	922,826	779,002	878,172
Sheet and strip	6,936,682	7,524,025	6,930,919	8,567,140
Bars & certain shapes	1,264,305	1,035,255	943,845	1,057,195
Wire rod	1,128,417	956,113	821,026	1,106,805
Wire	472,984	414,008	374,750	411,892
Wire products	703,602	660,325	511,839	586,916
Structural shapes & units	1,640,361	1,020,593	604,361	589,613
Rails & related products	322,985	349,555	303,596	299,418
Pipe and tube	2,435,544	2,542,189	2,687,154	1,500,877
Total	17,947,534	17,726,887	15,953,102	17,305,171
Stainless & alloy tool steel:				
Stainless steel:				
Semifinished	62,121	60,822	48,962	37,177
Plate	10,661	10,464	13,602	15,231
Sheet and strip	151,825	173,033	176,830	226,186
Bars & certain shapes	43,417	44,526	52,493	57,499
Wire rod	21,698	23,128	25,897	39,616
Wire	21,319	18,328	17,054	19,089
Pipe and tube	37,258	47,220	48,218	42,612
Tool steel (all forms)	48,313	39,304	45,158	37,923
Total stainless & tool	396,613	416,824	428,214	475,333

[1] Includes tool steel.
[2] "Certain alloy" refers to alloy steel other than stainless or tool steel.

Note.—Imports of steel mill products only (excluding fabricated steel products): 17,413,240 short tons, 1989; 17,336,410 short tons, 1990; 15,748,077 short tons, 1991; 17,062,421 short tons, 1992.

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

Table E-3
Steel mill products and certain fabricated steel products: U.S. exports of domestic merchandise, by products and grades of steel, 1989-92

(Short tons)

Item	1989	1990	1991	1992
All grades of steel:				
Semifinished	390,812	497,199	699,080	422,911
Plate	127,978	167,416	245,035	172,083
Sheet and strip	3,110,813	2,161,482	3,355,880	1,996,522
Bars & certain shapes[1]	258,640	451,278	585,849	536,713
Wire rod	36,093	106,632	166,455	70,846
Wire	31,344	70,052	89,415	90,138
Wire products	32,160	41,548	51,552	56,573
Structural shapes & units	260,750	495,007	657,019	446,412
Rails & related products	86,464	379,039	108,056	74,208
Pipe and tube	442,992	470,779	753,109	679,283
Total	4,778,047	4,840,433	6,711,450	4,545,690
Carbon & certain alloy[2] steel:				
Semifinished	376,984	515,848	679,017	417,424
Plate	124,541	133,760	235,842	165,485
Sheet and strip	3,057,814	2,099,903	3,257,888	1,918,453
Bars & certain shapes	223,749	428,311	560,268	510,804
Wire rod	30,588	101,219	162,231	68,590
Wire	28,730	66,453	86,775	87,957
Wire products	32,160	41,548	51,552	56,573
Structural shapes & units	260,750	495,007	657,019	446,412
Rails & related products	86,464	379,039	108,056	74,208
Pipe and tube	434,925	457,336	738,176	664,582
Total	4,656,705	4,718,426	6,536,825	4,410,489
Stainless & alloy tool steel:				
Stainless steel:				
Semifinished	13,829	6,472	20,063	5,487
Plate	3,437	8,534	9,193	6,598
Sheet and strip	52,999	63,947	97,991	78,069
Bars & certain shapes	16,399	16,005	16,989	19,935
Wire rod	5,505	5,413	4,224	2,256
Wire	2,614	3,599	2,640	2,181
Pipe and tube	8,067	13,443	14,934	14,701
Tool steel (all forms)	18,492	4,594	8,592	5,974
Total stainless & tool	121,342	122,007	174,626	135,201

[1] Includes tool steel.
[2] "Certain alloy" refers to alloy steel other than stainless or tool steel.

Note.—Exports of steel mill products only (excluding fabricated steel products): 4,631,806 short tons, 1989; 4,602,490 short tons, 1990; 6,392,652 short tons, 1991; 4,304,215 short tons, 1992.

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

Table E-4
Steel mill products and certain fabricated steel products: Apparent U.S. consumption, by products and grades of steel, 1989-92

(Short tons)

Item	1989	1990	1991	1992
All grades of steel:				
Semifinished	3,657,244	3,782,196	3,895,453	4,214,257
Plate	5,784,955	5,897,720	4,818,982	5,082,916
Sheet and strip	51,652,476	52,164,088	47,052,075	53,253,678
Bars & certain shapes[1]	15,607,402	15,394,638	13,296,159	14,051,391
Wire rod	5,343,912	5,198,349	5,046,063	5,562,500
Wire	2,139,808	1,899,011	1,627,768	1,751,896
Wire products	(2)	(2)	(2)	(2)
Structural shapes & units	6,818,015	6,618,407	5,623,128	5,859,507
Rails & related products	781,292	489,109	681,725	750,792
Pipe and tube	6,040,401	6,770,200	6,470,277	5,062,088
Total	97,825,505	98,213,718	88,511,630	95,589,025
Carbon & certain alloy[3] steel:				
Semifinished	3,511,955	3,659,738	3,786,810	4,115,749
Plate	5,673,158	5,805,764	4,717,472	4,979,102
Sheet and strip	50,531,239	51,002,105	45,927,322	51,974,403
Bars & certain shapes	15,344,745	15,138,353	13,038,494	13,782,675
Wire rod	5,290,947	5,146,047	4,990,468	5,495,619
Wire	2,096,403	1,861,082	1,589,864	1,710,530
Wire products	(2)	(2)	(2)	(2)
Structural shapes & units	6,818,015	6,618,407	5,623,128	5,859,507
Rails & related products	781,292	489,109	681,725	750,792
Pipe and tube	5,963,089	6,695,050	6,402,759	5,002,657
Total	96,010,843	96,415,655	86,758,042	93,671,034
Stainless & alloy tool steel:				
Stainless steel:				
Semifinished	145,288	97,337	108,643	98,508
Plate	111,798	117,078	101,509	103,814
Sheet and strip	1,121,237	1,159,616	1,124,754	1,279,275
Bars & certain shapes	165,636	166,238	169,909	172,857
Wire rod	52,964	52,302	55,595	66,882
Wire	43,405	37,929	37,904	41,366
Pipe and tube	77,312	75,150	67,517	59,430
Tool steel (all forms)	97,021	92,415	87,756	95,859
Total stainless & tool	1,814,661	1,798,065	1,753,587	1,917,991

[1] Includes tool steel.

[2] Not applicable. Shipment and apparent consumption data for wire and wire products have been combined and reported in the category designated "wire."

[3] "Certain alloy" refers to alloy steel other than stainless or tool steel.

Note.—Apparent consumption of steel mill products only (excluding fabricated steel products): 97,040,838 short tons, 1989; 97,644,359 short tons, 1990; 88,201,112 short tons, 1991; 95,112,415 short tons, 1992.

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

Table E-5
Steel mill products and certain fabricated steel products: U.S. imports as a percent of apparent consumption, by products and grades of steel, 1989-92

(Percent)

Item	1989	1990	1991	1992
All grades of steel:				
Semifinished	60.1	62.5	52.5	55.6
Plate	15.9	15.8	16.4	17.6
Sheet and strip	13.7	14.8	15.1	16.5
Bars & certain shapes[1]	8.7	7.3	7.8	8.2
Wire rod	21.5	18.8	16.8	20.6
Wire	56.0	57.5	55.5	58.1
Wire products	(2)	(2)	(2)	(2)
Structural shapes & units	24.1	15.4	10.7	10.1
Rails & related products	41.3	71.5	44.5	39.9
Pipe and tube	40.9	38.2	42.3	30.5
Total	18.8	18.5	18.5	18.6
Carbon & certain alloy[3] steel:				
Semifinished	60.8	62.9	52.7	56.1
Plate	16.0	15.9	16.5	17.6
Sheet and strip	13.7	14.8	15.1	16.5
Bars & certain shapes	8.2	6.8	7.2	7.7
Wire rod	21.3	18.6	16.5	20.1
Wire	56.1	57.7	55.8	58.4
Wire products	(2)	(2)	(2)	(2)
Structural shapes & units	24.1	15.4	10.7	10.1
Rails & related products	41.3	71.5	44.5	39.9
Pipe and tube	40.8	38.0	42.0	30.0
Total	18.7	18.4	18.4	18.5
Stainless & alloy tool steel:				
Stainless steel:				
Semifinished	42.8	62.5	45.1	37.7
Plate	9.5	8.9	13.4	14.7
Sheet and strip	13.5	14.9	15.7	17.7
Bars & certain shapes	26.2	26.8	30.9	33.3
Wire rod	41.0	44.2	46.6	59.2
Wire	49.1	48.3	45.0	46.1
Pipe and tube	48.2	62.8	71.4	71.7
Tool steel (all forms)	49.8	42.5	51.5	39.6
Total stainless & tool	21.9	23.2	24.4	24.8

[1] Includes tool steel.

[2] Not applicable. Shipment and apparent consumption data for wire and wire products have been combined and reported in the category designated "wire."

[3] "Certain alloy" refers to alloy steel other than stainless or tool steel.

Note.—U.S. imports as a percent of apparent consumption of steel mill products only (excluding fabricated steel products): 17.9 percent, 1989; 17.8 percent, 1990; 17.9 percent, 1991; 17.9 percent, 1992.

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

Table E-6
Steel mill products and certain fabricated steel products: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	3,274,968	3,203,970	3,189,823	4,493,860
Japan	3,749,462	3,205,475	2,880,969	2,716,559
Korea	1,196,251	1,520,641	1,583,466	1,759,996
Brazil	1,396,712	1,486,654	1,321,907	1,565,028
Germany	1,557,356	1,591,850	1,448,397	1,383,401
France	1,188,454	1,161,981	929,415	962,084
United Kingdom	871,036	823,983	626,679	619,573
Netherlands	471,062	459,375	494,184	563,949
Mexico	467,656	689,260	534,216	456,236
Belgium	507,787	485,121	452,790	397,624
Australia	274,578	310,515	368,973	369,910
Sweden	254,548	295,108	302,844	343,420
Italy	306,629	382,145	330,724	267,509
Republic of South Africa	756	1,290	415	254,958
Spain	497,727	346,450	222,981	212,128
All others	2,329,165	2,179,894	1,693,533	1,414,271
Total	18,344,147	18,143,711	16,381,316	17,780,504
East Asia	5,385,004	5,098,669	4,689,214	4,680,736
EC-12	5,681,672	5,550,937	4,749,489	4,627,807
Eastern Europe	184,612	169,471	201,883	110,322
LAIA[1]	2,286,466	2,607,940	2,184,428	2,215,447
U.S. exports:				
Canada	677,565	2,041,948	1,729,394	1,481,796
Mexico	555,664	730,368	1,370,880	1,464,634
Japan	582,978	479,781	704,128	134,455
Korea	727,170	309,219	874,556	131,095
China	411,416	9,093	100,367	97,331
Thailand	109,537	63,403	37,506	81,927
Ecuador	4,749	48,803	32,850	71,428
Colombia	25,701	20,377	14,971	66,597
United Kingdom	42,878	49,717	47,017	66,152
Venezuela	20,118	34,240	117,485	61,268
All others	1,620,270	1,053,485	1,682,296	889,007
Total	4,778,047	4,840,433	6,711,450	4,545,690
East Asia	2,187,790	1,001,759	2,435,240	643,201
EC-12	380,692	331,469	273,576	201,201
Eastern Europe	3,270	1,627	2,244	3,672
LAIA[1]	700,962	895,848	1,596,980	1,735,554

[1] Latin American Integration Association.

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

Table E-7
Carbon and certain alloy[1] semifinished steel: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Brazil	666,882	813,302	704,348	967,561
Germany	298,694	238,170	244,191	282,030
United Kingdom	356,524	289,099	212,479	223,297
Canada	83,218	188,925	82,534	177,583
Australia	68,747	129,746	160,936	149,901
Mexico	76,982	235,733	201,417	124,381
Belgium	32,382	88,307	60,690	97,312
Sweden	60,821	64,589	90,597	76,174
Netherlands	58,729	60,499	63,861	69,044
Venezuela	48,482	0	0	44,130
France	159,281	122,970	125,539	39,083
Finland	34,551	6,383	46,472	31,939
Korea	66,033	72	0	21,666
Norway	5,877	6	0	2,687
Slovenia	0	0	0	187
All others	118,488	64,197	3,545	170
Total	2,135,690	2,301,998	1,996,610	2,307,144
East Asia	152,526	9,679	3,451	21,688
EC-12	930,852	852,870	706,828	710,791
Eastern Europe	0	45	0	0
LAIA[2]	793,201	1,049,244	905,765	1,136,072
U.S. exports:				
Mexico	8,147	15,231	58,606	169,090
Ecuador	35	39,225	11,869	58,739
Canada	15,948	89,628	64,671	30,603
Taiwan	61,657	663	184,829	23,917
Singapore	77,236	136	3,565	21,008
Colombia	1,891	776	360	19,523
Hong Kong	17	29	2,255	16,951
Guatemala	5,082	4,847	4,601	9,480
France	1,119	37,241	18,274	6,923
Japan	7,550	66,077	54,715	6,606
All others	198,302	261,996	275,271	54,586
Total	376,984	515,848	679,017	417,424
East Asia	219,904	145,864	374,529	75,978
EC-12	8,769	52,558	40,556	23,087
Eastern Europe	0	0	2	14
LAIA[2]	18,532	61,725	76,435	252,335

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-8
Carbon and certain alloy[1] steel plate:[2] U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	106,691	86,548	92,872	202,904
Sweden	69,915	111,517	87,154	113,894
Republic of South Africa	0	0	0	79,295
Belgium	144,296	123,382	97,096	62,666
Mexico	24,543	41,520	19,343	59,997
Spain	54,834	68,136	69,560	54,674
Brazil	106,678	61,723	73,958	50,508
Finland	73,675	83,803	55,762	47,579
Germany	42,726	59,855	47,197	31,478
Poland	28,960	25,546	38,357	24,605
United Kingdom	29,041	44,067	35,843	22,391
India	53,828	62,315	0	18,124
Macedonia	0	0	0	18,115
Romania	35,438	31,650	36,428	18,078
France	19,044	18,556	20,064	14,696
All others	117,295	104,209	105,368	59,169
Total	906,965	922,826	779,002	878,172
East Asia	61,584	44,483	42,611	20,243
EC-12	306,642	333,940	291,632	193,350
Eastern Europe	86,694	79,915	106,306	47,924
LAIA[3]	132,830	103,243	93,301	110,505
U.S. exports:				
Mexico	5,489	8,288	37,765	66,617
Canada	21,162	104,891	79,648	54,275
Korea	1,009	53	33,687	17,716
Venezuela	4,483	1,137	534	10,885
Japan	11,631	93	47,684	6,119
Taiwan	29	157	11,436	4,595
Thailand	11,852	10,744	4,639	1,732
Guyana	0	0	45	354
Surinam	945	411	209	295
Jamaica	1,475	231	237	262
All others	66,466	7,754	19,959	2,635
Total	124,541	133,760	235,842	165,485
East Asia	39,422	12,181	112,521	30,245
EC-12	39,574	2,474	1,310	263
Eastern Europe	0	0	33	0
LAIA[3]	10,179	11,013	40,132	77,947

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Excluding coiled plate. See app. A for details.
[3] Latin American Integration Association.

