ANNUAL SURVEY CONCERNING COMPETITIVE CONDITIONS IN THE STEEL INDUSTRY AND INDUSTRY EFFORTS TO ADJUST AND MODERNIZE

Report to the President on
Investigation No. 332-209
Under Section 332 of the
Tariff Act of 1930

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NOTE

The whole of the Commission's report to the President may not be made public since it contains certain information that has been classified by the United States Trade Representative or would result in the disclosure of the operations of individual concerns. This published report is the same as the report to the President, except that the above-mentioned information has been omitted (as indicated by asterisks) or combined with data from related product categories to ensure confidentiality.

PREFACE

On March 8, 1985, the United States International Trade Commission instituted investigation No. 332-209, Annual Surveys Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize. The investigation, conducted under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), is in response to a request from the United States Trade Representative, at the direction of the President (app. A).

This report is the last in a 5-year annual series that reports on competitive conditions in the steel industry and industry efforts to adjust and modernize. The survey compares the period July 1, 1988-June 30, 1989, with the 12-month period ending June 30, 1988. The data in the report cover U.S. producers' capacity, production, and shipments, as well as certain financial and employment information for 22 carbon and specialty steel products. Also presented in the report are data on U.S. producers' and importers' prices, as well as data on unfilled orders and inventories of the subject products.

In addition to the reported data, the report provides certain information for the 12-month period ending September 30, 1989 on: (1) the extent to which the major companies of the industry have committed, or will have committed, their net cash flow from steel product operations for purposes of reinvestment in, and modernization of, the steel industry; (2) actions taken by the major companies to maintain international competitiveness, and (3) the extent to which each of the major companies has committed, or will have committed, not less than one percent of net cash flow to the retraining of workers. Information on world steel pricing, labor issues, and financial developments is also provided.

Notice of the investigation was given by posting copies of the notice of investigation at the Office of the Secretary, U.S. International Trade Commission, and by publication of the notice in the *Federal Register* of March 20, 1985 (app. B).

The Commission collected data and information from questionnaires sent to 84 raw steel producers and 88 importers of the carbon and alloy steel products subject to the investigation. Responses were received from 73 producers and 71 importers. Producers accounting for approximately 91 percent of U.S. raw steel production during July 1, 1988-June 30, 1989 and importers accounting for 36 percent of imports of the subject products submitted data to the Commission. The producers which responded to the Commission's questionnaire are, with few exceptions, the same companies which responded to the previous survey; data are therefore generally comparable. Tables from previous surveys which contain revised data appear in Appendix H.

iii

CONTENTS

	Page
Preface	iii
Executive Summary	xi
Conditions and Adjustment in the Steel Industry:	
Highlights	1
U.S. producers' capacity, production, and capacity utilization:	
Carbon and certain alloy steel	1
Certain stainless and alloy tool steel	2
U.S. producers' shipments:	
Carbon and certain alloy steel	2
Certain stainless and alloy tool steel	2
U.S. producers' and U.S. importers' unfilled orders and inventories, and U.S. importers' imports:	
Carbon and certain alloy steel	4
Certain stainless and alloy tool steel	4
Labor conditions:	5
Survey results	5
Employment trends in the United States	6
International comparisons	7
Labor negotiations:	7
Background	7
Review of settlements	9
Bethlehem Steel Corporation	9
National Steel Corporation	9
Inland Steel Corporation	10
Armco Inc.	10
U.S. producers' capital expenditures and research and development expenditures:	
Carbon and certain alloy steel	10
Certain stainless and alloy tool steel	11
Financial experience of U.S. producers:	11
Carbon and certain alloy steel	11
Certain stainless and alloy tool steel	12
Bankruptcies	12
Financial indicators and funding vehicles	13
Investment patterns	14
Steel pricing	16
International pricing developments	16
United States	17
Sheet products	18
Wire rod	18
Plate	18
Bar products	18
Oil country tubular goods	18
Specialty products	18
Japan	19
Canada	20
European Community	20
Steel price index trends in the United States, Japan, Canada, and West Germany	20
Actions to adjust and modernize, other than capital expenditures:	
Investment in activities other than steel	22
Minimills: Penetrating higher value markets	22
Market opportunities	22

v

Page

Conditions and Adjustment in the Steel Industry—*Continued*

The role of technology 22
Horizontal casting 22
Beamblank casting 23
Thin slab casting 23
Caveats 24
Export trends for domestic steel products: 24
Composition of U.S. exports 24
Export destinations 25
Factors influencing export levels 26
Future outlook 28
Key developments in the specialty steel industry, 1983–89:
Background 28
Industry performance, 1983–88 28

Cash Flow, Cash Flow Commitments, Worker Retraining, and Adjustment of Major Companies—

Net cash flow 34
Cash flow commitments and worker retraining 36
Actions taken to maintain international competitiveness 36

Appendixes

Appendix A. Copy of letter to Chairwoman Paula Stern from Ambassador William E. Brock, United States Trade Representative, requesting an investigation A–1

Appendix B. Notice of the Commission's investigation B–1

Appendix C. Definition of certain terms, and description of the products subject to the investigation C–1

Appendix D. Statistical tables, July 1, 1988–June 30, 1989 ..... D–1

Appendix E. Specifications of the products referenced in pricing section E–1

Appendix F. Description of actions taken by the steel industry to adjust and modernize F–1

Appendix G. Description of actions taken by major companies to maintain international competitiveness G–1

Appendix H. Revised statistical tables, July 1, 1984–June 30, 1988 ..... H–1

Appendix I. Specialty steel relief measures I–1

Appendix J. Revised statistical tables, selected minimill operations J–1

Appendix K. Major companies net income and cash flow data, October 1, 1987–September 30, 1988 ..... K–1

Appendix L. Pre-tax costs at various exchange rates L–1

Appendix M. Foreign equity investment in selected U.S. steelmaking facilities M–1

vi

CONTENTS—*Continued*

Page

Figures

1. Iron and steel average employment: Number employees and hours worked 6
2. U.S. carbon steel production costs: Labor and other costs 7
3. Compensation in the steel industry: U.S. and selected foreign countries 8
4. U.S. carbon steel industry: Indexes of output, employee hours, and output per employee hour 8
5. Selected industry rating trends, 1981–89 15
6. Steel price indexes in selected countries, 1983–88 20
7. Steel price indexes in selected countries, adjusted for exchange rate changes, 1984–88, 1984=100 21
8. U.S. export markets for steel mill products, 1983, 1988 27
9. U.S. domestic composite real vs world spot export price 28
10. Certain specialty steel: Percent change in prices, July 1983 compared with 1988 30
11. Certain specialty steel: Percentage change in price compared with percentage change in demand, 1988 from 1983 31

L–1. Pre–tax costs of West Germany and Japan at various exchange rates L–2
L–2. Pre–tax costs of South Korea and Brazil at various exchange rates L–2

Tables

A. Steel industry: Carbon and certain alloy steel 1
B. Steel industry: Certain stainless and alloy tool steel 2
1. Certain carbon and alloy steel: Changes in U.S. producers' reported capacity and production, and capacity utilization, by selected operations, July 1, 1987–June 30, 1988 (1987/88) and July 1, 1988–June 30, 1989 (1988/89) 3
2. Certain carbon and alloy steel: U.S. producers' shipments of selected products, and the unit value of those shipments, July 1, 1987–June 30, 1988 (1987/88) and July 1, 1988–June 30, 1989 (1988/89) 3
3. Certain carbon and alloy steel: U.S. producers' and U.S. importers' ratios of inventories to unfilled orders as of June 30, 1988 and June 30, 1989 4
4. Certain carbon and alloy steel: U.S. producers' employment, productivity, and wage costs, by sector, July 1, 1987–June 30, 1988 (1987/88) and July 1, 1988–June 30, 1989 (1988/89) 5
5. Certain carbon and alloy steel: U.S. producers' capital expenditures and research and development expenditures, July 1, 1987–June 30, 1988 (1987/88) and July 1, 1988–June 30, 1989 (1988/89) 10
6. Certain carbon and alloy steel: Total net sales, and net profits and losses as a percentage of sales, by selected product, July 1, 1987–June 30, 1988 (1987/88) and July 1, 1988–June 30, 1989 (1988/89) 12
7. Moody's bond ratings of selected U.S. steel producers, 1982–89 14
8. Certain carbon and alloy steel: Weighted average net prices for the three largest sales shipped by U.S. producers and importers, of selected products, by specified periods 19
9. Steel products: Western world exports, by quantity, selected years 25
10. Steel products: Western world exports as a percentage of shipments, selected years 25
11. Certain steel mill products, U.S. exports, by type, 1984–88 26
12. Specialty steel: Apparent consumption, financial performance, production, capacity, and employment, 1983 and 1988 29
13. Specialty steel: Significant structural changes, by year, by company, 1984–89 32

vii

Page

Tables—*Continued*

14. Calculation of major companies' net income from steel product operations, October 1, 1988–June 30, 1989 34
15. Sources and uses of cash and cash equivalents in steel product operations, October 1, 1988–June 30, 1989 34
16. Calculation of major companies' cash flow on steel product operations, October 1, 1988–June 30, 1989 35
17. Major U.S. steel companies: Net cash flow from steel product operations, October 1, 1988–June 30, 1989 and July 1, 1989–September 30, 1989 35
18. Major U.S. steel companies: Net cash flow from steel product operations, and steel related expenditures, October 1, 1988–June 30, 1989 38

Appendix Tables

D–1. Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1988–June 30, 1989 ..... D–2
D–2. Certain carbon and alloy steel: U.S. producers' shipments, unfilled orders, and inventories, and U.S. importers' imports, unfilled orders, and inventories, July 1, 1988–June 30, 1989 ..... D–3
D–3. Certain carbon and alloy steel: U.S. imports for consumption, by product, June 1984–May 1985, June 1985–May 1986, June 1986–May 1987, June 1987–May 1988, and June 1988–May 1989 ..... D–5
D–4. Average number of production and related workers employed in U.S. establishments producing certain carbon and alloy steel and hours worked by, wages paid to, and productivity of such employees, July 1, 1988–June 30, 1989 ..... D–6
D–5. Certain carbon and alloy steel: U.S. producers' capital expenditures, by types of expenditures, and research and development expenditures, July 1, 1988–June 30, 1989 ..... D–7
D–6. Certain carbon and alloy steel: Income and loss data from U.S. operations, by product, July 1, 1988–June 30, 1989 ..... D–6
D–7. Certain carbon and alloy steel: Financial experience of U.S. producers, July 1, 1988–June 30, 1989 ..... D–10
D–8. Certain carbon and alloy steel: Weighted average net prices for the three largest sales of U.S. producers and importers by product, by specified period, July 1988–June 1989 ..... D–11
H–1. Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1987–June 30, 1988 ..... H–2
H–2. Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1986–June 30, 1987 ..... H–3
H–3. Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1985–June 30, 1986 ..... H–4
H–4. Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1984–June 30, 1985 ..... H–5
H–5. Certain carbon and alloy steel: Weighted average net prices for the three largest sales by selected product, by specified July 1986–June 1987 ..... H–6
H–6. Certain carbon and alloy steel: U.S. producers' shipments, unfilled orders, and inventories, and U.S. importers' imports, unfilled orders, and inventories, July 1, 1987–June 30, 1988 ..... H–7

viii

CONTENTS—*Continued*

Page

Appendix Tables—*Continued*

H-7. Average number of production and related workers employed in U.S. establishments producing certain carbon and alloy steel and hours worked by, wages paid to, and productivity of such employees, July 1, 1987–June 30, 1988 ..... H-8

H-8. Certain carbon and alloy steel: U.S. producers' capital expenditures, by types of expenditures, and research and development expenditures, July 1, 1987–June 30, 1988 ..... H-9

J-1. Certain carbon and alloy steel: Ratio of U.S. minimill producers' reported capacity to total industry capacity, by selected products, July 1, 1984–June 30, 1985 (1984/85), July 1, 1985–June 30, 1986 (1985/86), July 1, 1986–June 30, 1987 (1986/87), and July 1, 1987–June 30, 1988 (1987/88) J-2

J-2. Certain carbon and alloy steel: U.S. minimill producers' capacity utilization, by selected products, July 1, 1984–June 30, 1985 (1984/85), July 1, 1985–June 30, 1986 (1985/86), July 1, 1986–June 30, 1987 (1986/87), and July 1, 1987–June 30, 1988 (1987/88) J-3

J-3. Certain carbon and alloy steel: Ratio of U.S. minimill producers' production to total industry production, by selected products, July 1, 1984–June 30, 1985 (1984/85), July 1, 1985–June 30, 1986 (1985/86), July 1, 1986–June 30, 1987 (1986/87), and July 1, 1987–June 30, 1988 (1987/88) J-4

J-4. Certain carbon and alloy steel: U.S. minimill producers' shipments, by selected products, July 1, 1984–June 30, 1985 (1984/85), July 1, 1985–June 30, 1986 (1985/86) July 1, 1986–June 30, 1987 (1986/87), and July 1, 1987–June 30, 1988 (1987/88) J-5

K-1. Calculation of major companies' net income from steel product operations, October 1, 1987–September 30, 1988 ..... K-2

K-2. Sources and uses of cash and cash equivalents in steel product operations, October 1, 1987–September 30, 1988 ..... K-3

K-3. Calculation of major companies' cash flow on steel product operations, October 1, 1987–September 30, 1988 ..... K-4

K-4. Major U.S. steel companies: Net cash flow from steel product operations, October 1, 1987–September 30, 1988 ..... K-5

K-5. Major U.S. steel companies: Net cash flow from steel product operations, and steel related expenditures, October 1, 1987–September 30, 1988 ..... K-6

K-6. Major U.S. steel companies: Net cash flow from steel product operations, and steel related expenditures, July 1, 1988–September 30, 1989 (estimate) K-7

M-1. Foreign equity investment in selected U.S. steelmaking operations M-2

ix

EXECUTIVE SUMMARY

Industry Conditions

During July 1, 1988–June 30, 1989 (as compared to the previous 12-month period):[1]

- *Shipments* of the carbon steel products subject to the Commission's investigation increased by 3 percent, while shipments of specialty steel products decreased by 4 percent. The *unit values* of these shipments increased by 6 and 42 percent, respectively. *Capacity utilization* levels increased or remained constant for most operations, the exceptions being structural shapes (down 8 percentage points) and pipes and tubes (down 14 percentage points) in the carbon sector and continuous casting (down 2 percentage points) and sheet and strip (down 7 percentage points) in the specialty sector.

- *Net Profits* as a percent of sales were 8 percent in the carbon steel sector, up almost two percentage points from the prior period. Profits as a percent of sales in the specialty steel sector increased from 12 percent to 15 percent. Pre-tax profits, excluding extraordinary and non-recurring items, increased by almost a third, to $3 billion.

- *Debt ratings* for the industry continued to improve, after reaching low points in the mid-1980s. On average, bond ratings for steel companies were Ba3, still indicating some level of speculative risk. One company, East Texas Steel Facilities, Inc., (formerly Lone Star Steel) was forced by creditors into involuntary bankruptcy during the period. Three integrated companies (LTV, Wheeling-Pittsburgh, and Sharon Steel) continued to operate under the protection of bankruptcy laws throughout the period.

- *Prices* for domestically produced carbon and certain alloy steel products showed no discernible trend during the current reporting period. Of those products registering increases, the largest increase (5 percent) occurred in carbon wire, whereas semifinished products and oil country tubular goods recorded the largest price declines (8 percent and 12 percent, respectively). In specialty steel, survey results indicated domestic price increases ranging from 6 to 11 percent, with the largest relative increases recorded in semifinished products (11 percent) and wire (10 percent). These increases were driven primarily by escalating raw material costs.

- Changes in *import prices* generally followed domestic price movements during the current reporting period. However, the largest import price increases for carbon and certain alloy products occurred in rails and related products (17 percent) and line pipe (15 percent). The largest price decline was recorded in wire products (31 percent). U.S. importers' prices for specialty steel rose in all product categories for which data were reported, with the largest import price increases occurring in stainless pipes and tubes (25 percent).

- Exchange rate changes among major steel-producing countries continued to result in wide variations in *world steel prices* during the first half of 1989. The price of cold-rolled sheet in major producing countries, for example, varied from a low of $449 per ton in the EC to $616 per ton in Japan. In the U.S. market, the combined effects of the steel VRAs, a weaker dollar, and improvements in production technology resulted in a narrowing of the difference between domestic and import prices. In January 1987, 20 percent of U.S. steel service centers surveyed by the Steel Service Center Institute (SSCI) reported that foreign mill steel prices for carbon steel products were 6 to 10 percent below U.S. delivered prices. During December 1988, however, 80 percent of the service centers reported to the SSCI that foreign mill carbon steel prices were equal to or 5 percent higher than U.S. prices.

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[1] A broader perspective, which compares current period information with base year data (i.e., July 1, 1984–June 30, 1985), is provided in the "Industry Conditions" section of the report (see pages 1–3).

xi

- *Employment* in the industry decreased by slightly less than 2 percent, with the largest relative decreases occurring in pipe and tube operations (29 percent) and wire rod, wire, and wire products (15 percent). *Labor productivity* in the industry increased by 5 percent as the ratio of man-hours per ton shipped in the carbon steel sector (adjusted for changes in inventories) fell from 4.2 to 4.1.
- *Modernization* efforts proceeded as steel companies continued to invest in new and upgraded equipment. For example, reported continuous casting capacity in both the carbon and stainless steel sectors increased by about 5 percent over the prior period. Capital expenditures for the industry as a whole increased 65 percent, to over $2.5 billion for the year, and research and development expenditures rose almost 17 percent from the previous year's level.

Issues

- A small number of *minimills*, implementing recently developed technology, are moving into higher value-added segments of the market, such as those for special quality bars, wide flange beams, and sheet. This development is expected to significantly impact the domestic market, as minimill companies win market share from integrated producers and imports in these product areas.
- *Exports* by U.S. steel producers increased 83 percent in 1988 over the previous year. The enhanced competitive position of U.S. products was a result of modernization of domestic facilities and upgrading of product quality, coupled with favorable exchange rates and strong demand abroad.
- An examination of conditions in the *specialty steel* segment of the industry during 1983–88, a period during which the industry received import relief, revealed considerable improvement in a number of key areas, including demand levels, financial performance, and capacity utilization. The specialty steel industry has undertaken significant restructuring since 1983, including acquisitions, company divestitures, management buyouts, reorganizations, and termination of operations. Improvements in production efficiencies, cited by producers as a common goal of many of the initiatives, appear to have been achieved through the vertical integration of operations and the concentration of production in more profitable product lines.

Adjustment of major companies

Following is information relating to the cash flow, and cash flow commitments (including commitments for the retraining of workers) of the major steel companies for the 12-month period ending September 30, 1988.[2]

- During the period October 1, 1988–June 30, 1989, major companies' cash flow totaled $1.4 billion, while net steel-related expenditures equaled $1.5 billion. Projections provided by companies for the remaining July 1–September 30, 1989 period indicate that cash flow will show a relative decline and expenditures will show a relative increase, when compared with the three previous quarters. In addition to current period expenditures, companies indicated a substantial level of post-period spending commitments, focused primarily on capital equipment.
- Almost all companies with positive earnings reported retraining expenditures in excess of 1 percent of net cash flow during October, 1988–June 30, 1989, a relationship which is projected to be maintained through September 30, 1989. The sole exception was Nucor, which is in a hiring position.
- Virtually all of the expenditures on retraining by the major companies related to current workers. Only two companies reported expenditures for retraining former workers, and the sums were negligible.

[2] Under section 806 of the Trade and Tariff Act of 1984 (P.L. 98-573), the President is required to make an annual determination to the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate as to whether the major companies of the steel industry have, taken as a whole, committed substantially all of their net cash flow from steel product operations for purposes of reinvestment in, and modernization of, the industry through investment in modern plant and equipment, research and development, and other appropriate projects, such as working capital for steel operations and programs for the retraining of workers. A determination must also be made as to whether each of the major companies committed not less than 1 percent of net cash flow to the retraining of workers.

xii

Conditions And Adjustment in The Steel Industry

Highlights

Statistical highlights of the carbon steel industry (i.e., producers of carbon and certain alloy steel products), and certain segments of the specialty steel industry (i.e., producers of certain stainless and alloy tool steel products) are contained in tables A and B on the following pages.[1] [2] The tables are based on information supplied by producers in response to Commission questionnaires and reflect data for the 12-month periods ending June 30, 1985 (1984/85), June 30, 1986 (1985/86), June 30, 1987 (1986/87), June 30, 1988 (1988/89), and June 30, 1989 (1988/89).

[1] See appendix C for a description of the products subject to the investigation.

[2] On July 16, 1987, the President announced his decision to extend import relief to the specialty steel industry from July 20, 1987, through September 30, 1989. Modifications made to the relief as the result of the negotiation of voluntary restraint agreements are to remain in force. See Appendix I for details on the provisions of the current import relief. For a fuller discussion of the specialty steel industry's efforts to

U.S. Producers' Capacity, Production and Capacity Utilization[3]

Carbon and Certain Alloy Steel

Following last year's production increases, U.S. production of carbon and alloy raw steel increased for a second year during the 1988/89 period, with production totaling 92.1 million tons (app. D, table D-1). This was an increase of roughly 1 percent from the level of 91.5 million tons produced during 1987/88. Capacity increased by almost the same percentage, yielding a capacity utilization rate of 84 percent, equal to that in 1987/88 (table 1). Most product categories showed either increased or virtually constant capacity utilization. Lower capacity utilization was reported for producers of pipes and tubes, and structurals. These lower utilization levels were due to low demand levels for pipes and tubes, and significant expansion of capacity for the production of structural shapes.

[2]—*Continued*
adjust and modernize, see the section of this report entitled "Key developments in the specialty steel industry, 1983-88" or the Commission's *Annual Survey on Certain Stainless Steel and Alloy Tool Steel* (Inv. 332-167, USITC Publication 2173, March 1989).

[3] Detailed data on U.S. producers' capacity, production, and capacity utilization during July 1, 1988-June 30, 1989 are presented in app. D.

Table A
Carbon and certain alloy tool steel:[1] Statistical highlights, by items and by specified periods, 1984/85 to 1988/89

Item	*1984/85*	*1985/86*	*1986/87*	*1987/88*	*1988/89*	*Percentage change, 1988/89 from 1987/88*[2]	*Average annual rate of change, 1988/89 from 1984/85*[3]
Raw steel:							
Production (1,000 tons)	79,967	83,176	73,560	91,534	92,123	0.6	3.6
Capacity (1,000 tons)	126,548	122,540	110,488	108,679	109,074	.4	-3.6
Capacity utilization percent	63	68	67	84	84	(4)	(4)
Shipments[5] (1,000 tons)	61,244	65,171	61,771	72,844	75,358	3.5	5.3
Production and related workers:							
Average number (1,000 hours)	175	162	137	148	145	-2.0	-4.6
Manhours (million hours)	352	339	286	308	308	0	-3.3
Wages (million dollars)	5,241	5,275	4,421	4,778	5,014	4.9	-1.1
Financial:							
Net sales (million dollars)	28,542	***	25,803	34,979	37,055	5.9	7.7
Pre-tax profit or (loss) (million dollars)	(1,027)	***	(1,748)	2,324	3,039	30.8	(4)
Return on sales (percent)	-3.7	-4.1	-6.8	6.6	8.2	(4)	(4)
Capital expenditures (million dollars)	2,398	1,822	1,173	1,468	2,467	68.1	.7
Research and development expenditures (million dollars)	114	96	81	113	128	13.3	2.9

[1] Certain alloy steel refers to alloy steel other than stainless or alloy tool steel.
[2] Calculated from unrounded data.
[3] Compound annual growth rate, 1984/85 to 1988/89.
[4] Percentage change not calculated.
[5] Shipment figures are not directly comparable with raw steel production data, since a significant quantity of scrap is generated in processing raw steel into finished products. Moreover, shipment figures do not include certain cast products.

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

Table B

Certain stainless and alloy tool steel:[1] Statistical highlights, by items and by specified periods, 1984/85 to 1988/89

Item	*1984/85*	*1985/86*	*1986/87*	*1987/88*	*1988/89*	*Percentage change, 1988/89 from 1987/88[2]*	*Average annual rate of change, 1988/89 from 1984/85[3]*
Raw steel:							
Production(1,000 tons)	1,673	1,558	1,717	1,836	1,712	-6.8	0.6
Capacity (1,000 tons)	2,677	2,505	2,568	2,582	2,385	-7.7	-2.8
Capacity utilization percent	62	62	67	71	72	(4)	(4)
Shipments[5] (1,000 tons)	1,076	1,033	1,155	1,408	1,357	-3.6	6.0
Production and related workers:							
Average number (1,000 hours)	13.2	12.8	11.5	12.1	12.4	2.2	-1.6
Manhours (million hours)	26	25	23	26	27	4.5	0.9
Wages (million dollars)	418	378	376	435	460	5.7	2.4
Financial:							
Net sales (million dollars)	2,084	***	2,045	2,882	4,086	41.8	18.3
Pre-tax profit or (loss) (million dollars)	83	***	182	356	627	76.1	65.8
Return on sales (percent)	4.0	2.7	8.9	12.4	15.3	(4)	(4)
Capital expenditures (millions dollars)	132	80	57	66	79	18.8	-12.0
Research and development expenditures (million dollars)	18	17	15	15	23	53.3	6.3

[1] Certain stainless and alloy tool steel refers to semifinished stainless and alloy tool steel products, stainless steel plates, stainless steel sheets and strip, stainless steel wire, and stainless steel pipes and tubes.
[2] Calculated from unrounded data.
[3] Compound annual growth rate, 1984/85 to 1988/89.
[4] Percentage change not calculated.
[5] Shipment figures are not directly comparable with raw steel production data, since a significant quantity of scrap is generated in processing raw steel into finished products. Moreover, shipment figures do not include certain cast products.

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

Certain Stainless and Alloy Tool Steel

Stainless and alloy tool raw steel production in the U.S. declined approximately 7 percent between reporting periods to about 1.7 million tons (app. D, table D-1). Capacity decreased by a slightly greater percentage to 2.4 million tons in 1988/89 (down from 2.6 million tons in 1987/88). These changes resulted in a slight increase in capacity utilization for producers of stainless and alloy tool steel from 71 percent in 1987/88 to 72 percent in 1988/89. Capacity utilization grew in all product lines except stainless steel sheets and strips (table 1), reflecting in part growth in demand for stainless products.

U.S. Producers' Shipments[4]

Carbon and Certain Alloy Steel

U.S. producers' shipments of carbon and certain alloy steel continued to increase in 1988/89, totaling 75.4 million tons, an increase of 2.8 percent over shipments of 73.3 million tons in 1987/88 (table 2). The unit value of these shipments increased by 5.5 percent during the period, from $445 per ton during 1987/88 to $470 per ton during 1988/89. The largest relative increase by quantity, 22.5 percent, was in shipments of rails and related products. Shipments of bars by companies reporting this year were generally up over the last period. However, the failure of certain bar producers to report for this period yielded a decrease in aggregate shipments of 2.8 percent when compared with last year.

Certain Stainless and Alloy Tool Steel

After increasing during 1987/88, U.S. producers' reported shipments of certain stainless and alloy tool steel decreased by almost 4 percent in 1988/89 (table 2). In terms of quantity, shipments of stainless semifinished products showed the greatest increase, rising by 31.5 percent, while reported shipments of sheets and strip declined by 12.3 percent.[5] The unit value of

[4] Detailed data on U.S. producers' shipments during July 1, 1988-June 30, 1989 are presented in app. D.

[5] The decline in sheet and strip shipments is believed to reflect the reduced level of response to this year's questionnaire rather than an actual reduction in shipments.

2

Table 1

Certain carbon and alloy steel: Changes in U.S. producers' reported capacity and production, and capacity utilization, by selected operations, July 1, 1987 - June 30, 1988 (1987/88) and July 1, 1988 - June 30, 1989 (1988/89)

Item	Change in capacity	Change in production	Capacity utilization	
			1987/88	1988/89
	Percent			
Certain carbon and alloy steel:[1]				
Cokemaking facilities	-1.6	2.8	85	89
Ironmaking facilities	1.0	7.1	78	83
Steelmaking facilities	0.4	0.6	84	84
Continuous casting	5.5	7.0	87	89
Products:				
Sheets and strip[2]	0.6	1.3	80	80
Plates	3.7	0.7	61	60
Bars[2 3]	-13.4	-12.4	80	81
Structural shapes and units	11.7	0.2	80	72
Pipes and tubes[2]	3.0	-23.1	55	41
Rails and related products	2.4	25.8	46	56
Wire rod, wire, and wire products[4]	-4.3	-5.0	76	76
Stainless and alloy tool steel:				
Steelmaking facilities	-7.7	-6.8	71	72
Continuous casting	5.6	3.3	87	85
Products:				
Plates	-5.2	-0.4	69	73
Sheets and strip[3]	-3.8	-10.6	95	88
Wire	-0.5	9.5	82	90
Pipes and tubes	5.3	21.7	66	77

[1] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[2] Weighted average of subcategory products.
[3] Changes may be due to reporting coverage.
[4] Weighted average of wire rod, wire, and wire products.

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

Table 2

Certain carbon and alloy steel: U.S. producers' shipments of selected products, and the unit value of those shipments, July 1, 1987 - June 30, 1988 (1987/88) and July 1, 1988 - June 30, 1989 (1988/89)

Item	Shipments			Unit value of shipments		
	1987/88	1988/89	Change	1987/88	1988/89	Change
	Short tons		Percent	Percent ton		Percent
Carbon and certain alloy steel:[1]						
Semifinished	2,899	2,976	2.7	$289	$301	4.2
Sheets and strip	40,099	42,888	7.0	480	479	-0.1
Plates	4,813	4,851	0.8	465	492	5.9
Bars[2]	12,326	11,985	-2.8	366	404	10.4
Structural shapes and units	5,135	5,047	-1.7	376	404	7.5
Pipes and tubes	3,171	2,555	-19.4	713	742	4.1
Rails and related products	557	682	22.5	502	516	2.8
Wire rod, wire, and wire products	4,318	4,374	1.3	377	376	-0.4
Total	73,317	75,358	2.8	445	470	5.5
Stainless and alloy tool steel						
Semifinished	166	218	31.5	2,040	2,841	39.3
Stainless steel:						
Plates	202	220	8.9	2,030	2,976	46.6
Sheets and strip[2]	988	866	-12.3	1,984	2,823	42.3
Wire	32	32	1.0	3,577	4,220	18.0
Pipes and tubes	20	21	2.8	3,886	5,433	39.8
Total	1,408	1,357	-3.6	2,061	2,925	41.9
Grand total	74,252	76,714	3.3	476	513	7.7

[1] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[2] Changes may be due to reporting coverage.

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

such shipments registered an increase of 42 percent, growing from $2,061 per ton during 1987/88 to $2,925 per ton during 1988/89. Unit values increased for all stainless steel products.

U.S. Producers' and U.S. Importers' Unfilled Orders and Inventories and U.S. Importers' Imports[6]

Carbon and Certain Alloy Steel

U.S. producers' unfilled orders as of June 30, 1989 totaled 10.9 million tons. With June 30, 1989 inventories totaling 7.1 million tons, the ratio of inventories to unfilled orders was 0.66 (app. D, table D-2 and table 3). This ratio increased slightly from the 0.63 ratio posted on June 30, 1988. Large increases in the ratio of inventories to unfilled orders occurred in bars (up 95.7 percent), structural shapes and units (up 147.2 percent) and rails and rail products (up 34.9 percent). Decreases in the ratio were posted in all other product areas.

The U.S. importers who responded to the Commission's questionnaire reported imports of carbon and certain alloy steel products of 7.2 million tons ($4.1 billion) during 1988/89.[7] Unfilled orders from importers were approximately 1 million tons as of June 30, 1989, which compared with inventories of 364,000 tons. The overall ratio of inventories to unfilled orders remained virtually unchanged between time periods (table 3).