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

Table E-9
Carbon and certain alloy[1] steel sheet and strip:[2] U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	1,075,054	1,055,992	1,158,944	1,933,969
Japan	2,121,442	1,945,407	1,655,243	1,796,481
Korea	389,405	865,358	953,719	1,239,400
Germany	754,168	855,292	684,639	777,922
France	596,954	677,938	501,952	657,044
Netherlands	386,238	383,180	416,072	478,970
Brazil	408,565	306,719	254,375	313,010
Italy	133,272	174,742	173,042	202,651
Australia	175,254	150,757	182,149	197,748
Belgium	155,585	154,385	209,306	143,226
Republic of South Africa	0	0	0	130,982
Mexico	120,109	130,962	88,650	113,764
Finland	92,107	107,072	81,194	94,010
Sweden	30,151	38,942	50,893	82,582
New Zealand	66,788	101,642	68,833	80,810
All others	431,590	575,638	451,908	324,571
Total	6,936,682	7,524,025	6,930,919	8,567,140
East Asia	2,560,725	2,912,560	2,662,545	3,073,699
EC-12	2,187,405	2,411,822	2,144,354	2,429,159
Eastern Europe	22,274	26,912	15,448	38,611
LAIA[3]	624,808	589,106	467,724	471,219
U.S. exports:				
Mexico	335,095	368,733	743,429	751,139
Canada	273,207	739,050	732,203	650,698
Japan	549,813	336,185	527,868	110,320
Korea	649,694	249,076	658,569	74,489
Italy	174,445	70,018	43,004	43,279
Republic of South Africa	23,687	12,679	10,969	42,390
Hong Kong	23,238	20,997	28,667	40,091
Thailand	89,767	11,453	22,535	34,219
Pakistan	28,162	20,894	18,099	20,571
Brazil	19,817	8,922	5,446	18,923
All others	890,890	261,894	467,098	132,334
Total	3,057,814	2,099,903	3,257,888	1,918,453
East Asia	1,739,238	643,125	1,536,791	284,435
EC-12	232,000	150,432	99,314	62,669
Eastern Europe	16	520	152	344
LAIA[3]	413,472	409,555	803,492	809,943

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Including coiled plate. See app. A for details.
[3] Latin American Integration Association.

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

Table E-10
Carbon and certain alloy[1] steel bars and light shapes: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	398,631	339,393	341,964	512,747
United Kingdom	160,048	162,112	159,667	139,106
Japan	131,880	92,407	84,049	86,218
France	62,703	65,807	68,718	60,035
Turkey	109,153	31,970	27,370	60,002
Brazil	50,035	84,587	85,635	55,550
Germany	55,004	53,152	48,104	52,893
Venezuela	10,391	32,482	21,847	17,657
Trinidad and Tobago	16,501	31,873	8,520	11,461
India	10,492	9,639	5,740	10,687
Spain	27,517	16,397	10,259	9,598
Korea	62,652	39,102	20,105	8,332
Mexico	16,066	13,193	11,194	7,254
Sweden	3,385	4,759	5,775	5,472
Italy	2,589	1,318	1,265	4,628
All others	147,257	57,063	43,634	15,557
Total	1,264,305	1,035,255	943,845	1,057,195
East Asia	235,377	146,212	110,440	99,060
EC-12	323,125	304,883	292,972	270,071
Eastern Europe	2,648	2,212	730	344
LAIA[2]	125,331	159,525	146,281	80,836
U.S. exports:				
Canada	105,024	257,120	226,334	195,480
Mexico	22,656	49,232	171,716	158,183
Korea	4,323	15,016	1,188	27,197
Thailand	2,625	6,628	21	24,259
Guatemala	146	8,587	8,468	16,113
China	253	74	86	11,220
Taiwan	500	1,448	904	7,879
Malaysia	8	5,008	143	7,324
Ecuador	1,326	5,842	50	6,770
Colombia	607	10,039	2,153	6,721
All others	86,279	69,319	149,205	49,657
Total	223,749	428,311	560,268	510,804
East Asia	13,311	42,175	28,050	79,835
EC-12	14,284	12,255	7,242	6,988
Eastern Europe	54	102	110	61
LAIA[2]	25,706	71,141	180,199	178,583

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-11
Carbon and certain alloy[1] steel wire rod: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	400,938	344,955	378,768	505,521
Japan	201,891	182,818	193,795	229,977
Brazil	57,858	70,254	19,547	90,035
Trinidad and Tobago	29,203	36,782	45,466	80,986
France	116,507	77,171	50,167	53,781
Turkey	75,596	89,832	64,336	52,693
Germany	8,804	7,467	17,051	30,813
Luxembourg	10,045	14,145	12,401	18,744
Venezuela	2,065	16,071	5,467	14,925
Australia	10,783	9,962	16,836	11,128
United Kingdom	14,937	7,410	705	6,310
Sweden	15,095	8,556	8,672	5,093
Spain	45,911	36,721	471	2,578
Belgium	6,428	111	126	1,357
Italy	9,573	1,824	2,070	1,226
All others	122,782	52,035	5,148	1,637
Total	1,128,417	956,113	821,026	1,106,805
East Asia	271,880	189,584	194,490	230,639
EC-12	212,925	147,053	83,344	115,422
Eastern Europe	2,264	0	0	0
LAIA[2]	92,573	117,364	29,080	104,989
U. S. exports:				
Mexico	10,909	33,667	51,094	35,768
Canada	15,441	45,217	54,997	23,842
Japan	100	19,368	63	5,730
Venezuela	92	422	1,094	1,270
Guatemala	0	94	1,998	678
Argentina	0	0	1	381
United Kingdom	84	158	102	129
Singapore	3	52	3,792	108
Colombia	99	0	2	106
Korea	76	363	24,557	94
All others	3,784	1,880	24,532	484
Total	30,588	101,219	162,231	68,590
East Asia	1,628	20,496	42,925	6,068
EC-12	285	566	541	214
Eastern Europe	0	0	0	0
LAIA[2]	11,488	34,502	60,630	37,543

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-12
Carbon and certain alloy[1] steel wire: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	183,779	160,741	153,425	182,612
Japan	67,924	63,483	59,440	64,382
Belgium	53,657	45,978	33,139	36,734
France	37,421	29,468	24,759	28,062
United Kingdom	24,167	19,881	15,959	16,648
Germany	17,167	13,996	11,351	11,905
Taiwan	3,548	8,060	10,308	11,835
Brazil	9,397	8,504	13,397	9,962
China	12,165	8,228	7,418	7,397
Sweden	7,601	7,240	7,738	7,119
Venezuela	5,906	6,092	8,124	6,645
India	5,266	6,759	6,653	5,300
Australia	4,189	4,849	4,880	3,840
Korea	7,512	4,003	4,944	3,525
Mexico	1,407	3,259	3,977	2,799
All others	31,878	23,467	9,239	13,127
Total	472,984	414,008	374,750	411,892
East Asia	92,077	84,131	82,454	87,910
EC-12	139,816	115,313	88,833	97,861
Eastern Europe	265	122	215	223
LAIA[2]	33,874	30,091	28,282	21,997
U.S. exports:				
Canada	10,548	34,294	33,308	39,994
Mexico	8,583	13,064	18,163	25,919
China	2	23	56	10,651
Jamaica	314	282	524	1,394
Germany	1,212	1,004	1,091	867
United Kingdom	777	540	1,345	696
Bangladesh	1	0	0	692
Brazil	1,645	625	3,987	687
Romania	0	632	985	677
Costa Rica	369	677	792	594
All others	5,279	15,310	26,525	5,787
Total	28,730	66,453	86,775	87,957
East Asia	1,416	11,675	22,932	11,768
EC-12	2,451	1,986	2,820	2,391
Eastern Europe	15	635	985	682
LAIA[2]	10,531	14,792	22,628	27,363

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-13
Carbon and certain alloy[1] steel wire products: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Korea	178,804	185,686	155,381	164,631
Canada	114,763	98,435	97,098	102,061
Japan	52,650	59,622	41,508	48,096
China	42,981	42,136	23,727	47,279
Mexico	24,461	34,023	26,959	27,825
Indonesia	27,489	22,699	14,540	26,684
Spain	31,535	23,142	16,375	25,263
Taiwan	17,331	14,687	11,071	14,592
Italy	6,211	8,244	12,639	13,303
Brazil	10,401	12,446	11,622	13,258
Belgium	13,787	16,284	10,201	12,905
France	11,101	10,257	8,655	11,076
Turkey	10,713	12,540	6,891	9,703
Germany	9,880	7,164	6,222	7,899
Poland	15,255	9,780	10,354	7,351
All others	136,240	103,180	58,597	54,991
Total	703,602	660,325	511,839	586,916
East Asia	342,832	333,007	249,162	305,438
EC-12	86,677	78,806	63,172	79,239
Eastern Europe	21,258	14,985	12,840	8,506
LAIA[2]	78,103	83,842	54,541	53,852
U.S. exports:				
Canada	14,363	18,671	21,473	28,376
Mexico	4,618	5,625	9,620	6,584
Philippines	89	187	212	1,879
Panama	129	412	760	1,664
Costa Rica	86	492	1,094	1,119
Bahamas	1,246	1,165	778	1,061
Dominican Republic	315	733	392	988
Chile	196	535	536	935
Taiwan	110	62	214	827
Singapore	387	370	509	816
All others	10,619	13,296	15,964	12,326
Total	32,160	41,548	51,552	56,573
East Asia	3,379	2,635	2,437	4,401
EC-12	2,833	3,937	3,185	2,086
Eastern Europe	4	13	33	22
LAIA[2]	5,235	6,797	12,654	9,644

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-14
Carbon and certain alloy[1] steel structural shapes and units: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	249,815	278,669	217,538	233,622
Luxembourg	188,746	160,457	88,005	101,856
United Kingdom	174,048	163,073	82,168	69,872
Japan	373,632	114,932	48,069	44,362
Belgium	88,063	42,548	22,295	32,745
Germany	97,376	35,696	19,376	26,210
Spain	174,970	93,138	41,845	19,445
France	63,358	39,444	8,512	16,000
Republic of South Africa	0	0	299	15,266
Mexico	17,588	36,696	13,031	8,936
Brazil	11,638	6,509	10,883	5,735
Poland	20,441	15,062	24,309	3,231
Korea	81,616	8,147	12,012	2,967
New Zealand	8,945	1,448	943	2,497
Saudi Arabia	0	0	0	1,350
All others	90,125	24,776	15,076	5,519
Total	1,640,361	1,020,593	604,361	589,613
East Asia	467,450	133,779	63,441	49,265
EC-12	790,065	537,513	263,352	267,931
Eastern Europe	20,609	15,193	24,371	3,231
LAIA[2]	59,831	48,745	31,620	14,937
U.S. exports:				
Canada	132,210	220,316	202,996	139,901
Mexico	48,403	80,558	120,608	133,102
United Kingdom	9,691	6,997	13,166	27,140
Thailand	404	6,298	2,671	19,990
Venezuela	1,575	4,586	8,477	13,780
Saudi Arabia	4,753	3,591	18,735	10,846
Singapore	7,142	12,774	25,848	9,220
Panama	1,238	2,324	5,901	7,313
Nigeria	105	8,101	33,443	7,184
Korea	1,961	18,619	55,892	6,637
All others	53,268	130,844	169,282	71,300
Total	260,750	495,007	657,019	446,412
East Asia	17,976	81,859	173,428	50,577
EC-12	13,739	33,485	36,435	34,839
Eastern Europe	174	89	655	68
LAIA[2]	57,308	88,965	133,113	152,611

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-15
Carbon and certain alloy[1] steel rails and related products: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	151,966	200,252	144,179	133,453
Japan	83,624	87,191	97,927	79,538
United Kingdom	7,326	9,977	17,636	30,948
Luxembourg	18,840	20,156	18,162	23,979
Austria	5,805	6,319	3,642	7,505
Germany	15,252	12,930	7,791	7,069
France	10,325	552	2,872	5,336
Korea	6,670	4,025	3,609	3,312
Brazil	2,942	1,336	1,272	2,770
Australia	3,567	3,657	1,324	1,769
Honduras	9	7	0	644
Israel	20	23	185	620
Poland	105	0	6	454
Italy	757	587	461	368
Belgium	409	195	191	321
All others	15,369	2,346	4,339	1,332
Total	322,985	349,555	303,596	299,418
East Asia	91,174	91,557	101,908	83,125
EC-12	53,518	44,423	47,188	68,024
Eastern Europe	105	30	46	455
LAIA[2]	6,026	1,523	4,510	3,230
U.S. exports:				
Canada	15,860	274,018	25,407	32,837
Mexico	60,360	88,527	63,187	29,051
Egypt	26	2,471	4,345	3,602
Peru	552	797	1,017	1,128
Venezuela	1,511	1,022	1,701	920
Belize	15	390	587	912
Taiwan	18	153	152	805
Guyana	93	1	0	465
United Kingdom	87	73	104	437
Australia	61	402	896	412
All others	7,881	11,186	10,659	3,639
Total	86,464	379,039	108,056	74,208
East Asia	428	1,138	1,621	1,506
EC-12	919	305	684	1,152
Eastern Europe	78	70	55	8
LAIA[2]	63,630	93,212	67,276	31,731

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-16
Carbon and certain alloy[1] steel pipe and tube: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	451,459	400,098	473,741	459,583
Korea	353,671	374,528	397,957	287,013
Japan	507,942	540,343	579,441	263,132
Germany	223,442	276,053	334,299	120,549
Mexico	138,081	140,133	133,064	68,642
Argentina	89,608	90,315	71,650	45,992
Brazil	64,098	111,315	138,046	43,673
France	67,247	83,086	82,614	30,827
United Kingdom	26,026	19,866	14,188	23,899
Thailand	34,384	11,312	6,519	20,466
Republic of South Africa	0	0	0	20,059
Italy	102,878	116,589	101,440	18,917
Spain	46,727	33,736	25,830	11,398
Sweden	21,424	16,887	9,902	10,733
Netherlands	12,038	5,975	7,919	9,055
All others	296,518	321,950	310,544	66,940
Total	2,435,544	2,542,189	2,687,154	1,500,877
East Asia	993,666	1,037,566	1,053,805	581,110
EC-12	504,008	573,065	616,761	227,256
Eastern Europe	27,926	29,638	39,145	10,840
LAIA[2]	315,730	391,387	381,849	162,346
U.S. exports:				
Canada	48,646	216,756	247,967	244,367
China	112,372	4,224	93,475	66,293
Mexico	21,374	29,676	41,690	42,937
Russia	0	0	0	34,342
Colombia	12,819	4,961	6,995	29,614
Algeria	98	316	43,178	22,560
Saudi Arabia	3,489	2,411	19,591	19,824
Venezuela	3,786	18,685	71,970	19,119
Nigeria	8,709	10,476	24,493	15,460
United Kingdom	3,699	9,009	8,282	13,154
All others	219,933	160,821	180,534	156,912
Total	434,925	457,336	738,176	664,582
East Asia	130,072	29,009	113,178	88,451
EC-12	55,128	60,468	50,794	46,958
Eastern Europe	2,838	90	174	2,454
LAIA[2]	49,804	62,876	140,473	106,071

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-17
Total, carbon and certain alloy[1] steel products: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	3,216,314	3,154,008	3,141,061	4,444,054
Japan	3,654,519	3,118,898	2,790,348	2,622,861
Korea	1,180,812	1,502,300	1,562,912	1,739,892
Brazil	1,388,494	1,476,696	1,313,084	1,552,062
Germany	1,522,514	1,559,775	1,420,222	1,348,768
France	1,143,940	1,125,248	893,852	915,940
United Kingdom	851,347	792,907	600,606	597,606
Netherlands	470,693	458,713	493,465	563,182
Mexico	451,990	665,777	501,740	413,781
Belgium	504,038	481,998	443,048	389,542
Australia	274,550	309,960	368,963	369,906
Sweden	212,340	256,296	263,341	303,499
Republic of South Africa	756	1,290	413	248,381
Italy	291,999	368,274	312,350	247,679
Finland	213,610	203,916	187,846	178,091
All others	2,569,619	2,250,829	1,659,852	1,369,925
Total	17,947,534	17,726,887	15,953,102	17,305,171
East Asia	5,269,292	4,982,558	4,564,307	4,552,176
EC-12	5,535,034	5,399,689	4,598,435	4,459,103
Eastern Europe	184,043	169,052	199,101	110,133
LAIA[2]	2,262,308	2,574,068	2,142,954	2,159,982
U.S. exports:				
Canada	652,409	1,999,961	1,689,005	1,440,372
Mexico	525,635	692,601	1,315,877	1,418,389
Japan	580,945	478,055	701,950	132,888
Korea	720,218	306,378	861,243	129,506
China	407,666	8,646	100,217	97,126
Thailand	109,068	63,108	37,057	81,640
Ecuador	4,667	48,750	32,785	71,372
Colombia	24,660	19,920	14,152	66,067
Hong Kong	26,467	23,021	46,844	59,549
Venezuela	17,284	33,135	115,551	59,074
All others	1,587,686	1,044,851	1,622,142	854,505
Total	4,656,705	4,718,426	6,536,824	4,410,489
East Asia	2,166,774	990,157	2,408,414	633,263
EC-12	369,983	318,466	242,881	180,649
Eastern Europe	3,178	1,518	2,198	3,653
LAIA[2]	665,885	854,578	1,537,031	1,683,771

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Latin American Integration Association.

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

Table E-18
Stainless semifinished steel: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Canada	36,556	26,379	21,273	19,831
Sweden	10,403	12,320	14,318	11,385
Germany	562	104	1,012	2,783
Italy	96	728	2,354	1,840
Japan	698	1,679	2,101	654
Republic of South Africa	0	0	0	213
United Kingdom	3,000	11,705	7,316	157
France	0	0	1	117
Mexico	176	275	65	107
Austria	0	0	0	32
Brazil	0	0	0	29
Spain	10,337	7,502	66	29
Israel	0	0	0	0
Korea	0	85	1	0
Soviet Union	0	0	455	0
All others	293	45	0	0
Total	62,121	60,822	48,962	37,177
East Asia	698	1,764	2,101	654
EC-12	13,995	20,041	10,749	4,927
Eastern Europe	293	42	0	0
LAIA[1]	176	275	65	136
U.S. exports:				
Mexico	995	895	713	1,794
Canada	2,027	780	754	655
Saudi Arabia	1,689	1,113	628	430
Japan	614	220	334	392
United Kingdom	413	313	458	275
Hong Kong	49	65	34	248
Taiwan	120	79	210	212
Venezuela	129	78	398	179
Germany	269	488	5,132	102
Belgium	25	100	2,287	89
All others	7,500	2,342	9,114	1,110
Total	13,829	6,472	20,063	5,487
East Asia	1,138	1,056	1,298	1,092
EC-12	1,470	1,339	15,155	542
Eastern Europe	3	0	9	0
LAIA[1]	1,778	1,440	1,510	2,140

[1] Latin American Integration Association.

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

Table E-19
Stainless steel plate:[1] U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Belgium	1,046	973	4,070	3,358
United Kingdom	2,490	2,951	2,598	2,845
Germany	2,896	1,868	2,689	2,209
Japan	1,316	2,462	2,508	2,003
Republic of South Africa	0	0	2	1,959
Finland	203	905	397	798
France	822	32	65	679
Sweden	1,387	1,031	659	673
Austria	187	112	464	259
Spain	200	88	49	212
Canada	44	42	18	135
Brazil	0	0	0	89
Netherlands	0	0	0	13
Mexico	4	0	0	0
Italy	57	0	66	0
All others	10	0	17	0
Total	10,661	10,464	13,602	15,231
East Asia	1,326	2,462	2,525	2,003
EC-12	7,511	5,911	9,538	9,316
Eastern Europe	0	0	0	0
LAIA[2]	4	0	0	89
U.S. exports:				
Canada	2,398	6,390	4,029	5,307
Mexico	131	873	938	811
Germany	7	187	0	93
Taiwan	354	3	45	83
Honduras	0	16	87	70
United Kingdom	93	41	52	56
Hong Kong	0	23	207	51
Australia	0	2	0	22
Korea	13	141	3,251	19
Dominican Republic	5	0	0	18
All others	435	859	584	68
Total	3,437	8,534	9,193	6,598
East Asia	603	738	3,545	174
EC-12	135	299	423	153
Eastern Europe	0	0	17	0
LAIA[2]	215	926	985	813

[1] Excluding coiled plate. See app. A for details.
[2] Latin American Integration Association.

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

Table E-20
Stainless steel sheet and strip:[1] U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Japan	46,891	43,270	43,150	44,261
Mexico	14,979	22,362	31,782	41,268
France	30,594	24,833	23,317	26,263
Spain	11,947	15,893	17,318	22,978
Germany	14,311	12,114	12,216	14,962
Canada	2,499	2,741	3,326	14,089
Korea	9,316	10,002	8,687	13,523
United Kingdom	7,797	10,558	10,469	11,974
Finland	2,930	14,904	8,438	11,749
Sweden	6,628	6,008	7,003	7,814
Italy	2,248	3,264	4,483	5,165
Republic of South Africa	0	0	0	4,406
Belgium	1,479	1,629	5,205	4,167
Brazil	0	2,239	730	2,091
India	0	2,773	361	1,145
All others	204	443	346	332
Total	151,825	173,033	176,830	226,186
East Asia	56,331	53,376	51,906	57,817
EC-12	68,398	68,491	73,078	85,568
Eastern Europe	0	34	19	0
LAIA[2]	14,979	24,641	32,511	43,359
U.S. exports:				
Mexico	17,671	27,952	42,876	35,168
Canada	11,058	19,612	22,743	22,131
Germany	745	700	1,963	3,667
France	187	528	1,527	3,033
Spain	149	35	28	1,683
Taiwan	1,434	985	1,554	1,568
United Kingdom	1,999	3,892	3,800	1,545
Hong Kong	376	624	3,175	918
Brazil	257	335	132	846
Australia	1,705	794	781	666
All others	17,417	8,491	19,413	6,843
Total	52,999	63,947	97,991	78,069
East Asia	10,054	4,006	14,676	4,053
EC-12	3,684	5,995	9,829	10,999
Eastern Europe	58	105	19	9
LAIA[2]	19,810	28,932	44,854	37,446

[1] Including coiled plate. See app. A for details.
[2] Latin American Integration Association.

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

Table E-21
Stainless steel bars and shapes: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Japan	20,286	17,777	19,988	19,742
Spain	3,013	4,127	5,626	5,971
Canada	1,711	5,374	5,089	5,762
Brazil	4,497	3,318	3,334	4,716
Italy	2,482	1,743	3,347	4,537
France	2,213	2,444	3,047	4,293
Sweden	2,727	3,308	3,595	3,379
Korea	3,165	2,610	3,822	3,343
India	214	1,084	1,404	2,226
Germany	1,178	717	566	1,308
United Kingdom	1,506	1,770	1,757	1,240
Switzerland	13	15	321	312
Taiwan	59	3	125	150
Austria	200	130	136	140
Yugoslavia	0	53	259	72
All others	153	52	77	307
Total	43,417	44,526	52,493	57,499
East Asia	23,520	20,389	23,946	23,275
EC-12	10,400	10,817	14,349	17,396
Eastern Europe	15	53	259	132
LAIA[1]	4,607	3,351	3,349	4,723
U.S. exports:				
United Kingdom	1,732	1,552	1,285	6,334
Canada	3,998	4,479	3,590	3,340
Panama	25	12	27	1,999
Mexico	820	639	1,202	1,695
Venezuela	1,562	577	596	1,255
Japan	177	697	963	777
Israel	214	1,352	2,669	619
Saudi Arabia	397	190	207	489
Dominican Republic	60	64	177	419
Hong Kong	217	270	257	366
All others	7,198	6,173	6,018	2,641
Total	16,399	16,005	16,989	19,935
East Asia	3,091	3,055	3,096	1,835
EC-12	2,845	3,525	3,294	7,268
Eastern Europe	3	0	0	1
LAIA[1]	2,626	1,428	2,073	3,227

[1] Latin American Integration Association.

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

Table E-22
Stainless steel wire rod: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
France	5,299	4,525	5,547	10,475
Japan	6,087	5,195	4,574	7,356
Sweden	3,497	4,621	4,244	5,191
India	0	97	1,729	4,305
Spain	1,505	3,354	3,309	3,828
Brazil	809	1,413	1,671	3,243
Italy	3,551	2,484	2,922	2,890
Taiwan	0	0	126	924
Korea	336	861	1,604	750
United Kingdom	186	184	120	523
Germany	40	218	0	98
Netherlands	0	8	0	21
Canada	284	168	48	10
Argentina	15	0	0	0
Austria	88	0	3	0
All others	0	0	0	0
Total	21,698	23,128	25,897	39,616
East Asia	6,423	6,057	6,305	9,030
EC-12	10,582	10,772	11,898	17,836
Eastern Europe	0	0	0	0
LAIA[1]	824	1,413	1,671	3,243
U.S. exports:				
Brazil	2	524	736	650
Korea	11	36	25	300
Canada	1,071	1,666	674	215
Venezuela	6	29	63	191
Mexico	2,711	1,439	875	156
Singapore	3	35	13	146
Taiwan	107	25	640	81
United Kingdom	66	73	105	72
Argentina	2	1	6	65
Switzerland	3	3	3	56
All others	1,524	1,584	1,085	324
Total	5,505	5,413	4,224	2,256
East Asia	705	225	1,186	593
EC-12	370	215	161	155
Eastern Europe	5	0	0	0
LAIA[1]	2,721	2,038	1,702	1,076

[1] Latin American Integration Association.

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

Table E-23
Stainless steel wire: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Sweden	2,493	2,051	2,531	3,099
Japan	4,796	3,393	2,677	2,702
Canada	2,355	2,404	2,156	2,370
Taiwan	1,099	867	1,441	2,090
France	1,877	2,354	1,862	1,894
United Kingdom	2,250	1,441	1,082	1,560
Italy	1,362	1,081	1,447	1,271
Korea	759	619	778	905
Spain	405	635	932	677
Germany	530	484	361	646
Belgium	1,047	448	386	511
Switzerland	337	284	591	467
India	896	1,613	337	341
Thailand	71	175	105	191
Russia	0	0	0	157
All others	1,041	478	367	207
Total	21,319	18,328	17,054	19,089
East Asia	6,725	5,055	5,002	5,904
EC-12	7,542	6,443	6,070	6,581
Eastern Europe	3	0	4	0
LAIA[1]	854	466	341	162
U.S. exports:				
Canada	849	1,311	1,119	1,029
Mexico	476	507	507	356
United Kingdom	148	177	171	96
Germany	281	288	105	74
Korea	62	78	12	43
Italy	9	28	5	41
Switzerland	52	19	20	34
Colombia	1	2	11	33
Taiwan	35	14	6	32
Argentina	3	4	0	28
All others	698	1,171	683	414
Total	2,614	3,599	2,640	2,181
East Asia	257	388	122	140
EC-12	604	652	397	285
Eastern Europe	0	2	1	4
LAIA[1]	536	551	530	454

[1] Latin American Integration Association.

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

Table E-24
Stainless steel pipe and tube: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Japan	9,327	8,787	11,333	11,932
Taiwan	3,135	8,216	9,333	4,172
Malaysia	13	0	159	3,573
Canada	6,241	5,711	4,479	3,457
Italy	2,677	2,845	2,729	3,452
Spain	1,281	2,084	4,969	3,400
United Kingdom	1,086	724	1,238	2,409
Singapore	315	1,038	1,529	1,991
France	2,017	1,561	1,446	1,504
Germany	4,603	6,885	517	1,447
Korea	684	3,470	5,391	1,445
Thailand	332	152	191	871
Austria	664	929	441	697
Sweden	4,208	3,225	908	690
Netherlands	290	412	650	675
All others	384	1,181	2,906	896
Total	37,258	47,220	48,218	42,612
East Asia	13,811	22,159	28,278	24,176
EC-12	11,955	14,525	11,554	12,904
Eastern Europe	0	0	1,993	1
LAIA[1]	358	598	526	618
U.S. exports:				
Canada	2,465	6,423	5,623	6,386
Mexico	740	3,458	2,652	3,911
Singapore	373	672	342	731
Korea	151	579	2,050	590
Jamaica	105	171	98	545
India	136	5	234	402
Egypt	8	0	32	295
Philippines	62	89	140	191
United Kingdom	119	297	299	125
Venezuela	9	158	155	100
All others	3,900	1,591	3,310	1,425
Total	8,067	13,443	14,934	14,701
East Asia	2,653	1,834	2,673	1,849
EC-12	514	571	816	380
Eastern Europe	24	1	0	0
LAIA[1]	858	3,830	2,971	4,224

[1] Latin American Integration Association.

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

Table E-25
Alloy tool steel (all forms): U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Germany	10,721	9,686	10,814	11,179
Sweden	10,867	6,247	6,246	7,687
Japan	5,543	4,015	4,291	5,047
Canada	8,963	7,142	12,371	4,151
Austria	2,709	2,810	4,139	3,013
Brazil	2,052	2,542	2,766	2,770
United Kingdom	1,373	1,741	1,493	1,259
France	1,691	984	277	919
Italy	2,156	1,726	1,027	674
Mexico	137	230	83	326
Taiwan	0	0	0	324
China	167	74	299	191
Korea	1,167	694	254	138
Spain	137	14	127	133
Poland	225	289	276	56
All others	406	1,111	695	55
Total	48,313	39,304	45,158	37,923
East Asia	6,877	4,848	4,844	5,701
EC-12	16,254	14,247	13,818	14,177
Eastern Europe	258	289	506	56
LAIA[1]	2,355	3,127	3,011	3,134
U.S. exports:				
Canada	1,290	1,326	1,859	2,360
Mexico	6,485	2,005	5,241	2,355
Germany	716	231	270	338
United Kingdom	120	33	177	159
Netherlands	47	29	94	130
Italy	141	82	47	105
Saudi Arabia	21	0	2	83
Angola	0	0	273	67
Taiwan	182	44	59	59
Malaysia	0	0	0	46
All others	9,490	844	569	272
Total	18,492	4,594	8,592	5,974
East Asia	2,514	300	230	202
EC-12	1,086	408	621	769
Eastern Europe	0	0	0	5
LAIA[1]	6,532	2,124	5,322	2,403

[1] Latin American Integration Association.