Certain Stainless and Alloy Tool Steel

U.S. producers' unfilled orders of certain stainless and alloy tool steel, as of June 30, 1989, were 204,000 tons, compared with inventories of 163,000 tons (table 3 and app. D, table D-2). The ratio of inventories to unfilled orders was 0.80, a figure 37 percent higher than the ratio of 0.58 posted as of June 30, 1988.

The U.S. importers who responded to the Commission's questionnaire reported 128,400 tons of imports of the subject stainless and alloy tool steel products ($350 million) during 1988/89.[8] Unfilled orders were 17,700 tons as of June 30, 1989, which compares with inventories of 10,700 tons (app. D, table D-2).

[6] Detailed data on U.S. producers' and U.S. importers' unfilled orders and inventories as of June 30, 1988 and U.S. importers' imports during July 1, 1988-June 30, 1989 are presented in app. D.

[7] The 7.2 million tons represented approximately 36 percent of total U.S. imports of carbon and certain alloy steel products (i.e., imports from surveyed and unsurveyed companies). See appendix D, table D-3.

[8] The 128,400 tons of imports represented approximately 48 percent of total U.S. imports of stainless and alloy tool steel products (i.e., imports from surveyed and nonsurveyed companies) during the period.

Table 3

Certain carbon and alloy steel: U.S. producers' and U.S. importers' ratios of inventories to unfilled orders as of June 30, 1988 and June 30, 1989

	U.S. Producers			*U.S. Importers*		
Item	*June 30, 1988*	*June 30, 1989*	*Change*[1]	*June 30, 1988*	*June 30, 1989*	*Change*[1]
			(Percent)			*(Percent)*
Carbon and certain alloy steel:[2]						
Semifinished	-			1.83	0.81	-55.4
Sheets and strip	0.75	0.69	-8.5	0.43	0.29	-33.0
Plates	0.28	0.25	-9.6	0.48	0.57	17.7
Bars[3]	0.49	0.96	95.7	0.74	1.14	55.4
Structural shapes and units	0.46	1.13	147.2	0.11	0.27	157.2
Pipe and tube	0.98	0.57	-41.7	0.38	0.48	26.0
Rails and related products	0.27	0.36	34.9	0.00	0.00	-100.0
Wire rod, wire, and wire products	0.70	0.33	-52.5	0.25	0.20	-19.2
Total	0.63	0.66	4.3	0.37	0.37	-1.6
Certain stainless and alloy tool steel:						
Semifinished	-	-	-	-	-	-
Stainless steel:						
Plates	0.46	0.99	116.4	0.16	0.11	-32.3
Sheets and strip[3]	0.64	0.84	29.7	0.47	0.85	81.0
Wire	0.41	1.26	203.5	0.25	0.28	12.8
Pipes and tube	1.18	0.99	-16.6	1.03	1.02	-1.8
Total	0.58	0.80	37.3	0.65	0.60	-6.9
Grand total	0.63	0.66	4.9	0.38	0.37	-3.5

[1] Calculated from unrounded data.
[2] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[3] Changes may be due to reporting coverage.

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

4

The ratio of inventories to unfilled orders of 0.60 was approximately 7 percent lower than the ratio of 0.65 as of June 30, 1988 (table 3).

Labor Conditions

The following review of labor conditions in the steel industry contains basic information about employment levels, labor costs, wage rates, and productivity in the United States, as well as comparisons with foreign steel producers in certain of these areas. In addition to this basic information the current labor negotiations described in this report are based on the ratified agreements between steel companies and the USWA and on discussions with union and industry executives.

Survey Results

Responses to the Commission's survey indicate that employment of production and related workers decreased by 1.8 percent to 157,831 workers during 1988/89 from 160,697 during 1987/88, but remained 6 percent below the employment level of 188,000 during 1984/85 (table 4 and app. D, table D-4). Although most producers reported slight increases in employment, these increases were overshadowed by decreases at certain companies and failure to report by other companies. The greatest relative increases took place in carbon steel plates and ironmaking operations, which rose by 20 and 14 percent, respectively. Increases in the plate area are partially due to the resumption of production at certain facilities during the survey period. The increase in ironmaking employment is primarily due to increases at certain producers; most producers reported declines in ironmaking employment. Employment levels in the carbon steel sheet and strip product area were the highest (35 percent of total employment), followed by basic carbon steelmaking (26 percent of the total).

Table 4

Certain carbon and alloy steel: U.S. producers' employment, productivity, and wage costs, by sector, July 1, 1987 - June 30, 1988 (1987/88) and July 1, 1988 - June 30, 1989 (1988/89)

Item	Average Number Employed			Productivity Index[1]			Hourly Wage Costs		
	1987/88	1988/89	Change	1987/88	1988/89	Change	1987/88	1988/89	Change
			Percent			Percent			Percent
Carbon and certain alloy steel:[2]									
Cokemaking facilities	10,035	10,297	2.6	113	110	-2.8	$15.26	$15.41	1.0
Ironmaking facilities	9,871	11,254	14.0	102	98	-3.6	16.01	16.44	2.7
Steelmaking facilities[3]	35,903	38,035	5.9	101	97	-4.2	15.58	16.12	3.5
Products:									
Sheets and strip	54,076	51,185	-5.3	136	150	10.3	16.24	17.24	6.2
Plates	4,520	5,427	20.1	222	208	-6.3	15.20	16.21	6.6
Bars	15,423	14,196	-8.0	136	143	5.0	13.73	14.72	7.2
Structural shapes and units	5,174	4,413	-14.7	174	201	15.9	14.51	15.00	3.4
Pipe and tube	8,078	5,760	-28.7	227	219	-3.3	14.23	16.21	14.0
Rails and related products	687	750	9.2	89	98	10.7	13.10	13.24	1.0
Wire rod, wire, and wire products	4,894	4,149	-15.2	130	142	9.8	15.79	15.24	-3.5
Total	148,598	145,466	-2.1	(4)	(4)	(4)	15.52	16.29	5.0
Stainless and alloy tool steel:									
Steelmaking facilities[3]	4,846	5,295	9.3	113	98	-13.6	16.27	16.22	-0.3
Stainless steel products									
Plates	1,312	1,294	-1.4	135	141	4.3	16.28	18.60	14.2
Sheets and strip	4,967	4,723	-4.9	116	107	-7.6	18.09	18.18	0.5
Wire	638	696	9.1	112	114	2.1	14.46	14.84	2.6
Pipes and tube	336	357	6.3	146	155	6.6	12.20	12.25	0.4
Total	12,099	12,365	2.2	(4)	(4)	(4)	16.78	16.98	1.2
Grand total	160,697	157,831	-1.8	(4)	(4)	(4)	15.62	16.34	4.2

[1] Calculated on the basis of production per manhour, except for the carbon and certain alloy sheets and strip, bars, and wire product categories, which are calculated on the basis of shipments per manhour. The 1984/85 period is used as a base (i.e., 1984/85=100).
[2] Certain alloy steel refers to alloy steel other than stainless and alloy tool steel.
[3] Including semifinished steel.
[4] Not applicable.

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

5

Productivity levels rose during 1988/89. In the carbon steel sector, for example, productivity rose by about 2 percent as the man-hours required per ton of shipments (adjusted for inventory changes) fell from 4.2 in 1987/88 to 4.1 in 1987/88.[9] The greatest relative gains for a product group occurred in carbon steel structural shapes, where productivity increased by 16 percent.

Average wage levels in the steel industry increased by 4.7 percent to $16.34 per hour. Average increases in specialty steel wages, however, were only one-fourth of the average increases in carbon steel wages.

Employment Trends in the United States

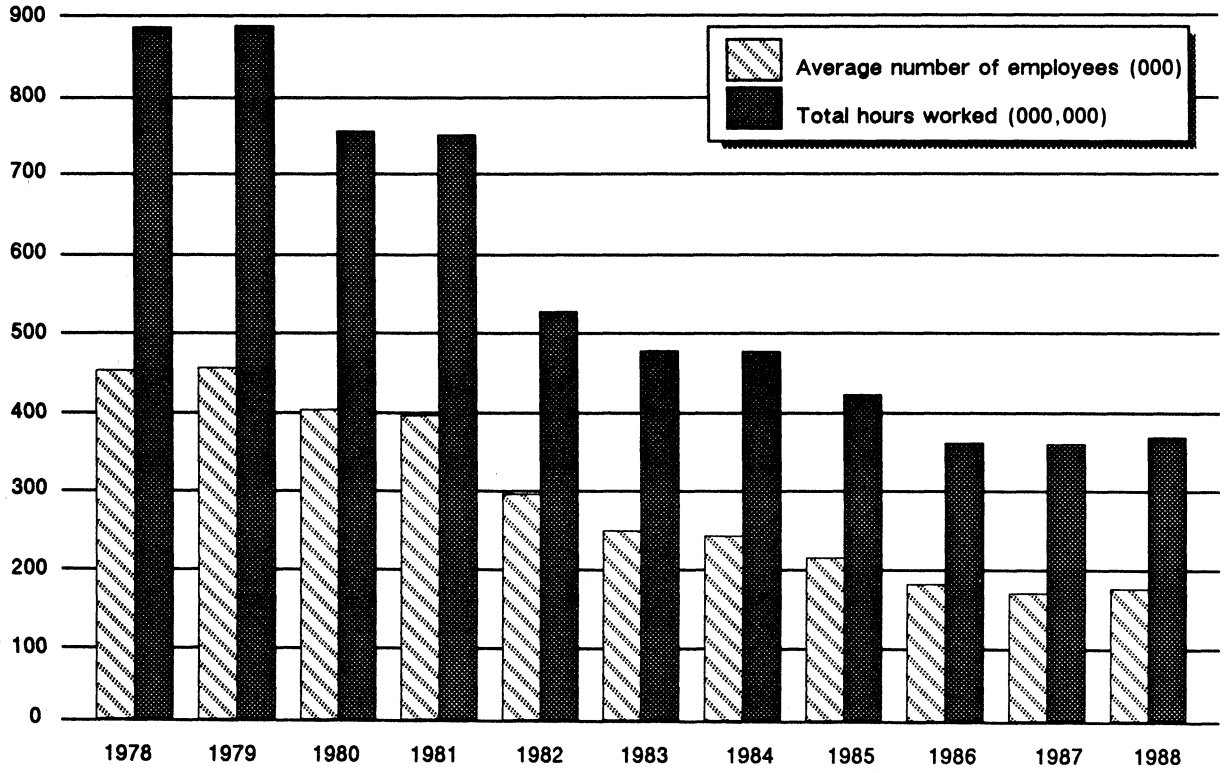
Steel industry employment increased by 3 percent to 168,898 in 1988 (figure 1).[10] In March 1989, the number of workers rose to 169,752 which represents a 0.6 percent increase over that reported for 1988. The gradual rise in employment reflects the increase in steel production, which was up 12 percent on an annual basis in 1988 compared with 1987, and 2.5 percent in the first three months of 1989 over the January–March 1988 level, according to AISI data. Hours worked per week averaged 42 hours in 1988, rising consistently since the 1981 average of 37 hours per week. By March 1989, the average had risen to 42.6 hours per week, again reflecting the effects of increased steel production.

Although total employment costs per unit of production are reported to have declined in the past several years, as has the share of total costs accounted for by labor (figure 2), survey data indicate a slight increase in labor costs in the 1988/89 period over the 1987/88 period. The decline in costs had reflected productivity gains which have exceeded increases in compensation, but that trend may be ending. Employee compensation peaked in 1982 at $24.67 per hour before declining to a low of $22.36 in 1984.[11] By 1988 compensation had risen to $25.51 per hour, which represents a 6 percent increase over the 1987 level of $24.11 per hour.[12]

[9] Figures derived from data contained in app. D, tables D-2 and D-4.
[10] As reported by 64 steel companies to the American Iron and Steel Institute, representing 87 percent of U.S. raw steel production.

[11] Compensation per hour includes wages plus benefits. Data from table 4 reflect wages only.
[12] World Steel Dynamics, Steel Strategist #15. January 1989, Table 5.

Figure 1
Iron and steel average employment: Number of employees and hours worked



Source: American Iron and Steel Institute.

6

International Comparisons

The effect of the depreciation of the U.S. dollar on relative wage rates contributed to the improved relative position of the United States with certain of its global competitors during 1988. As shown in figure 3, the gap in compensation among Japan, Canada, West Germany and the United States continued to remain relatively narrow during 1988 compared with 1987 and previous recent years; the rates in those countries, however, are considerably higher than those paid to workers in industrializing countries such as Korea and Brazil. With respect to productivity, U.S. performance continued to improve and was at its highest level in 1988 (figure 4) although gains were not limited to the United States. As shown below, man-hours per short ton (mhpt) shipped for principal producers worldwide improved to an average 6 mhpt during 1988, compared to 8–13 mhpt in 1981.

Actual Operating Rate

	1975	*1981*	*1988*
United States	11.13	8.86	5.73
Japan	10.13	8.46	6.14
Germany	11.64	9.06	5.84
United Kingdom	22.23	12.66	5.80
France	15.79	9.62	6.05

Source: *World Steel Dynamics*, Steel Strategist #14, Table 5.

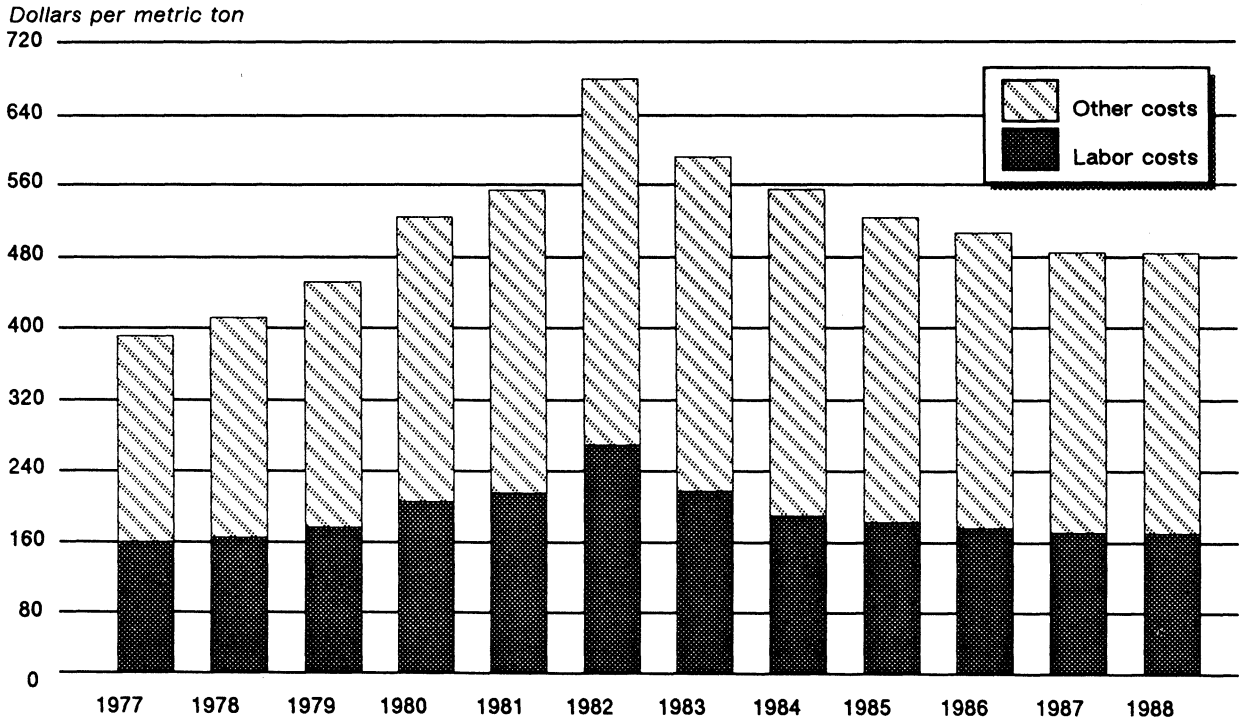
Labor Negotiations

Background

In its January 1989 Wage Policy Statement, the United Steelworkers of America (USWA) stated that it intended to reverse its recent practice of concessionary bargaining and was determined to secure its share of the steel industry's resurgent profits. The objective of the 1989 labor negotiations with four steel companies was to regain concessions and freezes contained in previous contracts.[13] The USWA believed that members should be compensated in the new contracts for improved productivity, with emphasis on guaranteed increases in the basic wage rates, paired with increases in other benefit programs and profit sharing. The USWA, concerned about job security for steel workers, also wanted negotiated training and education programs in the 1989 agreements.

[13] The four major companies with labor contracts expiring August 1, 1989 are Armco, Bethlehem, Inland and National.

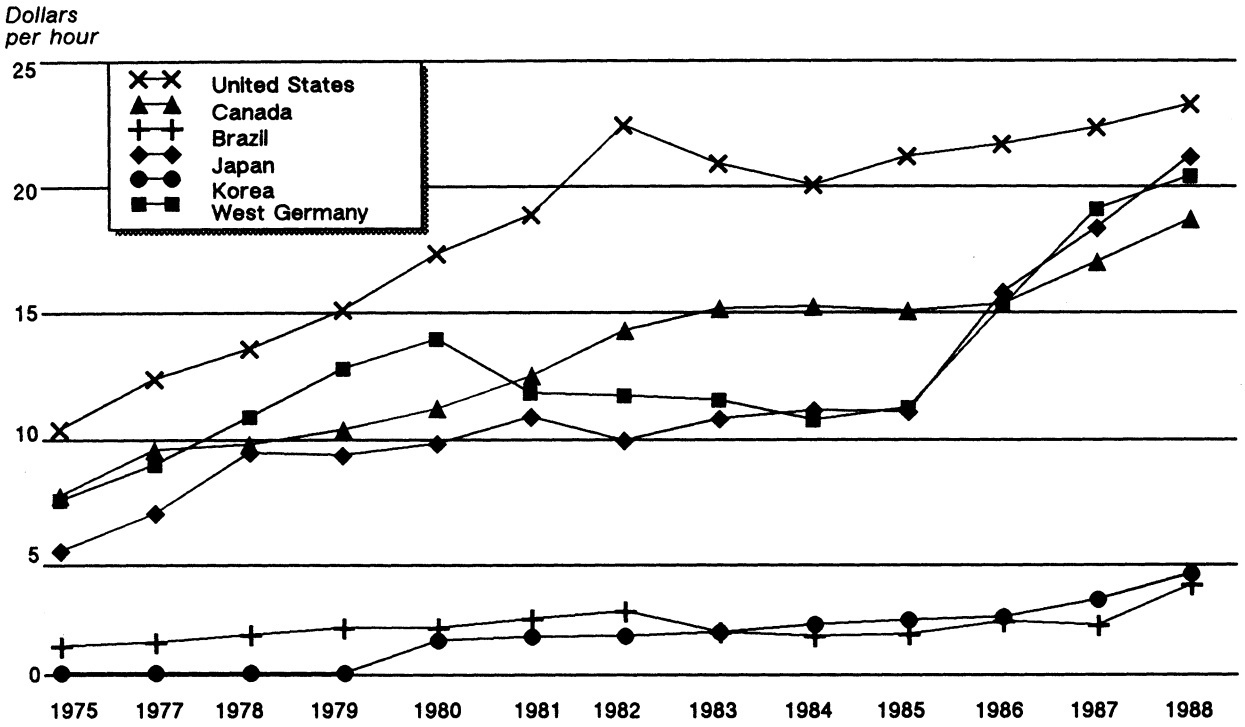
Figure 2
U.S. carbon steel production costs: Labor and other costs



Source: World Steel Dynamics.

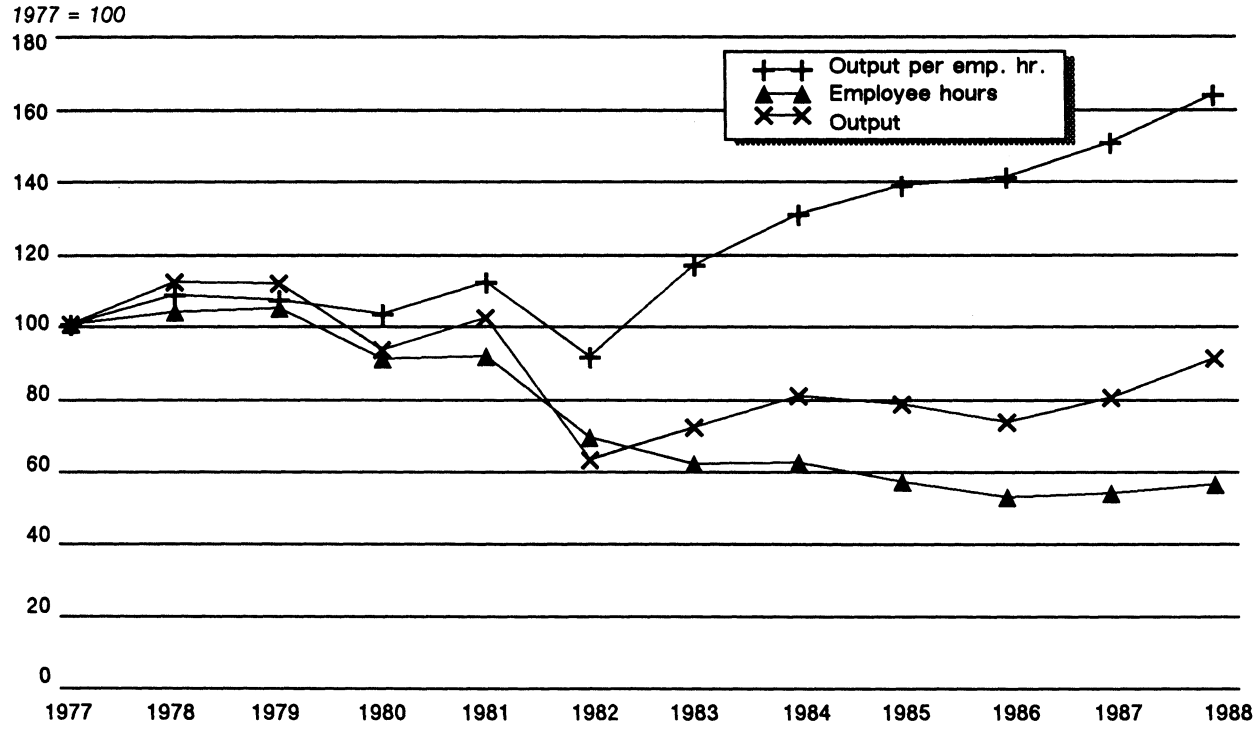
7

Figure 3
Compensation in the steel industry: U.S. and selected foreign countries



Source: U.S. Department of Labor.

Figure 4
U.S. carbon steel industry: Indexes of output, employee hours, and output per employee hour



Source: U.S. Department of Labor.

8

Review of Settlements

On May 25, 1989, the labor contract with Bethlehem Steel Corporation was ratified by USWA members. The Armco negotiations are incomplete, while the National and Inland contracts were ratified on July 14, 1989. Steel labor contracts with the remaining three major companies are expected to be negotiated in 1990–91. USX Corporation's contract expires in March 31, 1991 and Chapter 11 proceedings, including the renegotiation of labor contracts, are expected to be concluded for LTV Steel Co. Inc. and Wheeling-Pittsburgh Steel Corporation. Following are summaries of the current status of 1989 USWA labor negotiations with major steel firms.

Bethlehem Steel Corporation

As the first of the major integrated steel producers to negotiate a contract with the USWA, the Bethlehem agreement set a pattern for negotiations in other companies. The major provisions of the contract cover wages, benefits, profit sharing and training. The contract provides employees with restoration of the concessions agreed to in prior contracts, as well as improved wages and benefits reflecting projected rates of inflation and shares in the future profitability of the company. The Bethlehem contract is in force from June 1, 1989, to July 31, 1993. According to Paine Webber analysis of the Bethlehem contract, the 1988 hourly employment cost of $25.50 (which includes the 8.06 percent restoration payment) will rise over the term of the contract by an estimated 20 percent, or to $30.49.

At the effective date of the Bethlehem agreement, wage rates are restored to the levels existing in 1986, when rates were reduced by 8.09 percent, or approximately $1.00 per hour. In addition to the restoration of wage rates, increases of an average of $1 per hour in January 1991 and $0.50 per hour in January 1992 are scheduled. Immediately after ratification, active employees will receive a $500 cash restoration payment plus a $500 cash advance on profit-sharing payments for 1989. Each employee receiving the $1,000 bonus will have his 1989 Employee Investment Program account reduced by $500.

A new form of Inflation Recognition Payment will become effective on August 1, 1991. No pay adjustment will be made if inflation remains below 3 percent a year. Beyond 3 percent, pay levels will be adjusted quarterly by 1 percent for each full 1 percent increase in inflation.

In terms of benefits, the three holidays which were eliminated in 1986 will be restored—one each in 1990, 1991 and 1993. Sunday premium, which had been eliminated will be restored to 1-1/2 times, effective January 1, 1990. Improvements in pension, insurance benefits, and certain benefits for retirees are also provided for during the term of the agreement. The contract includes a new training and education provision through the USWA/Bethlehem Carrier Development Program, the purpose of which is to provide education, training, and personal development for Bethlehem employees. The program will be funded by Bethlehem at the rate of $300,000 per month. Additional funding for the program will come from an overtime control program which will go into effect on August 1, 1990. When overtime levels become excessive (over 56 hours per week per man), Bethlehem is liable for a financial penalty that will be paid to the Carrier Development Program.

The labor contract provides a new profit sharing plan under which 10 percent of annual corporate pre-tax income will be distributed to USWA members. The plan is effective as of January 1, 1990, with payments to be made by March 31, 1991. If there are no profits, Bethlehem guarantees payments of $0.35 per hour in 1990 and $0.14 per hour in 1991 and 1992, which at Bethlehem's option may be paid in stock. The plan is based on the overall profitability of Bethlehem and in part on the profitability of individual business divisions.

The USWA and Bethlehem have established the National Policy for Steel Committee, the purpose of which is to address issues of national trade policy, national health issues, national fiscal and monetary policy, the environment and rebuilding the nation's infrastructure.

National Steel Corporation

The labor contract with National covers a 50-month period from June 1, 1989 to July 31, 1993. The contract is substantially the same as the Bethlehem labor contract with the following principal modifications. Wage rates are restored to their 1986 levels, an increase over current rates of 2.6 percent or 31 cents per hour. The Inflation Recognition Payments (IRPs) are essentially the same as in the Bethlehem contract, except if National has no profit, the company can defer the IRP payment. While the payment is deferred it accumulates 5 percent interest. National does not pay any profit sharing bonuses to USWA members unless the corporation makes a net profit of over $7.5 million nor does it guarantee payments if there are no profits (as Bethlehem does). The agreement has a productivity gain sharing plan which pays quarterly bonuses based on productivity improvements measured in tons of steel shipped per National steel worker. According to company officials the overall rise in employment cost over the term of the contract is approximately 18 percent. The labor contract was voted on and rejected by USWA members on June 19, 1989, principally due to objections to provisions concerning compulsory overtime, contracting-out

9

and crew sizes. The contract was resubmitted to rank and file members in substantially the same form as the original, and members approved the contract on July 14, 1989.

Inland Steel Corporation

The labor contract with Inland was ratified on July 14, 1989 and covers a 48-month period from August 1, 1989, to July 31, 1993. The agreement is substantially the same as the Bethlehem agreement with a few modifications. The timing of the $1.50 per hour wage increase is different at Inland, i.e., union members will receive $0.75 in August 1989, $0.50 in January 1991 and $0.25 in January 1992. There is no restoration payment in the Inland contract since union members had not given up any of their wages. The Inland contract provides for an extra week of vacation in one of the four contract years. Inland's pension package to USWA members is fully funded.

Armco, Inc.

Armco, Inc. has recently begun to negotiate a labor contract with the USWA and is not expected to have a completed agreement until just before the current one expires on August 1, 1989.

U.S. Producer's Capital Expenditures and Research and Development Expenditures[14]

Carbon and Certain Alloy Steel

Capital expenditures for carbon and certain alloy steel operations rose during 1988/89 to $2.5 billion, representing an increase of 67 percent over the expenditure level of $1.5 billion during 1987/88 (table 5 and app. D, table D-5). This was the highest level of spending during the period of the VRAs.[15] The largest relative increases in expenditures were reported in the areas of sheet and strip (189 percent), rail products (169 percent), and cokemaking (112 percent). New capacity additions and modernization of facilities were responsible for the high level of spending in the sheet and strip area. The purchase of idled facilities was responsible for a considerable portion of the rail expenditures. High expenditure levels in the

[14] Detailed data on U.S. producers' capital expenditures and research and development expenditures during July 1, 1988-June 30, 1989 are presented in app. D, table D-5.
[15] Capital expenditures were $1.2 billion in 1986/87, $1.8 billion in 1985/86, and $2.4 billion in 1984/85.

Table 5

Certain carbon and alloy steel: U.S. producers' capital expenditures and research and development expenditures, July 1, 1987 - June 30, 1988 (1987/88) and July 1, 1988 - June 30, 1989 (1988/89)

	Capital Expenditures			*Research and Development*		
Item	*1987/88*	*1988/89*	*Change*	*1987/88*	*1988/89*	*Change*
	1,000 dollars		*Percent*	*1,000 dollars*		*Percent*
Carbon and certain alloy steel:[1]						
Cokemaking facilities	39,271	83,311	112.1	3,432	3,006	-12.4
Ironmaking facilities	305,701	356,286	16.5	3,115	3,683	18.2
Steelmaking facilities[2]	537,407	* * * *	* * * *	44,323	56,968	28.5
Products:						
Sheets and strip	350,094	1,011,637	189.0	49,096	48,399	-1.4
Plates	19,976	37,608	88.3	4,693	5,112	8.9
Bars	99,416	* * * *	* * * *	4,397	3,396	-22.8
Structural shapes and units	48,985	38,423	-21.6	706	* * * *	* * * *
Pipe and tube	31,721	57,532	81.4	2,401	* * * *	* * * *
Rails and related products	2,314	6,218	168.7	520	* * * *	* * * *
Wire rod, wire, and wire products	40,799	10,022	-75.4	909	1,022	12.4
Total	1,475,684	2,467,487	67.2	113,592	127,645	12.4
Stainless and alloy tool steel:						
Steelmaking facilities[2]	23,616	32,593	38.0	6,203	12,284	98.0
Products:						
Plates	3,092	3,631	17.4	384	* * * *	* * * *
Sheets and strip	32,071	30,546	-4.8	7,212	7,623	5.7
Wire	6,245	9,098	45.7	1,421	* * * *	* * * *
Pipes and tubes	1,387	3,023	118.0	121	* * * *	* * * *
Total	66,411	78,891	18.8	15,341	22,997	49.9
Grand total	1,542,095	2,546,378	65.1	128,933	150,642	16.8

[1] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[2] Including semifinished steel.

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

10

cokemaking area generally reflect the aging status of U.S. cokemaking facilities. Relative to sales, capital expenditures improved to .06 from the 1987/88 level of .04.

Producers' research and development expenditures continued to rise, totaling over $128 million during 1988/89, an increase of approximately 12 percent. Spending increased in all categories except bars, cokemaking and sheet and strip. The largest increases reported for R&D were in ***.

Certain Stainless and Alloy Tool Steel

Total capital expenditures for the production of certain stainless and alloy tool steel products were $78.9 million during 1988/89, an increase of approximately 19 percent over the $66.4 million spent in 1987/88. This figure was about 40 percent less, however, than the highest reported level of capital expenditures during the period of the VRAs, $132 million in 1984/85. Expenditures increased in all areas except stainless sheet and strip. Relative to sales, capital expenditures declined to a ratio of .02, the lowest level of any reporting period during 1984–89.

Research and development in all categories combined increased 50 percent during 1988/89; R & D levels in these areas were the highest of any reported during the period of the VRAs.

Financial Experience of U.S. Producers

The financial performance of the domestic steel industry has improved during the period of Voluntary Restraint Agreements (VRAs), in effect since October 1, 1984 and scheduled to end September 30, 1989.[16] During 1984–89, total net sales increased by 24 percent, and net operating losses as well as net losses before taxes returned to profits for producers of carbon steel. For stainless and alloy tool producers, total net sales increased by 96 percent, net operating profits increased by 357 percent, and net profits before taxes increased by 513 percent. The following tabulation compares these items for carbon and specialty steel products subject to the investigation for the 12-month periods ending June 30, 1985 and June 30, 1989 (see app. D, table D-7).