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

Table E-26
Total, stainless and alloy tool steel products: U.S. imports for consumption, U.S. exports, by selected countries and country groups, 1989-92

(Short tons)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Japan	94,944	86,577	90,622	93,697
Canada	58,653	49,962	48,761	49,806
France	44,514	36,733	35,562	46,144
Mexico	15,666	23,483	32,476	42,455
Sweden	42,208	38,812	39,503	39,920
Spain	28,824	33,698	32,396	37,230
Germany	34,842	32,075	28,175	34,633
United Kingdom	19,689	31,076	26,073	21,966
Korea	15,439	18,341	20,554	20,104
Italy	14,630	13,870	18,374	19,830
Brazil	8,218	9,958	8,823	12,966
Finland	3,140	15,809	9,018	12,582
Belgium	3,749	3,123	9,742	8,082
India	1,116	5,686	3,837	8,080
Taiwan	4,411	9,087	11,043	7,693
All others	6,569	8,536	13,255	20,147
Total	396,613	416,824	428,214	475,333
East Asia	115,712	116,110	124,908	128,560
EC-12	146,637	151,247	151,054	168,705
Eastern Europe	569	419	2,782	189
LAIA[1]	24,157	33,871	41,474	55,465
U.S. exports:				
Mexico	30,029	37,767	55,003	46,245
Canada	25,156	41,987	40,390	41,424
United Kingdom	4,691	6,379	6,347	8,662
Germany	2,199	2,269	7,791	4,628
France	799	855	4,425	3,293
Taiwan	3,909	2,715	3,995	2,229
Venezuela	2,834	1,106	1,934	2,193
Panama	53	179	423	2,124
Brazil	446	1,207	999	1,849
Spain	458	1,207	4,844	1,749
All others	50,768	26,336	48,477	20,805
Total	121,342	122,007	174,626	135,201
East Asia	21,016	11,602	26,826	9,937
EC-12	10,709	13,003	30,695	20,552
Eastern Europe	92	109	46	19
LAIA[1]	35,077	41,270	59,949	51,783

[1] Latin American Integration Association.

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

Table E-27
Steel mill products and certain fabricated steel products: Value of U.S. imports for consumption, U.S. exports, by products and grades of steel, 1989-92

(1,000 dollars)

Item	1989	1990	1991	1992
U.S. imports for consumption:				
Carbon & certain alloy[1] steel:				
Semifinished	552,553	538,223	505,791	500,125
Plate	379,060	369,279	305,405	303,747
Sheet and strip	3,483,351	3,465,061	3,089,470	3,717,099
Bars & certain shapes	563,118	476,540	440,348	459,340
Wire rod	421,514	340,591	294,588	377,494
Wire	347,003	309,503	278,526	312,454
Wire products	652,933	658,004	527,030	604,201
Structural shapes & units	740,930	476,520	325,913	296,698
Rails & related products	152,001	136,287	134,028	146,054
Pipe and tube	1,496,900	1,473,676	1,661,570	894,401
Subtotal	8,789,363	8,243,685	7,562,669	7,611,614
Stainless & alloy tool steel:				
Stainless steel:				
Semifinished	106,981	79,442	73,116	55,367
Plate	34,509	25,949	35,120	33,566
Sheet and strip	345,302	344,553	348,586	423,746
Bars & certain shapes	128,845	118,157	133,704	133,954
Wire rod	61,986	56,004	60,057	78,746
Wire	89,837	71,776	69,145	73,179
Pipe and tube	175,639	186,548	194,508	173,769
Alloy tool steel (all forms)	99,938	87,814	78,904	80,677
Subtotal	1,043,036	970,242	993,141	1,053,004
Total	9,832,399	9,213,927	8,555,810	8,664,618
U.S. exports:				
Carbon & certain alloy[1] steel:				
Semifinished	148,834	201,044	244,988	170,144
Plate	55,175	69,493	98,910	79,752
Sheet and strip	1,458,463	1,112,867	1,472,553	1,102,121
Bars & certain shapes	161,330	235,173	284,511	271,458
Wire rod	25,665	46,256	64,478	34,571
Wire	53,056	76,122	91,063	94,553
Wire products	72,738	90,155	90,003	115,954
Structural shapes & units	243,597	427,462	595,121	403,889
Rails & related products	60,204	83,716	82,168	64,789
Pipe and tube	474,320	515,023	752,052	726,230
Subtotal	2,753,381	2,857,312	3,775,847	3,063,460
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished	32,286	21,655	49,913	30,847
Plate	10,985	19,175	21,569	19,747
Sheet and strip	129,351	142,479	214,439	195,163
Bars & certain shapes	49,400	46,062	55,686	41,667
Wire rod	15,071	13,055	12,170	7,044
Wire	14,268	17,245	14,235	12,317
Pipe and tube	41,192	59,660	66,996	67,284
Alloy tool steel (all forms)	34,392	13,610	21,482	25,478
Subtotal	326,946	332,941	456,490	399,547
Total	3,080,327	3,190,253	4,232,337	3,463,008

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.

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

Table E-28
Steel mill products and certain fabricated steel products: U.S. imports for consumption, 1989-92

(Unit value, per short ton)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	$259	$234	$253	$217
Plate	418	400	392	346
Sheet and strip:				
Hot rolled	380	331	317	299
Cold rolled	548	502	492	486
Galvanized	587	581	542	545
Tin plate	613	616	624	617
Tin free	574	581	606	614
Other coated	616	643	619	588
Average, sheet and strip	502	461	446	434
Bar:				
Hot finished	454	463	462	434
Cold finished	658	684	701	701
Reinforcing	308	316	319	258
Light shapes	349	336	328	321
Average, bar	445	460	467	434
Wire rod	374	356	359	341
Wire	734	748	743	759
Wire products	928	996	1,030	1,029
Structural shapes and units:				
Heavy structurals	377	359	403	374
Fabricated structurals	1,129	1,371	1,373	1,255
Average, structurals	452	467	539	503
Rails and related products	471	390	441	488
Pipe and tube:				
Oil country tubular goods	743	728	757	989
Line pipe	563	510	597	541
Mechanical pipe	779	891	920	886
Structural pipe	563	538	519	477
Pressure tubing	1,021	1,093	1,082	1,081
Other (incl. standard)	519	503	522	517
Average, pipe and tube	615	580	618	596
Average, all carbon and certain alloy[1] steel	490	465	474	440
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	$1,722	$1,306	$1,493	$1,489
Plate	3,237	2,480	2,582	2,204
Sheet and strip:				
Sheet	2,125	1,841	1,798	1,712
Strip	3,219	3,084	3,211	3,304
Average, sheet and strip	2,274	1,991	1,971	1,873
Bars and shapes	2,968	2,654	2,547	2,330
Wire rod	2,857	2,421	2,319	1,988
Wire	4,214	3,916	4,054	3,834
Pipe and tube	4,714	3,951	4,034	4,078
Alloy tool steel (all forms)	2,069	2,234	1,747	2,127
Average, all stainless and alloy tool steel	2,630	2,328	2,319	2,215

[1] Includes alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.

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

Table E-29
Steel mill products and certain fabricated steel products: U.S. exports, 1989-92

(Unit value, per short ton)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	$395	$390	$361	$408
Plate	443	520	419	482
Sheet and strip:				
Hot rolled	389	369	329	393
Cold rolled	607	679	652	697
Galvanized	559	689	694	671
Tin plate	508	465	518	527
Tin free	551	621	624	613
Other coated	737	1,227	1,150	1,051
Average, sheet and strip	477	530	452	574
Bar:				
Hot finished	1,009	606	634	660
Cold finished	1,088	1,005	1,023	830
Reinforcing	332	321	288	286
Light shapes	554	444	465	484
Average, bar	721	549	508	531
Wire rod	839	457	397	504
Wire	1,847	1,146	1,049	1,075
Wire products	2,262	2,170	1,746	2,050
Structural shapes and units:				
Heavy structurals	385	436	423	453
Fabricated structurals	1,688	1,555	1,682	1,675
Average, structurals	934	864	906	905
Rails and related products	696	221	760	873
Pipe and tube:				
Oil country tubular goods	850	932	919	1,082
Line pipe	1,413	997	891	925
Other[3]	1,871	1,376	1,286	1,228
Average, pipe and tube	1,091	1,126	1,019	1,093
Average, all carbon and certain alloy[1] steel	591	606	578	695
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	$2,335	$3,346	$2,488	$5,622
Plate	3,196	2,247	2,346	2,993
Sheet and strip:				
Sheet	2,461	2,304	2,226	2,604
Strip	2,414	2,185	2,156	2,426
Average, sheet and strip	2,441	2,228	2,188	2,500
Bars and shapes	3,012	2,878	3,278	2,090
Wire rod	2,738	2,412	2,881	3,122
Wire	5,458	4,792	5,392	5,648
Pipe and tube	5,106	4,438	4,486	4,577
Alloy tool steel (all forms)	1,860	2,962	2,500	4,265
Average, all stainless and alloy tool steel	2,694	2,729	2,614	2,955

[1] Includes alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.
[3] Includes mechanical, standard, structural, and pressure pipe and tube.

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

Table E-30
Steel mill products and certain fabricated steel products: U.S. imports for consumption of specified products and imports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Quantity (short tons)			
Carbon and certain alloy[1] steel:				
Semifinished:				
Ingots	25,863	65,400	2,706	4,922
Blooms and billets	504,638	496,389	586,127	680,504
Slabs and sheet bars	1,605,189	1,740,209	1,407,776	1,621,717
Total	2,135,690	2,301,998	1,996,610	2,307,144
Plate:				
Carbon	826,322	835,904	694,877	784,529
Alloy	80,642	86,923	84,125	93,643
Total	906,965	922,826	779,002	878,172
Sheet and strip:				
Hot rolled:				
Sheet	2,402,872	2,904,187	2,606,689	3,360,533
Strip	110,452	96,349	105,520	136,782
Cold rolled:				
Black plate	144,642	146,079	129,488	152,394
Electrical	85,328	76,163	81,976	81,842
Other sheet	1,761,025	1,913,520	1,744,854	1,954,906
Other strip	119,076	118,377	119,987	147,309
Galvanized	1,625,227	1,649,264	1,527,317	1,995,612
Tin plate	337,330	313,549	310,962	321,674
Tin free	114,902	114,045	114,267	132,334
Other coated	235,827	192,491	189,857	283,754
Total, sheet and strip	6,936,682	7,524,025	6,930,919	8,567,140
Bars:				
Hot rolled:				
Carbon	525,944	464,375	421,611	448,213
Alloy	238,912	202,466	231,736	290,495
Cold rolled:				
Carbon	118,180	91,358	79,946	84,107
Alloy	46,608	44,295	38,520	32,088
Reinforcing	233,733	147,882	107,344	119,273
Light structural shapes	100,927	84,880	64,689	83,021
Total, bars	1,264,305	1,035,255	943,845	1,057,195
Wire rod and related products:				
Wire rod:				
Carbon	1,085,797	936,837	800,363	1,078,013
Alloy	42,620	19,276	20,663	28,792
Wire:				
Carbon	432,369	375,454	337,141	373,587
Alloy	40,615	38,555	37,609	38,305
Wire products:				
Nails	384,737	373,685	286,915	339,944
Barbed wire	12,440	15,350	11,167	12,106
Wire fencing	60,907	46,164	36,793	38,382
Bale ties	955	696	497	558
Wire strand	161,751	152,051	102,065	122,722
Wire rope	82,812	72,380	74,402	73,204
Total, wire rod and related products	2,305,004	2,030,446	1,707,616	2,105,612
Structurals:				
Heavy	1,477,782	911,556	519,377	503,124
Fabricated	162,579	109,037	84,984	86,488
Total	1,640,361	1,020,593	604,361	589,613

See footnotes at end of table.

Table E-30—Continued
Steel mill products and certain fabricated steel products: U.S. imports for consumption of specified products and imports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Quantity (short tons)—Continued			
Rails and related products:				
Rails	244,236	301,410	254,189	245,144
Joint bars and tie plates	14,023	10,205	12,991	9,596
Track spikes	5,853	2,602	3,352	3,094
Wheels and axles	58,873	35,337	33,064	41,586
Total	322,985	349,555	303,596	299,418
Pipes and tubes:				
Oil country tubular goods	429,448	381,022	412,616	100,646
Line pipe	526,983	695,930	1,003,500	404,234
Mechanical pipe	293,064	186,242	169,832	147,732
Structural pipe	323,918	275,432	209,824	227,314
Pressure tubing	44,944	38,044	35,881	27,536
Other (including standard)	817,187	965,519	855,502	593,415
Total	2,435,544	2,542,189	2,687,154	1,500,877
Stainless and alloy tool steel:				
Stainless:				
Semifinished:				
Ingots	191	273	2,702	340
Blooms and billets	42,268	41,560	32,516	26,317
Slabs and sheet bars	19,663	18,989	13,744	10,520
Total	62,121	60,822	48,962	37,177
Plate	10,661	10,464	13,602	15,231
Sheet and strip:				
Sheet:				
Hot rolled	15,122	17,009	12,595	29,254
Cold rolled	115,955	135,126	142,537	174,041
Strip	20,748	20,898	21,698	22,891
Total, sheet and strip	151,825	173,033	176,830	226,186
Bars and shapes	43,417	44,526	52,493	57,499
Wire rod	21,698	23,128	25,897	39,616
Wire	21,319	18,328	17,054	19,089
Pipe and tube	37,258	47,220	48,218	42,612
Alloy tool steel (all forms):				
Semifinished[2]	8,598	6,771	10,608	2,348
Bars	33,488	26,843	25,407	25,509
Other	6,227	5,690	9,143	10,066
Total, stainless & alloy tool steel	48,313	39,304	45,158	37,923

See footnotes at end of table.

Table E-30—Continued
Steel mill products and certain fabricated steel products: U.S. imports for consumption of specified products and imports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Share of product group total (percent)			
Carbon and certain alloy[1] steel:				
Semifinished:				
Ingots	1.21	2.84	0.14	0.21
Blooms and billets	23.63	21.56	29.36	29.50
Slabs and sheet bars	75.16	75.60	70.51	70.29
Total	100.00	100.00	100.00	100.00
Plate:				
Carbon	91.11	90.58	89.20	89.34
Alloy	8.89	9.42	10.80	10.66
Total	100.00	100.00	100.00	100.00
Sheet and strip:				
Hot rolled:				
Sheet	34.64	38.60	37.61	39.23
Strip	1.59	1.28	1.52	1.60
Cold rolled:				
Black plate	2.09	1.94	1.87	1.78
Electrical	1.23	1.01	1.18	0.96
Other sheet	25.39	25.43	25.17	22.82
Other strip	1.72	1.57	1.73	1.72
Galvanized	23.43	21.92	22.04	23.29
Tin plate	4.86	4.17	4.49	3.75
Tin free	1.66	1.52	1.65	1.54
Other coated	3.40	2.56	2.74	3.31
Total, sheet and strip	100.00	100.00	100.00	100.00
Bars:				
Hot rolled:				
Carbon	41.60	44.86	44.67	42.40
Alloy	18.90	19.56	24.55	27.48
Cold rolled:				
Carbon	9.35	8.82	8.47	7.96
Alloy	3.69	4.28	4.08	3.04
Reinforcing	18.49	14.28	11.37	11.28
Light structural shapes	7.98	8.20	6.85	7.85
Total, bars	100.00	100.00	100.00	100.00
Wire rod and related products:				
Wire rod:				
Carbon	47.11	46.14	46.87	51.20
Alloy	1.85	0.95	1.21	1.37
Wire:				
Carbon	18.76	18.49	19.74	17.74
Alloy	1.76	1.90	2.20	1.82
Wire products:				
Nails	16.69	18.40	16.80	16.14
Barbed wire	0.54	0.76	0.65	0.57
Wire fencing	2.64	2.27	2.15	1.82
Bale ties	0.04	0.03	0.03	0.03
Wire strand	7.02	7.49	5.98	5.83
Wire rope	3.59	3.56	4.36	3.48
Total, wire rod and related products	100.00	100.00	100.00	100.00
Structurals:				
Heavy	90.09	89.32	85.94	85.33
Fabricated	9.91	10.68	14.06	14.67
Total	100.00	100.00	100.00	100.00

See footnotes at end of table.