[16] Although the VRAs have been a factor in improved performance of the domestic industry, previous Commission studies have also indicated that other factors, including the decline in the value of the dollar versus major foreign suppliers' currencies, the rise in demand for steel worldwide, and the restructuring and modernization of the domestic industry, were of equal or greater importance during the period of the VRAs. See, *The Western U.S. Steel Market: Analysis of Market Conditions and Assessment of the Effects of Voluntary Restraint Agreements on Steel-Producing and Steel Consuming Industries,* USITC Publication 2165, March 1989; and *The Effects of the Steel Voluntary Restraint Agreements on U.S. Steel-Consuming Industries,* USITC Publication 2182, May 1989.

Item	Carbon and Certain Alloy Steel [1] [2] 1984/85	1988/89	Stainless and Alloy Tool Steel [2] 1984/85	1988/89
	(In millions of dollars)			
Total net sales[3] .	30,929	38,470	2,120	3,913
Net operating profit or (loss)[4]	(655)	3,239	130	592
Net profit or (loss) before taxes[5]	(1,072)	1,368	89	546

[1] Includes alloy steel other than stainless and alloy tool steel.
[2] Certain respondents included financial information on related products.
[3] Includes intracompany and intercompany transfers, less discounts, returns, and allowances.
[4] Total net sales less the cost of goods sold, general, selling and administrative expenses. Includes nonitemized costs.
[5] Net operating profit or (loss) less other expenses, such as net interest expense (or income).

During the most recent 12-month period ending June 30, 1989, total net sales (including intracompany and intercompany transfers, less discounts, returns, and allowances) of steel products totaled approximately $41.1 billion, up 8.7 percent from sales in the preceding 12-month period (app. D, table D-6). Domestic steelmakers registered an aggregate net income before extraordinary charges (net operating profit) of $3.8 billion, up 19 percent from last year (app. D, table D-7). Six of the reporting companies reported extraordinary and non-recurring expenses totaling $3 billion, although such expenses for the domestic steel industry as a whole totaled $1.9 billion in 1988/89. Some of these expenses are due to unresolved claims under Chapter 11 of the U.S. bankruptcy code, divestiture due to restructuring, and post-employment health and life insurance benefits for steelworkers.[17] Net profits before taxes fell 26 percent from their level during the preceding 12-month period to about $2 billion because of the increased extraordinary expenses (app. D, table D-7). On a product line basis, reporting companies experienced profits before taxes in all categories, except rails and related products, and line pipe (table 6, and app. D, table D-6).

Carbon and Certain Alloy Steel

Total net sales of all carbon and certain alloy steel products subject to the investigation amounted to $37.1 billion (table 6, and app D, table D-6) during July 1988 through June 1989, an increase of 5.9 percent from the preceding period's $35.0 billion. Net profits before taxes for steelmaking operations were $3.0 billion, compared with a profit of $2.3 billion in the

[17] LTV Corp. has reported that these previously unrecognized costs totaled $*** in 1988; another company, Florida Steel Corp., incurred extraordinary expenses totaling $*** in higher debt service costs in connection with the leveraged buyout of the company in 1988. Other extraordinary expenses were incurred with maintenance and company restructuring.

11

previous period. As a result, profits as a percentage of sales rose from 6.6 percent to 8.2 percent. With the exception of rails and rail products and line pipe, all products within the group were profitable. The most profitable product areas were plates, sheets and strip, hot finished bars, and structural shapes and units.

Certain Stainless and Alloy Tool Steel

Total net sales of certain stainless and alloy tool steel products amounted to $4.1 billion (table 6, and app. D, table D-6) during July 1988 through June 1989, an increase of 42 percent from the $2.9 billion in net sales recorded in the year ending June 30, 1988. Net profits before taxes in the sector rose from a profit of $356 million to $627 million. Net profits as a percentage of sales rose from 12.4 percent to 15.3 percent, a net percentage point change of 2.9 (table 6). All products within the group recorded improvement with the greatest improvement shown in semifinished products.

Bankruptcies

East Texas Steel Facilities, Inc. (formerly Lone Star Steel Company) was forced involuntarily into Chapter 11 bankruptcy by the company's creditors on June 12, 1989.[18] East Texas is an electric arc furnace based steelmaker specializing in the production of oil country tubular goods (OCTG) and line pipe. These product markets have experienced depressed sales and profits because of lower steel consumption in crude petroleum drilling and production. East Texas was the only steelmaker to enter bankruptcy proceedings during 1988/89.

Several companies (representing 15 to 20 percent of domestic raw steel production capacity) are continuing to operate under Chapter 11 of the federal bankruptcy laws.[19] These companies, LTV Steel Corp., Wheeling-Pittsburgh Steel Corp., and Sharon Steel are in the process of negotiating with creditors to emerge from that status. Wheeling-Pittsburgh, which presented its reorganization plan to the court on Dec. 29,

[18] "Creditors file bankruptcy plea against Lone Star's steel unit", *American Metal Market*, June 14, 1989, pp. 1, 16.
[19] While in Chapter 11 status, the companies are not required to pay interest on unsecured debt, are not bearing the major cost of terminated pension plans, and have benefited from various tax credits. Some of these costs are being reinstated prior to emerging from bankruptcy.
[20] Net profit before taxes is defined as net operating profit plus net interest income or (expense) plus all other income or (expense).

Table 6

Certain carbon and alloy steel: Total net sales and net profits and losses as a percentage of sales, by selected product, July 1, 1987—June 30, 1988, (1987/88) and July 1, 1988—June 30, 1989 (1988/89)

Item	Total net sales[1] 1987/88	Total net sales[1] 1988/89	Percent change in sales	Net profit or loss as a percent of sales[2] 1987/88	Net profit or loss as a percent of sales[2] 1988/89	Net change in percentage
	1,000 dollars					
Carbon and alloy steel:[3]						
Semifinished	1,176,191	1,465,203	24.6	(4.9)	0.9	5.8
Plates	2,286,532	2,479,689	8.4	10.8	13.8	3.0
Sheets and strip	20,269,707	21,922,009	8.2	8.6	9.2	0.6
Bars	4,728,827	5,303,956	12.2	0.6	6.6	6.0
Wire, wire rod and wire products	1,674,126	1,632,897	(2.5)	2.0	2.1	0.1
Structural shapes and units	1,982,966	2,064,400	4.1	8.1	10.5	2.4
Rails and related products	282,875	362,190	28.0	(5.4)	(6.8)	(1.4)
Pipes and tubes	2,577,536	1,825,132	(29.2)	7.5	4.4	(3.1)
Subtotal, carbon and certain alloy steel	34,978,659	37,055,476	5.9	6.6	8.2	1.6
Certain stainless and tool steel:						
Semifinished	294,754	693,514	135.3	6.6	19.7	13.1
Stainless steel:						
Plates	392,863	639,666	62.8	8.7	14.5	5.8
Sheets and strip	2,000,747	2,501,095	25.0	14.7	14.7	0.0
Wire	114.025	137,373	20.5	6.3	13.9	7.6
Pipes and tubes	79,612	114,704	44.1	1.3	9.5	8.2
Subtotal, certain stainless and alloy tool steel	2,882,001	4,086,352	41.8	12.4	15.3	2.9
Grand total	37,860,660	41,141,828	8.7	7.1	8.9	1.8

[1] Includes intracompany and intercompany transfers, less discounts, returns, and allowances.
[2] Net profit is defined as the total net sales, less the cost of goods sold, general, selling and administrative expenses, and other expenses (such as net interest expense for income).
[3] Certain alloy refers to alloy steel other than stainless and alloy tool steel.

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

12

1988, expects to emerge from bankruptcy during 1989. *** Wheeling-Pittsburgh reported a profit before taxes[20] for the first time since 1981.[21] ***

Nearly all of the companies which were in bankruptcy have emerged as restructured companies, or as divisions or subsidiaries of other companies. The stainless steel operations of Eastmet Corp. (Eastern Stainless Steel, which produces flat-rolled stainless steel products) were sold to Cyclops Corporation, another stainless steel producer; the company's non-steel operations were divested elsewhere. LTV sold its carbon steel flat-rolled products facility in Warren, OH, which has re-emerged as Warren Consolidated Industries; the carbon steel bar division is being sold to an employee stock ownership plan (ESOP), and will re-emerge as Republic Engineered Steel. Phoenix Steel, in Chapter 11 from 1986–88, re-emerged as CitiSteel and restarted production of carbon steel plate in 1989. Athlone Industries re-opened Green River Steel, its Kentucky mini-mill subsidiary closed several years earlier, which makes reinforcing bar.

Financial Indicators and Funding Vehicles

Steel company balance sheets strengthened during 1988 as debt-to-equity and liquidity ratios improved over 1987 results. The most significant change affecting the integrated steel mills has been the reduction in debt since 1986, and the consequent reduction in net interest expense. For most of the integrated steelmakers, debt as a percentage of total capital is now about 30 percent, down from over 50 percent two years ago.[22] In some instances, proceeds from new stock sales have been applied to debt reduction.

The restructuring and cost-cutting programs initiated several years ago have reduced production costs and improved productivity. Steady economic growth in the United States has improved the market for steel in terms of increased shipments, prices, and operating rates, leading to higher operating margins, operating income, and increased cash and cash equivalents. Most of the steel industry's cash flow from earnings and depreciation has been directed to modernization of facilities and improvements in quality, as well as debt reduction (including funding retiree benefit plans). Improved cash flow has seemed to engender increased capital expenditures.[23] This has meant an overall improvement in credit ratings and increased access to the securities and credit markets.

Until 1987, net losses from steelmaking operations, lowered credit ratings, and general investor pessimism regarding steel industry prospects constrained the major integrated steelmakers from using the U.S. debt and equity markets.[24] In response, steelmakers moved to new sources of funds, generted through methods of off-balance sheet financing,[25] such as production payments or operating leases,[26] or project financed facilities in joint venture arrangements. Joint venture arrangements have become a more important source of funds, particularly with respect to carbon steel flat-rolled products (app. M, table M–1).

Beginning with 1988, credit ratings have been upgraded for steel companies (table 7), and most steelmakers report increased credit lines, longer repayment maturities for credit used or debt incurred, and less strict collateral requirements.[27] The upgraded credit ratings for the steel industry in 1988 and 1989 compares favorably to the trend for other industries as reported by Moody's.[28] Most of the upgrades came in the basic industries sector and reflected a weaker dollar (making U.S. products more cost-competitive) and restructuring and cost-cutting programs initiated several years earlier (figure 5).[29] Among the major steelmakers, Moody's upgraded the corporate debt of USX Corp. which regained investment-grade status in 1988. This affected $3.9 billion of that company's debt.

[21] Wheeling-Pittsburgh Steel Corp., *Annual Report*, 1988.
[22] As a comparison, the debt to total capitalization ratio for most mini-mills is below 20 percent.
[23] In general, capital expenditures follow improved cash flow by one to two years.
[24] The U.S. major integrated firms experienced net losses every year from 1982 through 1986. Credit ratings were lowered by the rating agencies, affecting the ability of the companies to sell debt instruments (such as bonds or debentures), equity instruments (such as common or preferred stock), or expand bank borrowing and credit limits. Investor perceptions and future expectations were unfavorable, particularly since three steelmakers went into Chapter 11, and it was widely reported that Bethlehem Steel asked its legal staff to investigate such a filing in March 1987.
[25] Off-balance sheet financing refers to removing debt from the balance sheet. To do so a company also removes an asset, such as an inventory, account receivable, or plant and equipment. Three forms of off-balance sheet liabilities are: product financing arrangements, operating leases, and related party transactions. "Product financing arrangements" often involve transactions where inventory is "parked" with another party with the expectation that the buyer will exercise an option to return the goods and receive the original money back with interest; this is in effect a secured borrowing transaction. "Operating leases" generally include all leases other than capital leases. Capital leases are typically capitalized and are accounted for on the balance sheet. Operating leases involve a sale and leaseback of plant and/or equipment by the corporation. "Related party transactions" involve borrowing and lending between the reporting company and a related party, which include people and organizations that often do not qualify as a subsidiary or affiliate such as a joint venture partner. See, Graham and Dodd's, *Security Analysis*, 5th ed., pp. 299–313.
[26] An example of this is the modernization and capital investment that Bethlehem Steel made at its Sparrows Point facility, where the company sold the caster to an investment group and leases the equipment.
[27] Moody's Industrial Reports, 1988 and 1989.
[28] Moody's Global Outlook, 1989, "Corporate Credit Review, 1988." Downgrades outpaced upgrades by a factor of about 2 to 1, or 237 corporate downgrades, affecting $219 billion of outstanding debt versus 142 corporate upgrades, affecting $110 billion of outstanding debt.
[29] Ibid.

13

Table 7

Moody's ratings of senior debt[1] [2] of selected U.S. steel producers

1982–1989

Firm	*1982*	*1983*[3]	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Armco	A	A2	Baa2	Baa3	Ba2	B2	B2	Ba3
Bethlehem	A	Baa2	Baa2	Ba1	Ba1	B2	Ba3[4]	Ba3
Inland	A	Baa2	Baa2	Baa2	Ba2	Ba2	Ba1[4]	Ba1[4]
J & L[5]	Ba	Ba1	Ba1	Ba1	B3	Baa	Caa	Caa
National	A	Baa3	Ba1	Ba1	B3	Ba3	Ba3	Ba3
Republic[5]	A	Baa3	Ba1	Ba1	B3	Caa	Caa	Caa
U.S.S.[6]	A	A3	Baa2	Baa2	Baa2	Baa3	Ba1	Baa3[7]
LTV[5]	([8])	([8])	([8])	B1	B1	Caa	Caa	Caa

[1] Moody's ratings of company senior debt are as follows:
- Aaa: Best quality and carry smallest degree of risk.
- Aa: High quality and together with Aaa, are known as high-grade bonds.
- A: Possess many favorable investment attributes and are considered upper-medium grade obligations.
- Baa: Medium-grade obligations which are neither highly protected nor poorly secured.
- Ba: Obligations which have speculative elements; future cannot be considered well assured.
- B: Generally lack characteristics of desirable investment.
- Caa: In poor standing; may be in default or may present elements of danger with respect to principal or interest.
- Ca: Speculative in a high degree.
- C: Lowest rated bonds.

[2] Ratings are of senior debt, those of subordinated debt such as debentures are not shown. Subordinated debentures have historically been lower than the ratings shown here.
[3] Moody's began assigning numerical modifiers to its alphabetic ratings in 1983. 1a is preferable to 2, which is preferable to 3.
[4] Moody's upgraded the ratings for Inland Steel and Bethlehem Steel in July 1988. Inland is being reviewed currently.
[5] LTV Corp (the umbrella, holding company) merged Jones and Laughlin (J & L) and Republic Steel to form LTV Steel in 1984. While Moody's assigns a rating of Ca to the holding company, a higher rating of Caa is assigned to the operating companies.
[6] U.S. Steel changed its corporate name to USX Corp on July 9, 1986 to reflect diversification into non-steel lines of business.
[7] Moody's upgraded the rating for USS in Sept. 1988.
[8] Not applicable.

Source: Moody's Investors Service, Inc.

Investment Patterns

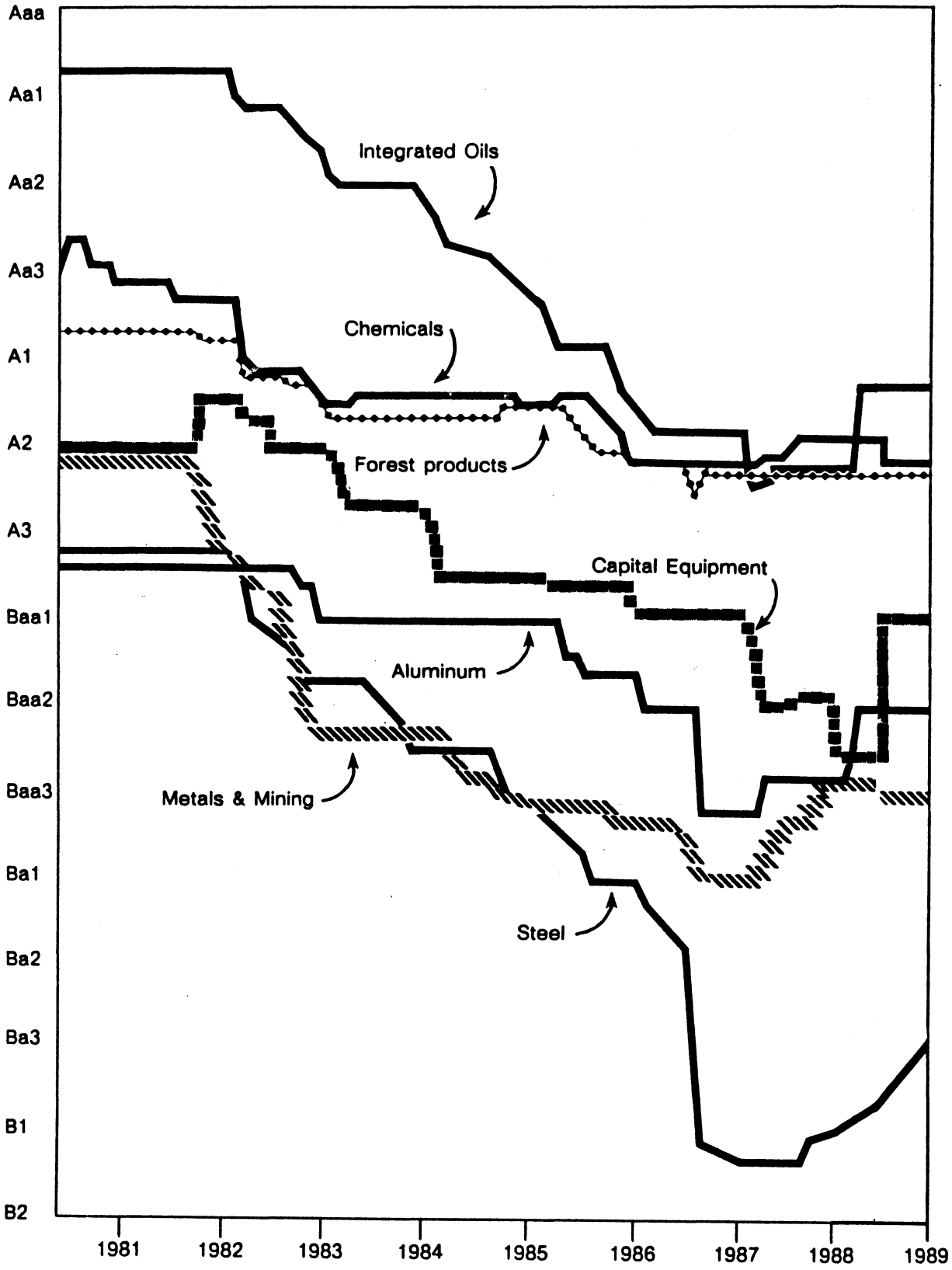
The factors of debt service, operating efficiencies, and industry-wide supply-demand characteristics have affected industry investment in terms of the "buy-or-acquire" versus the "develop-and-build" strategies that were the basis for growth. While most "Big Steel" companies have divested assets[30] during the 1980's to improve operating earnings and concentrate on specific product markets, several mini-mill and specialty steel companies have grown by purchasing undervalued steelmaking assets having a potential competitive advantage within a particular commodity or geographical market.[31] Additionally, positive cash flows from earnings and depreciation over a number of years have enabled several mini-mill companies to examine expansion of their product lines beyond the traditional mini-mill commodity products.[32] The leveraged buyout[33] and the employee stock ownership plan (ESOP) buyout,[34] have also been used in several recent buy-and-acquire transactions in the domestic steel industry. However, several factors have combined to slow domestic steel industry acquisitions, as interest rates in 1989 are higher than in 1988, and changes in fundamental valuation trends have

[30] For example, none of the integrated mills produce wire products (the last was eliminated by Bethlehem's sale of its wire rope division in 1989).
[31] Birmingham Steel Corp. purchased six plants in a three-year time span and North Star Steel Co. built one plant and purchased four in a five-year period; at the other end of the acquisition-versus-build spectrum is Florida Steel Corp. which built four of its facilities and acquired one, and Chaparral Steel Co. which built its mill facility. In the specialty steel sector, several companies made acquisitions in the past year to streamline operations (see discussion, "Key Developments in the Specialty Steel Industry, 1983–88").

[32] See the section of this report entitled "Minimills: Penetrating Higher Value Markets."
[33] There were two companies which went private through leveraged buyouts in 1988: Northwestern Steel and Wire for $135 million to a group of senior management and an ESOP (subordinated notes have been rated B3 by Moody's); and Florida Steel for about $250 million. Additionally, a group composed of senior management attempted to purchase Jessop Steel, a specialty steel producer, but the transaction failed due to valuation problems.
[34] One tax incentive allows a company sponsoring an ESOP to deduct not only the interest on the loan to buy stock for the plan, but also the principal. Another tax incentive gives banks and other lenders a 50 percent deduction on their income from ESOP loans, enabling them to charge lower interest rates to companies that borrow for such programs. A leveraged buyout can be financed by paying for the stock- purchase plan (and setting aside part of the stock for employees) by borrowing against corporate assets. There are currently six ESOP-owned steel producers: Republic Engineered Steel (formerly the bar division of LTV Steel), Northwestern Steel and Wire, McLouth Steel, CF&I, Weirton Steel, and Oregon Steel.

14

Figure 5
Selected industry rating trends, 1981-89



Source: Moody's Investors Service

15

occurred (the gap between the replacement value of corporate assets and the market value of equity has shrunk).

The focus and source of investment within the steel industry depends upon the investor's perceptions of risks and rewards. For example, at a time when the integrated sector was perceived as declining, and several large companies approached bankruptcy, direct foreign equity investment tended to flow to the minimill sector.[35] As the integrated sector returns to profitability and its long-term outlook improves, joint venture arrangements have become an important source of investment funds, particularly with respect to modernizing plate, sheet, and strip rolling mill operations (app. M, table M-1).[36]

Foreign steelmakers have invested more than $3 billion in the U.S. industry. Such investment is primarily in the carbon steel industry,[37] and within the flat-rolled sector of the industry. Most of the investment is from Japan. Reportedly, the reasons for such foreign investment include:[38] the improved domestic steel market; the improved credit climate for the steelmaking companies and their improved ratings; the lower exchange value of the dollar vis-a-vis the yen compared with the level several years ago; import restraints on foreign steel and autos imposed in 1984;[39] and the globalization of the steel industry, which permits shifts in production and sales on a world-wide basis depending on shifts in demand and exchange rate fluctuations.

Steel Pricing

The rise in steel prices that occurred internationally during 1987–88 was largely a reflection of increased worldwide demand, the depreciation of the U.S. dollar relative to other currencies, and the effects of the steel VRA program.[40] Prices for most products in major steel producing countries were higher than those in the United States. For example, the world "spot" export price[41] of cold-rolled sheet increased about 72 percent, from $320 per ton in early 1987 to $550 at year-end 1988, whereas the price of cold-rolled sheet in the United States[42] rose about 1 percent from $498 per ton to $502 per ton during the period.[43] Another price disparity occurred in the price of plate; in Japan, prices ranged between $570 and $600 per ton during 1987-88, while the "spot" price of plate produced in the United States ranged between $490 and $540 per ton during the period. The relatively lower prices in the United States during 1988 were also a reflection of domestic steel producers' efforts to modernize facilities through improvements in production technology, which enhanced productivity.

An analysis of data published by the Steel Service Center Institute reveals that in January 1987, 20 percent of the steel service centers reported that foreign mill steel prices for carbon steel products were 6 to 10 percent below U.S. delivered prices. During December 1988, however, 80 percent of the service centers reported that foreign mill carbon steel prices were equal to, or 5 percent higher than U.S. prices.

International Pricing Developments

The two-tiered pricing system that existed for steel exported to the U.S. market in 1980 was primarily the result of a relatively strong U.S. dollar, limitations placed on steel exported to the United States, and increased U.S. steel prices and production costs. These market conditions, which continued throughout 1980–87, allowed

[35] Additionally, since mini-mill companies are smaller and have traditionally operated in specialized geographical or market segments, investment could be targeted more easily, total investment could be less, and the financial return could be earlier than if such investment were made in an integrated steelmaking plant.

[36] There also is foreign investment in steel distribution through full or partial foreign equity ownership of steel service centers. Industry sources indicate that foreign equity ownership may total 15–25 percent of service centers in the United States (of which Japanese trading companies may own 8–12 percent and European steelmakers may own another 10–12 percent). Foreign owned and operated service centers in the United States are similar in size, operations, and investment capitalization to U.S.-owned mid-sized service centers, and serve a specific geographical market. They provide a permanent distribution channel for foreign produced steel to foreign owned or U.S. owned original equipment manufacturers. Since several domestic steelmakers own service centers, they are a parallel and competing distribution network. See "Japan adjusts its policies to handle market changes," *American Metal Market*, Feb. 13, 1989.

[37] An important exception to this is the purchase of the Canadian and U.S. assets of Atlas Specialty Steel (the U.S. operations operate under the name of Al Tech Specialty Steel Corporation) by Sammi Steel, a South Korean stainless steelmaker, for $350 million in late February 1989.

[38] "Japanese companies grab big stake in US integrated steel," *American Metal Market*, April 24, 1989; "Daido buys 17% stake in Copperweld," *Metal Bulletin*, Mar. 16, 1989.

[39] Reportedly, the Armco-Kawasaki joint venture was prompted in part by requests from two transplanted automakers, Honda of America Manufacturing Inc, and Nissan Motor Manufacturing Corp. USA; the National Steel-NKK joint venture also focuses on supplying galvanized sheet to the automakers, as does the joint venture between USS-Kobe.

[40] For a full discussion of the effects of the VRAs and exchange rates on steel prices, and other relevant information, see the Commission's reports *The Western U.S. Steel Market: Analysis of Market Conditions and Assessment of the Effects of Voluntary Restraint Agreements on Steel-Producing and Steel-Consuming Industries*, Publication No. 2165, March 1989 and *The Effects of the Steel Voluntary Restraint Agreements on U.S. Steel-Consuming Industries*, USITC Publication 2182, May 1989.

[41] Weekly "spot" purchase price obtained from either *Metal Bulletin* (of London) or *Echo de la Bourse* (of Belgium), based on prices agreed on by metal traders in Brusels.

[42] Reflects the "spot" price of cold-rolled sheet in the Midwestern United States.

[43] *World Steel Dynamics*, Steel Price Track 27.

16

foreign mills to obtain $100 to $125 per ton more when exporting to the United States, as compared to other countries whose currencies and prices were weaker. During 1988, however, the two-tiered pricing system disappeared, largely reflecting the depreciation of the U.S. dollar relative to most foreign currencies and a surge of steel "spot" export prices in foreign markets. Therefore, foreign mills began increasing steel shipments to non-U.S. destinations, where an average $50 per ton higher price could be obtained.[44] The ending of the two-tiered system in 1988 (coupled with relatively higher steel prices in most foreign markets) contributed to a reduction in the volume of steel exported to the U.S. market and an increase in the volume of U.S. steel shipped to foreign markets (see app. D, table D-3 and the "Export Trends for Domestic Steel Products" section of this report).

Increasing transportation costs to the United States also became a major concern for exporters of steel to the U.S. market. For example, an additional $60 to $70 per ton shipping cost to the United States (added to the world base price of $490 per ton for cold-rolled sheet) would result in foreign mill price realizations of about $50 per ton less than shipments to other markets.[45]

With regard to general international price comparisons, the following tabulation indicates that as of June 1989, U.S. prices for sheet products were generally higher than EC prices (from 9 to 11 percent), but less than Japanese and Canadian prices.

Spot price comparisons, June 1989

(U.S. dollars per net ton)

Market	*Hot-rolled coil*	*Cold-rolled coil*	*Galvanized sheet*
Canada	403	504	705
EC	357	449	557
Japan:			
Dealer	499	596	849
Big Buyer[1]	515	616	726
United States	390	500	620

[1] "Big Buyer" prices are those quoted to large steel consumers in Japan.

Source: World Steel Dynamics, Steel Price Track 28.

The following tabulation indicates that by June 1989, U.S. "spot" prices for plate products were higher than "spot" prices (denominated in dollars) in the EC, but generally lower than prices in Japan and Canada.

[44] *World Steel Dynamics*, Steel Price Track 27.
[45] *World Steel Dynamics*, Steel Price Track 27.

Spot price comparisons, June 1989

(U.S. dollars per net ton)

Market	*Plate*
Canada	460
EC	368
Japan:	
Dealer	427
Big Buyer	518
United States	430

Source: *World Steel Dynamics*, Steel Price Track 28

"Spot" prices were competitive with respect to rebar "spot" prices in Canada and the EC, but significantly lower than prices in Japan, as the following tabulation illustrates.

Spot price comparisons, June 1989

(U.S. dollars per net ton)

Market	*Plate*
Canada	325
EC	315
Japan:	
Dealer	376
United States	322

Source: *World Steel Dynamics*, Steel Price Track 28.

Following are summaries of steel pricing developments and conditions in the United States, Japan, Canada, and the EC:

United States

Domestic steel producers had become concerned about the labor negotiations scheduled for August 1989, and their possible impact on prices. Despite Bethlehem Steel's labor settlement on May 25, 1989, producers anticipated hedge-buying prior to the ratification of contracts at National and Inland. With Armco as the only major producer at which a strike might now occur, such fears have eased. Another major concern among domestic steel producers (which could lead to a lowering of prices) has been the slowdown in automotive sales during the first-half of 1989. Steel mills always allocate steel production runs to fully satisfy advanced orders, and a reduction in automotive production would create uncertainty in production schedules.

On a regional basis, "spot" prices in the *Eastern United States* were fairly firm during 1988, with hot-rolled coil priced at about $380 per ton and cold-rolled coil priced between $480 and $500 per ton. Because demand for steel products has remained relatively strong throughout the region, steel mills were booked on orders throughout the second quarter of 1989.

[46] See "Labor Conditions" section of this report.
[47] *World Steel Dynamics*, Steel Price Track 28.
[48] *World Steel Dynamics*, Steel Price Track 27.

17

Reportedly, steel demand is strong throughout the *Southern United States*. In all areas, except the Gulf (where plate prices declined to $440 per ton) prices have remained stable. During the first quarter of 1989, hot-rolled "spot" prices were around $390 per ton, with cold-rolled coil being quoted at $480 to $490 per ton.

Steel prices have weakened in the *Midwestern United States* (the largest of the U.S. regional steel markets). Although demand in this region is relatively strong, an abundance of new material (coupled with a buildup of inventories) intensified pricing competition. Hot-rolled coil prices declined to $390 per ton during June 1989, from $410 during February 1989. In addition, price cuts in structurals by Nucor heightened the price uncertainty in this region.

Plate demand has remained strong in the *Western United States*, reflecting increased activity in ship repair, transportation, and forestry and mining industries. The "spot" price for plate sold to service centers ranged from about $450 to $460 per ton during the first quarter of 1989. Oregon Steel refused to sell at levels below these prices several months ago and began shipping to Japan. Throughout the region, domestic producers rather than importers are influencing plate prices.

Following are brief summaries of recent pricing developments in selected key product groups during recent months.

Sheet products (automotive and appliance markets).—The strong demand which led to certain supply dislocations during 1988 appears to be easing. However, while demand for cold-rolled sheet is also softening (especially on the West coast), an immediate decline in prices does not seem likely. Both USS-Posco and California Steel are expected to increase cold-rolled sheet prices during the first half of 1989, bringing their base price to $505 per ton. This still compares favorably to prices of $510 to $520 per ton for cold-rolled sheet from Japan and Korea. USX and Bethlehem are expected to implement similar increases during the period. Stelco has already announced a cold-rolled sheet price increase of $43 (bringing its price to about $504 per ton).[49]

Wire rod (wire drawers and construction markets).—Effective April 1, 1989 Raritan River and Atlantic Steel raised wire rod prices by $20 per ton to offset rising scrap prices and the rising costs of other materials. Wire drawers, however, questioned their ability to pass off the increase to customers, maintaining that the price hike may decline during the latter part of 1989.

[49] *American Metal Market*, January 1989.

Plate (construction and heavy-equipment markets).—Geneva Steel and Oregon Steel Mills (the only West coast producers) announced price hikes of $20 (to total $445 per ton) for deliveries starting in May 1989. While the plate shortage concern has been somewhat relieved by the start-up of Geneva in September 1987, the market is still relatively tight. Plate from foreign sources is being offered at $460 to $500 per ton compared to $445 per ton for plate offered by the West coast producers.[50]

Bar products (construction and automotive markets).—The demand for machining grade bar products leveled off during the first quarter 1989, as service centers trimmed orders by 10 to 15 percent on 1200-series bar. Prices for 12L14 1-inch round average $685 per ton plus a scrap surcharge of $27 per ton. Reportedly, cold finishers have been unable to pass along scrap surcharges and have had to absorb the additional cost.[51] Florida Steel raised prices on stock-length and coil rebar (effective April 3, 1989) by $10 to $315 per ton, maintaining that the increase was necessary to offset scrap surcharges.

Oil-country-tubular goods (petroleum market).—USS's price hike of 5 percent, effective January 1, 1989, came as a surprise to its customers in light of the dampened market conditions.[52] Reportedly, most distributors have been able to pass along the price increase despite declining demand for OCTG products.

Specialty products (chemical and food-processing markets).—Baltimore Specialty Steel Corporation became the first domestic producer to lower surcharges on chrome-nickel grades of stainless bar to reflect a decline in raw material prices. Baltimore announced that surcharges will decline between $180 to $420 per ton (depending on the grade), effective with June 5, 1989 shipments.[53] J&L Specialty announced reductions in stainless steel flat-rolled surcharges, effective with July shipments. The surcharge declines will range from $2.20 per ton on straight-chromium Types 409 and 410 to $349 per ton on Types 310 and 310S, which contain higher levels of nickel.[54]

Although prices in the United States for most steel products generally weakened during 1988–89, they have increased from price levels in 1985 as reflected in the continuing reductions in discounts offered by domestic producers. As shown in the following illustration, the level of discounts declined from as much as 31.2 percent in December 1985, to 16.7 percent in June 1989.

[50] *American Metal Market*, January 13, 1989.
[51] *American Metal Market*, April 24, 1989.
[52] *American Metal Market*, December 8, 1988.
[53] *American Metal Market*, May 2, 1989.
[54] *American Metal Market*, June 6, 1989.

18

Percent variation between U.S. list and "spot" prices[55]

Period	Percent
January 1985	-27.8
April 1985	-28.3
July 1985	-30.2
December 1985	-31.2
April 1986	-21.0
July 1986	-21.8
September 1986	-15.7
December 1986	-14.0
May 1987	-9.5
September 1987	-5.5
December 1987	-9.9
April 1988	-7.9
September 1988	-9.5
February 1989	-16.6
June 1989	-16.7

Source: *World Steel Dynamics*, Steel Price Track 28.

The increases in domestic steel prices during July 1985 through June 1989 is reflected in data received by the Commission from U.S. producers and importers. An examination of these data reveals that U.S. producers experienced price increases in most product categories (table 8 and app. D, table D-8. The largest price increases in the stainless steel category occurred in plates (up 59 percent) and sheets and strip (up 58 percent).With respect to the carbon and certain alloy steel category, the largest price increases were recorded in hot-finished bars (up 52 percent) andplates and line pipe (each up 30 percent). Data received from importers reveal that the largest price increases occurred in stainless steel pipes and tubes (up 374 percent) and hot-finished bars (up 98 percent). In more than one-half of the product categories, the data revealed that importers' prices were higher than U.S. producers' prices.

[55] Composite for five major products through January 1985; composite for four major products starting April 1985.

Japan

The Japanese steel industry is experiencing an unfavorable international competitive position due to the increasing price of its products, stemming largely from escalating production costs. The cost of producing a metric ton of cold-rolled sheet is approximately $550 in Japan, compared to $480 in the United States, $420 to $470 in the EC, and $420 to $440 in Korea and Taiwan. The "Big Buyer" price of cold-rolled sheet in Japan is about $742 per metric ton, whereas the "spot" prices of this product in the United States and West Germany are $530 and $475 per ton, respectively. In an effort to offset these differences, the Japanese steel industry is planning to reduce interest expense from $50 to $25 per metric ton of steel shipped, reduce

Table 8

Certain carbon and alloy steel: Weighted average net prices for the three largest sales shipped by U.S. producers and importers, of selected products, by specified period[1]

(Per ton)

	Weighted average net price						Ratio of U.S. producer prices to importers' prices	
	U.S. producers			U.S. importers				
Product2[2]	July-Sept. 1985	April-June 1989	Percent Change	July-Sept. 1985	April-June 1989	Percent Change	July-Sept. 1985	April-June 1989
Carbon and certain alloy steel:[3]								
Plates	347.31	451.59	30.0	330.43	563.13	70.4	105.1	80.2
Sheets and strip:								
Hot rolled	313.58	357.82	14.1	329.67	430.48	30.6	95.1	83.1
Galvanized	528.70	583.42	10.4	556.30	616.00	10.7	95.0	94.7
Bars:								
Hot finished	305.02	463.71	52.0	278.25	555.61	99.7	109.6	83.5
Reinforcing	284.76	325.50	14.3	248.33	353.62	42.4	114.7	92.0
Wire rod	279.06	312.61	12.0	290.52	351.93	21.1	96.1	88.8
Structural shapes and units	325.48	404.55	24.3	338.32	482.91	42.7	96.2	83.8
Rails and related products	368.36	***	8.3	433.56	***	18.4	85.0	77.7
Pipes and tubes:								
Oil country tubular goods	***	756.96	***	***	***	0.1	141.8	***
Line pipe	452.86	589.19	30.1	595.06	609.58	2.4	76.1	96.7
Certain stainless and alloy tool steel:								
Plates	2364.02	3752.77	58.7	2370.37	3055.91	28.9	99.7	122.8
Sheets and strip	1614.57	2550.15	57.9	1695.32	3191.49	88.3	95.2	79.9
Wire	4499.99	***	-14.3	(4)	***	(4)	(4)	(4)
Pipes and tubes	***	***	57.3	1072.08	5084.34	374.2	276.2	***

[1] Prices are net of all discounts and allowances (including freight allowances) and excluding U.S. inland freight. Producers' prices aref.o.b. mill; importers' prices are f.o.b. warehouse, or, if shipped directly to customs, c.i.f., ex-dock, port of entry, duty paid. Prices represent the total industry value of reported sales divided by the total quantity sold, based on the 3 largest sales of each firm.
[2] See Appendix E for decription of products.
[3] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[4] No data reported.

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

19

employment 30 percent by 1991, reduce gross capacity from around 150 million metric tons to 131 million metric tons in 1991–92, reduce the number of blast furnaces, and increase investments in non-steel operations.[56]

Canada

The price of steel products in Canada has remained stable, largely due to sustained demand from the automotive, appliance, and other major steel consuming industries. Because of the strength of demand on the West coast (reflecting a large number of projects such as waterfront projects in Vancouver and the construction of paper mills, Eastern Canadian steel producers are shipping to the West coast.[57]

European Community

The European steel mills have benefitted significantly from the increase in steel demand, higher prices in the home market, and higher prices on the World steel export market. With their steel producers being relatively heavy exporters, prices in the European Community are significantly influenced by the price levels on the world "spot" export market. A continuing challenge for EC steel producers during 1989 will be their ability to control home-currency prices during periods of weak demand. Although official production controls no longer exist in the EC, most steel producers are planning to initiate production cuts if demand weakens.

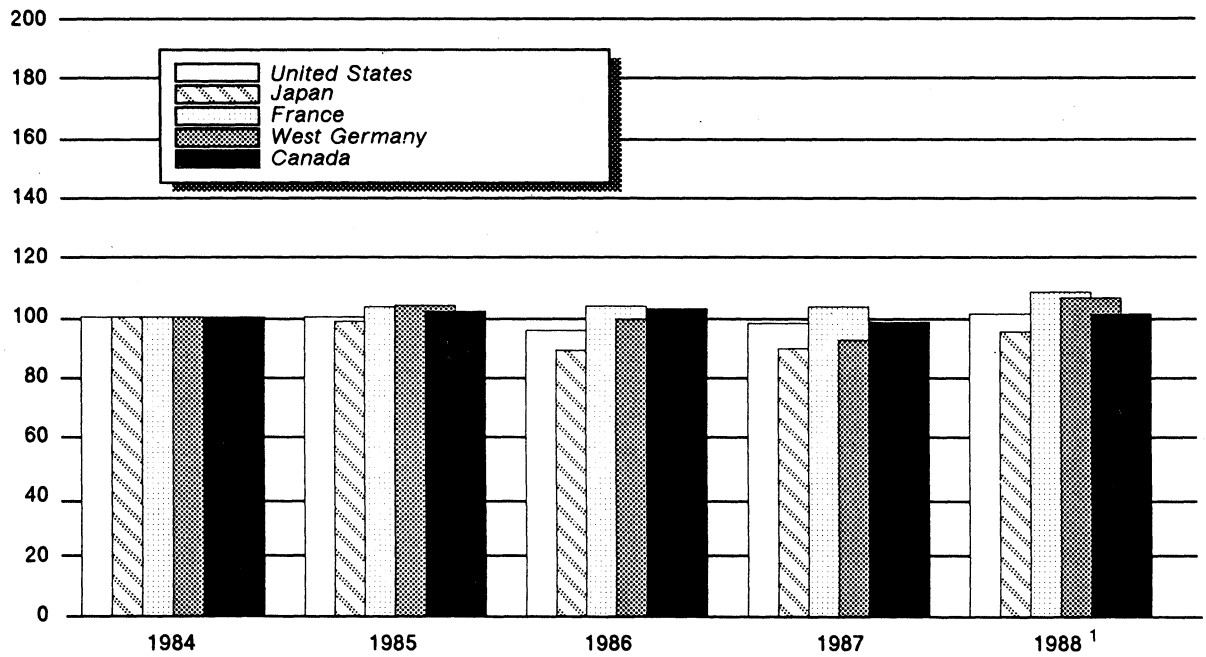
[56] *World Steel Dynamics*, Steel Price Track 27.

Steel Price Index Trends[58] *in the United States, Japan, Canada, West Germany, and France.*[59]

During 1984–88, home currency steel price indicies in France and West Germany registered increases ranging from about 6 to 8 percent (steel price indicies in the United States and Canada remained about the same), whereas home currency price indicies in Japan declined about 5 percent. However, currency fluctuations are a significant factor in determining competitive price levels and an examination of price indicies in these countries after factoring in the effects of exchange rates reveals a different picture. Steel price indicies in the United States and Canada remained relatively stable, whereas price indicies in Japan, West Germany, and France (in dollar terms) increased 44 percent, 57 percent, and 63 percent, respectively, during 1984–88. Illustrations of these price indicies are shown in the following figures.

[57] *World Steel Dynamics*, Steel Price Track 27.
[58] Price indexes do not necessarily reflect movements in transaction prices. See the Commission's 1986 *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize* for a fuller discussion of this point.
[59] Japan, Canada, West Germany, and France are major competitors of the United States.

Figure 6
Steel price indexes in selected countries, 1984-88 (1984 = 100)

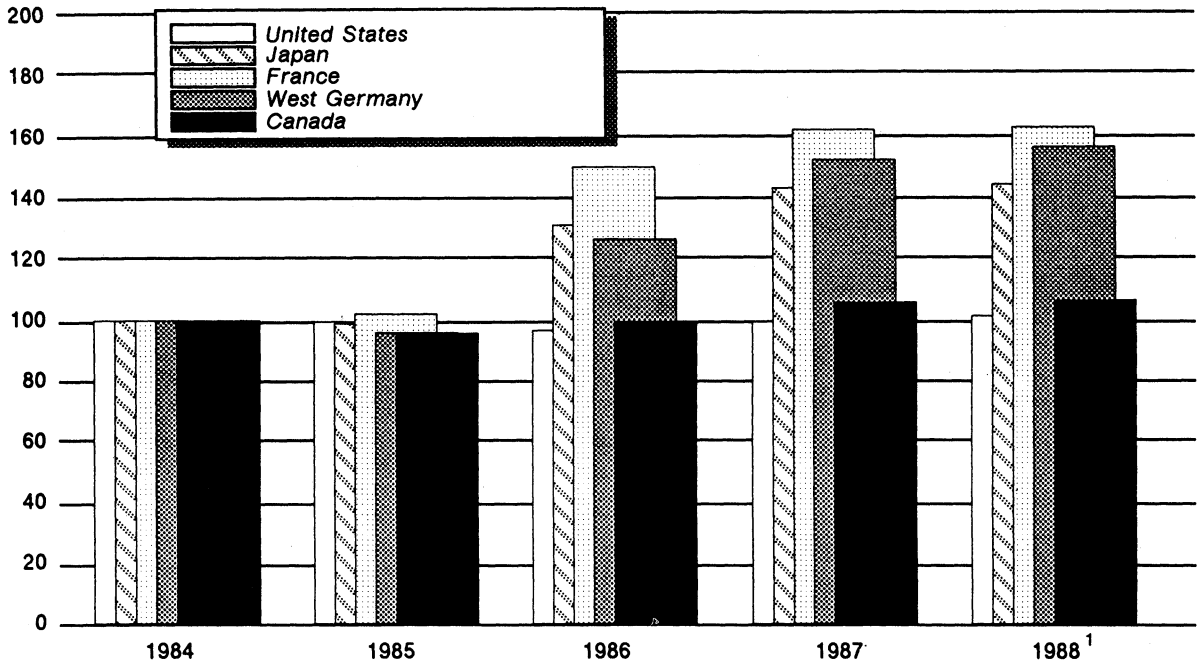


[1] Price indexes for France and West Germany were estimated by the staff of the U.S. International Trade Commission.

Source: Price indexes of selected official government publications.

20

Figure 7
Steel price indexes in selected countries, adjusted for exchange rate changes, 1984-88 (1984 = 100)



[1] Price indexes for France and West Germany were estimated by the staff of the U.S. International Trade Commission.

Source: Price indexes of selected official government publications.

Actions to Adjust and Modernize, Other Than Capital Expenditures

Of the 73 companies responding to the questionnaire, 31 firms provided information on actions that been taken to adjust and modernize, other than capital expenditures and research and development expenditures. A tabulation showing the number of companies reporting various types of actions follows.[60]

	Number of companies	
Type of action	*1988-89*	*1987-88*
Cost reduction programs ...	16	19
Personnel-related actions ...	12	16
Changes in company practices	7	7
Divestitures and closures ...	7	9
Organizational changes	7	7
Training/seminars	5	9
Expansions and acquisitions .	4	6
Other	15	13

Over 50 percent of the respondents reported taking specific cost reduction measures, the majority of which focused on operations and equipment modifications and reductions in energy and materials costs.

[60] Appendix F contains a company by company description of the actions taken by the responding firms.

Personnel-related actions reported this year continued to focus on developing a team approach toward cost and quality concerns at individual companies. In addition, several companies noted continued training of both salaried and wage employees, and two companies reported a technology exchange program with foreign firms.

About one-third of the companies providing responses reported changes in company holdings, detailing either divestitures or acquisitions and expansions (especially through joint ventures with Japanese companies).

A small number of respondents noted either organizational changes or changes in company practices, including reorganization of internal divisions, retention of consulting firms to advise on future plant modernization, and consolidation of some operations.

Actions taken in other areas to aid in adjustment and modernization efforts included the use of bar coding in company shipping and inventory control, increased computerization of all aspects of operations, and development of new product lines to target specific market niches.

Investment in Activities Other Than Steel

* * * * * * *

(This section contains information entitled to confidential treatment and has not been published.)

Minimills: Penetrating Higher Value Markets

Recent technological advances especially applicable in minimills have afforded a small number of innovative minimill companies the opportunity to compete in previously inaccessible markets, such as those for special quality bars, wide flange beams, and sheet. The minimills' recent entrance into these higher value-added markets will result in their direct competition with domestic integrated mills and foreign producers, the traditional providers of such products to the U.S. market. This section will briefly examine the recent progression of this trend, looking at the motivation of the companies involved, the role of new technologies, and the significance of these technologies to the domestic steel market.[61]

Market Opportunities

While it appears that most of the approximately 40 minimills will remain entirely in the merchant market (i.e., the market for hot-rolled bars), some minimills have reportedly concluded that they want to reduce their dependence on the merchant market. Traditional minimill markets - those for bar, wire rod, and light structurals - have become less attractive in recent years. Such markets are perceived to be oversupplied and overly dependent on the construction industry. In addition, minimill domination of these markets has periodically resulted in intense price pressure as minimills with similar cost structures compete for market share.

Nontraditional markets, on the other hand, have attracted minimill companies because of their size and apparent potential for new entrants. In 1988, apparent domestic consumption of structurals, pipes and tubes, and sheets and strip, jointly accounting for over 60 percent of domestic consumption, was approximately three times that of merchant bars, reinforcing bars, light structurals, and rod.[62] Moreover, trade statistics suggest that certain nontraditional markets offer the potential for added penetration by domestic firms; in 1988, import penetration among structurals and pipes and tubes was 30 and 40 percent, respectively.[63] Finally, while the domestic market for special quality bar presently appears small (at an estimated 3.5 million tons)[64], the special quality bar market does present the opportunity to apply the minimills' bar-making expertise to a growing, higher value-added market.

The Role of Technology

Just as new technology facilitated the development and growth of minimills decades ago, further technological developments are now providing minimills with the opportunity to expand into new markets. Prior to the 1980s, improvements in melting and casting steel enabled minimill production to become increasingly economical. For example, the accommodation of high voltages reduced the time required to produce molten steel in electric furnaces; better refractories reduced furnace downtime; and oxyfuel burners reduced electricity consumption in electric furnaces. The advent of continuous casting further improved yields and reduced labor costs and electricity consumption while decreasing the capital costs of rolling facilities.[65]

During the 1980s, technological developments have not only reduced costs, but have made it economical for minimills to provide products formerly produced economically only in integrated mills. Among those nontraditional products now feasibly produced by minimills are special quality bars, wide flange beams, and sheet. Following are brief summaries of the advantages conferred by new technologies.

Horizontal casting

After 2 years of experimentation with a prototype, Chaparral Steel, located in Midlothian, TX, is preparing to begin horizontal casting this summer.[66] The horizontal caster employed by Chaparral reportedly produces billets which can be rolled into special quality bars, the market for which is currently dominated by integrated producers with significantly higher capital costs.[67] The special quality bar market is the only remaining segment of the bar market in which integrated firms have maintained their dominance. Principal consumers of special quality bars are the automotive and forging industries, which require bars meeting rigid surface and metallurgical specifications; the market for special quality bars is growing as a result of greater demand by domestically-located auto manufacturers, especially Japanese transplants (Honda and Toyota).

[61] For a more comprehensive treatment of minimills, see *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*, U.S. International Trade Commission, inv. no. 332-209, September 1988, pp. 51-66. See also Appendix J, Revised Statistical Tables, Selected Minimill Operations.

[62] U.S. International Trade Commission, "Monthly Report on the Status of the Steel Industry," USITC Publication 2162, March 1989, p. 5.

[63] *Ibid.*, p. 6.

[64] *Iron Age*, February 1989, p. 19.

[65] See Donald F. Barnett and Robert W. Crandall, *Up From the Ashes: The Rise of the Steel Minimill in the United States*, The Brookings Institution, Washington, D.C., chapter 4.

[66] The use of horizontal casters is longstanding in specialty steel mills, where relatively low production levels are economical. Chaparral's application of horizontal casting to the production of carbon steel appears to be unique.

[67] Some minimills, most notably North Star at its Monroe, MI, plant, also currently produce special quality bars, although they do so with more traditional vertical casters.

22

The primary advantage resulting from the employment of a horizontal caster is the relatively low capital cost of constructing one, which is significantly smaller and more simply designed than traditional vertical casters. The second advantage conferred by horizontal casting is its three-fold effect on quality. First, horizontal casters produce "exceptionally clean" steel because there is no secondary oxidation of molten metal between the tundish and mold. Second, horizontal casters create no stress fractures on billet surfaces. Such fractures commonly result from the bending and subsequent straightening of billets processed in vertical casters. Third, the larger nozzle found in Chaparral's horizontal caster accommodates the flow of aluminum-killed and boron grade alloyed steel without clogging, unlike vertical casters.[68]

Beamblank casting

Rather than casting square or rectangular billets from which to roll wide flange beams, three minimills - Chaparral, Nucor-Yamato (located in Blythesville, AR), and Northwestern Steel and Wire (located in Sterling, IL, and Houston, TX) - have undertaken beamblank casting, in which the cast shape is formed closer to the shape of finished structurals. Beamblanks exhibit a modest I-shape before rolling; as a result, they require less processing to attain finished shape. Beamblanks produced at Nucor-Yamato, for example, require approximately one-half the rolling stands necessary to produce large structurals from billets.[69]

Before the development of beamblank casting, production of large structurals like wide flange beams was not economical in minimills, which in part derive competitive advantage from relatively low capital, labor, and energy costs commensurate with short rolling mills. Northwestern predicts that its structural beams will reduce production cost by $50 per ton, or about 15 percent, compared to those produced in conventional structural plants operated by USX, Bethlehem, and LTV.[70] Moreover, Inland appears to have acknowledged that Nucor's and Northwestern's projects, which overlap its geographic and product markets, threaten the survival of its newly formed bar and structural division.[71]

Thin slab-casting

As noted in previous ITC studies,[72] minimills advanced into the flat-rolled market when Nucor constructed a $250 million, 800,000-ton-per-year hot strip mill in Crawfordsville, IN. Central to Nucor's project was the development of a thin slab-caster which produces 2-inch-thick continuously cast slabs. Thin slab-casting significantly reduces the cost of producing flat-rolled product (by approximately $50-75 per ton)[73] by decreasing the quantity of roughing stands, electricity, labor, and time necessary to produce hot-rolled sheet.

Reduced fixed costs enable Nucor to economically produce flat-rolled product on a relatively small scale, which is virtually cost-prohibitive in integrated facilities. Traditional flat-rolled plants have been designed with approximately $2,000 of capital costs for every ton of capacity; Nucor's facility entails about $300 of capital costs per ton.[74] In addition, Nucor's flat-rolled facility will use 40 percent less electricity and 50 percent fewer manhours per ton produced than do integrated companies.[75]

Recently, two other minimill companies have announced plans to follow Nucor into the flat-rolled market. In March 1989, Birmingham Steel, a minimill company headquartered in Birmingham, AL, announced a $200 million joint venture that will annually produce 800,000 tons of sheet from 5-inch thick slabs in Houston, TX. The venture, named Buffalo Steel, will reportedly derive competitiveness not only from economies conferred by the thin slab-caster, which will cast thinner slabs as the venture's technology improves, but also from substantially lower capital costs resulting from the acquisition of older equipment.[76] [77]

More recently, New Jersey Steel, located in Sayreville, NJ, announced plans to construct a $125 million, 500,000-ton-per-year sheet mill in the Northeast.[78] New Jersey Steel has been experimenting with thin strip casting, in which steel is cast in sheets less than 1 inch thick. Reportedly, thin strip-casting further reduces the number of rolling stands needed to produce sheet and strip, thereby affording significantly lower capital costs; the facility described by New Jersey Steel appears to entail about $250 of capital costs per ton of steel capacity.[79]

[68] Chaparral Steel, Midlothian, TX, interview with Gordon Forward and James Wroble, April 1989.
[69] *Iron Age*, October 1988, p. 22.
[70] Telephone conversation with Robert Wilthew, President and CEO of Northwestern Steel and Wire, July 1989.
[71] *Business Week*, June 13, 1988, p. 100.
[72] *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*, U.S. International Trade Commission, inv. no. 332-209, September 1988, p. 61.
[73] Speech by Ken Iverson, chairman of Nucor Corporation, to the fourth annual Steel Survival Strategies seminar, in New York, NY, on June 27, 1989.
[74] *Business Week*, June 13, 1988, p. 102.
[75] *Ibid.*
[76] James G. Regan, "Birmingham Steel teams with Proler and Danieli in $200M mini-mill project," *American Metal Market*, March 31, 1989, p. 1.
[77] James G. Regan, "Buffalo Steel plans to beat rivals by keeping costs at lower levels," *American Metal Market*, April 3, 1989, p. 1.
[78] Tom Balcerek, "Two mini mills plan production of sheet," *American Metal Market*, May 4, 1989, p. 1.
[79] *Iron Age*, November 1988, p. 11.

23

Should these ventures prove successful, other similar projects will likely emerge; Chaparral and North Star have voiced interest in such projects should Nucor be successful. Industry officials speculate that by the mid-1990s, minimills may have up to 20 percent of the flat-rolled steel market, which accounts for over half of all domestic steel shipments.[80] PaineWebber forecasts that within 5 years, it is likely that minimill production of flat-rolled steel will impact the existing domestic price structure.[81]

Caveats

Tempering the effect of the minimills' advancement into the high end of the steel market are financial, technological, and market obstacles. The cost of constructing or purchasing a minimill capable of producing sheet or wide-flanged beams is significantly higher than that of acquiring a minimill which produces traditional merchant products. Birmingham Steel, for example, acquired its two West Coast bar mills for approximately $15–$30 million each,[82] whereas the cost of Birmingham's venture into the flat-rolled market was approximately $200 million. Similarly, other nontraditional minimill ventures have been relatively costly; the Nucor-Yamato structural beam facility reportedly cost over $200 million to construct.[83]

The largest minimills have attracted foreign[84] and domestic capital as a means of funding the construction of new facilities. Examples are Nucor-Yamato, a partnership between Nucor (51 percent) and Yamato Kogyo Ltd. of Japan (49 percent) and Buffalo Steel, a joint venture between Birmingham Steel (50 percent), Proler International Corporation (35 percent), and Danieli, an Italian mill equipment manufacturer (15 percent). North Star, on the other hand, is a wholly-owned subsidiary of Cargill Inc., a privately held, U.S.-owned multinational trading firm. Nine minimills have also been able to raise funds in the stock market. Investments of the magnitude required to enter higher value-added markets, however, will exclude most minimills from participating in the high end of the market.

Most of the new technologies still present significant challenges. Reportedly, Nucor's entire thin slab-casting process must function almost perfectly or production on the line will stop and costs will rise dramatically; a malfunction at one point in the highly interconnected production process disturbs the entire production line.

A variety of market forces will impact significantly on the minimills. The price of scrap, which minimills melt to produce steel, has increased dramatically in recent years. Dealer grade scrap prices have increased by over 40 percent since 1987, primarily as a result of greater scrap consumption, which has increased by 67 percent since 1982.[85] Greater implementation of continuous casting, which reduces scrap by-products, and the increasing use of alloys in steel, which complicates the recovery of steel from scrap metal, have also contributed significantly to rising scrap prices.

The integrated mills have reacted aggressively in recognition of the competitive threat posed by minimills in some markets. Inland Bar and Structural and USS-Kobe, for instance, have announced $100 million modernization programs designed to retain their competitiveness in the bar and structural markets. Reinvestment in integrated flat-rolled facilities has continued as well; USX has invested approximately $600 million at its Gary, IN, Works and Bethlehem has spent more than $700 million at Burns Harbor Plant in Chesterton, IN, since 1981.[86]

Export Trends For Domestic Steel Products

During the 1980s, world steel trade increased from about 24 percent to 30 percent of world steel production as new facilities came on stream and global markets expanded.[87] Throughout much of this period, however, U.S. steel exports remained the smallest of any of the major producing regions, both in absolute terms and as a percentage of domestic shipments (tables 9 and 10). After a 50 percent decline during 1982–86, domestic steel exports began to increase early in 1988 and by the first quarter of 1989 reached peak levels for the decade. Of this increase, approximately 97 percent of all tonnage shipped abroad was in carbon and certain alloy steel products; stainless and tool steel accounted for the remainder. [88]

Composition of U.S. Exports

The greatest increases in exports occurred in all types of sheets and strips during 1984–88, with most other export categories of stainless and tool steel also showing large increases (table 11). Steelmakers also report increased order inquiries from abroad for structurals and shapes in 1989.

Most integrated producers report that coated, thin gauge, or other customized flat-rolled products, principally used in consumer white goods and automobiles, account for more than half of their export line.[89] Several indicated that while steady demand for these products would

[80] *Business Week*, June 13, 1988, p. 102.
[81] Paine Webber, *Nucor's Revolutionary Thin Slab/Flat Rolling Steel Mill*, June 20, 1989, p. 2.
[82] *PaineWebber*, October 24, 1988, p. 3.
[83] *Iron Age*, August 1987, p. 20.
[84] Foreign interest in minimills is long standing; foreign companies have established or acquired ten domestic minimills since the late 1950s. See Appendix M, table M-1.

[85] *Business Week*, p. 102.
[86] *Ibid.*
[87] International Iron and Steel Institute *Statistical Yearbook, 1988* and World Steel Dynamics.
[88] U.S. International Trade Commission publication no. 2202, Monthly Report on the Status of the Steel Industry.
[89] Interviews with industry officials.

24

Table 9

Steel products: Western world exports, selected years 1980–88

(In thousands of metric tons)

Market	*1980*	*1982*	*1984*	*1986*	*1988*
United States[1]	3,763	1,696	901	856	2,152
Canada	3,534	3,193	3,459	3,435	(2)
Latin America	2,188	4,020	4,904	9,493	(2)
EC	64,416	57,223	68,106	66,185	(2)
Asia and Japan[1]	35,886	36,745	40,519	36,855	(2)
All other	11,460	11,762	14,892	17,552	(2)
Total Western world	121,247	114,634	136,781	134,376	(2)

[1] Shipments for the United States and Japan based on national sources for annual consumption using deliveries rather than production.
[2] Not available.

Source: International Iron & Steel Institute, *Steel Statistical Yearbook 1988*.

Table 10

Steel products: Western world exports as a share of the quantity of shipments, selected years, 1980–88

(In percent)

Market	*1980*	*1982*	*1984*	*1986*	*1988*
United States[1]	4.9	3.0	1.3	1.4	2.6
Canada	27.7	33.1	28.7	29.4	(2)
Latin America	9.3	18.4	33.4	30.2	(2)
EC	54.9	54.5	59.6	60.2	(2)
Asia and Japan[1]	29.9	31.8	32.4	29.4	(2)
All other	5.8	6.1	7.2	7.9	(2)

[1] Shipments for the United States and Japan, based on national sources for annual consumption using deliveries rather than production.
[2] Not available.

Source: International Iron & Steel Institute, *Steel Statistical Yearbook 1988*.

support increased export volume in the future, the proportion of flat-rolled products relative to total exports is likely to decline as demand increases for other types of steel products. Specialty steel producers have generally exported a larger share of their production than have carbon steel producers in recent years; the higher value per ton and a smaller number of competitors generally enable specialty producers to earn higher returns than can be realized on carbon steel exports. Of the approximately 25 domestic specialty producers, an estimated 90 percent export,[90] and although export markets represent a small percentage of total sales for most companies, these can be a significant source of revenue. Exports account for approximately 6–10 percent of Allegheny Ludlum's total sales, for example, but generated $30 million of $33 million profit earned by that company in the first quarter of 1989.[91] One category of specialty steel experiencing particularly strong export growth is electrical steel which is used in the manufacture of electrical equipment such as generators and transformers; 1988 exports were two-and-a-half times 1983 levels, with Mexico and India as primary markets (37 and 22 percent, respectively).

Export Destinations

The destinations for domestic steel exports have remained relatively stable over time with the exception of exports to the EC which have almost doubled since 1983 (fig. 8). Canada and Mexico accounted for almost 41 percent (840,000 tons) of all exports in 1988. Industry sources indicate this is primarily due to the relative ease of transportation to these markets and thelarge number of domestic customers' subsidiaries located there.[92] In addition, exchange rate relationships with the dollar are reportedly more favorable.