Table E-30—Continued
Steel mill products and certain fabricated steel products: U.S. imports for consumption of specified products and imports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Share of product group total (percent)—Continued			
Rails and related products:				
Rails	75.62	86.23	83.73	81.87
Joint bars and tie plates	4.34	2.92	4.28	3.20
Track spikes	1.81	0.74	1.10	1.03
Wheels and axles	18.23	10.11	10.89	13.89
Total	100.00	100.00	100.00	100.00
Pipes and tubes:				
Oil country tubular goods	17.63	14.99	15.36	6.71
Line pipe	21.64	27.38	37.34	26.93
Mechanical pipe	12.03	7.33	6.32	9.84
Structural pipe	13.30	10.83	7.81	15.15
Pressure tubing	1.85	1.50	1.34	1.83
Other (including standard)	33.55	37.98	31.84	39.54
Total	100.00	100.00	100.00	100.00
Stainless and alloy tool steel:				
Stainless:				
Semifinished:				
Ingots	0.31	0.45	5.52	0.91
Blooms and billets	68.04	68.33	66.41	70.79
Slabs and sheet bars	31.65	31.22	28.07	28.30
Total	100.00	100.00	100.00	100.00
Plate	100.00	100.00	100.00	100.00
Sheet and strip:				
Sheet:				
Hot rolled	9.96	9.83	7.12	12.93
Cold rolled	76.37	78.09	80.61	76.95
Strip	13.67	12.08	12.27	10.12
Total, sheet and strip	100.00	100.00	100.00	100.00
Bars and shapes	100.00	100.00	100.00	100.00
Wire rod	100.00	100.00	100.00	100.00
Wire	100.00	100.00	100.00	100.00
Pipe and tube	100.00	100.00	100.00	100.00
Alloy tool steel (all forms):				
Semifinished[2]	17.80	17.23	23.49	6.19
Bars	69.31	68.30	56.26	67.26
Other	12.89	14.48	20.25	26.54
Total, stainless & alloy tool steel	100.00	100.00	100.00	100.00

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.

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

Table E-31
Steel mill products and certain fabricated steel products: U.S. exports of specified products and exports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Quantity (short tons)			
Carbon and certain alloy[1] steel:				
Semifinished[2]	376,984	515,848	679,017	417,424
Plate:				
Carbon	118,853	122,632	219,715	150,589
Alloy	5,688	11,129	16,128	14,895
Total	124,541	133,760	235,842	165,485
Sheet and strip:				
Hot rolled:				
Sheet	1,637,706	990,947	2,063,015	619,949
Strip	39,927	47,658	36,709	56,051
Cold rolled:				
Black plate	0	2,382	4,883	4,734
Electrical	54,712	47,574	84,184	47,875
Other sheet	490,486	346,747	380,228	338,486
Other strip	100,145	133,623	126,341	127,654
Galvanized	444,166	286,377	303,358	297,788
Tin plate	188,289	147,705	150,737	279,122
Tin free	29,531	25,605	37,987	59,805
Other coated	72,852	71,284	70,446	86,990
Total, sheet and strip	3,057,814	2,099,903	3,257,888	1,918,453
Bars:				
Hot rolled:				
Carbon	67,187	137,475	136,338	125,435
Alloy	18,580	73,738	91,126	91,015
Cold rolled:				
Carbon	29,159	40,412	38,469	51,764
Alloy	4,278	4,846	10,179	13,046
Reinforcing	87,800	118,919	234,616	183,557
Light structural shapes	16,745	52,921	49,540	45,987
Total, bars	223,749	428,311	560,268	510,804
Wire rod and related products:				
Wire rod:				
Carbon	26,910	94,960	155,710	58,416
Alloy	3,678	6,260	6,522	10,174
Wire:				
Carbon	21,875	54,841	75,236	76,421
Alloy	6,855	11,611	11,539	11,536
Wire products:				
Nails	9,688	11,853	14,135	17,143
Barbed wire	3,175	2,715	3,997	2,124
Wire fencing	9,367	7,694	10,794	14,209
Wire strand	6,758	14,704	18,245	18,170
Wire rope	3,171	4,582	4,380	4,927
Total wire rod and related products	91,479	209,220	300,559	213,121

See footnotes at end of table.

Table E-31—Continued
Steel mill products and certain fabricated steel products: U.S. exports of specified products and exports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Quantity (short tons)			
Structurals:				
Heavy	150,793	305,804	405,222	281,533
Fabricated	109,957	189,204	251,796	164,879
Total	260,750	495,007	657,019	446,412
Rails and related products:				
Rails	70,470	110,214	77,005	34,769
Joint bars and tie plates	11,870	261,635	15,601	19,416
Wheels and axles	4,124	7,191	15,450	20,023
Total	86,464	379,039	108,056	74,208
Pipes and tubes:				
Oil country tubular goods	319,868	194,770	362,765	227,245
Line pipe	27,927	73,420	162,052	187,652
Other[3]	87,130	189,147	213,358	249,684
Total	434,925	457,336	738,176	664,582
Stainless and alloy tool steel:				
Stainless:				
Semifinished[2]	13,829	6,472	20,063	5,487
Plate	3,437	8,534	9,193	6,598
Sheet and strip:				
Sheet:				
Hot rolled	17,945	5,876	14,500	9,239
Cold rolled	11,616	17,266	30,906	23,204
Strip	23,439	40,806	52,586	45,625
Total, sheet & strip	52,999	63,947	97,991	78,069
Bars and shapes	16,399	16,005	16,989	19,935
Wire rod	5,505	5,413	4,224	2,256
Wire	2,614	3,599	2,640	2,181
Pipe and tube	8,067	13,443	14,934	14,701
Alloy tool steel (all forms)	18,492	4,594	8,592	5,974
Total, stainless & tool	121,342	122,007	174,626	135,201

See footnotes at end of table.

Table E-31—Continued
Steel mill products and certain fabricated steel products: U.S. exports of specified products and exports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Share of product group total (percent)			
Carbon and certain alloy[1] steel:				
Semifinished[2]	100.00	100.00	100.00	100.00
Plate:				
Carbon	95.43	91.68	93.16	91.00
Alloy	4.57	8.32	6.84	9.00
Total	100.00	100.00	100.00	100.00
Sheet and strip:				
Hot rolled:				
Sheet	53.56	47.19	63.32	32.32
Strip	1.31	2.27	1.13	2.92
Cold rolled:				
Black plate	0.00	0.11	0.15	0.25
Electrical	1.79	2.27	2.58	2.50
Other sheet	16.04	16.51	11.67	17.64
Other strip	3.28	6.36	3.88	6.65
Galvanized	14.53	13.64	9.31	15.52
Tin plate	6.16	7.03	4.63	14.55
Tin free	0.97	1.22	1.17	3.12
Other coated	2.38	3.39	2.16	4.53
Total, sheet and strip	100.00	100.00	100.00	100.00
Bars:				
Hot rolled:				
Carbon	30.03	32.10	24.33	24.56
Alloy	8.30	17.22	16.26	17.82
Cold rolled:				
Carbon	13.03	9.44	6.87	10.13
Alloy	1.91	1.13	1.82	2.55
Reinforcing	39.24	27.76	41.88	35.93
Light structural shapes	7.48	12.36	8.84	9.00
Total, bars	100.00	100.00	100.00	100.00
Wire rod and related products:				
Wire rod:				
Carbon	29.42	45.39	51.81	27.41
Alloy	4.02	2.99	2.17	4.77
Wire:				
Carbon	23.91	26.21	25.03	35.86
Alloy	7.49	5.55	3.84	5.41
Wire products:				
Nails	10.59	5.67	4.70	8.04
Barbed wire	3.47	1.30	1.33	1.00
Wire fencing	10.24	3.68	3.59	6.67
Wire strand	7.39	7.03	6.07	8.53
Wire rope	3.47	2.19	1.46	2.31
Total, all wire rod and related products	100.00	100.00	100.00	100.00

See footnotes at end of table.

Table E-31—Continued
Steel mill products and certain fabricated steel products: U.S. exports of specified products and exports as a percent of major product groupings, 1989-92

Item	1989	1990	1991	1992
	Share of product group total (percent)			
Structurals:				
Heavy	57.83	61.78	61.68	63.07
Fabricated	42.17	38.22	38.32	36.93
Total	100.00	100.00	100.00	100.00
Rails and related products:				
Rails	81.50	29.08	71.26	46.85
Joint bars and tie plates	13.73	69.03	14.44	26.16
Wheels and axles	4.77	1.90	14.30	26.98
Total	100.00	100.00	100.00	100.00
Pipes and tubes:				
Oil country tubular goods	73.55	42.59	49.14	34.19
Line pipe	6.42	16.05	21.95	28.24
Other[3]	20.03	41.36	28.90	37.57
Total	100.00	100.00	100.00	100.00
Stainless and alloy tool steel:				
Stainless:				
Semifinished[2]	100.00	100.00	100.00	100.00
Plate	100.00	100.00	100.00	100.00
Sheet and strip:				
Sheet:				
Hot rolled	33.86	9.19	14.80	11.83
Cold rolled	21.92	27.00	31.54	29.72
Strip	44.22	63.81	53.66	58.44
Total, sheet and strip	100.00	100.00	100.00	100.00
Bars and shapes	100.00	100.00	100.00	100.00
Wire rod	100.00	100.00	100.00	100.00
Wire	100.00	100.00	100.00	100.00
Pipe and tube	100.00	100.00	100.00	100.00
Alloy tool steel (all forms)	100.00	100.00	100.00	100.00
Total, stainless & alloy tool steel	100.00	100.00	100.00	100.00

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.
[3] Includes mechanical, standard, structural, and pressure pipe and tube.

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

Table E-32
Steel mill products and certain fabricated steel products: U.S. imports for consumption, by customs areas, 1989-92

(Short tons)

Item	1989	1990	1991	1992
Atlantic Coast	3,528,821	2,928,879	2,796,230	2,856,868
Great Lakes-Canadian border	5,760,887	5,846,525	5,092,319	6,788,052
Gulf Coast-Mexican border	4,574,356	4,633,694	4,388,184	4,051,683
Off-shore	371,842	309,270	267,302	293,409
Pacific Coast	4,108,241	4,425,344	3,837,281	3,790,493
Total	18,344,147	18,143,711	16,381,316	17,780,504

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

Table E-33
Steel mill products and certain fabricated steel products: U.S. imports for consumption through the Atlantic Coast customs area, 1989-92

(Short tons)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	323,401	172,652	215,983	197,728
Plate	144,259	140,747	135,459	119,918
Sheet and strip	1,371,360	1,288,286	1,363,034	1,474,263
Bars and certain shapes	155,134	102,207	75,641	90,076
Wire rod	215,013	185,722	150,070	206,153
Wire	88,009	76,338	56,557	60,118
Wire products	237,679	211,516	142,681	180,784
Structural shapes and units	458,130	192,938	91,410	85,277
Rails and related products	35,669	26,018	27,479	22,651
Pipe and tube	340,606	360,166	366,760	216,592
Total	3,369,260	2,756,591	2,625,076	2,653,559
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	14,669	21,028	14,741	12,091
Plate	3,535	3,317	3,742	6,506
Sheet and strip	53,526	62,975	66,343	85,256
Bars and certain shapes	22,418	19,501	23,850	27,003
Wire rod	16,289	17,513	18,497	31,080
Wire	11,848	10,169	9,195	9,461
Pipe and tube	14,468	18,163	15,230	11,508
Tool steel (all forms)	22,807	19,621	19,555	20,405
Total stainless & tool	159,561	172,288	171,154	203,309
Grand total	3,528,821	2,928,879	2,796,230	2,856,868

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.

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

Table E-34
Steel mill products and certain fabricated steel products: U.S. imports for consumption through the Great Lakes-Canadian border customs area, 1989-92

(Short tons)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	393,604	376,130	147,430	497,809
Plate	279,566	275,279	225,946	296,303
Sheet and strip	2,489,471	2,769,747	2,472,889	3,409,624
Bars and certain shapes	650,140	590,935	557,758	722,328
Wire rod	466,968	387,724	394,153	527,597
Wire	230,319	202,258	197,111	231,314
Wire products	106,485	96,089	87,258	100,003
Structural shapes and units	375,682	399,695	267,925	284,051
Rails and related products	161,932	196,840	125,448	128,874
Pipe and tube	492,836	446,874	517,440	481,639
Total	5,647,003	5,741,573	4,993,357	6,679,543
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	36,980	26,516	21,834	19,847
Plate	1,798	2,036	1,496	1,883
Sheet and strip	36,732	38,187	29,589	48,531
Bars and certain shapes	4,337	8,597	9,236	11,456
Wire rod	822	1,064	1,866	2,765
Wire	5,832	4,816	5,214	6,311
Pipe and tube	7,190	7,942	7,264	6,080
Tool steel (all forms)	20,192	15,794	22,463	11,637
Total stainless & tool	113,884	104,951	98,962	108,509
Grand total	5,760,887	5,846,525	5,092,319	6,788,052

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.

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

Table E-35
Steel mill products and certain fabricated steel products: U.S. imports for consumption through the Gulf Coast-Mexican border customs area, 1989-92

(Short tons)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	684,289	616,184	603,254	576,719
Plate	341,682	424,239	361,340	418,292
Sheet and strip	1,426,476	1,455,723	1,369,315	1,646,240
Bars and certain shapes	157,610	124,950	150,691	100,628
Wire rod	220,248	217,475	197,187	302,093
Wire	61,675	53,333	44,736	48,401
Wire products	138,125	175,874	133,800	152,177
Structural shapes and units	323,672	197,391	128,798	124,448
Rails and related products	81,408	55,424	61,407	72,166
Pipe and tube	1,070,870	1,229,715	1,233,838	503,817
Total	4,506,055	4,550,308	4,284,367	3,944,981
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	10,462	13,275	11,879	5,145
Plate	3,598	3,042	6,001	4,933
Sheet and strip	31,007	39,834	54,715	62,099
Bars and certain shapes	7,646	8,266	10,425	10,128
Wire rod	1,735	1,824	2,142	1,769
Wire	1,144	2,162	1,848	2,224
Pipe and tube	11,123	12,488	15,145	16,738
Tool steel (all forms)	1,585	2,495	1,663	3,666
Total stainless & tool	68,301	83,386	103,818	106,701
Grand total	4,574,356	4,633,694	4,388,184	4,051,683

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.

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

Table E-36
Steel mill products and certain fabricated steel products: U.S. imports for consumption through the Off-shore customs area, 1989-92

(Short tons)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	0	(3)	0	0
Plate	4,922	6,066	5,182	3,615
Sheet and strip	80,248	100,253	66,482	87,630
Bars and certain shapes	169,928	115,415	99,676	98,240
Wire rod	5,174	15,574	12,199	10,073
Wire	11,407	12,654	13,339	10,667
Wire products	6,070	8,213	5,953	5,300
Structural shapes and units	28,269	12,233	11,587	12,444
Rails and related products	333	624	439	1,040
Pipe and tube	64,215	37,894	49,995	63,428
Total	370,565	308,925	264,852	292,438
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	(3)	(3)	(3)	(3)
Plate	0	0	0	0
Sheet and strip	153	244	0	(3)
Bars and certain shapes	(3)	10	0	(3)
Wire rod	0	0	0	0
Wire	810	64	64	(3)
Pipe and tube	18	8	2,386	970
Tool steel (all forms)	295	19	0	0
Total stainless & tool	1,277	345	2,450	971
Grand total	371,842	309,270	267,302	293,409

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.
[3] Less than 0.5 short tons.