[90] Interviews with industry officials, June 15, 1989.
[91] Metal Bulletin, April 17, 1989.

[92] Some steel products are exported, transformed and reenter the United States under the 9802.00.60/9802.00.80 HTS trade provisions (formerly 806/807). For example, some hot-rolled stainless sheet is processed into cold-rolled sheet in Mexico and is then returned to the United States. Duty is assessed only on the value added by the foreign processing.

25

Table 11
Certain steel mill products: U.S. exports, by types, 1984-88

Item	1984	1985	1986	1987	1988	Change 1984-88
	Short tons					Percent
Semifinished:						
Carbon and certain alloy[1]	72,285	82,650	57,932	71,362	58,598	(19)
Stainless	1,251	7,058	953	2,181	2,833	126
Plate:						
Carbon and certain alloy[1]	84,813	74,957	66,042	92,057	107,546	27
Stainless	3,371	8,031	3,523	4,481	11,847	251
Sheet and strip:						
Carbon and certain alloy[1]	369,495	349,620	477,803	501,010	1,328,485	260
Stainless	20,081	25,776	29,617	55,981	45,571	127
Bars and certain shapes:						
Carbon and certain alloy[1]	126,090	89,241	72,134	111,619	124,911	(1)
Stainless	5,178	7,762	6,946	7,189	12,047	133
Wire rod:						
Carbon and certain alloy[1]	7,918	3,716	5,049	6,889	8,676	10
Stainless	728	1,024	828	1,328	1,486	104
Wire:						
Carbon and certain alloy[1]	17,524	17,182	24,033	22,863	32,209	88
Stainless	2,455	1,964	2,728	3,806	4,459	82
Pipe and tube:						
Carbon and certain alloy[1]	199,778	193,309	118,010	143,405	244,192	22
Stainless	7,648	5,948	3,040	8,751	6,198	(19)
Tool steel, all forms	2,326	2,094	2,144	3,061	4,502	94
Total steel mill products	1,081,363	992,046	980,16	1,176,367	2,151,875	99

[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.

Exports to Pacific Rim nations continue to increase, in part, because of favorable exchange rates; in 1988, 700,000 tons were shipped to Asia, up almost 10 percent over 1983 levels. Domestic steelmakers indicate that this market is likely to be a long term orientation for the industry due to continuing strong demand for consumer goods and infrastructure construction. Evidence of this perspective is reflected in several sales of specialty steels to Japan, and Chapparal Steel recently received JIS[93] certification to sell structural shapes in that country. In 1988, the United States was the ninth largest source of imported steel in Japan, accounting for about 15 percent of all Japanese imports; most U.S. export tonnage was hot-rolled bands, a product which can be worked into a variety of downstream steel products.

[93] JIS g-301 is a Japanese Industrial Standard marking which is required on all steel used for public works projects in Japan. Japanese qualification requirements such as certification reportedly have acted as trade barriers to certain steel imports.

Industry sources indicate that Latin America remains an erratic and somewhat closed market, one whose steel industry is itself concentrating on exports; the growth in this region has largely been limited to Mexico. The EC is characterized as a market with "growth potential", although its future is dependent on final arrangements within the EC after 1992. At this time, however, EC integration is not expected to have any significant effect on the steel export trade from the United States to the EC.[94]

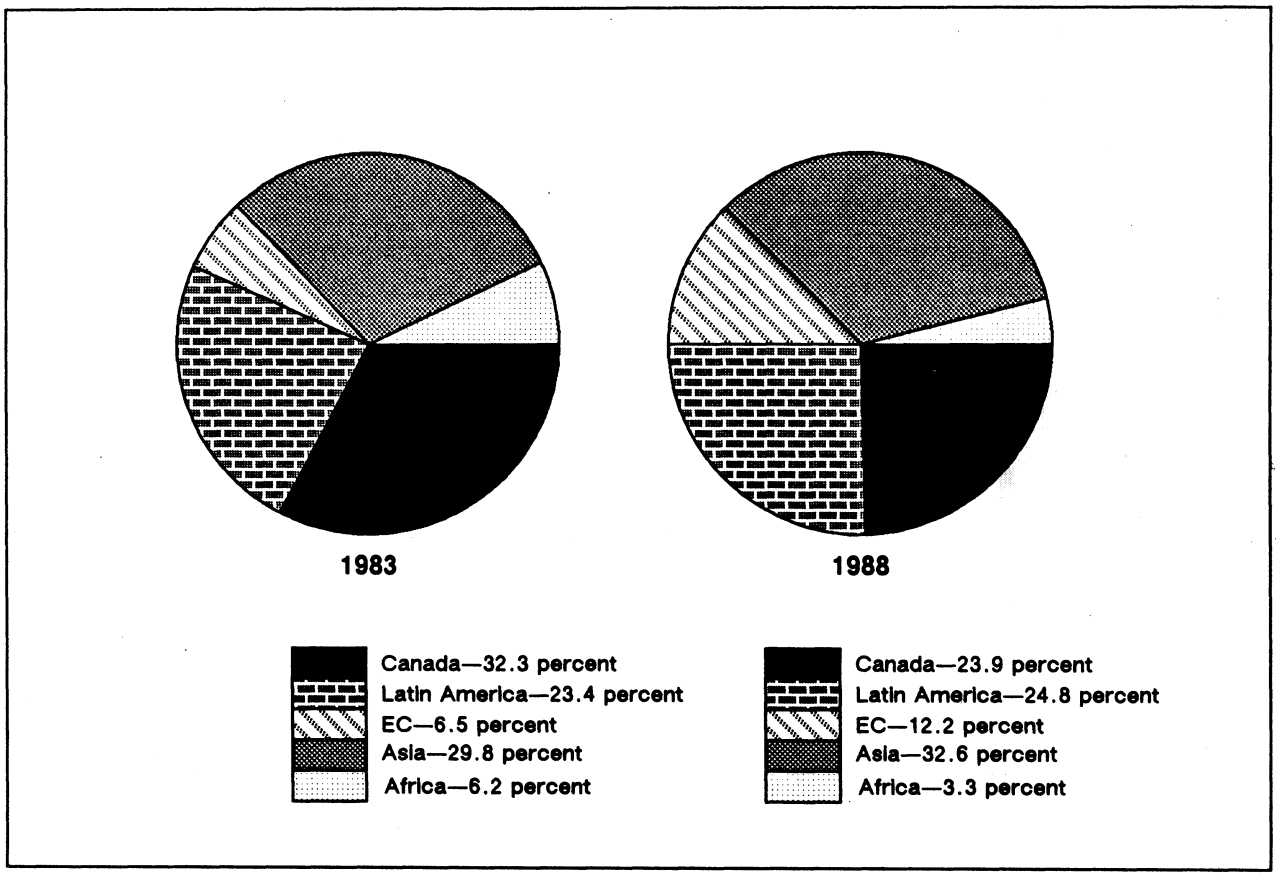
Factors Influencing Export Levels

Domestic steelmakers indicate that increased export performance is primarily a result of strong global demand and recent efforts to modernize domestic facilities, enabling firms to raise quality, lower costs and become more competitive

[94] Remarks by the director general of the European Confederation of Iron and Steel Industries, May, 1989 and telephone conversation with staff of the Delegation of the Commission of the European Communities, Washington, DC, June 1989.

26

Figure 8
U.S. export markets for steel mill products 1983, 1988.



Source: American Iron and Steel Institute.

in expanding markets abroad.[95] This favorable cost advantage is contingent to some degree on the exchange rate, however, (see appendix L) and domestic companies note that a buoyant dollar will hamper export efforts to markets whose currency is not tied to the dollar. One industry spokesman noted that Japanese orders with his firm were canceled immediately when the yen/dollar rate reached 143:1.[96] Prior to 1988, U.S. export levels appeared to be largely independent of exchange rate fluctuations as domestic producers concentrated on retaining domestic market share. In 1988 the real domestic price and the bellweather spot price (F.O.B. Antwerp) converged for the first time in a decade (figure 9) as export prices rose more rapidly than did domestic prices, and the previous "tiered" pricing system disappeared.[97] This convergence reflects the tendency of world "spot" export prices to drop to the level of marginal costs during periods of weak demand and to increase in periods of stronger demand.

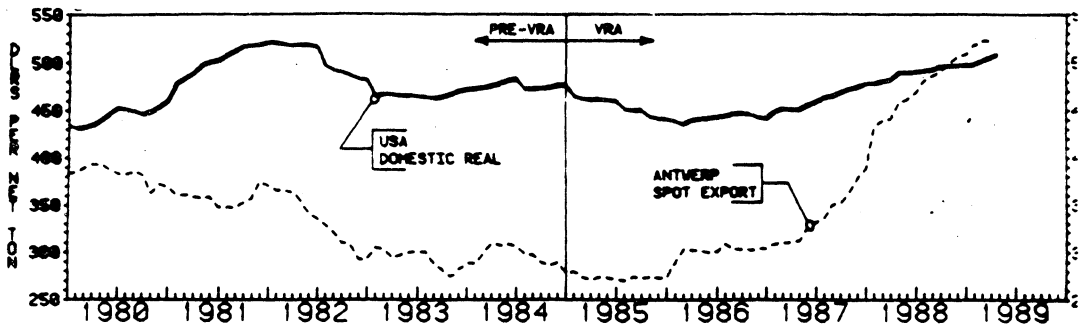
Although exchange rates influence the decision to export, they are by no means the only consideration. Several domestic steel producers export products in order to insure higher capacity utilization levels, thereby lowering fixed costs per ton. Other spokesmen underscore the value of exports as leverage against the vagaries of domestic demand and price fluctuations.[98]

[95] World Steel Dyamics reported pre-tax production costs for U.S. steel companies as averaging $495 per metric ton in May, 1989, compared with $521 for Japan and $452 for West Germany.
[96] Interviews with industry officials, June 6, 1989.

[97] World Steel Dynamics, *Pacific Basin Steel In A Global Context.* WSD notes that prior to this time, a three tiered pricing system existed; exports to the U.S. commanded as much as $100 per ton premium over other markets and exports to the PRC were often sold below the average price in other export markets. Since early 1988, however, export markets have begun to move toward equilibrium; in late 1988, exports to some non-U.S. markets reportedly brought higher revenues than did exports to the U.S.
[98] *American Metal Market,* May 22, 1989 and discussions with industry officials.

27

Figure 9
U.S. Domestic composite real vs world spot exports price



Future Outlook

Throughout the industry, company actions and private discussions indicate that the recent interest in exporting will continue into the future, barring prohibitively strong dollar exchange rates. For example, USS has repeatedly stated its intention of exporting 1 million tons of steel in 1989, much of it lower-valued steel to Pacific Rim countries,[99] and some industry analysts are predicting that domestic steel exports could total 5 million tons in 1989.[100] A number of producers are establishing export divisions, both to handle increased order inquiries from foreign trading companies eager to sell product abroad on a "spot" basis, and also to seek out foreign markets for long term marketing arrangements.

There are several reasons for the industry's bullish long-term export outlook. One of the strongest is the increasing globalization of end-user markets; for example, domestic companies operate overseas branches to manufacture farm machinery equipment for U.S. farmers and U.S. oil companies continue to prospect around the world. In many cases, domestic firms request a continuance of steel supplies from traditional domestic sources when an overseas branch opens. In addition, domestic modernization is improving the quality of steel products available from the United States and is lowering production costs for those products. Producers acknowledge that it is unlikely that they will be able to compete abroad against producers whose primary goal is to retain market share. There is, however, renewed confidence that expanding foreign markets and rising demand abroad will continue, and that the export orientation of U.S. steel producers is longterm.

[99] *Metal Bulletin*, March 6, 1989.
[100] *World Steel Intelligence*, May 15, 1989.

Key Developments In The Specialty Steel Industry, 1983–88

Background

The U.S. specialty steel industry faced deteriorating conditions in the early 1980s, including decreased domestic market share, increased imports, declining employment, lower prices, and reduced profitability. The deteriorating conditions, which followed several years of import relief that expired in the late 1970s, led the domestic industry to petition for renewed import relief. On July 19, 1983, following an affirmative determination by the U.S. International Trade Commission in Investigation no. TA-201-48, *Stainless Steel and Alloy Tool Steel*, the President (by Proclamation 5074) imposed temporary (4 years) duty increases on stainless steel sheets and strip, and stainless steel plate, and quantitative restrictions on stainless steel bar and wire rod, and alloy tool steel. A more detailed description of both the specialty steel import relief program and the coverage of specialty steel products under the Voluntary Restraint Agreements (VRA) program is presented in Appendix I.

The following section describes changes that have occurred in the specialty steel industry during the period of import relief (1983–88).

Industry Performance, 1983–88

Table 12 provides key indicators of the specialty steel industry's performance during the 1983–88 period of import relief.

The specialty steel industry experienced a rise in demand for its products during 1983–88, reflected by the 43-percent increase in apparent consumption and the 39-percent rise in shipments (table 12). Growth in demand for

28

Table 12

Specialty steel: Apparent consumption, financial performance, production, capacity, and employment, 1983 and 1988

Item	*1983*	*1988*	*Percentage change, 1988 from 1983*	*Average annual rate of change, 1988 from 1983*[1]
Apparent consumption (1,000 tons)	1,343	1,923	43.2	7.4
Shipments (1,000 tons)	1,137	1,586	39.5	6.9
Financial:				
Net sales (million dollars)	3,048	5,099	67.3	10.8
Pre-tax profit or (loss) (million dollars)	103	611	493.2	42.8
Return on sales (percent)	3.4	12.0	(2)	(2)
Capital expenditures (million dollars)	150	143	-4.7	-0.95
Raw steel:				
Production[3] (1,000 tons)	1,750	2,202	25.8	4.7
Capacity (1,000 tons)	2,437	2,495	2.4	0.47
Capacity utilization (percent)	72	88	(2)	(2)
Employment[4] (average number)	16,996	17,151	0.9	0.18

[1] Compound annual growth rate, 1983 to 1988.
[2] Percent change not calculated.
[3] Data include stainless steel, and exclude alloy tool steel.
[4] Data cover stainless steel plate, sheets and strip, bar, wire rod, and alloy tool steel operations.

Source: Compiled from data of the American Iron and Steel Institute; from data submitted in response to questionnaires of the U.S. International Trade Commission in connection with USITC investigation no. 332-167, *Annual Survey on Certain Stainless Steel and Alloy Tool Steel*, various issues; and from data contained in USITC investigation no. 332-226, *Monthly Report on the Status of the Steel Industry*, various issues.

stainless steel products has resulted from the increased use of stainless steels in the automotive industry (which uses stainless steel liners for auto exhaust systems), in the maintenance and upgrading of oil refining and chemical plants, and in the wider use of stainless equipment in the pulp and paper industry and fast food services industry. Consumption of stainless steel used in kitchen utensils and appliances is also growing, as is the decorative use by the construction industry of colored stainless steel on building facades. The U.S. home heating market (high efficiency gas-fired furnaces) is a potentially significant growth area for stainless steel applications. Federal law requires that all home heating furnaces produced after 1992 must have a minimum of 78 percent efficiency, which will require stainless steel parts.[101]

Healthy demand for specialty steel products contributed to significant improvements in the industry's financial performance during the period, as reflected in the 67-percent increase in sales value (table 12). This increase in sales volume led to increased net profits for overall operations, resulting in a concurrent increase in net profit as a share of sales from 3.4 percent in 1983 to 12.0 percent in 1988.

Price increases, which reflected both increased demand and raw materials surcharges,[102] further contributed to the growth in sales value. An examination of the changes in prices for certain specialty steel products[103] in 1988 compared with July 1983 (the beginning of import relief) shows increases for all five product categories (see figure 10). The growth in prices for each of the specialty steel products exceeded that for finished goods during the period of comparison. An examination of price changes in the five specialty steel categories from 1983 to 1988 compared with concurrent changes in demand for these products shows that shifts in demand were accompanied by corresponding increases in price. As figure 11 shows, there appears to have been a correlation between the magnitude of the respective changes in demand and prices. For example, stainless steel plates experienced the largest relative increases in price and demand, and stainless sheets showed the second largest increases.

Despite increased net profits, capital expenditures by specialty steel producers on all operations producing stainless steel and alloy tool steel products declined by about 5 percent in 1988 compared with 1983 expenditures (table 12). Cumulative expenditures over the period totalled $770.1 million. Reasons given by domestic producers for lower than anticipated expenditure levels include the postponement of projects because of delays in arranging financing, and cancellation of projects because of changes in company programs, such as a shifting of production from one product line to another.[104]

[101] *Metal Bulletin Monthly*, "Undercutting the Nickel Effect," June 1989.
[102] Nickel and chrome are two of the most important inputs used to produce stainless steels. Increased prices and price volatility of nickel and chrome, together with reduced supplies of these materials, caused sharp increases in the price of stainless steel in 1988.

[103] Stainless steel plates, sheet and strip, bar, wire rod, and alloy tool steel.
[104] Information submitted in response to questionnaires for Investigation no. 332-167, *Annual Survey of Certain Stainless Steel and Alloy Tool Steel*, various years.

29

The bulk of expenditures was for modernization and upgrading of facilities, including improvements to melting equipment, rolling mills, annealing, pickling, and coating facilities, and finishing equipment. The principal goals of the expenditures are to lower production costs and improveproductivity and product quality. Producers have also concentrated on technological advancements (e.g., Allegheny Ludlum's efforts to develop direct strip casting technology) and on achieving improved competitiveness with substitute materials (e.g., plastics, other alloys, and advanced ceramics) in their major markets.[105]

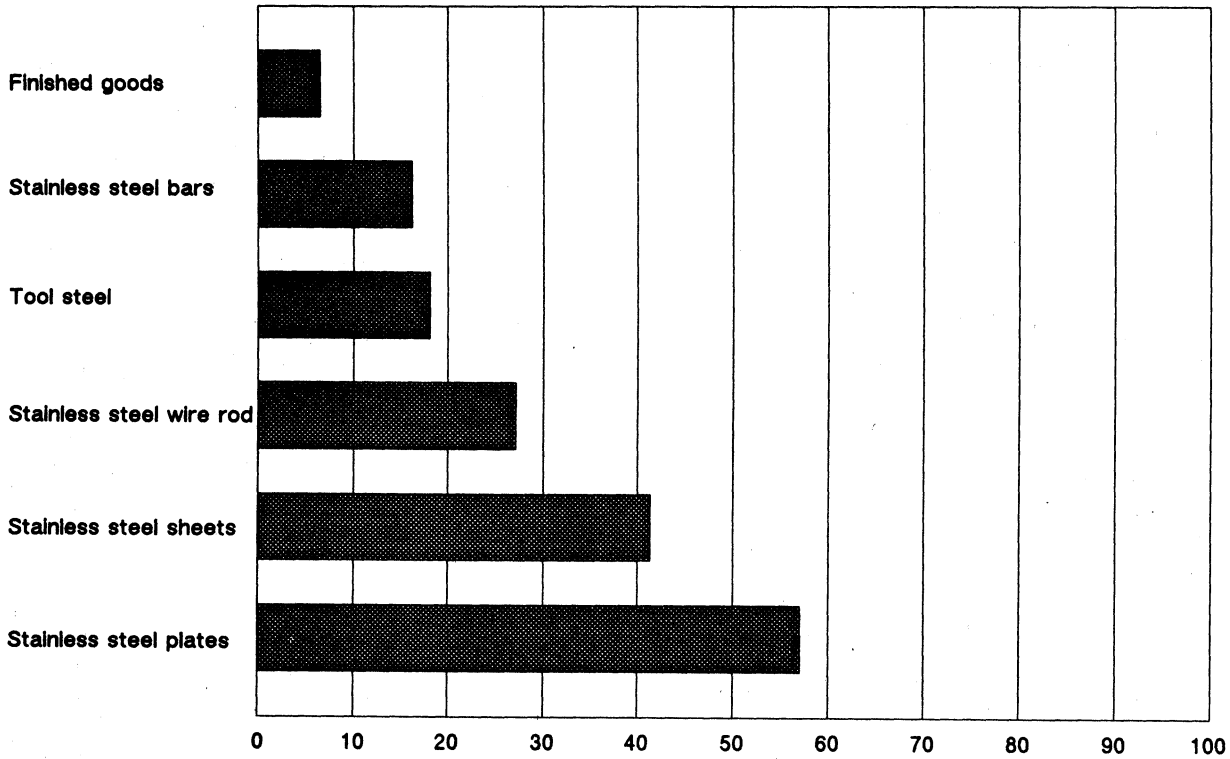
Although capacity to produce specialty steel remained fairly stable during 1983–88, growth in demand led to a net increase in raw specialty steel production of 26 percent during the period. There was a concurrent increase in capacity utilization from 71.8 percent in 1983 to 88.3 percent in 1988 (table 12).

Employment levels in the industry producing certain specialty steel products remained relatively stable during 1983–1988, increasing only about 1 percent (table 12). There was some fluctuation in employment during the intermediate years, however, with the average number of all persons employed peaking in 1987. The decline in employment in 1988 partly reflects efforts by domestic producers to improve production efficiencies and, consequently, labor productivity. The number of manhours required to produce one ton of certain specialty steel products declined from 24.4 manhours in 1983 to 17.8 manhours in 1988. Productivity improvements occurred in all product categories during the period. Specialty steel producers also reported taking steps to reduce employment costs, including the implementation of resource management programs designed to promote ideas for quality and productivity improvements and enhance employee motivation, and the establishment of early retirement programs for certain salaried employees to lower future salary costs.

In response to market conditions (including increased import penetration in the early- to mid-1980's and financial pressures leading to greater specialization of operations), the specialty steel industry has undergone significant restructuring since 1983. Actions taken have included acquisitions, company divestitures, management buyouts, reorganizations, and termination of operations. Significant structural changes are reflected by industry activity noted in table 13.

[105] *Metal Bulletin Monthly*, "Undercutting the Nickel Effect", June 1989.

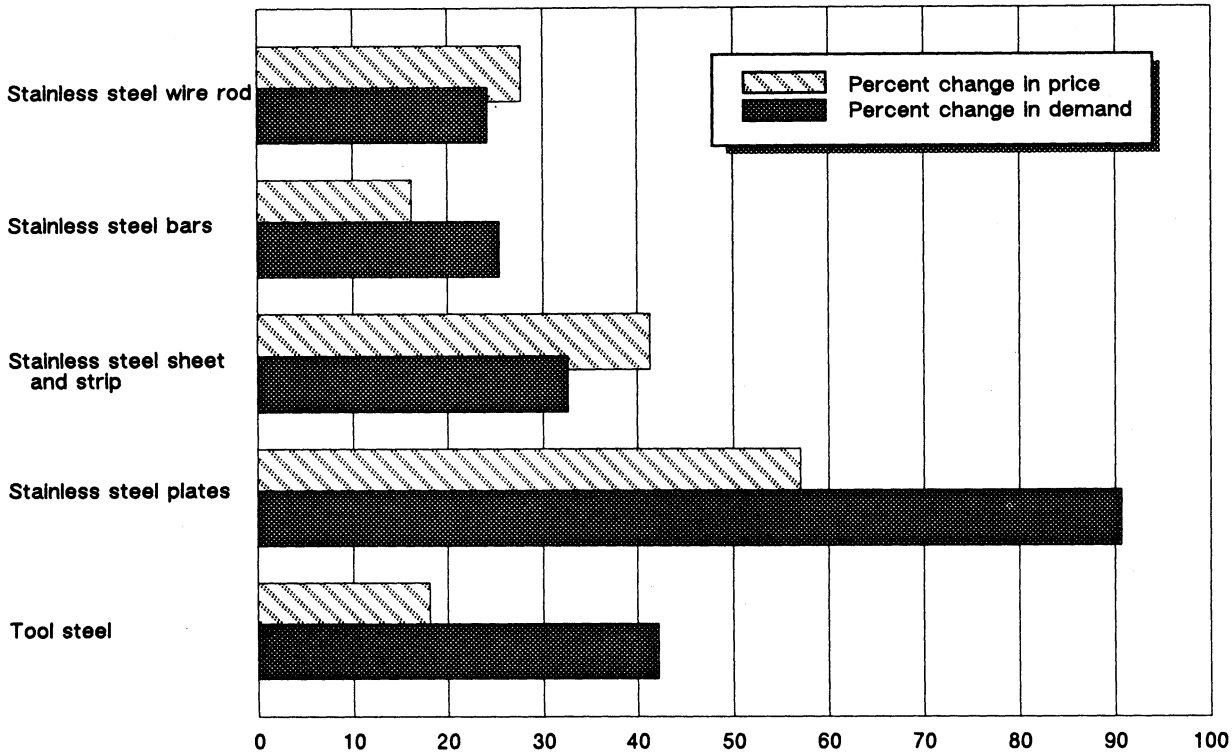
Figure 10
Certain specialty steel: Percent change in prices, July 1983 compared with 1988



Source: U.S. Department of Labor, Bureau of Labor Statistics.

30

Figure 11
Certain specialty steel: Percentage change in price compared with percentage change in demand, 1988 from 1983



Source: Data of the American Iron and Steel Institute and official statistics of the U.S. Department of Commerce and the U.S. Department of Labor.

Several of the acquisitions during 1983–88 resulted in a vertical integration of operations designed to improve each of the participating company's production efficiencies. The most common motivation for such transactions was the acquisition by rollers of a reliable source of raw materials (e.g., slabs, hot bands). Examples of this type of integration include the Washington Steel – Mercury Stainless alliance and the Cyclops – Eastern Stainless transaction.

Structural changes have also led to the concentration of production in more profitable product lines. This has been achieved either by the elimination of certain less profitable lines (e.g., Cyclops' pending sale of its Cytemp Specialty Steel Division to an employee stock ownership plan) or by the acquisition of facilities producing more profitable products (e.g., Allegheny Ludlum's acquisition of USX's Vandergrift, PA plant in order to expand its stainless sheet and strip operations).

Two companies, both producers of alloy tool steel, ceased production during 1983–88. They cited competitive pressures from alternative materials (carbide coated steels and ceramics) and imports as factors contributing to their closure.

The specialty steel industry has become increasingly publicly held, primarily as the result of Allegheny Ludlum's move from private to public ownership in 1987. Approximately 75 percent of melt capacity in 1983 was publicly owned, compared with almost 90 percent in 1988.

Three U.S. specialty steel producers are owned by foreign concerns, Avesta Inc., Al Tech Specialty Steel Corp., and Slater Steels (Fort Wayne Specialty Alloys Div.). Avesta, which is owned by Avesta AB, a Swedish group, is a plate roller that imports slabs from Sweden. The company does not operate any domestic steel melting operations. Al Tech, previously owned by a Canadian company, was recently acquired by Sammi Steel, a major South Korean producer of stainless steel. The transaction will likely assure South Korea, whose steel shipments to the United States are limited by a VRA, of a prominent position in the North American specialty steel market. Fort Wayne Specialty Alloys, which produces stainless steel bar, is owned by Slater Steels, a Canadian company.

31

Table 13

Specialty steel: Significant structural changes, by year, by company, 1984-89

Year	*Company*	*Type of change*
1984	Allegheny Ludlum Steel Corp	Acquired the melting facilities of specialty steel producer Guteri Steel.
1984 (Oct.)	Cyclops Corp	Reorganized its Universal Cyclops Specialty Steel Division into two divisions: Coshocton Stainless, which produces and markets stainless steel sheets and strip; and Cytemp Specialty Steel, which produces and markets Cyclops' other specialty steels, principally in bar and billet forms.
1984 (Dec.)	Enduro Stainless	Justice Department approval of the merger between Jones & Laughlin Steel Corp. and Republic Steel was contingent on the sale of certain facilities, including Republic Steel's Massillon, OH stainless steel flat-rolling facility. Enduro emerged when a private investor bought the plant.
1985 (Dec.)	Crucible Specialty Metals	Sold by its parent company, Colt Industries. Sale was a leveraged buy-out by a management-employee group led by two Colt executives.
1986 (Jan.)	Eastern Stainless	Filed for protection from creditors under Chapter 11 of the U.S. bankruptcy code. The action occurred shortly after the company suspended production of stainless sheet and strip to concentrate on stainless plate.
1986 (Feb.)	Enduro Stainless	Filed for protection from creditors under Chapter 11 of the U.S. bankruptcy code.
1986 (July)	Al Tech Specialty Steel Corp	Sold by its parent company, GATX Corp., to Rio Algom Ltd., a Toronto, Canada-based company with interests in mining, specialty and stainless steel manufacture (Atlas Steel Divisions) and sales.
1986 (Oct.)	Enduro Stainless	Purchased by Mercury Stainless Corp. of Wheeling, IL, a steel service center.
1987	Allegheny Ludlum Steel Corp	Announced decision to go public by initially offering almost 6.3 million shares of common stock.
1987 (Dec.)	Braeburn Alloy	Closed melt shop and took other actions to cease steel production. CCX Corp., Braeburn's parent company, sold the assets of the division to Tool Steel Service Inc. in Chicago, IL, in March 1988.
1987 (Dec.)	Columbia Tool Steel	Ceased production of tool, die, and high speed steels.
1988 (Jan.)	Armco	Reorganized its specialty steel division along product lines into Armco Advanced Materials (Butler, PA), which produces flat-rolled products and pipe and tube; and Baltimore Specialty Steel Corp. (Baltimore, MD), which produces long products.
1988 (Jan.)	Cytemp Specialty Steel Division	Withdrew from its traditional business in high-speed tool steels to concentrateon production of metal powders, high temperature alloys and stainless steels.
1988 (Feb.)	Cyclops Inds. Inc	Announced intention to seek buyer for its Cytemp Specialty Steel Division in order to concentrate on its more profitable businesses: flat-rolled carbon sheet, stainless sheet and strip, and tubes.
1988 (Mar.)	Allegheny Ludlum Steel Corp	Acquired USX's Vandergrift, PA plant, which finishes stainless and electrical steels, in an effort to expand stainless sheet and strip operations.

Table 13—Continued

Specialty steel: Significant structural changes, by year, by company, 1984-89

Year	*Company*	*Type of change*
1988 (July)	Cyclops Inds. Inc	Purchased the assets of Eastern Stainless Steel from its parent company, Eastmet. Assets purchased included melting, casting, and plate and sheet finishing facilities. The acquisition allows Cyclops to supply stainless steel slab from internal sources to its rolling facilities at Coshocton.
1988 (Aug.)	Washington Steel Corp	Sold to Mercury Stainless. Washington's parent company, Blount Inc., stated that the divestiture would allow it to reduce debt and interest costs on other projects. The transaction secures for Mercury a reliable source of stainless hot bands, the primary raw material for Mercury's operation, and provides Washington with an in-house distribution network for its products.
1989 (Jan.)	Jessop Steel	Parent Athlone Industries sold 51 percent of Jessop's equity to three senior Jessop managers (6 percent) and to an investment partnership consisting primarily of Drexel Burnham Lambert employees (45 percent).
1989 (May)	Al Tech Specialty Steel	Sold by parent company, Rio Algom Ltd (Canada), to Sammi Steel, a South Korean stainless steel producer.

Source: Articles from *American Metal Market and Metal Bulletin*, various issues.

33

Cash Flow, Cash Flow Commitments, Worker Retraining, And Adjustment Of Major Companies

Net Cash Flow

To arrive at the statutory cash flow for the 10 major steel companies,[106] the Commission collected data on net income from steel product operations and the sources and uses of cash for the October 1, 1988–June 30, 1989 period (tables 14 and 15). The net cash flow of $1.4 billion was calculated according to the definition provided in P.L. 98-573, Section (b)(2)(B) (see table 16).[107]

There are two significant factors that could affect the calculation of the major companies' net cash flow. The first pertains to the treatment of losses or gains from prior period activities for which cash was either paid, received, or saved during Oct. 1, 1988–June 30, 1989. During the period under investigation, there were two major items reported in prior period activities: (1) tax savings due to net operating loss carry forwards, and (2) unused investment tax credit refunds.

[106] "Major company" is defined in the Trade and Tariff Act as an enterprise whose raw steel production in the United States during 1983 exceeded 1,500,000 net tons.

[107] Under P.L. 98-573, Section 806(b)(2)(B), net cash flow is defined as "annual net (after tax) income plus depreciation, depletion allowances, amortization and changes in reserves minus dividends and payments on short-term and long-term debt and liabilities."

Table 14

Calculation of major companies' net income from steel product operations, October 1, 1988–June 30, 1989

(In thousands)

Item	*Calculation*
Net sales	$21,836,353
Cost of goods sold	19,145,239
General, selling, and administrative expenses	860,642
Interest expense	314,019
Reserves, provisions, special charges and other unusual items	109,241
All other expenses or (income)	(78,961)
Current income taxes	288,094
Tax effect of operating loss carry forward	(198,647)
Investment tax credit refund	(14,026)
Deferred taxes	0
Net income from steel operations	1,410,752

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

Table 15

Sources and uses of cash and cash equivalents in steel product operations, October 1, 1988–June 30, 1989

(In thousands)

Item	*Calculation*
Cash provided from (cash used in) operations:	
Net income	$1,410,752
Depreciation, depletion, and amortization	910,811
Non-cash income tax expense	(1,000)
Non-cash charges (credits):	
relating to reserves, provisions, special charges and other unusual items	29,208
Other	32,878
Cash flow from earnings	2,382,649
Changes in working capital, excluding financing activities	(239,565)
Cash flow from operations	2,143,084
Cash provided from (used in) financing activities:	
Net additions to or (reductions) in long and short term debt	(493,433)
Changes in capital stock	3,604
Transfers from or (to) corporate	(236,858)
Other	(22,079)
Subtotal	(748,766)
Investment,[1] dividends paid, and other cash provided (used)	(1,345,622)
Increase (decrease) in cash and cash equivalents	48,696
Cash and cash equivalents:	
Beginning of period[2]	1,073,828
End of period[2]	1,122,524

[1] Includes capital expenditures and cash generated from the disposal of assets.
[2] ***

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

34

Table 16

Calculation of major companies' cash flow on steel product operations,[1] October 1, 1988–June 30, 1989

(1,000 dollars)

Item	*Calculation*
Cash flow from earnings	$2,382,649
Net changes in long and short term debt and liabilities	[2](732,998)
Dividends paid	(203,682)
Net cash flow from steel product operations	[3]1,445,969

[1] Under P.L. 98-573, section 806 (b)(2)(B) net cash flow is defined as "annual net (after-tax) income plus depreciation, depletion allowances, amortization, and changes in reserves minus dividends and payments on short-term and long term debt and liabilities." The Conference report on the bill states that payment on short and long term debt and other liabilities means the net reduction in such debt and liabilities.
[2] Includes net changes in working capital.
[3] Including net income pertaining to prior periods and net increases in debt and liabilities, exclusion of which would reduce cash flow to $1.2 billion.

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

P.L. 98-573 does not specify how such savings or income should be treated. Deduction of these prior period activities would decrease the cash flow figure presented in table 16 by $212.7 million (see table 17).

A second item relates to the item "payments on short and long term debt debt and liabilities." The conference report on P.L. 98-573 indicates that such payments should reflect, "the net reduction in such liabilities, i.e., net cash flow would reflect both reductions and increases in debt and liabilities." The law does not indicate how a company's net increases should be treated. Deduction of net increases by companies during the period Oct. 1, 1988–June 30, 1989, would decrease the cash flow figure presented in table 16 by $62.9 million (see table 17).

Table 17

Major U.S. steel companies: Net cash flow from steel product operations, October 1, 1988–June 30, 1989 and July 1, 1989–September 30, 1989.

(1,000 dollars)

	Oct. 1, 1988–June 30, 1980		*Jul. 1, 1989–Sept. 30, 1989*	
Source	*Net cash flow[1]*	*Net income pertaining to prior period*	*Net increase in short and long term debt and liabilities[2]*	*Net cash flow estimate*
Armco	***	***	***	***
Bethlehem	***	***	***	***
Inland	***	***	***	***
LTV	***	***	***	***
National	***	***	***	***
Nucor	***	***	***	***
Rouge	***	***	***	***
USX	***	***	***	***
Weirton	***	***	***	***
Wheeling-Pittsburgh	***	***	***	***
Total	1,445,969	212,673	62,894	61,120

[1] Including net income pertaining to prior periods and net increases in long and short debt and liabilities.
[2] Includes net changes in working capital.

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

35

Cash Flow Commitments and Worker Retraining[108] [109]

During the period October 1, 1988–June 30, 1989, net steel related expenditures[110] of the 10 major steel companies amounted to $1.5 billion (see table 18). An additional $591 million of steel related expenditures was forecast by 10 companies for the July 1, 1989–Sept. 30, 1989 period (see table K–6). Summing the estimate with expenditures during the October–June period results in a total period estimate of $2.1 billion. For the period July 1, 1989–Sept. 30, 1989, companies were asked to estimate cash flow (not reflecting prior period activities or net increases in debts and liabilities). All companies provided estimates which totaled $61.1 million (see table 17). Summing this estimate with cash flow over the October–June period results in a total period estimate of $1.5 billion.

Eight companies indicated the magnitude of post-September 30, 1989, commitments. *** did not provide such information. Expenditures by the 10 major steel companies for the retraining of workers[111] during October 1, 1988–June 30, 1989 totaled $48.9 million (see table 18). Of the nine companies that reported a positive net cash flow during the period, all but 1 indicated that retraining expenditures met or exceeded 1 percent of net cash flow.[112] With respect to that one company, ***, no expenditures for the retraining of workers was reported in light of actual growth in employment.

For the entire 12-month period October 1, 1988–September 30, 1989, 8 companies projected positive net cash flows and all but 1, ***, expected expenditures for the retraining of workers to exceed 1 percent of net cash flow from steel operations. *** does not expect its respective situation to change from that reported above.

Only two companies reported expenditures for retraining former workers, and the sums were negligible. Overall, most of the retraining funds appear to be directed toward developing the skills of employees in apprentice and professional positions. Whereas most of this training is mill-specific (workers are taught how to operate and repair existing, modified, and new mill equipment), appreciable funds do appear to be spent on the development of basic skills which are applicable in many industries and employment situations. Courses teaching basic language and math, electronics and computing, mechanical, construction, and general maintenance skills are regularly listed as available to continuing workers.

Individual Company Expenditures

* * * * * * *

Information contained in this section is entitled to confidential treatment and has not been published.

Actions Taken to Maintain International Competitiveness[113]

The major companies identified a number of actions they have taken, or will take, during the period October 1, 1988 to September 30, 1989 to maintain their international competitiveness. The purpose of the actions were identified as follows: (1) to produce price-competitive and quality-competitive products; (2) to control costs of production including employment costs, and (3) to improve productivity. With respect to the first element, a number of major companies identified actions taken to improve steelmaking and flat-rolled product (i.e., plates, sheets and strip) operations. These actions included modernizing hot and cold strip mill operations, relining or

[108] Under the Trade and Tariff Act of 1984 (P.L. 98–573), the President is required to make an annual determination to the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate as to whether "the major companies of the steel industry, taken as a whole, have, during the 12-month period ending at the close of an anniversary referred to in the [the Act],...committed substantially all of their net cash flow from steel product operations for purposes of reinvestment in, and modernization of that industry through investment in modern plant and equipment, research and development, and other appropriate projects such as working capital for steel operations and programs for the retraining of workers." Because of reporting time periods, the Commission focuses on data for the nine month period October–June and reports estimates provided by the companies for the subsequent three month period July–September.

[109] See appendix K for final data on the October 1, 1987–September 30, 1988 period.

[110] Net steel related expenditures are derived by deducting (from total expenditures) expenditures that were already reflected in the net income calculation used to determine net cash flow from earnings.

[111] In addition to the determination of cash flow commitments, the President is required to determine whether, "each of the major companies committed for the applicable 12-month period not less than 1 percent of net cash flow to the retraining of workers; except that this requirement may be waived by the President with respect to a major company in noncompliance, if he finds unusual economic circumstances exist with respect to that company."

[112] Retraining expenditures are treated as an expense in income statements, as either a componenet of cost of

[12]—*Continued*
goods sold or a component of general, selling, and administrative expenses; in order to avoid "double counting," they have been added back to cash flow prior to the calculation of the ratio of retraining expenditures to cash flow.

[113] Under the Trade and Tariff Act of 1984, the President is required to make an annual determination as to whether "the major companies of the steel industry, taken as a whole, have during the 12-month period ending at the close of an anniversary referred to in [The Act]...taken sufficient action to maintain their international competitiveness, including action to produce price competitive and quality competitive products, to control costs of production, including employment costs, and improve productivity."

36

improving blast and electric furnaces, modifications of continuous casting equipment, and modi-fications in electrogalvanizing equipment. Actions taken by the major companies to control costs of production and to increase productivity included the use of lower cost raw materials and energy sources, refinements in production processes and upgrading machinery. Following is a company-by company review of competitive actions taken, based on information reported by companies in response to Commission questionnaires.

* * * * * * *

(The company-specific information is entitled to confidential treatment and has not been published.)

37

Table 18

Major U.S. steel companies: Net cash flow from steel product operations, and steel related expenditures, October 1, 1988–June 30, 1989

		Steel related expenditures								
Company	*Net cash flow[1] (1)*	*Plant and equipment (2)*	*Research and development[2] (3)*	*Retraining workers[2] (4)*	*Other (5)*	*Total expenditures (6)*	*Expenditures reflected in net cash flow (7)*	*Net expenditures (6–7) (8)*	*Adjusted net cash flow (1+ 4) (9)*	*Ratio of expenditures for retraining workers to adjusted net cash flow (10)*
Armco	***	***	***	***	***	***	***	***	***	***
Bethlemen	***	***	***	***	***	***	***	***	***	***
Inland	***	***	***	***	***	***	***	***	***	***
LTV	***	***	***	***	***	***	***	***	***	***
National	***	***	***	***	***	***	***	***	***	***
Nucor[7]	***	***	***	***	***	***	***	***	***	***
Rouge	***	***	***	***	***	***	***	***	***	***
USX	***	***	***	***	***	***	***	***	***	***
Weirton	***	***	***	***	***	***	***	***	***	***
Wheeling-Pittsburgh	***	***	***	***	***	***	***	***	***	***
Total	1,445,969	1,547,204	86,788	48,883	17,325	1,700,200	170,175	1,530,025	1,494,852	3.3

[1] Including income pertaining to prior periods and net increases in short and long term debts and liabilities (see table 17).
[2] Included as expenses in net income calculations.

APPENDIX A
COPY OF LETTER TO CHAIRWOMAN PAULA STERN FROM AMBASSADOR WILLIAM E. BROCK, UNITED STATES TRADE REPRESENTATIVE, REQUESTING INVESTIGATION

THE UNITED STATES TRADE REPRESENTATIVE
WASHINGTON
20506

OFFICE OF THE CHAIRWOMAN

February 85 FEB 12 1985

The Honorable Paula Stern
Chairwoman
United States International
Trade Commission
701 "E" Street, N.W.
Washington, D.C. 20436

RECEIVED 1985 FEB 15

Dear Madam Chairwoman:

On September 18, the President responded to the steel industry's petition for import relief under Section 201 of the Trade Act 1974. A copy of his decision is enclosed. It was the President's concern that U.S. steel policy should promote the continued development of a free market environment in steel trade while maintaining maximum opportunities for the domestic steel industry to recover and modernize. In order to achieve this goal the President has directed me to coordinate his steel policy decision through the implementation of a nine point comprehensive policy.

To effectuate this policy, I request, at the direction of the President and pursuant to Section 332(g) of the Tariff Act of 1930, that the Commission monitor competitive conditions in the steel industry and the industry's efforts to adjust and modernize and to prepare annual reports on those efforts during the five year period beginning October 1, 1984. Also, inasmuch as certain specific information on these efforts will be required for the administration of the enforcement authority for the national policy for the steel industry, contained in title VIII of the Trade and Tariff Act of 1984 (the Act), I request the Commission to include in its annual reports, in addition to the basic categories of information listed in the attachment to this letter, the best information it can compile for the preceding 12-month period ending September 30 of each year on the following matters.

(A) The extent to which the major companies of the steel industry have, or will have committed their net cash flow from steel product operations for purposes of reinvestment in, and modernization of, that industry through investment in modern plant and equipment, research and development, and other appropriate projects, such as working capital for steel operations and programs for the retraining of workers;

(B) Actions taken by the major companies to maintain their international competitiveness, including action to produce price-

competitive and quality-competitive products, to control costs of production, including employment costs, and to improve productivity; and

(C) Whether each of the major companies committed, or will have committed, not less than one percent of net cash flow to the retraining of workers.

If any major company did not commit at least one percent of its net cash flow to the retraining of workers, the Commission should report any unusual economic circumstances which contributed to the company's failure to do so.

For the purpose of this request the terms "steel industry", "major company", and "net cash flow" shall have the same meaning as that set forth in title VIII of the Act.

In addition to reporting on the progress on the steel industry as a whole, I request that the Commission prepare its report in such a manner that, to the extent possible, the progress of carbon steel producers in their efforts to adjust and modernize can be distinguished from that of producers of specialty steel.

Inasmuch as the President's determination called for in the Act will have to be made before the end of each annual period, the Commission is requested to begin submitting its annual reports on August 1, 1985, and on each successive August 1 through 1989.

Very truly yours,

WILLIAM E. BROCK

WEB:hcc

Enclosure

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release

MEMORANDUM FOR THE UNITED STATES TRADE REPRESENTATIVE

SUBJECT: Steel Import Relief Determination

Pursuant to Section 202(b)(1) of the Trade Act of 1974, (P.L. 93-618, 88 Stat. 1978), I have determined the actions I will take with respect to the report of the United States International Trade Commission (USITC) dated July 24, 1984 concerning carbon and alloy steel.

I have determined today under Section 203 of the Trade Act that import relief is not in the national economic interest for the following reasons:

1. In responding to this pressing import problem, we must do all we can to avoid protectionism, to keep our market open to free and fair competition, and to provide certainty of access for our trading partners. This Administration has repeatedly, and most recently at the London Economic Summit, committed itself to "resist continuing protectionist pressures, to reduce barriers to trade, and to make renewed efforts to liberalize and expand trade in manufactures, commodities and services."

2. It is not in the national economic interest to take actions which put at risk thousands of jobs in steel fabricating and other consuming industries or in the other sectors of the U.S. economy that might be affected by compensation or retaliation measures to which our trading partners would be entitled.

3. This Administration has already taken many steps to deal with the steel import problem. In 1982, a comprehensive arrangement restraining steel imports from the European Community was negotiated. This Administration has also conducted an unprecedented number of antidumping and countervailing duty investigations of steel imports, in most cases resulting in the imposition of duties or a negotiated settlement. In addition, the governments of Mexico and South Africa have unilaterally imposed voluntary restraint on exports, leading to the termination of unfair trade complaints.

However, I have decided to establish a government policy for the steel industry. I believe that this new policy is the best way to respond to the legitimate concerns of the domestic industry while maintaining access to our market for those who trade fairly.

I am directing you to coordinate and direct the implementation of this policy for the U.S. steel industry which includes the following elements:

more

1. The United States Trade Representative (USTR) will negotiate "surge control" arrangements or understandings and, where appropriate, suspension agreements with countries whose exports to the United States have increased significantly in recent years due to an unfair surge in imports -- unfair because of dumping subsidization, or diversion from other importing countries who have restricted access to their markets. The USTR will negotiate additional such arrangements and understandings, if necessary, to control new surges of imports that result from subsidizing, dumping or other unfair or restrictive trade practices during the next five years. If agreements cannot be reached to control new surges from countries that are guilty of unfair practices, the President will use his authority under the unfair trade laws including Section 301 of the Trade Act of 1974 to assure that these-countries do not maintain unrestricted access to the United States market.

2. The United States Trade Representative will reaffirm existing measures with countsies that have voluntarily restrained their exports to our market, and will take necessary steps to ensure the effectiveness of these measures. Specifically the Administration will support legislation in the Congress to make enforceable at our borders all voluntary agreements and "surge control" arrangements.

3. The United States Trade Representative will consult with our trading partners to seek the elimination of trade distortive and trade restraining practices in other markets to lead to the liberalization of steel trade around the world.

4. The Department of Commerce will continue to rigorously enforce our unfair trade laws. Further, the Department of Commerce and the United States Trade Representative will self-initiate unfair trade cases including anti-dumping, countervailing duty and Section 301 actions when appropriate.

5. The United States International Trade Commission will be asked to monitor the efforts of the steel industry to adjust and modernize, and to prepare an annual report for the President on those efforts.

6. The Secretary of Commerce will establish an interagency group to analyze all U.S. government domestic tax, regulatory and antitrust laws and policies which could hinder the ability of the steel industry to modernize.

7. The Secretary of Defense and the Federal Emergency Management Agency will analyze domestic steel plate rolling capacity in relationship to emergency needs, and to recommend to the President appropriate actions if deficiencies are found to exist.

8. The Secretary of Labor will work with state and local governments to develop a program to assist workers in communities adversely affected by steel imports.

A-5

9. The United States Trade Representative will closely monitor the trade elements of this program and the resultant import trends and report them to the President on a quarterly basis.

The Administration's hope is that this combination of actions, taken without protectionist intention or effect would enable one of the United States' most basic and vital industries to return to a level playing field, one in which steel is traded on the basis of market forces, not government intervention, and one in which the market would seek a return to a more normal level of steel imports, or approximately 18.5 percent, excluding semi-finished steel.

This determination is to be published in the Federal Register.

RONALD REAGAN

# # # # # #

A-6

Attachment

Annual data specified in section B below are requested to be reported to the maximum extent possible for each of the 21 product categories listed in section A below:

A. Product Categories

Sheet and strip

1. Hot rolled carbon and certain alloy 1/
2. Cold rolled carbon and certain alloy 1/
3. Galvanized carbon and certain alloy 1/
4. Other carbon and certain alloy 1/
5. Stainless

Plate

1. Carbon and certain alloy 1/
2. Stainless

Pipe and tube

1. Oil country tubular goods
2. Line pipe
3. Other carbon and alloy pipes and tubes
4. Stainless

Bars

1. Hot finished carbon bar and certain alloy 1/
2. Cold finished carbon bar and certain alloy 1/
3. Reinforcing carbon bar and certain alloy 1/

Structurals

1. Structural shapes (including fabricated structurals)

Rails and related railway products

1. Rails and related railway products

Wire rods

1. Carbon and certain alloy wire rod 1/

Wire and wire products

1. Carbon and certain alloy wire 1/
2. Stainless wire
3. Carbon and certain alloy 1/ wire products (including wire rope and strand)

1/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

A-7

Semifinished

1. Semifinished

B. **Data Requested**

Domestic Producers

Production
Shipments
Net sales
Net profits
Orders
Inventories
Prices
Employment
Man-hours

Capital expenditures:
- For modern production techniques or facilities
- For older production techniques or facilities
- For polution control or occupational safety and health
- Other

Capacity and net change in capacity
Research and development expenditures
Other actions to adjust and modernize
Investments in activities other than steel

Importers

Total imports
Prices
Orders
Inventories

A-8

Appendix

Annual data specified in section B below are requested to be reported to the maximum extent possible for each of the 21 product categories listed in section A below:

A. Product Categories

Sheet and strip

1. Hot rolled carbon and certain alloy 1/
2. Cold rolled carbon and certain alloy 1/
3. Galvanized carbon and certain alloy 1/
4. Other carbon and certain alloy 1/
5. Stainless

Plate

1. Carbon and certain alloy 1/
2. Stainless

Pipe and tube

1. Oil country tubular goods
2. Line pipe
3. Other carbon and alloy pipes and tubes
4. Stainless

Bars

1. Hot finished carbon bar and certain alloy 1/
2. Cold finished carbon bar and certain alloy 1/
3. Reinforcing carbon bar and certain alloy 1/

Structurals

1. Structural shapes (including fabricated structurals)

Rails and related railway products

1. Rails and related railway products

Wire rods

1. Carbon and certain alloy wire rod 1/

Wire and wire products

1. Carbon and certain alloy wire 1/
2. Stainless wire
3. Carbon and certain alloy 1/ wire products (including wire rope and strand)

Semifinished

1. Semifinished (carbon and certain alloy 1/; and stainless and tool steel)

1/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

A-9

B. Data Requested

Domestic Producers

Production
Shipments
Net sales
Net profits
Orders
Inventories
Prices
Employment
Man-hours

Capital expenditures:
- For modern production techniques or facilities
- For older production techniques or facilities
- For pollution control or occupational safety and health
- Other

Capacity and net change in capacity
Research and development expenditures
Other actions to adjust and modernize
Investments in activities other than steel

Importers

Total imports
Prices
Orders
Inventories

A-10

APPENDIX B
NOTICE OF THE COMMISSION'S INVESTIGATION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

(332-209)

Annual Surveys Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize

AGENCY: UNITED STATES INTERNATIONAL TRADE COMMISSION

ACTION: Institution of an investigation under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332 (g)) concerning the competitive conditions in the steel industry and the industry's efforts to adjust and modernize.

EFFECTIVE DATE: March 8, 1985

FOR FURTHER INFORMATION CONTACT: Mr. Dennis Rapkins or Mr. Peter Avery, Minerals and Metals Division, United States International Trade Commission, 701 E Street NW., Washington, D.C. 20436 (telephone: 202-523-0438, 202-523-0342, respectively).

BACKGROUND AND SCOPE OF INVESTIGATION: The Commission instituted the investigation, No. 332-209, following receipt on February 12, 1985, of a request from the United States Trade Representative (USTR), at the direction of the President. In accordance with the request, the Commission will monitor competitive conditions in the steel industry and the industry's efforts to adjust and modernize, and prepare annual reports on these efforts during the 5 year period beginning October 1, 1984. In addition to collecting the information listed in the appendix, the Commission will compile the best information it can for the preceding 12-month period ending September 30 of each year on the following matters:

(1) The extent to which the major companies of the steel industry have, or will have committed their net cash flow from steel product operations for purposes of reinvestment in, and modernization of, that industry through investment in modern plant and equipment, research and development, and other appropriate projects, such as working capital for steel operations and programs for the retraining of workers;

(2) Actions taken by the major companies to maintain their international competitiveness, including action to produce price- competitive and quality-competitive products, to control costs of production, including employment costs, and to improve productivity; and

(3) Whether each of the major companies committed, or will have committed, not less than one percent of net cash flow to the retraining of workers. If any major company did not commit at least one percent of its net cash flow to the retraining of workers, the Commission will report any unusual economic circumstances which contributed to the company's failure to do so.

B-2

For the purposes of this investigation, the term "steel industry" is defined as producers in the United States of steel products; "major company" is an enterprise whose raw steel production in the United States during 1983 exceeded 1,500,000 net tons; and "net cash flow" is annual net (after-tax) income plus depreciation, depletion allowances, amortization, and changes in reserves minus dividends and payments on short-term and long-term debts and liabilities.

In addition to reporting on the progress of the steel industry as a whole, reports will be prepared in such a manner that, to the extent possible, the progress of carbon steel producers in their efforts to adjust and modernize can be distinguished from that of producers of specialty steel.

The Commission will submit its initial annual report to the President and USTR by August 1, 1985. Subsequent reports will be submitted by August 1 of each successive year through 1989. A public version of the report will be available 2 weeks later.

WRITTEN SUBMISSIONS: Interested persons are invited to submit written statements concerning the investigation. Commercial or financial information which a submitting 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. All submissions requesting confidential treatment must conform with the requirements of section 201.6 of the Commission's Rules of Practice and Procedures (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. To be assured of consideration by the Commission, written statements should be received at the earliest possible date, but no later than July 1, 1985 and by July 1 of each successive year through 1989. All submissions should be addressed to the Secretary at the Commission's Office in Washington, D.C.

By order of the Commission.

Kenneth R. Mason
Secretary

Attachment

Issued: March 11, 1985

B-3

APPENDIX C
DEFINITION OF CERTAIN TERMS, AND DESCRIPTION OF THE PRODUCTS SUBJECT TO THE INVESTIGATION

DEFINITIONS

1. Firm.--An individual proprietorship, partnership, joint venture, association, corporation (including all divisions, any subsidiary corporations, and parent corporations), business trust, cooperative, trustees in bankruptcy, or receivers under decree of any court, owning or controlling one or more establishments, as defined below.

2. Establishment.--Each plant of a firm in the United States in which carbon and/or alloy steel products (as defined below) are produced and all auxiliary facilities operated in conjunction with (whether or not physically separate from) such production facilities, e.g., warehouses, shipping facilities, and the like.

3. Steel industry.--Producers in the United States of steel products.

4. Net cash flow.--Annual net (after-tax) income plus depreciation, depletion allowances, amortization, and changes in reserves minus dividends and payments on short-term and long-term debts and liabilities.

5. United States.--The 50 states, Puerto Rico, and the District of Columbia.

6. Steel.--An alloy of iron and carbon which is malleable as first cast. Steel may contain other elements, but iron must predominate, by weight, over each of the other elements.

7. Carbon steel.--Steel in which none of the elements listed below 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
0.60 percent of copper, or
0.30 percent of aluminum, or
0.20 percent of chromium, or
0.30 percent of cobalt, or
0.35 percent of lead, or
0.50 percent of nickel, or
0.30 percent of tungsten, or
0.10 percent of any other metallic element.

8. Alloy steel.--Steel which contains any of the elements listed in definition 5 (above) in excess of its specified quantity.

(i) Stainless steel.--Any alloy steel which contains by weight less than 1 percent of carbon and over 11.5 percent of chromium;

C-2

Alloy steel--Continued

(ii) Tool steel.--Alloy steel which contains the following combinations of elements in the quantity, by weight, respectively indicated:

(A) not less than 1.0 percent carbon and over 11.0 percent chromium, or

(B) not less than 0.85 percent carbon and 1.0 percent to 1.8 percent inclusive manganese; or

(C) 0.9 percent to 1.2 percent inclusive chromium and 0.9 percent to 1.4 percent inclusive molybdenum; or

(D) not less than 0.5 percent carbon and not less than 3.5 percent molybdenum; or

(E) not less than 0.5 percent carbon and not less than 5.5 percent tungsten; or

(F) not less than 0.3 percent carbon and 1.25 percent to 11.0 percent inclusive chromium.

(iii) Certain alloy steel.--Alloy steel not covered under 6. (i) "Stainless steel" or 6. (ii) "Tool Steel."

9. Galvanized.--Steel which has been coated or plated with zinc.

10. 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).

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

12. 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.

13. Short ton.--Two thousand (2,000) pounds.

FOR THE PURPOSES OF THIS QUESTIONNAIRE, DEFINITIONS 14 THROUGH 22 INCLUDE ONLY PRODUCTS OF CARBON STEEL OR CERTAIN ALLOY STEEL (AS DEFINED ABOVE). THESE PRODUCTS, INCLUSIVELY, ARE DEFINED AS CARBON AND CERTAIN ALLOY STEEL PRODUCTS.

Semifinished products include

14. (A) 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 American Iron and Steel Institute (AISI) product group No. 1A.

C-3

(B) Blooms and billets.--Semifinished products generally of rectangular or circular cross section, having a length several times greater than the maximum cross-sectional dimension, and, if rectangular, a width less than 4 times the thickness. A bloom is at least 36 square inches but not less than 3 square inches in cross-sectional areas. Blooms and billets are included in AISI product group No. 1B.

(C) Slabs and sheet bars.--Semifinished products of rectangular cross section, having a width of at least 4 times the thickness. A slab is not less than 2 inches in thickness; a sheet bar is less than 2 inches in thickness. Slabs and sheet bars are included in AISI product group No. 1B.

For the purpose of this investigation, semifinished products are classified as follows:

(i) Carbon and certain alloy semifinished products, as provided for in items 606.6705, 606.6710, 606.6715, 606.6720, 606.6725, 606.6730, 606.6735, 606.6740, 606.6949, 606.6951, 606.6953, 606.6955, 606.6957, 606.6959, 606.6961, 606.6963, 607.6620, and 607.7803 of the Tariff Schedules of the United States Annotated (1987) (TSUSA).

(ii) Stainless and alloy tool steel semifinished products, as provided for in items 606.6901, 606.6902, 606.6904, 606.6905, 606.6906, 606.6909, 606.6912, 606.6915, 606.6918, 606.6921, 606.6923, 607.7210, and 607.7603 of the TSUSA.

15. Sheets and strip.--Flat rolled products whether or not corrugated or crimped, in coils or cut to length. Sheets are under 0.1875 inch in thickness and over 12 inches in width. Strip is under 0.1875 inch in thickness and, if cold rolled, over 0.50 inch but not over 12 inches in width, or, if not cold rolled, not over 12 inches in width. Sheets and strip are included in AISI product group Nos. 28, 29, 29A, 30, 31, 32, 33A, 33B, 34, 34B, 35, 36, and 37. For the purposes of this investigation, sheets and strip are classified as follows:

(i) Hot-rolled carbon and alloy steel sheets and strip; provided for in items 607.6710, 607.6720, 607.6730, 607.6740, 607.8100, 607.8342, 607.9205, 608.1920, 608.2120, and 608.2320 of the TSUSA.

(ii) Cold-rolled carbon and alloy steel sheets and strip; provided for in items 607.6200, 607.6400, 607.8350, 607.8355, 607.8360, 607.8362, 607.8366, 607.8375, 607.8378, 607.8380, 607.8385, 607.8390, 607.9210, 607.9315, 607.9320, 608.1930, 608.1940, 608.1945, 608.2130, 608.2140, 608.2145, 608.2150, 608.2160, 608.2170, 608.2330, 608.2340, 608.2345, 608.3810, 608.3820, 608.3900, 608.5510, 608.5520, 608.6710, and 608.6720 of the TSUSA.

(iii) Galvanized carbon and alloy steel sheets and strip; provided for in items 608.0730, 608.1305, 608.1310, 608.1315, 608.1320, 608.1321, 608.1325, 608.1330, 608.1331, and 608.1335 of the TSUSA.

(iv) All other carbon and alloy steel sheets and strip; provided for in items 607.9600, 607.9700, 607.9900, 608.0100, 608.1340, 608.1350, 608.1440, 609.1710, and 609.1790 of the TSUSA.

(v) Stainless steel sheets and strip; provided for in items 607.7610, 607.9010, 607.9020, 608.2600, 608.2900, 608.4300, and 608.5700 of the TSUSA.

C-4

16. Plates.--Flat rolled products whether or not corrugated or crimped, in coils or cut to length. Plates are 0.1875 inch or more in thickness and, if not cold rolled, over 8 inches in width. Plates are included in AISI product group No. 6. For the purposes of this investigation, plates are classified as follows:

(i) Carbon and certain alloy steel plate; as provided for in items 607.6610, 607.6625, 607.7806, 607.8320, 607.9100, 607.9400, 608.0710, 608.1100, 608.1420, and 609.1400 and 609.1500 of the TSUSA.

(ii) Stainless steel plate; as provided for in items 607.7606 and 607.9005 of the TSUSA.

17. 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, conforming to American Petroleum Institute (API) specifications, as provided for in items 610.3216, 610.3219, 610.3233, 610.3249, 610.3252, 610.3256, 610.3258, 610.3264, 610.3721, 610.3722, 610.3925, 610.3935, 610.4025, 610.4035, 610.4210, 610.4220, 610.4230, 610.4240, 610.4310, 610.4320, 610.4335, 610.4942, 610.4944, 610.4946, 610.4954, 610.4957, 610.4968, 610.4969, 610.4970, 610.5221, 610.5222, 610.5226, 610.5240, 610.5242, 610.5243, 610.5244 of the TSUSA. Oil country tubular goods are included in AISI product group No. 19.

(ii) Line pipe, conforming to API specifications; as provided for in items 610.3208, 610.3209, 610.3212, 610.3213, 610.3711, 610.3712, 610.3713, 610.4931, 610.4933, 610.4936, 610.5211, 610.5214, and 610.5216. Line pipe is included in AISI product group No. 20.