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

Table E-37
Steel mill products and certain fabricated steel products: U.S. imports for consumption through the Pacific Coast customs area, 1989-92

(Short tons)

Item	1989	1990	1991	1992
Carbon and certain alloy[1] steel:				
Semifinished[2]	734,396	1,137,032	1,029,943	1,034,887
Plate	136,535	76,496	51,075	40,044
Sheet and strip	1,569,127	1,910,016	1,659,198	1,949,383
Bars and certain shapes	131,492	101,747	60,079	45,923
Wire rod	221,015	149,617	67,417	60,889
Wire	81,573	69,425	63,008	61,391
Wire products	215,243	168,632	142,147	148,652
Structural shapes and units	454,608	218,336	104,641	83,393
Rails and related products	43,644	70,650	88,822	74,687
Pipe and tube	467,017	467,540	519,121	235,402
Total	4,054,651	4,369,490	3,785,451	3,734,651
Stainless and alloy tool steel:				
Stainless steel:				
Semifinished[2]	10	3	507	94
Plate	1,729	2,068	2,363	1,910
Sheet and strip	30,407	31,792	26,184	30,299
Bars and certain shapes	9,015	8,152	8,981	8,912
Wire rod	2,852	2,728	3,392	4,002
Wire	1,685	1,117	733	1,094
Pipe and tube	4,459	8,619	8,193	7,315
Tool steel (all forms)	3,433	1,376	1,478	2,215
Total stainless & tool	53,590	55,854	51,831	55,842
Grand total	4,108,241	4,425,344	3,837,281	3,790,493

[1] "Certain alloy" refers to alloy steel other than stainless or tool steel.
[2] Semifinished steel includes ingots, blooms, billets, slabs, and sheet bars.

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

APPENDIX F
DESCRIPTIONS OF THE PRODUCTS SUBJECT TO THE INVESTIGATION AND DEFINITIONS OF CERTAIN TERMS

Definitions

1. *Steel.*—An alloy of iron and carbon which is malleable as first cast and which contains by weight 2 percent or less of carbon. Steel may contain other elements, but iron must predominate, by weight, over each of the other elements.

2. *Carbon steel.*—Steel, other than chromium, which contains by weight 2 percent or less of carbon, and in which none of the elements listed below meets or exceeds the quantity, by weight, respectively indicated:

1.65 percent of manganese; or
0.25 percent of phosphorus; or
0.35 percent of sulphur; or
0.60 percent of silicon; or
0.40 percent of copper; or
0.30 percent of aluminum; or
0.30 percent of chromium; or
0.30 percent of cobalt; or
0.40 percent of lead; or
0.30 percent of nickel; or
0.30 percent of tungsten; or
0.10 percent of any other metallic element.

3. *Alloy steel.*—Steel which contains any of the elements listed in definition 2 (above) in excess of its specified quantity.

(i) *Stainless steel.*—Any alloy steel which contains by weight 1.2 percent or less of carbon and 10.5 percent or more of chromium, with or without other elements.

(ii) *Tool steel.*—Alloy steels which contain the following combinations of elements in the quantity, by weight, respectively indicated:

more than 1.2 percent carbon and more than 10.5 percent chromium; or
not less than 0.3 percent carbon and 1.25 percent or more but less than 10.5 percent chromium; or
not less than 0.85 percent carbon and 1 percent to 1.8 percent, inclusive, manganese; or
0.9 percent to 1.2 percent, inclusive, chromium and 0.9 percent to 1.4 percent, inclusive, molybdenum; or
not less than 0.5 percent carbon and not less than 3.5 percent molybdenum; or
not less than 0.5 percent carbon and not less than 5.5 percent tungsten.

(iii) *Certain alloy steel.*—Alloy steel not covered under 3.(i) "Stainless steel" or 3.(ii) "Tool steel."

4. *Galvanized.*—Steel which has been coated or plated with zinc.

5. *Hot-rolled.*—Steel which has been reduced to its final thickness by heating and rolling the product at elevated temperature (usually above 2,200° F).

6. *Cold-rolled.*—Steel which has been reduced to its final thickness by rolling the product without heating it immediately prior to the rolling operation.

7. *Continuous casting.*—The method of producing semifinished products in which molten steel flows evenly into a caster where it is rapidly cooled, causing it to solidify directly into semifinished products such as slabs and billets.

8. *Short ton.*—Two thousand (2,000) pounds.

Unlike the TSUSA system of classification, the HTS does not differentiate by dimension those steel products formerly referred to as blooms and billets, slabs and sheet

bars, plate, sheet, and strip. Instead, these products are included in two larger categories: flat-rolled and semifinished (described below). However, for purposes of data comparability with previous Commission reports provided under investigation No. 332-226 (*Monthly and Quarterly Reports on the Status of the Steel Industry*), and in the interest of providing useful information and coverage of the steel industry, this report will continue to designate such product categories (e.g., blooms and billets, slabs and sheet bars, plate, hot-rolled and cold-rolled sheet, and strip). A partial basis for classification are those definitions found in Federal Register Notice 52897, December 29, 1988.

For certain products, export categories under the Schedule B classification system are broader than import product categories under the HTS; therefore, there is no overall one-to-one correspondence between the two classification systems. For this reason, export classifications are listed separately from import classifications in the following definitions.

9. *Semifinished products* include:

Continuous cast products of solid section, not presented in coils, whether or not subjected to primary hot-rolling.

Other products of solid section which have not been further worked than subjected to primary hot-rolling or roughly shaped by forging, including blanks, angles, shapes, or sections.

For the purposes of this investigation, semi-finished products are classified as follows:

(i) *Ingots.*—Castings resulting from the solidification of molten steel and having a columnar form suitable for working by rolling or forging. Ingots are included in AISI (American Iron and Steel Institute) product group No. 1A.

(A) *Carbon and certain alloy ingots*; provided for in subheadings 7206.10.0000, 7206.90.0000, 7224.10.0005, 7224.10.0075 of the *Harmonized Tariff Schedules of the United States* (*HTS*).

(B) *Stainless steel ingots*; provided for in subheading 7218.10.0000 of the *HTS*.

(ii) *Blooms, billets, slabs, and sheet bars.*—Other continuous cast products of solid cross section, which have not been further worked than subjected to primary hot-rolling or roughly shaped by forging including blanks for angles, shapes or sections. These products are not presented in coils and are included in AISI product group No. 1B.

(A) *Carbon and certain alloy blooms and billets*; provided for in subheadings 7207.11.0000, 7207.12.0010, 7207.19.0030, 7207.19.0090, 7207.20.0025, 7207.20.0075, 7207.20.0090, 7224.90.0005, 7224.90.0045, 7224.90.0065, 7224.90.0075 of the *HTS*.

(B) *Carbon and certain alloy slabs and sheet bars*; provided for in subheadings 7207.12.0050, 7207.20.0045, 7224.90.0055 of the *HTS*.

(C) *Stainless steel blooms and billets*; provided for in subheadings 7218.90.0005, 7218.90.0015, 7218.90.0025, 7218.90.0032, 7218.90.0040, 7218.90.0050, 7218.90.0060, 7218.90.0075, 7218.90.0085, 7218.90.0095 of the *HTS*.

(D) *Stainless steel slabs and sheet bars*; provided for in subheading 7218.90.0038 of the *HTS*.

Exports of carbon and certain alloy semifinished products are provided for in Schedule B subheadings 7206.10.0000, 7206.90.0000, 7207.11.0000, 7207.12.0000, 7207.19.0000, 7207.20.0000, 7224.10.0000, 7224.90.0000.

Exports of stainless steel semifinished products are provided for in Schedule B subheadings 7218.10.0000, 7218.90.0000.

10. *Flat-rolled products.*—Rolled products of solid rectangular (other than square) cross section, whether perforated, corrugated, polished, or with a pattern derived from rolling, which do not conform to the definition of semifinished products above in the form of:

- coils of successively superimposed layers; or
- straight lengths, which if of a thickness less than 4.75 mm are of a width measuring at least 10 times the thickness or if of a thickness of 4.75 mm or more are of a width which exceeds 150 mm and measures at least twice the thickness. Also those products of a shape other than rectangular or square of a width of 600 mm or more, not elsewhere specified.

(i) *Plates (cut-to-length).*—Flat-rolled products with a thickness equal to or exceeding 4.75 mm, not in coils. Plates are included in AISI product group No. 6A.

(A) *Carbon plate*; provided for in subheadings 7208.31.0000, 7208.32.0000, 7208.33.1000, 7208.33.5000, 7208.41.0000, 7208.42.0000, 7208.43.0000, 7210.90.1000, 7211.11.0000, 7211.21.0000, 7211.22.0045 of the *HTS*.

Exports of carbon plates are provided for in Schedule B subheadings 7208.31.0000, 7208.32.0000, 7208.33.0000, 7208.41.0000, 7208.42.0000, 7208.43.0000, 7210.90.1000, 7211.11.0000, 7211.21.0000.

(B) *Certain alloy plate*; provided for in subheadings 7225.40.1015, 7225.40.3005, 7225.40.3050, 7225.50.6000 of the *HTS*.

Exports of certain alloy plates are provided for in Schedule B subheadings 7225.30.0000, 7225.40.0000.

(C) *Stainless steel plate*; provided for in subheadings 7219.21.0005, 7219.21.0050, 7219.22.0005, 7219.22.0050, 7219.31.0010, 7219.31.0050 of the *HTS*.

Exports of stainless steel plates are provided for in Schedule B subheadings 7219.21.0000, 7219.22.0000, 7219.31.0000.

(ii) *Sheets and strip (including coiled plate).*—Flat-rolled products in either coils or straight lengths. Sheet has a width equal to or exceeding 600 mm; strip width is less than 600 mm (but at least 10 times the thickness). Sheets and strip are included in AISI product group Nos. 6B, 28, 29, 29A, 30, 31, 32, 33A, 33B, 34, 35, 36, and 37. For the purposes of this investigation, sheets and strip are classified as follows:

(A) *Hot-rolled carbon and certain alloy sheet*; provided for in subheadings 7208.11.0000, 7208.12.0000, 7208.13.1000, 7208.13.5000, 7208.14.1000, 7208.14.5000, 7208.21.1000, 7208.21.5000, 7208.22.1000, 7208.22.5000, 7208.23.1000, 7208.23.5030, 7208.23.5090, 7208.24.1000, 7208.24.5030, 7208.24.5090, 7208.34.1000, 7208.34.5000, 7208.35.1000, 7208.35.5000, 7208.44.0000, 7208.45.0000, 7208.90.0000, 7211.12.0000, 7211.22.0090, 7225.30.3000, 7225.30.3005, 7225.30.3050, 7225.30.5030, 7225.30.7000, 7225.40.5030, 7225.40.7000, 7226.91.1530, 7226.91.5000 of the *HTS*.

Exports of hot-rolled carbon and certain alloy sheet are provided for in Schedule B subheadings 7208.11.0000, 7208.12.0000, 7208.13.0000, 7208.14.0000, 7208.21.0000, 7208.22.0000, 7208.23.0000, 7208.24.0000, 7208.34.0000, 7208.35.0000, 7208.44.0000, 7208.45.0000, 7208.90.0000, 7211.12.0000, 7211.22.0000, 7225.30.0000.

(B) *Hot-rolled carbon and certain alloy strip*; provided for in subheadings 7211.19.1000, 7211.19.5000, 7211.29.1000, 7211.29.3000, 7211.29.5000, 7211.29.7030, 7211.29.7060, 7211.29.7090, 7226.91.2530, 7226.91.7000, 7226.91.8000 of the *HTS*.

Exports of hot-rolled carbon and certain alloy strip are provided for in Schedule B subheadings 7211.19.0000, 7211.29.0000, 7226.91.0000.

(C) *Cold-rolled carbon and certain alloy sheet and strip*:

(a) *Black plate*; provided for in subheading 7209.24.1000 of the HTS.

Exports of black plate are provided for in Schedule B subheading 7209.24.1000.

(b) *Electrical sheet and strip*; provided for in subheadings 7225.10.0000, 7226.10.1000, 7226.10.5030, 7226.10.5060 of the *HTS*.

Exports of electrical sheet and strip are provided for in Schedule B subheadings 7225.10.0000, 7226.10.0000.

(c) *Other sheet*; provided for in subheadings 7209.11.0000, 7209.12.0030, 7209.12.0090, 7209.13.0030, 7209.13.0090, 7209.14.0030, 7209.14.0090, 7209.21.0000, 7209.22.0000, 7209.23.0000, 7209.24.5000, 7209.31.0000, 7209.32.0000, 7209.33.0000, 7209.34.0000, 7209.41.0000, 7209.42.0000, 7209.43.0000, 7209.44.0000, 7209.90.0000, 7210.70.3000, 7225.50.1030, 7225.50.7000, 7225.50.8000, 7225.90.0000 of the *HTS*.

Exports of other cold-rolled sheet are provided for in Schedule B subheadings 7209.11.0000, 7209.12.0000, 7209.13.0000, 7209.14.0000, 7209.21.0000, 7209.22.0000, 7209.23.0000, 7209.24.0000, 7209.24.5000, 7209.31.0000, 7209.32.0000, 7209.33.0000, 7209.34.0000, 7209.41.0000, 7209.42.0000, 7209.43.0000, 7209.44.0000, 7209.90.0000, 7225.50.0000, 7225.90.0000.

(d) *Other strip*; provided for in subheadings 7211.30.1030, 7211.30.1090, 7211.30.3000, 7211.30.5000, 7211.41.1000, 7211.41.3030, 7211.41.3090, 7211.41.5000, 7211.41.7030, 7211.41.7060, 7211.41.7090, 7211.49.1030, 7211.49.1090, 7211.49.3000, 7211.49.5030, 7211.49.5060, 7211.49.5090, 7211.90.0000, 7212.40.1000, 7212.40.5000, 7226.92.1030, 7226.92.3030, 7226.92.5000, 7226.92.7005, 7226.92.7050, 7226.92.8005, 7226.92.8050, 7226.99.0000 of the *HTS*.

Exports of other cold-rolled strip are provided for in Schedule B subheadings 7210.70.0000, 7211.30.0000, 7211.41.0000, 7211.49.0000, 7211.90.0000, 7212.40.0000, 7226.92.4000, 7226.99.0000.

(D) *Galvanized sheet and strip*; provided for in subheadings 7210.31.0000, 7210.39.0000, 7210.41.0000, 7210.49.0030, 7210.49.0090, 7210.70.6030, 7210.70.6060, 7212.21.0000, 7212.29.0000, 7212.30.1030, 7212.30.1090, 7212.30.3000, 7212.30.5000 of the *HTS*.

Exports of galvanized sheet and strip are provided for in Schedule B subheadings 7210.31.0000, 7210.39.0000, 7210.41.0000, 7210.49.0000, 7212.21.0000, 7212.29.0000, 7212.30.0000.

(E) *Tin plate*; provided for in subheadings 7210.11.0000, 7210.12.0000, 7212.10.0000 of the *HTS*.

Exports of tin plate are provided for in Schedule B subheadings 7210.11.0000, 7210.12.0000, 7212.10.0000.

(F) *Tin free*; provided for in subheading 7210.50.0000 of the *HTS*.

Exports of tin free sheets are provided for in Schedule B subheading 7210.50.0000.

(G) *Other metallic coated sheet and strip*; provided for in subheadings 7210.20.0000, 7210.60.0000, 7210.70.6090, 7210.90.6000, 7210.90.90000, 7212.50.0000, 7212.60.0000 of the *HTS*.

Exports of other metallic coated sheet and strip are provided for in Schedule B subheadings 7210.20.0000, 7210.60.0000, 7210.90.5000, 7212.50.0000, 7212.60.0000.

(H) *Stainless steel hot-rolled sheet*; provided for in subheadings 7219.11.0000, 7219.12.0000, 7219.12.0005, 7219.12.0015, 7219.12.0030, 7219.12.0045,

7219.12.0060, 7219.12.0075, 7219.12.0080, 7219.13.0030, 7219.13.0060, 7219.14.0030, 7219.14.0060, 7219.23.0030, 7219.23.0060, 7219.24.0030, 7219.24.0060, 7220.11.0000 of the *HTS*.

Exports of stainless steel hot-rolled sheet are provided for in Schedule B subheadings 7219.11.0000, 7219.12.0000, 7219.13.0000, 7219.14.0000, 7219.23.0000, 7219.24.0000, 7220.11.0000.

(I) *Stainless steel cold-rolled sheet*; provided for in subheadings 7219.32.0015, 7219.32.0030, 7219.32.0045, 7219.32.0060, 7219.33.0015, 7219.33.0030, 7219.33.0045, 7219.33.0060, 7219.34.0010, 7219.34.0050, 7219.35.0010, 7219.35.0050, 7219.90.0000 of the *HTS*.

Exports of stainless steel cold-rolled sheet are provided for in Schedule B subheadings 7219.32.0000, 7219.33.0000, 7219.34.0000, 7219.35.0000, 7219.90.0000.

(J) *Stainless steel strip*; provided for in subheadings 7220.12.1000, 7220.12.5000, 7220.20.1000, 7220.20.6005, 7220.20.6050, 7220.20.7005, 7220.20.7050, 7220.20.8000, 7220.20.9000, 7220.90.0000 of the *HTS*.

Exports of stainless steel strip are provided for in Schedule B subheadings 7220.12.0000, 7220.20.0000, 7220.90.0000.

11. *Bars.*— Hot-rolled products, over 0.55 inches (14mm) in diameter, whether or not in irregularly wound coils, which have a solid cross section along their length in the shape of circles, segments of circles, ovals, rectangles (including squares), triangles, or other convex polygons. Such products may:

- have indentations, ribs, grooves or other deformations produced during the rolling process (reinforcing bars and rods);
- be twisted after rolling.

For purposes of this investigation the term "bars" also includes hollow drill steel, which is a hollow product suitable for making mining drills or mining drill rods, of which the greatest external dimension of the cross-section exceeds 15 mm but does not exceed 52 mm, and of which the greatest internal dimension does not exceed one-half of the greatest external dimension. Bars and hollow drill steel are found in AISI product groups Nos. 14, 14A, 15, and 16.

For the purposes of this investigation, bars and light structural shapes are classified as follows:

(i) *Hot-rolled carbon bars.*—Provided for in subheadings 7213.39.0060, 7213.49.0060, 7213.50.0060, 7214.10.0000, 7214.30.0000, 7214.40.0010, 7214.40.0030, 7214.40.0050, 7214.50.0010, 7214.50.0030, 7214.50.0050, 7214.60.0010, 7214.60.0030, 7214.60.0050, 7215.90.1000 of the *HTS*, and included in AISI product group No. 14.

Exports of hot-rolled carbon bars are provided for in Schedule B subheadings 7213.20.0000, 7214.10.0000, 7214.30.0000, 7214.40.0000, 7214.50.0000, 7214.60.0000.

(ii) *Hot-rolled certain alloy bars.*—Provided for in subheadings 7227.20.0000, 7227.90.6005, 7227.90.6050, 7228.20.1000, 7228.30.8005, 7228.30.8050, 7228.40.0000, 7228.60.6000, 7228.80.0000 of the *HTS*, and included in AISI product group No. 14.

Exports of hot-rolled alloy bars are provided for in Schedule B subheadings 7227.20.0000, 7228.20.0000, 7228.30.8000, 7228.40.0000, 7228.60.5000, 7228.80.0000.

(iii) *Cold-formed carbon bars.*—Provided for in subheadings 7215.10.0000, 7215.20.0000, 7215.30.0000, 7215.40.0000, 7215.90.3000, 7215.90.5000 of the *HTS*, and included in AISI product group No. 16.

Exports of cold-formed carbon bars are provided for in Schedule B subheadings 7215.10.0000, 7215.20.0000, 7215.30.0000, 7215.40.0000, 7215.90.0000.

(iv) *Cold-formed certain alloy bars.*—Provided for in subheadings 7228.20.5000, 7228.50.5005, 7228.50.5050, 7228.60.8000 of the *HTS*, and included in AISI product group No. 16.

Exports of cold-formed certain alloy bars are provided for in Schedule B subheading 7228.50.5000.

(v) *Reinforcing carbon and certain alloy steel bars.*—Hot-rolled steel bars, of solid cross section, having deformations of various patterns on their surfaces; provided for in subheadings 7213.10.0000, 7214.20.0000 of the *HTS*, and included in AISI product group No. 15.

Exports of reinforcing carbon and certain alloy steel bars are provided for in Schedule B subheadings 7213.10.0000, 7214.20.0000.

(vi) *Light structural shapes.*—Bar-size light shapes having a cross-sectional dimension of less than 7.62 cm provided for in subheadings 7216.10.0010, 7216.10.0050, 7216.21.0000, 7216.22.0000, 7228.70.3060, 7228.70.3080 of the *HTS*, and included in AISI product group No. 14A.

Exports of light structural shapes are provided for in Schedule B subheadings 7216.10.0000, 7216.21.0000, 7216.22.0000.

(vii) *Stainless steel bars and shapes.*—Provided for in subheadings 7221.00.0005, 7221.00.0045, 7221.00.0075, 7222.10.0005, 7222.10.0050, 7222.20.0005, 7222.20.0045, 7222.20.0075, 7222.30.0000, 7222.40.3060, 7222.40.3080 of the *HTS* and included in AISI product group Nos. 14, 15, and 16.

Exports of stainless steel bars and shapes are provided for in Schedule B subheadings 7222.10.0000, 7222.20.0000, 7222.30.0000, 7222.40.0000.

12. *Wire rods and related products*:

(i) *Wire rods.*—Coiled, semifinished, hot-rolled products of solid cross section, approximately round in cross section, not over 19mm in diameter. Wire rods are included in AISI product group No. 3.

For the purposes of this investigation, wire rods are classified as follows:

(A) *Carbon steel wire rods*; provided for in subheadings 7213.31.3000, 7213.31.6000, 7213.39.0030, 7213.39.0090, 7213.41.3000, 7213.41.6000, 7213.49.0030, 7213.49.0090, 7213.50.0020, 7213.50.0040, 7213.50.0080 of the *HTS*.

Exports of carbon steel wire rods are provided for in Schedule B subheadings 7213.31.0000, 7213.39.0000, 7213.41.0000, 7213.49.0000, 7213.50.0000.

(B) *Certain alloy steel wire rods*; provided for in subheadings 7227.90.1030, 7227.90.2030, 7228.30.2000, 7228.50.1010, 7228.60.1030 of the *HTS*.

Exports of certain alloy steel wire rods are provided for in Schedule B subheading 7227.90.0000.

(C) *Stainless steel wire rods*; provided for in subheadings 7221.00.0015, 7221.00.0030 of the *HTS*.

Exports of stainless steel wire rods are provided for in Schedule B subheading 7221.00.0000.

(ii) *Steel wire.*—Cold-formed products in coils, of any uniform solid cross section along their whole length, which do not conform to the definition of flat-rolled products. Steel wire is included in AISI product group No. 23.

For the purpose of this investigation, steel wire is classified as follows:

(A) *Carbon steel wire*; provided for in subheadings 7217.11.1000, 7217.11.2000, 7217.11.3000, 7217.11.5020, 7217.11.5040, 7217.11.5060, 7217.11.5080,

7217.11.7030, 7217.11.7090, 7217.11.9000, 7217.12.1000, 7217.12.3030, 7217.12.3060, 7217.12.5000, 7217.12.7000, 7217.13.1000, 7217.13.3030, 7217.13.3060, 7217.13.5000, 7217.13.7000, 7217.19.5000, 7217.21.1000, 7217.21.3015, 7217.21.3030, 7217.21.3045, 7217.21.3060, 7217.21.3075, 7217.21.3090, 7217.21.5000, 7217.22.1015, 7217.22.1030, 7217.22.1050, 7217.22.5000, 7217.23.1015, 7217.23.1030, 7217.23.1050, 7217.23.5000, 7217.29.5000, 7217.31.1000, 7217.31.3015, 7217.31.3030, 7217.31.3045, 7217.31.3060, 7217.31.3075, 7217.31.3090, 7217.31.5000, 7217.32.1015, 7217.32.1030, 7217.32.1050, 7217.32.5000, 7217.33.1015, 7217.33.1030, 7217.33.1050, 7217.33.5000, 7217.39.5000 of the *HTS*.

Exports of carbon steel wire are provided for in Schedule B subheadings 7217.11.0000, 7217.12.0000, 7217.13.0000, 7217.19.0000, 7217.21.0000, 7217.22.0000, 7217.23.0000, 7217.29.0000, 7217.31.0000, 7217.32.0000, 7217.33.0000, 7217.39.0000.

(B) *Certain alloy steel wire*; provided for in subheadings 7229.20.0000, 7229.90.1000, 7229.90.5015, 7229.90.5030, 7229.90.5050, 7229.90.9000 of the HTS.

Exports of certain alloy steel wire are provided for in Schedule B subheadings 7229.20.0000, 7229.90.0000.

(C) *Stainless steel wire*; provided for in subheadings 7223.00.1015, 7223.00.1030, 7223.00.1045, 7223.00.1060, 7223.00.1075, 7223.00.5000, 7223.00.9000 of the *HTS*.

Exports of stainless steel wire are provided for in Schedule B subheading 7223.00.0000.

(iii) *Carbon and certain alloy steel wire products*.—As defined by the following:

(A) *Nails and brads, spikes, staples, and tacks*; fasteners, of one piece construction, made of round wire, and not including thumb tacks, staples in strip form, corrugated fasteners, glaziers' points, hook nails, ring nails, or fasteners suitable for use in power-actuated hand tools; as provided for in subheadings 7317.00.1000, 7317.00.5505, 7317.00.5510, 7317.00.5520, 7317.00.5530, 7317.00.5540, 7317.00.5550, 7317.00.5560, 7317.00.5570, 7317.00.5580, 7317.00.5590, 7317.00.7500, 8305.20.0000 of the *HTS*. Nails and staples are included in AISI product group No. 51 (pt.).

Exports of nails and brads, spikes, staples, and tacks are provided for in Schedule B subheadings 7317.00.1000, 7317.00.9000, 8305.20.0000.

(B) *Barbed wire*; a wire, or strand of twisted wires, armed with barbs or sharp points; as provided for in subheading 7313.00.0000 of the HTS. Barbed wire is included in AISI product group No. 52.

Exports of barbed wire are provided for in Schedule B subheading 7313.00.0000.

(C) Wire expanded metal, grill and fencing; products, whether or not galvanized, wholly of round wire with a maximum cross-sectional diameter of 3 mm or more, having a mesh size of 100 cm^2 or more, whether or not such wire is covered with plastics; as provided for in subheadings 7314.20.0000, 7314.30.1000, 7314.30.5000, 7314.41.0030, 7314.41.0060, 7314.42.0030, 7314.42.0060, 7314.49.3000, 7314.49.6000 of the HTS. The products are included in AISI product group No. 50.

Exports of wire expanded metal, grill and fencing are provided for in Schedule B subheadings 7314.20.0000, 7314.30.0000, 7314.41.0000, 7314.42.0000, 7314.49.0000.

(D) Baling wire and ties; with or without buckles or fastenings and whether or not coated with paint or other substance; as provided for in subheading 7326.20.0010 of the HTS and included in AISI product group No. 53.

(E) Wire strand; two or more wires which together constitute one of the parts which are twisted together to form rope, cord, or cordage, suitable for fencing purposes, not fitted with fittings, not made up into articles, not of brass plated wire, as provided for in subheadings 7312.10.1030, 7312.10.1050, 7312.10.1070, 7312.10.3005,

7312.10.3010, 7312.10.3012, 7312.10.3020, 7312.10.3065, 7312.10.3070, 7312.10.3074, 7312.10.3080 of the HTS. Wire strand is included in AISI product group No. 47.

Exports of wire strand are provided for in Schedule B subheadings 7312.10.3015, 7312.10.3500.

(F) *Wire ropes, cables, and cordage*; products made by the twisting of a number of wire strands and are not covered with nonmetallic material, not fitted with fittings, not made up into articles, and, if valued 13 cents or more per pound, not of brass plated wire; as provided for in subheadings 7312.10.6000, 7312.10.9030, 7312.10.9060, 7312.10.9090 of the *HTS*. Wire ropes, cables, and cordage are included in AISI product group No. 46.

Exports of wire ropes, cables, and cordage are provided for in Schedule B subheading 7312.10.8500.

13. *Structurals.*—Nontubular products not conforming completely to the respective specifications set forth in the *HTS* for semi-finished, flat-rolled, bars and rod or wire.

(i) *Heavy structural shapes.*—Products having a maximum cross-sectional dimension of 7.62 cm or more, and *sheet piling*; as provided for in subheadings 7216.31.0000, 7216.32.0000, 7216.33.0030, 7216.33.0060, 7216.33.0090, 7216.40.0010, 7216.40.0050, 7216.50.0000, 7222.40.3020, 7222.40.3040, 7228.70.3020, 7228.70.3040, 7301.10.0000 of the HTS. These products are included in AISI product group Nos. 4 and 5.

Exports of heavy structural shapes and sheet piling are provided for in Schedule B subheadings 7216.31.0000, 7216.32.0000, 7216.33.0000, 7216.40.0000, 7216.50.0000, 7216.60.0000, 7216.90.0000, 7301.10.0000.

(ii) *Fabricated structural units.*—Columns, pillars, posts, beams, girders, and similar structural units; as provided for in subheadings 7216.60.0000, 7216.90.0000, 7222.40.6000, 7228.70.6000, 7301.20.1000, 7301.20.5000, 7308.10.0000, 7308.20.0000, 7308.40.0000, 7308.90.3000, 7308.90.6000, 7308.90.9030, 7308.90.9090, 8430.49.4000 of the *HTS*. These products are included in AISI product group Nos. 38 and 39.

Exports of fabricated structural units are provided for in Schedule B subheadings 7228.70.0000, 7301.20.1000, 7301.20.5000, 7308.10.0000, 7308.20.0000, 7308.40.0000, 7308.90.1000, 7308.90.9030, 7308.90.9090, 8430.49.4000.

14. *Rails and related railway products* as defined by the following:

(i) *Rails.*— Hot-rolled steel products, whether punched or not punched, weighing not less than 8 pounds per yard, with cross-sectional shapes intended for carrying wheel loads in railroad, railway, and crane runway applications; as provided for in subheadings 7302.10.1010, 7302.10.1015, 7302.10.1025, 7302.10.1035, 7302.10.1045, 7302.10.1055, 7302.10.1065, 7302.10.1075, 7302.10.5020, 7302.10.5040, 7302.10.5060 of the *HTS*. Rails are included in AISI product group Nos. 7, 8, and 41.

Exports of rails are provided for in Schedule B subheadings 7302.10.1020, 7302.10.1030, 7302.10.1080, 7302.10.5000.

(ii) *Joint bars.*—Hot-rolled steel products, usually punched or slotted, designed to connect the ends of adjacent rails in track; tie plates are hot-rolled steel products which are punched to provide holes for spikes and have one or two shoulder sections as rail guides and are used to support rails in track, to maintain track gauge, and to protect the ties; all the foregoing, as provided for in subheadings 7302.20.0000, 7302.30.0000, 7302.40.0000, 7302.90.0000 of the *HTS*. Joint bars and tie plates are included in AISI product group Nos. 9 and 42.