(iii) Other carbon and alloy (excluding stainless) pipes and tubes, as provided for in items 610.3000, 610.3100, 610.3205, 610.3221, 610.3227, 610.3231, 610.3234, 610.3241, 610.3242, 610.3243, 610.3254, 610.3262, 610.3500, 610.3600, 610.3704, 610.3728, 610.3732, 610.3751, 610.3945, 610.3955, 610.4045, 610.4055, 610.4245, 610.4255, 610.4345, 610.4355, 610.4500, 610.4600, 610.4800, 610.4920, 610.4925, 610.4928, 610.4948, 610.4951, 610.4953, 610.4955, 610.4956, 610.4966, 610.4967, 610.4976, 610.5160, 610.5204, 610.5206, 610.5209, 610.5229, 610.5234, and 610.5236, of the TSUSA. Other carbon and alloy steel pipes and tubes are included in AISI product group Nos. 18, 21A, 21B, and 22.

(iv) Stainless steel pipes and tubes, welded or seamless, provided for in items 610.3701, 610.3727, 610.3731, 610.3741, 610.3742, 610.5130, 610.5202, 610.5230, and 610.5231. Stainless steel pipes and tubes are included in AISI product group Nos. 21C and 21D.

C-5

18. Bars.--Products of solid cross section not conforming completely to the respective specifications set forth in the TSUS for blooms, billets, slabs, sheet bars, wire rods, plates, sheets, strip, wire, rails, joint bars, or tie plates, and which have cross sections in the shape of circles, segments of circles, ovals, triangles, rectangles, hexagons, or octagons. Also, for the purposes of this investigation, the term "bars" includes hollow drill steel, which is a hollow product in any cross section suitable for use in making mining drills or mining drill rods, with the largest internal cross-sectional dimension not greater than one-third of the largest external cross-sectional dimension. For the purposes of this investigation, bars are classified as follows:

(i) Hot finished carbon and certain alloy steel bars; as provided for in items 606.8310, 606.8330, 606.8350, 606.8600, 606.9700, 607.0500, 607.0700, and 607.0900 of the TSUSA, and included in AISI product group No. 14.

(ii) Cold finished carbon steel and certain alloy steel bars; as provided for in items 606.8805, 606.8815, and 606.9900 of the TSUSA, and included in AISI product group No. 16.

(iii) Reinforcing carbon and certain alloy steel bars; which are hot-rolled steel bars, of solid cross section, having deformations of various patterns on their surfaces; as provided for in items 606.79 and 606.81 of the TSUS and included in AISI product group No. 15.

19. Structural shapes and units include the following articles:

(i) Angles, shapes, and sections. Nontubular products not conforming completely to the respective specifications set forth in the TSUS for blooms, billets, slabs, sheet bars, bars, wire rods, plates, sheets, strip, wire, rails, joint bars, or tie plates, hot rolled, forged, extruded, or drawn, or cold formed or cold finished, whether or not drilled, punched, or otherwise advanced, and if cold formed weighing over 0.29 pound per linear foot. Angles, shapes, and sections comprise:

(A) Light structural shapes (bar-size light shapes having a maximum cross-sectional dimension of less than 3 inches; as provided for in items 609.8050, 609.8070, 609.8090, 609.8235, and 609.8240 of the TSUSA and included in AISI product group No. 14A; and

(B) Heavy structural shapes having a maximum cross-sectional dimension of 3 inches or more; as provided for in items 609.8005, 609.8010, 609.8020, 609.8025, 609.8035, 609.8041, 609.8045, 609.8225, and 609.8230 of the TSUSA and included in AISI product group Nos. 4 and 5(pt.); and

(ii) Sheet piling.--Rolled straight web, deep-arch, arch-web, and Z-sections having continuous interlocking joints on each lengthwise edge; as provided for in items 609.96 and 609.98 of the TSUS. Sheet piling is included in AISI product group No. 5 (pt); and

(iii) Fabricated structural units, which include columns, pillars, posts, beams, girders, and similar structural units; as provided for in items 609.84, 609.86, 652.94, 652.96, and 653.00 of the TSUS. These columns, pillars, etc., are included in AISI product group No. 38.

C-6

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

(i) Rails are 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 items 610.2010, 610.2025, 610.2030, and 610.2100 of the TSUSA. Rails are included in AISI product group Nos. 7 and 8.

(ii) Joint bars are 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 protect the ties; all the foregoing, as provided for in items 610.25 and 610.26 of the TSUS. Joint bars and tie plates are included in AISI product group Nos. 9 and 10.

(iii) Railway track spikes, of one piece construction, used to secure tie plates or ties; as provided for in item 646.3020 of the TSUSA. Railway track spikes are included in AISI product group No. 11.

(iv) Railroad and railway (RR) axles and wheels, parts thereof, and axle bars; as provided for in items 690.25 and 690.30 of the TSUS. These articles are included in AISI product group Nos. 12 and 13.

21. Carbon and certain alloy wire rods.--Coiled, semifinished, hot-rolled products of solid cross section, approximately round in cross section, not under 0.20 inch nor over 0.74 inch in diameter; as provided for in items 607.14, 607.17, 607.22, 607.23, 607.41, and 607.59 of the TSUS. Wire rods are included in AISI product group No. 3.

22. Wire and wire products are classified as follows:

(i) Carbon and certain alloy wire; a finished, drawn, nontubular product, of any cross-sectional configuration, in coils, and not over 0.703 inch in maximum cross-sectional dimension; the term includes a product of solid rectangular cross section, in coils, with a cold-rolled finish, and not over 0.25 inch thick and not over 0.50 inch wide. Wire is provided for in items 609.20, 609.21, 609.22, 609.25, 609.28, 609.35, 609.36, 609.37, 609.40, 609.41, 609.43, 609.70, 609.72, 609.75, and 609.76 of the TSUS, and item 609.3040, 609.3340, 609.4530, and 609.4560 of the TSUSA. Wire is included in AISI product group Nos. 23 and 27(pt.).

(ii) Stainless steel wire; as provided for in items 609.3020, 609.3320, 609.4502, 609.4504, 609.4542, and 609.4544 of the TSUSA. Stainless steel wire is included in AISI product group No. 23.

(iii) Carbon and certain alloy wire products as defined by the following:

(A) Barbed wire is a wire, or strand of twisted wires, armed with barbs or sharp points; as provided for in item 642.02 of the TSUS. Barbed wire is included in AISI product group No. 25(pt).

(B) Twisted barbless wire is a wire strand of loosely twisted double wire, suitable for fencing purposes, not fitted with fittings, not made up into articles, and not covered with nonmetallic material; as provided for in item 642.1105 of the TSUSA. Twisted barbless wire is included in AISI product group No. 25(pt).

(C) Wire strand is two or more wires which together constitute one of the parts which are twisted together to form rope, cord, or cordage, not fitted with fittings, not made up into articles, not of brass plated wire, not covered with nonmetallic material, and not including twisted barbless wire; as provided for in items 642.1120, 642.1142, 642.1144, and 642.1146 of the TSUSA. Wire strand is included in AISI product group No. 23(pt).

(D) Wire ropes, cables, and cordage are 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 items 642.12 and 642.16 of the TSUS. Wire ropes, cables, and cordage are included in AISI product group No. 23(pt).

(E) Wire fencing is a galvanized product wholly of round wire measuring not over 0.20 inch and not under 0.075 inch in diameter, whether or not such wire is covered with plastics; as provided for in item 642.35 of the TSUS. Wire fencing is included in AISI product group Nos. 23(pt) and 26.

(F) Brads, nails, spikes, staples, and tacks are 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 items 646.25 and 646.26 of the TSUS. Brads, nails, spikes, staples, and tacks are included in AISI product group No. 24.

(G) Other wire products comprises: wire bale ties, with or without buckles or fastenings and whether or not coated with paint or other substance; as provided for in items 642.90 and 642.91 of the TSUS and included in AISI product group No. 27(pt); and milliners' wire and other wire covered with textile or other material not wholly of metal; as provided for in items 642.96 and 642.97 of the TSUS and included AISI product group No. 23.

23. Semifinished products include.—Continous 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 shared by forging, including blanks, angles, shapes, or sections.

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.

C-8

Blooms billets, slabs, and sheet bars.—Other continuous cast products 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.

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

(A) Carbon and certain alloy semifinished products

(i) Carbon and certain alloy ingots; provided for in items 7206.10.0000, 7206.90.0000, 7224.10.0090 of the Harmonized Tariff Schedules of the United States (HTS).

(ii) Carbon and certain alloy blooms and billets; provided for in items 7207.11.0000, 7207.12.0010, 7207.19.0030, 7207.19.0090, 7207.20.0025, 7207.20.75, 7207.20.0090, 7224.90.0040, 7224.90.0060, 7223.90.0070 of the HTS.

(iii) Carbon and certain alloy slabs and sheet bars; provided for in items 7207.12.0050, 7207.20.0045, 7224.90.0050, 7224.90.0070 of the HTS.

(B) Stainless and alloy tool steel semifinished products

(i) Stainless and alloy tool steel ingots; provided for in item 7218.10.0000 and 7224.10.0030 of the HTS.

(ii) Stainless and alloy tool steel, steel blooms and billets; provided for in items 7218.90.0010, 7218.90.0020, 7218.90.0030, 7218.90.0045, 7218.90.0055, 7218.90.0065, 7218.90.0090 7224.90.0010, and 7224.90.0030 of the HTS.

(iii) Stainless and alloy tool steel, steel slabs and sheet bars; provided for in items 7218.90.0035 7218.90.0070, and 7218.90.0080, and 7224.90.0020.of the HTS.

For the purpose of this survey, flat rolled products are classified as follows:

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.

24. Plates.—Flat rolled products whether or not corrugated or crimped, in coils or cut to length. Plates are 4.7625 mm inch or more in thickness and, if not cold rolled, over 20.32 cm in width, or if cold rolled, over 30.45 cm in width. Plates are included in AISI product group No. 6. For the purposes of this investigation, plates are classified as follows:

C-9

(i) Carbon plate; provided for in items 7208.11.0000, 7208.12.0000, 7208.21.1000, 7208.21.5000, 7208.22.1000, 7208.22.5000, 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, 7211.12.0000, 7211.21.0000, 7211.22.0045, of the HTS.

(ii) Alloy plate; provided for in items 7225.30.3000, 7225.40.3000, 7225.50.6000, 7226.91.5000 of the HTS.

(iii) Stainless steel plate; provided for in items 7219.11.0000, 7219.12.0000, 7219.21.0000, 7219.22.0000, 7219.31.0050, 7220.11.0000 of the HTS.

25. Sheets and strip.—Flat rolled products whether or not corrugated or crimped, in coils or cut to length. Sheet is less than 4.7625 mm in thickness and over 30.48 cm inches in width. Strip is less than 4.7625 mm in thickness, not over 30.48 cm in width and, if cold rolled, over 1.27 cm in width. Sheets and strip are included in AISI product group Nos. 28, 29, 29A, 30, 31, 32, 33A, 33B, 34, 34B, 35, 36, and 37. For the purposes of this investigation, sheets and strip are classified as follows:

(A) Hot-rolled carbon and alloy sheet—provided for in items 7208.13.1000, 7208.13.1350, 7208.14.1000, 7208.14.5000, 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, 7225.30.7000, 7225.40.7000 of the HTS.

(B) Hot-rolled carbon and alloy strip; provided for in items 7211.19.1000, 7211.19.5000, 7211.29.1000, 7211.29.3000, 7211.29.5000, 7211.297030, 7211.29.7060, 7211.29.7090, 7226.91.7000 and 7226.91.8000 of the HTS.

Cold-rolled carbon and alloy sheet and strip:

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

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

(c) Other sheet; provided for in items 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, 7209.42.000, 7209.43.0000, 7209.44.0000, 7210.70.3000, 7225.50.7000, 7225.50.8000 of the HTS.

(d) Other strip; provided for in items 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, 7212.40.1000, 7212.40.5000, 7226.92.5000, 7226.92.7000, 7226.92.8000, 7226.99.0000 of the HTS.

C-10

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

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

(F) Tin free; provided for in item 721.50.0000 of the HTS.

(G) Other metalic coated; provided for in items 7210.20.0000, 7210.60.0000, 7210.70.6090, 7210.90.6000, 7210.90.90000, 7212.50.0000, and 7212.60.0000 of the HTS.

(H) Stainless steel hot-rolled sheet; provided for in items 7219.13.0030, 7219.13.0060, 7219.14.0030, 7219.14.0060, 7219.23.0030, 7219.23.0060, 7219.24.0030, and 7219.24.0060 of the HTS.

(I) Stainless steel cold-rolled sheet; provided for in items 7219.32.0015, 7219.32.0030, 7219.32.0045, 7219.32.0060, 7219.33.0010, 7219.33.0015, 7219.33.0030, 7219.33.0045, 7219.33.0060, 7219.34.0010, 7219.34.0050, 7219.35.0010, and 7219.35.0050 of the HTS.

(J) Stainless steel strip; provided for in items 7220.12.1000, 7220.12.5000, 7220.20.1000, 7220.20.6000, 7220.20.7000, 7220.20.8000, 7220.20.9000, 7220.90.0000 of the HTS.

26. Bars.— Hot-rolled products 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, rubs, 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 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 items 7213.390060, 7213.490060, 7213.500020, 7213.500060, 7214.100000, 7214.300000, 7214.400010, 7214.400030, 7214.00050, 7214.500010, 7214.500030 7214.500050, 7214.600010, 7214.600030, 7214.600050, 7215.901000 and 7228.80000 of the HTS, and included in AISI product group No. 14.

C-11

(ii) Hot-rolled alloy bars; provided for in items 7213.200000, 7228.201000, 7228.308000, 7228.400000, 7228.606000, 7228.800000 of the HTS, and included in AISI product group No. 14.

(iii) Cold-formed carbon bars; provided for in items 7215.100000, 7215.200000, 7215.300000, 7215.400000 and 7215.903000 of the HTS, and included in AISI product group No. 16.

(iv) Cold-formed alloy bars; provided for in items 7228.205000, 7228.505000, and 7228.608000 of the HTS, and included in AISI product group No. 16.

(v) Reinforcing carbon and certain alloy steel bars; which are hot-rolled steel bars, of solid cross section, having deformations of various patterns on their surfaces; provided for in items 7213.100000 and 7214.200000 of the HTS, and included in AISI product group No. 15.

27. Carbon and certail alloy wire rod:

Wire rods.—Coiled, semifinished, hot-rolled products of solid cross section, approximately round in cross section, not under 14mm nor over 19mm in diameter. Wire rods are included in AISI product group No. 3.

For the purposes of this investigation, wire rod is classified as follows:

(i) Carbon steel wire rod; provided for in items 7213.31.3000, 7213.31.6000, 7213.39.0030, 7213.39.0090, 7213.41.3000, 7213.41.6000, 7213.49.0030, 7213.49.0090, 7213.50.0040 of the HTS.

(ii) Alloy steel wire rod; provided for in items 7227.20.0000, and 7227.90.6000 of the HTS.

28. Wire and wire products.—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.

C-12

(i) Carbon and alloy steel wire; provided for in items 7217.11.1000, 7217.11.2000, 7217.11.3000, 7217.11.5020, 7217.11.5040, 7217.11.5060, 7217.11.5080, 7217.11.7030, 721711.7090, 7217.11.9000, 7217.12.1000, 7217.12.3020, 7217.12.3060, 7217.12.5000, 7217.12.7000, 7217.13.1000, 7217.13.3030, 7217.13.3060, 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, 7217.31.3075, 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, 7217.33.5000, 7217.39.5000, 7229.20.000, 7229.90.1000, 7229.90.5015, 7229.90.5030, 7229.90.5050, and 7229.90.9000 of the HTS.

(ii) Stainless steel wire; provided for in items 7223.00.1015. 7223.00.1030, 7223.00.1045, 7223.00.1060, 7223.00.1075, 7223.00.5000, and 7223.00.9000 of the HTS.

(iii) Carbon and certain alloy steel wire products as defined by the following:

(A) Nails and brads, spikes, staples, and tacks are 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 items 7317.00.5505, 7317.00.5510, 7317.00.5520, 7317.00.5530, 7317.00.5540, 7317.00.5550, 7317.00.5560, 7317.00.5580, and 7317.00.5590 of the HTS. Nails and staples, are included in AISI product group No. 51.

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

(C) Wire expanded metal, grill and fencing include 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^3 or more, whether or not such wire is covered with plastics; as provided for in items 7314.20.0000, 7314.30.1000 7314.30.5000, 7314.41.1000 7314.42.0000, 7314.49.3000 7314.49.6000, and 7314.50.0000 of the HTS. The products are included in AISI product group No. 50.

(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 item 7326.20.0010 of the HTS and included in AISI product group No. 53.

(E) Wire strand is 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, not covered with nonmetallic material, as provided for in items 7312.10.1030, 7312.10.1060, 7312.10.3005, 7312.10.3015, 731.10.3045 7312.10.3065, 7312.10.3075, and 7312.10.3090 of the HTS. Wire strand is included in AISI product group No. 45.

(F) Wire ropes, cables, and cordage are 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 items 7312.10.6000, 7312.10.8000, 7312.10.9030, 7312.10.9060, and 7312.10.9090 of the HTS. Wire ropes, cables, and cordage are included in AISI product group No. 47.

(G) Milliners wire is wire covered with textile or other material not wholly of metal; as provided for in items 642.96 and 642.97 of the TSUSA. Milliners wire is included in AISI product group No. 23(pt.).

29. 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) Light structural shapes; which are bar-size light shapes having a cross-sectional dimension of less than 7.62 cm provided for in items 7216.100010, 7216.100050, 7216.2100000, 7216.220000, 7228.703060, and 7228.703080 of the HTS, and included in AISI product group No. 14A.

(ii) Heavy structural shapes having a maximum cross-sectional dimension of 7.62 cm or more, and sheet piling; as provided for in items 7216.31.0000, 7216.32.0000, 7216.33.0030, 7216.33.0060, 7216.31.0090, 7216.40.0010, 7216.40.0050, 7216.50.0000, 7216.69.0000, 7222.40.3020, 7222.40.3020, 7222.40.3040, 7228.70.3020, 7228.70.3040, and 7301.10.0000 of the HTS.

(iii) Fabricated structural units, which include columns, pillars, posts, beams, girders, and similar structural units; as provided for in items 7216.60.0000, 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 No. 38 and 39.

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

(i) Rails are 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 items 7302.10.5000, 7302.10.1020, 7302.10.1040, 7302.10.1060, and 7302.10.1080 of the HTS. Rails are included in AISI product group Nos. 7, 8 and 41.

(ii) Joint bars are 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 protect the ties; all the foregoing, as provided for in items 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 (pt.).

C-14

(iii) Railway track spikes, of one piece construction, used to secure tie plates or ties; as provided for in item 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; as provided for in items 8607.19.1000, 8607.19.2000 of the HTS. These articles are included in AISI product group No. 43.

31. 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 items 7304.20.1000, 7304.20.2000, 7304.20.3000, 7304.20.4000, 7304.20.5010, 7304.20.5050, 7304.20.6010, 7304.20.6050, 7304.20.7000, 7304.20.8000 of the HTS. Oil country tubular goods are included in AISI product group No. 19.

(ii) Line pipe; provided for in items 7304.101020, 7304.101050, 7304.101080, 7305.111030, 7305.121030, 7305121060, 7305.191030, 7305.191060, 7306.101010, and 7306.101050 of the HTS. Line pipe is included in AISI product group No. 20.

(iii) Mechanical pipe; provided for in items 7304.313000, 7304.316050, 7304.390050, 7304.390075, 7304.515090, 7304.515000, 7306.607000 of the HTS. Mechanical pipe is included in AISI product group 21A.

(iv) Structural pipe; provided for in items 7304.90.1000, 7304.903000, 7305.312000, 7306.303000, 7306.503000, 7306.601000, and 7306.603000 of the HTS. Structural pipe is included in AISI product category 22.

(v) Pressure tubing; provided for in items 7304.316010, 7304.390005, 7304.515030, 7304.515050, 7304.592030, 7304.592050, 7306.305010 and 7306.505010 of the HTS. Pressure tubing is included in AISI product category 21B.

(vi) Stainless steel pipes and tubes; provided for in items 7304.410010, 7304.410050, 7304.490010, 7304.490030, 7304.490050, 7306.401000, 7306.405010, 7306.405030, 7306.405050, and 7306.405070 of the HTS. Stainless steel pipes and tubes are included in AISI product categories 21C and D.

(vii) Other, including standard; provided for in items 7304.390010, 7304.390015, 7304.390030, 7304.390040, 7304.390070, 7304.390090, 7305.314000, 7306.305025, 7306.305030, 7306.305040, 7306.305050 and 7306.305065 of the HTS. Other, including standard pipe is included in AISI product category 18.

C-15

APPENDIX D
STATISTICAL TABLES, JULY 1, 1988–JUNE 30, 1989

Table D-1

Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1988 —June 30, 1989

Item	Capacity	Changes in capacity[1]	Capacity Production	Utilization
	Short tons			Percent
Carbon and certain alloy steel[2]				
Cokemaking facilities	26,468,600	* * * *	23,594,795	89
Ironmaking facilities	67,190,230	* * * *	55,875,795	83
Steelmaking facilities[3]				
Electric furnace	36,233,442	(4)	28,364,545	78
Basic oxygen furnace	65,492,335	(4)	58,560,510	89
Other furnaces	7,348,7005	(4)	5,198,111	71
Total	109,074,477	* * * *	92,123,166	84
Continuous casting	65,332,576	(4)	57,841,092	89
Products:				
Plates	8,113,850	* * * *	4,836,739	60
Sheets and strip:				
Hot rolled	58,402,400	* * * *	47,172,703	81
Cold rolled	32,945,200	* * * *	25,269,050	77
Galvanized	11,160,691	* * * *	10,362,481	93
Other	8,080,100	* * * *	6,096,124	75
Bars:				
Hot finished	12,279,084	* * * *	9,825,157	80
Cold finished	481,000	* * * *	428,634	89
Reinforcing	3,299,193	* * * *	2,743,890	83
Wire rod	5,228,209	* * * *	4,226,322	81
Wire	1,205,420	* * * *	773,733	64
Wire products	765,106	* * * *	464,264	61
Structural shapes and units	7,125,091	* * * *	5,106,500	72
Rails and related products	1,311,301	* * * *	737,936	56
Pipes and tubes:				
Oil country tubular goods	1,835,000	* * * *	789,465	43
Line pipe	2,218,580	* * * *	712,129	32
Other	2,249,020	* * * *	1,096,258	49
Certain stainless and and alloy tool steel:				
Steelmaking facilities[3]				
Electric furnace	2,352,648	(4)	1,703,796	72
Basic oxygen furnace	24,000	(4)	7,812	33
Other furnaces	8,000	(4)	0	0
Total	2,384,648	* * * *	1,711,608	72
Continuous casting	1,481,500	(4)	1,261,457	85
Stainless steel products:				
Plates	305,000	* * * *	221,438	73
Sheets and strip	1,008,905	* * * *	892,815	88
Wire	37,150	* * * *	33,603	90
Pipes and tubes	29,800	* * * *	22,870	77

[1] Reported changes are likely to differ from changes in capacity calculated by company annual averages, due partly to the fact that reported capacity "averages in" the effect of closures or additions over the reporting period.

[2] Certain alloy refers to alloy steel other than stainless and alloy tool steel.

[3] Including semifinished steel.

[4] Change in capacity not calculated.

Source: Compiled from data submitted in response to questionnaires of the

D-2

Table D-2

Certain carbon and alloy steel: U.S. producers' shipments, unfilled orders, and inventories, and U.S. importers' imports, unfilled orders, and inventories, July 1, 1988 — June 30, 1989

Product	U.S. Producers: Shipments Quantity	U.S. Producers: Shipments Value	U.S. Producers: Unfilled orders[1]	U.S. Producers: Inventories[1]	U.S. Producers: Ratio inventories to unfilled orders	U.S. Imports: Imports Quantity	U.S. Imports: Imports Value	U.S. Imports: Unfilled orders[1]	U.S. Imports: Inventories[1]	U.S. Imports: Ratio of inventories to unfilled orders
	(Short tons)	1,000 dollars	Short tons	Short tons		(Short tons)	1,000 dollars	Short tons	Short tons	
Carbon and certain alloy steel:[2]										
Semifinished	2,976,361	896,967	352,919	([3])	-	798,256	264,345	50,192	40,833	0.81
Plates	4,850,702	2,387,991	793,951	197,771	0.25	272,362	141,355	37,220	21,165	0.57
Sheets and strip:										
Hot rolled	16,999,395	6,476,573	1,661,256	1,518,051	0.91	972,226	427,050	77,588	48,808	0.63
Cold rolled	11,238,611	5,694,131	2,331,461	1,553,511	0.67	953,280	611,263	127,461	23,232	0.18
Galvanized	8,418,994	5,198,338	1,777,499	1,049,935	0.59	998,933	691,968	146,967	24,500	0.17
Other	6,230,510	3,949,682	1,269,771	731,401	0.58	233,652	186,899	16,963	9,900	0.58
Subtotal, sheets and strip	42,887,510	21,318,724	7,039,987	4,852,898	0.69	3,158,091	1,917,180	368,979	106,440	0.29
Bars:										
Hot finished	8,770,861	3,718,390	792,690	799,389	1.01	156,740	92,122	17,567	5,523	0.31
Cold finished	* * * *	* * * *	* * * *	* * * *	1.20	80,802	48,595	4,435	7,996	1.80
Reinforcing	* * * *	* * * *	* * * *	* * * *	0.81	108,235	33,023	0	11,647	-
Subtotal, bars	11,985,495	4,846,465	1,229,242	1,177,205	0.96	345,777	173,740	22,002	25,166	1.14
Wire rod	3,603,712	1,206,860	403,084	119,544	0.30	401,352	190,828	121,358	9,069	0.07
Wire	330,507	187,373	41,046	17,059	0.42	118,998	91,704	7,527	1,852	0.25
Wire products	439,423	248,215	30,813	21,468	0.70	198,944	144,390	5,981	15,890	2.66
Structural shapes and units	5,047,191	2,039,833	379,374	428,156	1.13	769,002	358,863	116,140	31,421	0.27
Rails and related products	682,078	352,069	147,707	53,766	0.36	103,228	60,537	28,190	0	0.00
Pipes and tubes:										
Oil country tubular goods	821,768	627,245	142,305	85,741	0.60	247,331	240,033	47,094	75,675	1.61
Line pipe	583,344	326,029	140,895	78,654	0.56	259,133	167,635	97,629	5,927	0.06
Other	1,149,470	943,146	192,152	108,159	0.56	493,413	336,384	89,869	30,486	0.34
Subtotal, pipes and tubes	2,554,582	1,896,420	475,352	272,554	0.57	999,877	744,052	234,592	112,088	0.48
Total, carbon and certain alloy steel	75,357,561	35,380,917	10,893,475	7,140,421	0.66	7,165,887	4,086,994	992,181	363,924	0.37

See footnotes on next page.

D-3

Table D-2—*Continued*

Certain carbon and alloy steel: U.S. producers' shipments, unfilled orders, and inventories, and U.S. importers' imports, unfilled orders, and inventories, July 1, 1988 — June 30, 1989

Product	U.S. Producers					U.S. Imports				
	Shipments		Unfilled orders[1]	Inventories[1]	Ratio inventories to unfilled orders	Imports		Unfilled orders[1]	Inventories[1]	Ratio of inventories to unfilled orders
	Quantity	Value				Quantity	Value			
	(Short tons)	1,000 dollars	Short tons			(Short tons)	1,000 dollars	Short tons		
Certain stainless and alloy tool steel:										
Semifinished	217,714	618,572	16,649	(3)	-	61,676	104,556	3,745	64	0.02
Stainless steel:										
Plates	219,926	654,563	20,026	19,864	0.99	4,202	13,650	2,379	254	0.11
Sheets and strip	865,999	2,445,004	155,308	129,848	0.84	35,426	101,465	5,651	4,812	0.85
Wire	32,187	135,814	5,306	6,664	1.26	5,731	19,666	649	183	0.28
Pipes and tubes	21,067	114,456	6,923	6,827	0.99	21,375	110,509	5,274	5,358	1.02
Total, certain stainless and alloy tool steel	1,356,893	3,968,409	204,212	163,203	0.80	128,410	349,846	17,698	10,671	0.60
Grand total	76,714,454	39,349,326	11,097,687	7,303,624	0.66	7,294,297	4,436,840	1,009,879	374,595	0.37

[1] As of June 30, 1987.
[2] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[3] Inventories of semifinished steel intended for sale are estimated by the ITC staff to be negligible.

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

Table D-3

Certain carbon and alloy steel: U.S. imports, by product, June 1984-May 1985, and June 1986-May 1987[1]

(In tons)

Item	Quantity				
	June 1984-May 1985	*June 1985-May 1986*	*June 1986-May 1987*	*June 1987-May 198*	*June 1988-May 1989*
Carbon and certain alloy steel products:[2]					
Semifinished[3]	1,668,223	2,366,861	2,326,428	2,373,135	2,409,969
Plates	2,184,608	1,549,783	1,409,299	1,750,191	1,626,877
Sheets and strip:					
Hot rolled	2,618,281	2,226,887	2,174,590	2,190,503	2,062,182
Cold rolled	3,752,841	3,012,696	2,741,541	2,580,686	1,994,046
Galvanized	2,683,568	2,362,806	2,319,321	2,273,218	1,651,964
Other	734,537	687,548	764,638	666,001	670,071
Subtotal, sheets and strip	9,789,227	8,289,937	8,000,090	7,718,408	7,048,334
Bars:					
Hot finished	714,691	550,865	607,491	610,051	784,739
Cold finished	336,602	236,747	200,523	195,921	177,045
Reinforcing	423,139	409,912	449,546	306,265	346,598
Subtotal, bars	1,474,432	1,197,524	1,257,560	1,112,237	1,308,382
Wire rod	1,514,956	1,353,358	1,367,484	1,501,842	1,113,677
Wire	648,958	580,344	554,236	531,351	996,902
Wire products	707,691	646,600	649,583	609,491	598,122
Structural shapes and units	2,542,995	2,447,664	2,366,188	2,235,382	1,909,325
Rails and related railway products	388,816	344,443	237,837	263,621	334,289
Pipes and tubes:					
Oil country tubular goods	3,259,050	1,294,432	459,446	1,369,324	780,445
Line pipe	1,034,175	1,072,356	530,123	503,774	401,947
Other	1,061,601	1,645,554	1,357,292	1,558,816	1,250,717
Subtotal, pipes and tubes	5,354,826	4,012,342	2,346,861	3,131,614	2,433,109
Total, carbon and certain alloy steel	26,274,732	22,788,856	20,515,566	21,227,272	19,778,986
Certain stainless and alloy tool steel:					
Semifinished	12,790	23,144	46,965	55,518	72,625
Stainless steel:					
Plates	9,145	18,273	10,502	12,856	16,436
Sheets and strip	123,963	177,845	128,143	121,553	118,852
Wire	25,068	18,900	18,647	18,776	21,705
Pipes and tubes	29,010	36,652	28,090	32,940	35,510
Total, certain stainless and alloy tool steel	199,976	274,814	232,347	241,643	265,128
Grand total	26,474,708	23,063,670	20,747,913	21,468,915	20,044,114

[1] Because of a lag in reporting, official import statistics include some "carry-over" data for merchandise imported, but not reported, in prior periods (usually the previous month). Beginning in 1987, Commerce extended its monthly data compilation cutoff date by about 2 weeks in order to significantly reduce the amount of carry-over. Therefore, official statistics for January 1987 include data that would previously have been carried over to February 1987. However, in order to avoid an apparent overstatement of the January 1987 data, the carry-over data from 1986 that would have been included in January 1987 official statistics as of the previous cutoff date have been excluded. Commerce isolated these 1986 carry-over data and has not included them in official statistics for 1986 or January 1987, since their inclusion in either period would result in an apparent overstatement. With respect to imports of certain carbon and alloy steel, this carry-over amounted to 509,802 tons.

[2] Certain alloy steel refers to alloy steel other than stainless and alloy tool steel.