Exports of joint bars, tie plates, and other railway track material are provided for in Schedule B subheadings 7302.20.0000, 7302.30.0000, 7302.40.0000, 7302.90.0000.

(iii) *Railway track spikes.*—Products of one-piece construction, used to secure tie plates or ties; as provided for in subheadings 7317.00.6530, 7317.00.6560 of the *HTS*. Railway track spikes are included in AISI product group No. 42 (pt.).

(iv) *Railroad and railway (RR) axles and wheels, parts thereof, and axle bars.*—Provided for in subheadings 8607.19.1000, 8607.19.2000 of the *HTS*. These articles are included in AISI product group No. 43.

Exports of railroad and railway (RR) axles and wheels, parts thereof, and axle bars are provided for in Schedule B subheadings 8607.19.1000 and 8607.19.2000.

15. *Pipes and tubes and blanks therefor.*—Tubular products, including hollow bars and hollow billets but not including hollow drill steel, of any cross-sectional configuration, by whatever process made, whether seamless, brazed, or welded and whether with an open or lock seam or joint. For the purposes of this investigation, pipes and tubes and blanks therefor are classified as follows:

(i) *Oil country tubular goods.*—Provided for in subheadings 7304.20.1000, 7304.20.1010, 7304.20.1020, 7304.20.1030, 7304.20.1040, 7304.20.1050, 7304.20.1060, 7304.20.1080, 7304.20.2000, 7304.20.2010, 7304.20.2020, 7304.20.2030, 7304.20.2040, 7304.20.2050, 7304.20.2060, 7304.20.2080, 7304.20.3000, 7304.20.3010, 7304.20.3020, 7304.20.3030, 7304.20.3040, 7304.20.3050, 7304.20.3060, 7304.20.3080, 7304.20.4010, 7304.20.4020, 7304.20.4030, 7304.20.4040, 7304.20.4050, 7304.20.4060, 7304.20.4080, 7304.20.5015, 7304.20.5030, 7304.20.5045, 7304.20.5060, 7304.20.5075, 7304.20.6015, 7304.20.6030, 7304.20.6045, 7304.20.6060, 7304.20.6075, 7304.20.7000, 7304.20.8030, 7304.20.8045, 7304.20.8060, 7305.20.2000, 7305.20.4000, 7305.20.6000, 7305.20.8000, 7306.20.1030, 7306.20.1090, 7306.20.2000, 7306.20.3000, 7306.20.4000, 7306.20.6010, 7306.20.6050, 7306.20.8010, 7306.20.8050 of the *HTS*. Oil country tubular goods are included in AISI product group No. 19.

Exports of oil country tubular goods are provided for in Schedule B subheadings 7304.20.1500, 7304.20.3500, 7304.20.5000, 7304.20.6000, 7304.20.7000, 7304.20.8000, 7305.20.3000, 7305.20.7000, 7306.20.1500, 7306.20.2500, 7306.20.6000, 7306.20.8000.

(ii) *Line pipe.*—Provided for in subheadings 7304.10.1020, 7304.10.1030, 7304.10.1045, 7304.10.1060, 7304.10.1080, 7304.10.5020, 7304.10.5050, 7304.10.5080, 7305.11.1030, 7305.11.1060, 7305.11.5000, 7305.12.1030, 7305.12.1060, 7305.12.5000, 7305.19.1030, 7305.19.1060, 7305.19.5000, 7306.10.1010, 7306.10.1050, 7306.10.5010, 7306.10.5050 of the *HTS*. Line pipe is included in AISI product group No. 20.

Exports of line pipe are provided for in Schedule B subheadings 7304.10.1020, 7304.10.1050, 7304.10.1080, 7304.10.5020, 7304.10.5050, 7304.10.5080, 7305.11.1000, 7305.11.5000, 7305.12.1000, 7305.12.5000, 7305.19.1000, 7305.19.5000, 7306.10.1000, 7306.10.5000.

(iii) *Mechanical pipe.*—Provided for in subheadings 7304.31.3000, 7304.31.6050, 7304.39.0028, 7304.39.0032, 7304.39.0040, 7304.39.0044, 7304.39.0052, 7304.39.0056, 7304.39.0068, 7304.39.0072, 7304.51.1000, 7304.51.5060, 7304.59.1000, 7304.59.6000, 7304.59.8020, 7304.59.8025, 7304.59.8035, 7304.59.8040, 7304.59.8050, 7304.59.8055, 7304.59.8065, 7304.59.8070, 7304.90.5000, 7304.90.7000, 7306.30.1000, 7306.30.5015, 7306.30.5020, 7306.30.5035, 7306.50.1000, 7306.50.5030, 7306.50.5050, 7306.50.5070, 7306.60.5000, 7306.60.7000 of the *HTS*. Mechanical pipe is included in AISI product group No. 21A.

(iv) *Structural pipe.*—Provided for in subheadings 7304.90.1000, 7304.90.3000, 7305.31.2000, 7305.31.4000, 7305.31.6000, 7306.30.3000, 7306.50.3000, 7306.60.1000, 7306.60.3000 of the *HTS*. Structural pipe is included in AISI product group No. 22A.

(v) *Pressure tubing.*—Provided for in subheadings 7304.31.6010, 7304.39.0002, 7304.39.0004, 7304.39.0006, 7304.39.0008, 7304.51.5015, 7304.51.5045, 7304.59.2030, 7304.59.2040, 7304.59.2045, 7304.59.2055, 7304.59.2060, 7304.59.2070, 7304.59.2080, 7306.30.5010, 7306.50.5010 of the *HTS*. Pressure tubing is included in AISI product group No. 21B.

(vi) *Stainless steel pipes and tubes.*—Provided for in subheadings 7304.41.0005, 7304.41.0015, 7304.41.0045, 7304.49.0005, 7304.49.0015, 7304.49.0045, 7304.49.0060,

7306.40.1000, 7306.40.5005, 7306.40.5015, 7306.40.5045, 7306.40.5060, 7306.40.5075 of the *HTS*. Stainless steel pipes and tubes are included in AISI product group Nos. 21C and 21D.

Exports of stainless steel pipes and tubes are provided for in Schedule B subheadings 7304.41.0000, 7304.49.0010, 7304.49.0040, 7306.40.1000, 7306.40.5000.

(vii) *Other, including standard.*—Provided for in subheadings 7304.39.0016, 7304.39.0020, 7304.39.0024, 7304.39.0036, 7304.39.0048, 7304.39.0062, 7304.39.0076, 7304.39.0080, 7304.39.0090, 7304.51.5005, 7304.59.8010, 7304.59.8015, 7304.59.8030, 7304.59.8045, 7304.59.8060, 7304.59.8080, 7305.39.1000, 7305.39.5000, 7305.90.1000, 7305.90.5000, 7306.30.5025, 7306.30.5028, 7306.30.5032, 7306.30.5040, 7306.30.5055, 7306.30.5085, 7306.30.5090, 7306.90.1000, 7306.90.5000 of the *HTS*. Other, including standard pipe is included in AISI product group Nos. 18, 21E, and 22B.

Exports of other pipes and tubes, including mechanical, structural, pressure, and standard are provided for in Schedule B subheadings 7304.31.0000, 7304.39.0000, 7304.51.0000, 7304.59.0000, 7304.90.4000, 7304.90.6000, 7305.31.2000, 7305.31.4000, 7305.31.6000, 7305.39.1000, 7305.39.5000, 7305.90.1000, 7305.90.5000, 7306.30.1000, 7306.30.1500, 7306.50.1000, 7306.50.4500, 7306.60.2500, 7306.60.6500, 7306.90.1000, 7306.90.5000.

16. *Alloy tool steel* (all forms).—Provided for in subheadings 7224.10.0045, 7224.90.0015, 7224.90.0025, 7224.90.0035, 7225.20.0000, 7225.30.1000, 7225.30.5060, 7225.40.1090, 7225.40.5060, 7225.50.1060, 7226.20.0000, 7226.91.0500, 7226.91.1560, 7226.91.2560, 7226.92.1060, 7226.92.3060, 7227.10.0000, 7227.90.1060, 7227.90.2060, 7228.10.0010, 7228.10.0030, 7228.10.0060, 7228.30.4000, 7228.30.6000, 7228.50.1020, 7228.50.1040, 7228.50.1060, 7228.50.1080, 7228.60.1060, 7229.10.0000 of the *HTS*. Alloy tool steel is included in AISI product group No. 17.

Exports of alloy tool steel (all forms) are provided for in Schedule B subheadings 7225.20.0000, 7226.20.0000, 7226.92.2000, 7227.10.0000, 7228.10.0000, 7228.30.5000, 7228.50.1000, 7228.60.1000, 7229.10.0000.

Please refer to appendix A, Notes on Product Coverage and Methodology, for further explanation.

APPENDIX G
U.S. PRODUCERS' AND CONVERTERS' CAPITAL EXPENDITURES AND REASONS FOR SUCH EXPENDITURES, 1991 AND 1992

Table G-1
Carbon and certain alloy steel: U.S. producers' and converters' capital expenditures,[1] 1991 and 1992

Item	1991								1992							
	Environmental	Total	Reasons for expenditures[2]						Environmental	Total	Reasons for expenditures[2]					
			A	B	C	D	E	F			A	B	C	D	E	F
	$1,000		*Number of responses*						*-$1,000*		*Number of responses*					
Cokemaking facilities	249,428	391,750	5	0	2	6	12	0	107,273	325,928	5	0	2	1	11	0
Ironmaking facilities	19,930	335,474	14	1	9	2	7	0	25,376	169,080	12	1	7	2	7	0
Raw steelmaking facilities:																
Basic oxygen process	41,607	298,247	11	1	8	3	7	0	50,405	91,057	12	0	5	3	6	0
Electric furnace	24,481	117,872	24	8	22	10	18	0	41,895	138,802	22	8	23	7	20	1
Continuous casting	(3)	217,605	12	7	10	6	3	0	5,305	304,609	12	3	9	6	4	0
Secondary steelmaking facilities[4]	1,309	3,544	2	0	2	2	2	0	(3)	1,717	1	0	1	1	1	1
Flat-rolled products:																
Plate mills	2,181	58,871	3	0	2	4	1	0	1,064	26,473	5	0	1	3	1	0
Sheet and strip:																
Hot strip mills	2,408	350,801	10	1	10	12	3	0	(3)	235,846	10	1	10	12	4	0
Cold-rolled sheet mills	9,944	199,675	11	1	11	10	5	0	10,141	164,450	11	2	11	10	5	0
Galvanizing facilities	2,320	225,106	5	2	10	11	6	0	5,810	203,166	5	2	8	10	6	0
Other coating facilities	2,634	87,246	3	0	6	5	2	0	2,404	57,466	4	0	5	4	2	0
Bars, shapes, and light structural mills:																
Hot-finished	326	94,772	18	5	17	10	4	0	64	72,703	19	4	15	10	3	0
Cold-finished	1,218	4,481	5	1	5	2	1	1	712	2,977	6	1	5	4	3	1
Medium and heavy structural mills[5]	537	112,397	8	4	7	3	1	0	(3)	26,167	7	4	6	3	0	0
Rail mills	0	4,516	3	1	1	1	0	0	0	4,079	2	1	2	0	0	0
Wire rod mills	(3)	12,994	6	2	4	4	2	0	(3)	6,436	3	0	5	2	2	0
Wire drawing machines	1,306	28,964	16	8	9	3	10	0	2,793	22,103	16	7	10	4	9	0
Wire products	2,484	30,571	9	4	8	2	5	0	854	27,712	8	4	7	2	3	0
Pipes and tubes:																
Seamless pipe and tube mills	273	14,511	6	2	2	3	1	0	1,022	35,266	5	3	3	2	1	0
Welded pipe and tube mills	1,118	38,473	13	5	12	7	8	0	4,245	38,707	14	5	12	6	9	0
Other[6]	28,656	468,298	28	5	16	8	15	0	22,405	581,193	29	4	15	7	16	1
Total	392,515	3,096,168		212	58	173	114	1131	287,281	2,535,937	209	51	161	99	113	4

[1] Includes expenditures for the specific type of facility as well as related facilities. Also includes expenditures for plant and equipment, land and land improvement, occupational safety and health (OSH), and environmental control.

[2] Principal reason(s) for investment are coded as follows: A = Facility maintenance and replacement; B = Increased capacity; C = Improvement in operating efficiency; D = Improvement in response to increased customer demand for higher quality products and improved service; E = Government regulation; F = Other (primarily safety reasons).

[3] Not shown.

[4] Includes ladle treatment (heat balance, alloy addition, degassing, decarburization, etc.) and other secondary refining processes (vacuum arc remelt, electroslag remelting, etc.).

[5] Structural shapes with a cross-section exceeding 3 inches.

[6] Includes expenditures which companies could not allocate to product groups.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table G-2
Stainless and alloy tool steel: U.S. producers' and converters' capital expenditures,[1] 1991 and 1992

Item	1991								1992							
	Environmental	Total	Reasons for expenditures[2]						Environmental	Total	Reasons for expenditures[2]					
			A	B	C	D	E	F			A	B	C	D	E	F
	$1,000		*Number of responses*						*-$1,000*		*Number of responses*					
Raw steelmaking facilities:																
Electric furnace	703	10,943	8	3	5	1	3	1	2,105	14,344	7	3	5	2	6	1
Continuous casting	0	7,763	0	0	1	1	1	0	(3)	19,922	3	2	4	1	2	0
Secondary steelmaking facilities[4]	(3)	(3)	0	0	1	1	1	0	(3)	832	2	2	3	0	1	0
Flat-rolled products:																
Plate mills	(3)	7,772	2	2	1	1	1	0	(3)	2,132	3	1	1	0	0	0
Sheet and strip:																
Hot strip mills	0	(3)	1	1	0	0	0	0	(3)	(3)	2	1	0	0	1	0
Cold-rolled sheet mills	284	13,860	4	2	4	2	1	0	611	12,338	5	2	4	3	2	0
Bars and shapes:																
Hot-finished	(3)	(3)	2	0	2	1	0	0	(3)	389	2	1	4	2	1	0
Cold-finished	(3)	1,356	4	0	5	1	1	1	(3)	834	4	2	6	3	2	0
Wire rod mills	(3)	(3)	1	0	1	0	1	0	0	(3)	2	1	3	0	0	0
Wire drawing machines	(3)	1,027	3	2	2	1	0	0	(3)	1,488	2	1	3	1	0	0
Pipes and tubes:																
Seamless pipe and tube mills	0	0	1	0	1	1	0	0	0	(3)	1	0	1	0	0	0
Welded pipe and tube mills	0	3,405	6	2	4	1	0	0	2,382	5,357	6	2	3	0	2	0
Other[5]	1,204	55,778	10	3	5	5	5	0	2,984	71,013	9	3	6	5	7	0
Total	3,003	105,647	42	15	32	16	14	2	10,141	132,784	48	21	43	17	24	1

[1] Includes expenditures for the specific type of facility as well as related facilities. Also includes expenditures for plant and equipment, land and land improvement, occupational safety and health (OSH), and environmental control.

[2] Principal reason(s) for investment are coded as follows: A = Facility maintenance and replacement; B = Increased capacity; C = Improvement in operating efficiency; D = Improvement in response to increased customer demand for higher quality products and improved service; E = Government regulation; F = Other (primarily safety reasons).

[3] Not shown.

[4] Includes ladle treatment (heat balance, alloy addition, degassing, decarburization, etc.) and other secondary refining processes (vacuum arc remelt, electroslag remelting, etc.).

[5] Includes expenditures which companies could not allocate to product groups.

Note.—Because of rounding, figures may not add to totals shown.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.