[3] Imports of semifinished tool steel were not specifically provided for in the TSUSA prior to April 1985. Imports prior to April are recorded under the carbon and certain alloy steel category.

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

D-5

Table D-4
Average number of production and related workers employed in U.S. establishments producing certain carbon and alloy steel and hours worked by, wages paid to, and productivity of such employees, July 1, 1988 — June 30, 1989

Item	*Average number employed*	*Man-hours*	*Productivity*	*Wages*	*Unit hourly labor costs*
		(Thousands)	*(man-hours per ton)*	*(1,000 dollars)*	
Carbon and certain alloy steel:[1]					
Cokemaking facilities	10,297	22,423	0.95	345,568	$15.41
Ironmaking facilities	11,254	23,846	0.43	391,924	16.44
Steelmaking facilities[2]	38,035	80,467	0.87	1,297,482	16.12
Products:					
Plates	5,427	10,465	2.16	169,632	16.21
Sheets and strip:					
Hot rolled	16,027	34,311	0.73	572,525	16.69
Cold rolled	19,154	41,529	1.64	706,781	17.02
Galvanized	7,575	16,509	1.59	288,950	17.50
Other	8,429	17,497	2.87	325,036	18.58
Subtotal, sheets and strip	51,185	109,846	(3)	1,893,292	17.24
Bars:					
Hot finished	10,960	22,727	2.31	347,761	15.30
Cold finished	1,287	2,776	6.48	41,647	15.00
Reinforcing	1,949	4,337	1.58	49,948	11.52
Subtotal, bars	14,196	29,840	(3)	439,356	14.72
Wire rod	2,239	4,747	1.12	75,596	15.93
Wire	* * * *	* * * *	* * * *	* * * *	* * * *
Wire products	* * * *	* * * *	* * * *	* * * *	* * * *
Structural shapes and units	4,413	9,557	1.87	143,377	15.00
Rails and related products	750	1,643	2.23	21,747	13.24
Pipes and tubes:					
Oil country tubular goods	1,553	3,006	3.81	45,892	15.27
Line pipe	1,177	2,239	3.14	34,218	15.28
Other	3,030	5,755	5.25	98,252	17.07
Subtotal, pipes and tubes	5,760	11,000	(3)	178,362	16.21
Total, carbon and certain alloy steel	145,466	307,856	(3)	5,014,377	16.29
Certain stainless and alloy tool steel:					
Steelmaking facilities[2]	5,295	12,060	7.05	195,655	16.22
Stainless steel products:					
Plates	1,294	2,754	12.44	51,219	18.60
Sheets and strip	4,723	9,908	11.10	180,082	18.18
Wire	696	1,527	45.44	22,656	14.84
Pipes and tubes	357	820	35.85	10,043	12.25
Total, stainless and alloy tool steel	12,365	27,069	(3)	459,655	16.98
Grand total	157,831	334,925	(3)	5,474,032	16.34

[1] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[2] Including semifinished steel.
[3] Not applicable.

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

Table D-5

Certain carbon and alloy steel: U.S. producers' capital expenditures, by types of expenditures, and research and development expenditures, July 1, 1988 — June 30, 1989

(In thousands of dollars)

Item	Capital expenditures								Research and development expenditures
			For plant and equipment						
			For existing facilities						
	Land and land improvement	For new facilities	Placed in service during Jan 1, 1980–June 30, 1986	Placed in service prior to Jan 1, 1981	Total	For pollution control or occupational safety and health	Other	Total[1]	
Carbon and certain alloy steel[2]									
Cokemaking facilities	–	–	–	–	–	–	–	83,311	3,006
Ironmaking facilities	–	–	–	–	–	–	–	356,286	3,683
Steelmaking facilities[3]	23,468	262,176	58,448	317,793	638,417	71,759	48,090	767,181	56,968
Products:									
Plates	* * * *	* * * *	* * * *	21,473	* * * *	* * * *	0	37,608	5,112
Sheets and strip:									
Hot rolled	* * * *	* * * *	* * * *	214,999	300,996	* * * *	* * * *	326,718	7,599
Cold rolled	* * * *	374,517	0	145,395	* * * *	* * * *	* * * *	536,443	13,159
Galvanized	* * * *	7,710	* * * *	56,807	67,753	* * * *	* * * *	75,809	13,757
Other	* * * *	* * * *	* * * *	61,695	62,588	* * * *	* * * *	72,667	13,884
Subtotal, sheets and strip	6,989	467,284	5,069	478,896	951,249	37,003	16,385	1,011,637	48,399
Bars:									
Hot finished	* * * *	14,768	4,312	46,684	* * * *	* * * *	* * * *	* * * *	2,606
Cold finished	* * * *	0	* * * *	* * * *	* * * *	* * * *	* * * *	* * * *	435
Reinforcing	* * * *	* * * *	* * * *	* * * *	* * * *	* * * *	* * * *	* * * *	355
Subtotal, bars	3,720	31,063	7,156	53,387	91,606	404	2,939	99,269	3,396
Wire rod	* * * *	* * * *	* * * *	3,043	5,346	* * * *	* * * *	6,741	* * * *
Wire	* * * *	* * * *	* * * *	902	1,174	* * * *	* * * *	1,261	* * * *
Wire products	0	* * * *	* * * *	* * * *	2,001	* * * *	* * * *	2,020	* * * *
Structural shapes and units	* * * *	* * * *	* * * *	16,215	37,312	* * * *	* * * *	38,423	* * * *
Rails and related products	0	* * * *	* * * *	5,796	6,072	* * * *	* * * *	6,218	* * * *
Pipes and tubes:									
Oil country tubular goods	0	* * * *	* * * *	* * * *	16,425	* * * *	* * * *	16,506	* * * *
Line pipe	* * * *	* * * *	1,016	* * * *	17,418	* * * *	* * * *	17,854	* * * *
Other	* * * *	* * * *	2,151	17,068	23,219	* * * *	* * * *	23,172	* * * *
Subtotal, pipes and tubes	* * * *	* * * *	* * * *	39,364	57,062	726	235	57,532	* * * *
Total, carbon and certain alloy steel	37,531	801,682	86,298	936,910	1,824,890	112,398	67,769	2,467,487	127,645

See footnotes on next page.

D-7

Table D-5—*Continued*

Certain carbon and alloy steel: U.S. producers' capital expenditures, by types of expenditures, and research and development expenditures, July 1, 1988 — June 30, 1989

(In thousands of dollars)

Item	Capital expenditures								
			For plant and equipment						
			For existing facilities						
	Land and land improvement	For new facilities	Placed in service during Jan 1, 1980–June 30, 1986	Placed in service prior to Jan 1, 1981	Total	For pollution control or occupational safety and health	Other	Total[1]	Research and development expenditures
Certain stainless and alloy tool steel:									
Steelmaking facilities[3]	* * * *	7,230	2,998	17,191	* * * *	1,301	0	32,593	12,284
Stainless steel products:									
Plates	* * * *	* * * *	* * * *	* * * *	3,088	541	0	3,631	* * * *
Sheets and strip	* * * *	10,732	* * * *	15,624	* * * *	* * * *	0	30,546	7,623
Wire	* * * *	* * * *	1,184	2,746	* * * *	* * * *	0	9,098	* * * *
Pipes and tubes	* * * *	* * * *	* * * *	* * * *	* * * *	* * * *	* * * *	3,023	* * * *
Subtotal, certain stainless and alloy tool steel	143	21,634	6,021	38,377	66,032	4,917	163	78,891	22,997
Grand total	37,674	823,316	92,319	975,287	1,890,922	117,315	67,932	2,546,378	150,642

[1] Including nonitemized expenditures.
[2] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[3] Including semifinished steel.

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

Table D-6

Certain carbon and alloy steel: Income-and-loss data from U.S. operations, by product, July 1, 1988 — June 30, 1989

(In thousands of dollars)

Item	*Total net sales*[1]	*Net profit or (loss) before taxes*[2]	*Net profit or (loss) as a percentage of sales*
Carbon and certain alloy steel[3]			
Semifinished	1,465,203	12,881	0.9
Plates	2,479,689	341,223	13.8
Sheets and strip:			
Hot rolled	7,008,924	624,056	8.9
Cold rolled	5,970,582	537,060	9.0
Galvanized	5,349,641	594,283	11.1
Other	3,592,862	270,120	7.5
Subtotal, sheets and strip	21,922,009	2,025,519	9.2
Bars:			
Hot finished	3,663,730	258,293	7.1
Cold finished	403,626	2,150	0.5
Reinforcing	1,236,600	92,005	7.4
Subtotal, bars	5,303,956	352,448	6.6
Wire rod	1,196,156	25,649	2.1
Wire	187,687	1,140	0.6
Wire products	249,054	6,750	2.7
Structural shapes and units	2,064,400	217,682	10.5
Rails and related products	362,190	(24,721)	(6.8)
Pipes and tubes:			
Oil country tubular goods	626,917	13,424	2.1
Line pipe	331,394	(55,069)	(16.6)
Other	866,821	122,510	14.1
Subtotal, pipes and tube	1,825,132	80,865	4.4
Total, carbon and certain alloy steel	37,055,476	3,039,436	8.2
Certain stainless and alloy tool steel			
Semifinished	693,514	136,334	19.7
Stainless steel:			
Plates	639,666	92,958	14.5
Sheets and strip	2,501,095	367,774	14.7
Wire	137,373	19,033	13.9
Pipes and tubes	114,704	10,855	9.5
Subtotal, certain stainless and alloy tool steel	4,086,352	626,954	15.3
Grand total	41,141,828	3,666,390	8.9

[1] Includes intracompany and intercompany transfers, less discounts, returns, and allowances.

[2] Net profit is defined as the total net sales, less the cost of goods sold, general, selling and administrative expenses, and other expenses (such as net interest expense (or income)).

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

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

D-9

Table D-7

Certain carbon and alloy steel: Financial experience of U.S. producers, July 1, 1988 - June 30, 1989

(In thousands of dollars)

Item	*All carbon and certain alloy[1] steel products subject to the investigation[2]*	*All stainless and alloy tool steel products subject to the investigation[2]*	*Total[2]*
NET SALES			
Excluding intracompany and intercompany transfers	36,208,805	3,743,766	39,952,571
Intracompany and intercompany transfers	2,279,336	169,036	2,448,372
Total net sales	38,483,336	3,912,902	42,396,238
COST OF GOODS SOLD (including intracompany and intercompany transfers)			
Raw Materials	9,399,777	1,175,659	10,575,436
Direct labor	4,859,763	240,966	5,100,729
Other factory costs, including depreciation and amortization	9,394,618	608,000	10,002,618
Total cost of goods sold[3]	33,676,782	3,113,046	36,789,828
GROSS PROFIT OR (LOSS)	4,793,556	797,856	5,591,412
GENERAL, SELLING, AND ADMINISTRATIVE EXPENSES	1,554,142	207,597	1,761,739
NET OPERATING PROFIT OR (LOSS)	3,330,966	590,259	3,921,225
OTHER INCOME OR (EXPENSE)			
Net interest income or expense	(312,832)	(25,990)	(338,822)
All other income or (expense)[4]	(1,431,458)	(20,003)	(1,451,461)
Total other income or expense[5]	(1,831,317)	(45,993)	(1,877,310)
NET PROFIT OR (LOSS) BEFORE TAXES	1,415,906	541,152	1,957,058
Depreciation and amortization	1,498,102	48,883	1,546,985

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

[2] Certain respondents included financial information on related products.

[3] Including nonitemized costs.

[4] Certain respondents reported extraordinary and non-recurring expenses totaling $3 billion.

[5] Including nonitemized expenses.

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

D-10

Table D-8

Certain carbon and alloy steel: Weighted average net prices for the three largest sales by product, by specified period, July 1988 — June 1989

(Per ton)

Product[2]	Weighted average net price: U.S. producers 1988 July-September	October-December	1989 January-March	April-June	U.S. importers 1988 July-September	1989 October-December	January-March	April-June
Carbon and certain alloy steel:[3]								
Semifinished	$263.63	$254.64	$245.42	$243.47	$304.16	(4)	$312.63	$342.12
Plates	474.22	463.86	439.27	451.59	499.21	535.97	493.94	563.13
Sheets and strip:								
Hot rolled	363.51	351.20	349.39	357.82	427.57	428.87	445.77	430.48
Cold rolled	472.43	486.26	472.27	480.78	507.12	511.88	515.56	502.57
Galvanized	574.72	556.13	557.64	583.42	559.82	620.67	638.59	616.00
Other	688.73	671.19	649.47	682.71	739.36	730.38	754.10	770.11
Bars:								
Hot finished	479.13	496.79	480.41	463.71	491.90	530.33	546.77	555.61
Cold finished	(4)	(4)	(4)	(4)	529.90	484.17	615.20	528.52
Reinforcing	318.09	319.54	321.65	325.50	344.02	347.33	351.29	353.62
Wire rod	310.72	309.38	300.64	312.61	333.74	333.59	360.96	351.93
Wire	634.69	685.47	629.78	664.12	793.55	445.45	512.50	550.00
Wire products	(4)	(4)	(4)	(4)	(4)	(4)	(4)	734.69
Structural shapes and units	423.70	430.34	413.50	404.55	478.90	471.81	448.39	482.91
Rails and related products	397.12	403.88	409.68	* * * *	440.29	672.16	546.91	* * * *
Pipes and tubes:								
Oil country tubular goods	* * * *	* * * *	* * * *	* * * *	572.07	494.76	605.71	* * * *
Line pipe	613.41	545.26	540.77	589.19	531.55	382.63	607.46	609.58
Other	1027.06	1012.30	1057.01	1043.69	595.74	621.55	631.23	658.23
Certain stainless and alloy tool steel:								
Semifinished	2731.71	2617.02	2853.33	3022.22	(4)	(4)	(4)	(4)
Stainless steel:								
Plates	3434.29	3403.10	3525.99	3752.77	2595.68	2972.82	2861.57	3055.91
Sheets and strip	2543.89	2559.05	2485.35	2550.15	2801.53	3050.15	2496.77	3191.49
Wire	* * * *	* * * *	* * * *	* * * *	2333.33	2799.99	2599.99	* * * *
Pipes and tubes	* * * *	* * * *	* * * *	* * * *	4068.60	4141.26	4560.21	5084.34

[1] Prices are net of all discounts and allowances (including freight allowances) and excluding U.S. inland freight. Producers' prices are f.o.b. mill; importers' prices are f.o.b. warehouse, or, if shipped directly to customs, c.i.f., ex-dock, port of entry, duty paid. Prices represent the total industry value of reported sales divided by the total quantity sold, based on the 3 largest sales of each firm.
[2] See Appendix E for decription of products.
[3] Certain alloy refers to alloy steel other than stainless and alloy tool steel.
[4] No data reported.

D-11

APPENDIX E
SPECIFICATIONS OF THE PRODUCTS REFERENCED IN PRICING SECTION

The products identified below are those used by the Commission to collect pricing information in its questionnaires.

Semifinished

Product 1.--Carbon steel slabs for drawing applications, AISI 1008 rimmed steel or AISI 1008 aluminum killed, fine grain, 6 inches-10 inches thick, 30 inches-80 inches wide, 20 feet to 40 feet long.

Product 2.--Stainless steel billets, Grade 304, round cornered square, 8 inches by 8 inches.

Sheets and strip

Product 3.--Hot-rolled carbon steel bands, in coils, mill edge, commercial quality, 0.25 percent carbon maximum, not pickled, 0.1210 inches through 0.1875 inch in thickness, over 36 inches through 72 inches in width.

Product 4.--Cold-rolled carbon steel sheets, in coils, commercial quality, class 1, 0.0280 inch through 0.0630 inch in thickness, 45 inches through 60 inches in width.

Product 5.--Galvanized carbon steel sheet, in coils, commercial or lock forming quality, G-40 coating, regular or minimum spangle, 0.028 inch through 0.035 inch in thickness, 24 inches through 72 inches in width.

Product 6.--Electrolytic tin plate, S.R. 80-lb., .25 coating.

Product 7.--Stainless steel cold-rolled sheets, AISI grade 304, 2B finish, 16 gauge in thickness, 36" (914 mm) exact through 48" (1,218 mm) exact in width, and coiled.

Plate

Product 8.--Hot-rolled carbon steel plate, in cut lengths, A-36 or equivalent, sheared edge, not heat treated, not cleaned or oiled, 3/8 inch to under 1/2 inch in thickness, over 90 inches through 100 inches in width.

Product 9.--Stainless steel plate, HRAP, AISI grade 304, 1/4" (6 mm) thick, 72" (1,827 mm) exact through 96" (2,437 mm) exact in width X 240" (6,091 mm) to 290" (7,360 mm) long, cut to length.

E-2

SECTION D.--PRICES--Continued

Pipes and tubes

Product 10.--Oil-country tubular goods, API 5A, Grade K-55, 7 inches outside diameter, 0.317 inch wall thickness, 23 pounds per foot, PE.

Product 11.--Line pipe, API 5L, Grade X42, 8-5/8 inches outside diameter, 0.322 wall thickness, 28.55 pounds per foot.

Product 12.--Round fence tubing, light wall, galvanized, 1.315 inch outside diameter.

Product 13.--Stainless steel pipe, Grade 304, 1-1/2 inches-4 inches outside diameter, 1/8 inch-3/4 inch wall thickness.

Bars

Product 14.--Hot-rolled carbon steel,bars, in cut lengths or coils, 1/2 inch through 6-1/8 inches in diameter/thickness, all shapes except flats, 1000 series, not thermal treated.

Product 15.--Cold-formed carbon steel bars, in cut lengths or coils, 1/2 inch through 6 inches in diameter/thickness, all shapes including flats, 1000 series, not thermal treated.

Product 16.--Deformed reinforcing bars, ASTM 615, Grade No. 40.

Structural shapes and units

Product 17.--Wide-flange carbon steel beams, A-36 or equivalent, 8 inches by 8 inches, 31 through 67 pounds per foot, 40 through 60 feet in length, item order of 5 tons and over.

Rails and related railway products

Product 18.--Carbon steel rails, standard quality, 39 feet in length, 115 lbs. through 140 lbs. per yard.

Wire rods

Product 19.--Hot-rolled carbon steel wire rod, in coils, standard quality, AISI specifications C-1008 through C-1022, 7/32 inch in diameter.

E-3

PRICES--Continued

Wire and wire products

Product 20.--Galvanized wire, 12 gauge, soft industrial quality.

Product 21.--Cold-drawn stainless steel round wire, Grade 304, 1/8 inch in diameter.

Product 22.--Steel wire rope, IPS, 5/8 inch, 6 x 19, IWRC.

E-4

APPENDIX F
DESCRIPTION OF ACTIONS TAKEN BY THE STEEL INDUSTRY TO ADJUST AND MODERNIZE

(Pages F–2 to F–14 contain information entitled to confidential treatment and have not been published.)

APPENDIX G
DESCRIPTION OF ACTIONS TAKEN BY MAJOR COMPANIES TO MAINTAIN INTERNATIONAL COMPETITIVENESS

(Pages G–2 to G–76 contain information entitled to confidential treatment and have not been published.)

APPENDIX H
REVISED STATISTICAL TABLES, JULY 1, 1984–JUNE 30, 1988

Table H-1.--Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1987 -- June 30, 1988

Item	Capacity	Changes in capacity 1/	Production	Capacity Utilization
	Short tons			Percent
Carbon and certain alloy steel: 2/				
Cokemaking facilities	26,888,400	* * *	23,594,795	85
Ironmaking facilities	66,492,800	* * *	55,875,795	78
Steelmaking facilities: 3/				
Electric furnace	37,687,846	4/	28,364,545	84
Basic oxygen furnace	63,759,225	4/	58,560,510	87
Other furnaces	7,231,700	4/	5,198,111	63
Total	108,678,771	* * *	92,123,166	84
Continuous casting	61,940,247	4/	57,841,092	87
Products:				
Plates	7,822,850	* * *	4,836,739	61
Sheets and strip:				
Hot rolled	57,529,500	* * *	47,172,703	79
Cold rolled	33,516,000	* * *	25,269,050	73
Galvanized	10,993,291	* * *	10,362,481	105
Other	7,875,100	* * *	6,096,124	82
Bars:				
Hot finished	14,269,514	* * *	9,825,157	73
Cold finished	* * *	* * *	* * *	* * *
Reinforcing	3,748,608	0	2,743,890	78
Wire rod	5,254,000	* * *	4,226,322	82
Wire	1,413,231	* * *	773,733	64
Wire products	854,446	* * *	464,264	64
Structural shapes and units	6,378,729	* * *	5,106,500	80
Rails and related products	1,280,301	* * *	737,936	46
Pipes and tubes:				
Oil country tubular goods	1,703,740	* * *	789,465	79
Line pipe	2,331,400	* * *	712,129	32
Other	2,085,260	* * *	1,096,258	62
Certain stainless and and alloy tool steel:				
Steelmaking facilities: 3/				
Electric furnace	2,551,356	4/	1,703,796	71
Basic oxygen furnace	24,000	4/	7,812	99
Other furnaces	6,900	4/	0	0
Total	2,582,256	* * *	1,711,608	71
Continuous casting	1,402,368	4/	1,261,457	87
Stainless steel products:				
Plates	321,800	* * *	221,438	69
Sheets and strip	1,048,405	* * *	892,815	95
Wire	37,350	* * *	33,603	82
Pipes and tubes	28,300	* * *	22,870	66

1/ Reported changes are likely to differ from changes in capacity calculated by company annual averages, due partly to the fact that reported capacity "averages in" the effect of closures or additions over the reporting period.

2/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

3/ Including semifinished steel.

4/ Change in capacity not calculated.

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

Table H-2.--Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1986 -- June 30, 1987

Item	Capacity	Changes in capacity 1/	Production	Capacity Utilization
	Short tons			Percent
Carbon and certain alloy steel: 2/				
Cokemaking facilities	29,347,900	***	18,393,399	63
Ironmaking facilities	69,498,300	***	40,780,130	59
Steelmaking facilities: 3/				
Electric furnace	36,256,026	4/	26,584,121	73
Basic oxygen furnace	65,876,500	4/	***	***
Other furnaces	8,355,700	4/	***	***
Total	110,488,226	***	73,560,353	67
Continuous casting	60,421,681	4/	45,946,076	76
Products:				
Plates	7,868,464	***	2,743,133	35
Sheets and strip:				
Hot rolled	59,578,736	***	38,150,046	64
Cold rolled	34,111,200	***	21,584,232	63
Galvanized	9,629,200	***	7,105,398	74
Other	8,429,100	***	5,496,655	65
Bars:				
Hot finished	13,463,404	***	8,324,271	62
Cold finished	590,992	***	372,297	63
Reinforcing	3,871,944	***	3,626,523	94
Wire rod	4,532,086	***	3,521,747	78
Wire	1,254,340	***	675,480	54
Wire products	768,846	***	558,744	73
Structural shapes and units	6,768,000	***	4,259,557	63
Rails and related products	1,715,301	***	566,193	33
Pipes and tubes:				
Oil country tubular goods	1,864,760	***	244,199	13
Line pipe	2,173,615	***	372,753	17
Other	2,193,800	***	894,298	41
Certain stainless and				
and alloy tool steel:				
Steelmaking facilities: 3/				
Electric furnace	2,554,582	4/	***	***
Basic oxygen furnace	***	4/	***	***
Other furnaces	***	4/	***	***
Total	2,567,882	***	1,717,023	67
Continuous casting	1,277,295	4/	1,035,882	81
Stainless steel products:				
Plates	264,900	***	193,527	73
Sheets and strip	1,131,605	***	809,820	72
Wire	38,650	***	30,744	80
Pipes and tubes	30,400	***	13,257	44

1/ Changes in practical annual capacity from July 1, 1983 -- June 30,1984 to July 1, 1984 -- June 30, 1985.

2/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

3/ Including semifinished steel.

4/ Change in capacity not calculated.

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

H-3

Table H-3--Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1985 -- June 30, 1986

Item	Capacity	Changes in capacity 1/	Production	Capacity Utilization
	Short tons			Percent
Carbon and certain alloy steel: 2/				
Cokemaking facilities	31,353,400	***	22,767,801	73
Ironmaking facilities	72,813,500	***	47,879,208	66
Steelmaking facilities: 3/				
Electric furnace	39,668,773	4/	27,042,481	68
Basic oxygen furnace	70,410,628	4/	49,864,957	71
Other furnaces	12,460,700	4/	6,268,505	50
Total	122,540,101	***	83,175,943	68
Continuous casting	50,456,545	4/	38,788,305	77
Products:				
Plates	8,488,864	***	3,299,877	39
Sheets and strip:				
Hot rolled	57,665,784	***	38,446,653	67
Cold rolled	31,567,304	***	23,318,439	74
Galvanized	7,966,536	***	6,365,103	80
Other	8,628,760	***	6,014,905	70
Bars:				
Hot finished	12,191,852	***	7,316,713	60
Cold finished	773,725	***	521,768	***
Reinforcing	5,772,044	***	4,391,925	76
Wire rod	5,432,519	***	3,912,335	72
Wire	740,940	***	370,293	50
Wire products	756,306	***	460,605	61
Structural shapes and units	6,853,102	***	4,550,827	66
Rails and related products	1,915,301	***	779,564	41
Pipes and tubes:				
Oil country tubular goods	2,706,717	***	840,493	31
Line pipe	2,169,271	***	639,980	30
Other	2,148,474	***	978,404	46
Certain stainless and and alloy tool steel:				
Steelmaking facilities: 3/				
Electric furnace	***	4/	***	***
Basic oxygen furnace	***	4/	***	***
Other furnaces	***	4/	***	***
Total	2,505,014	***	1,557,544	62
Continuous casting	1,123,495	4/	955,175	85
Stainless steel products:				
Plates	257,300	***	167,100	65
Sheets and strip	1,067,505	***	746,716	70
Wire	35,950	***	28,342	79
Pipes and tubes	37,700	***	19,275	51

1/ Reported changes are likely to differ from changes in capacity calculated by company annual averages, due partly to the fact that reported capacity "averages in" the effect of closures or additions over the reporting period.

2/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

3/ Including semifinished steel.

4/ Change in capacity not calculated.

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

H-4

Table H-4.--Certain carbon and alloy steel: U.S. producers' capacity, changes in capacity, production, and capacity utilization, July 1, 1984 -- June 30, 1985

Item	Capacity	Changes in capacity 1/	Production	Capacity Utilization
	Short tons			Percent
Carbon and certain alloy steel: 2/				
Cokemaking facilities	32,249,400	***	23,418,398	73
Ironmaking facilities	75,179,500	***	46,370,344	62
Steelmaking facilities: 3/				
Electric furnace	39,906,440	4/	24,431,699	61
Basic oxygen furnace	72,776,624	4/	49,260,123	68
Other furnaces	13,901,000	4/	6,275,187	45
Total	126,584,064	***	79,967,009	63
Continuous casting	44,719,737	4/	34,064,314	76
Products:				
Plates	8,449,509	-	3,502,962	41
Sheets and strip:				
Hot rolled	58,783,792	***	38,958,983	66
Cold rolled	31,819,884	***	21,858,856	69
Galvanized	6,223,088	***	4,722,262	76
Other	8,682,372	***	6,534,731	75
Bars:				
Hot finished	12,610,215	***	7,067,901	56
Cold finished	***	***	***	***
Reinforcing	5,193,204	***	3,570,171	69
Wire rod	5,488,682	***	3,750,768	68
Wire	1,276,530	-	734,501	58
Wire products	845,257	***	440,709	52
Structural shapes and units	6,604,112	***	3,943,383	60
Rails and related products	1,643,301	***	1,101,022	67
Pipes and tubes:				
Oil country tubular goods	3,140,916	***	1,127,870	36
Line pipe	2,362,584	***	849,892	36
Other	2,337,800	***	955,979	41
Certain stainless and and alloy tool steel:				
Steelmaking facilities: 3/				
Electric furnace	***	4/	***	***
Basic oxygen furnace	***	4/	***	***
Other furnaces	***	4/	***	***
Total	2,677,184	***	1,672,644	62
Continuous casting	1,157,065	4/	1,062,842	92
Stainless steel products:				
Plates	203,900	-	144,957	71
Sheets and strip	1,211,854	***	804,751	66
Wire	36,650	***	29,051	79
Pipes and tubes	45,600	-	19,366	42

1/ Changes in practical annual capacity from July 1, 1983 -- June 30,1984 to July 1, 1984 -- June 30, 1985.

2/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

3/ Including semifinished steel.

4/ Change in capacity not calculated.

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

Table H-5.--Certain carbon and alloy steel: Weighted average net prices for the three largest sales by product, by specified period, July 1986 -- June 1987

(Per ton)

Product 2/	Weighted average net price							
	U.S. producers				U.S. importers			
	1986		1987		1986		1987	
	July-September	October-December	January-March	April-June	July-September	October-December	January-March	April-June
Carbon and certain alloy steel: 3/								
Semifinished	$255.26	$279.23	$302.97	$268.38	$214.20	***	$202.44	$213.01
Plates	352.49	352.81	358.63	367.83	331.25	346.82	356.95	395.25
Sheets and strip:								
Hot rolled	286.29	283.74	289.42	295.69	316.80	323.26	328.76	344.78
Cold rolled	414.51	395.91	427.07	427.06	443.81	437.51	448.66	449.40
Galvanized	513.29	525.15	538.29	544.46	546.37	560.68	559.17	564.02
Other	668.93	669.63	640.65	617.71	566.22	595.94	624.56	642.74
Bars:								
Hot finished	327.15	325.53	321.57	328.17	402.77	399.73	431.70	454.01
Cold finished	***	***	***	***	553.33	545.52	555.47	523.83
Reinforcing	271.58	263.79	257.97	262.74	293.94	276.79	247.84	271.41
Wire rod	281.48	269.13	274.15	276.75	305.42	295.67	281.94	314.04
Wire	573.37	606.80	640.92	779.99	516.24	487.93	525.42	520.20
Wire products	1500.00	1600.00	1222.22	1500.00	602.65	610.08	610.30	607.18
Structural shapes and units	329.24	303.84	311.15	339.83	408.34	377.72	377.84	410.44
Rails and related products	***	***	***	***	***	***	***	***
Pipes and tubes:								
Oil country tubular goods	0.00	***	***	***	452.46	640.00	590.91	764.43
Line pipe	419.05	434.38	458.72	450.74	544.75	391.34	447.13	426.16
Other	4/	4/	4/	4/	531.60	522.50	574.14	578.04
Certain stainless and alloy tool steel:								
Semifinished	1375.00	1375.00	1407.41	1379.31	4/	4/	4/	4/
Stainless steel:								
Plates	1918.60	1845.93	1843.85	1850.90	1801.53	1822.22	1805.56	1925.00
Sheets and strip	1668.30	1634.06	1673.13	1690.43	1697.67	1606.71	1695.40	1770.99
Wire	3761.90	3125.00	3277.78	3000.00	4/	4/	4/	4/
Pipes and tubes	***	***	***	***	2991.07	2729.17	3106.87	3119.76

1/ Prices are net of all discounts and allowances (including freight allowances) and excluding U.S. inland freight. Producers' prices are f.o.b. mill; importers' prices are f.o.b. warehouse, or, if shipped directly to customs, c.i.f., ex-dock, port of entry, duty paid. Prices represent the total industry value of reported sales divided by the total quantity sold, based on the 3 largest sales of each firm.

2/ See Appendix E for description of products.

3/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

4/ No data reported.

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

H-6

Table H-6.--Certain carbon and alloy steel: U.S. producers' shipments, unfilled orders, and inventories, and U.S. importers' imports, unfilled orders, and inventories, July 1, 1987 -- June 30, 1988

Product	U.S. Producers					U.S. Importers				
	Shipments		Unfilled orders 1/	Inventories 1/	Ratio of inventories to unfilled orders	Imports		Unfilled orders 1/	Inventories 1/	Ratio of inventories to unfilled orders
	Quantity	Value				Quantity	Value			
	(short tons)	(1,000 dollars)	Short tons	Short tons		(short tons)	(1,000 dollars)	Short tons	Short tons	
Carbon and certain alloy steel: 2/										
Semifinished	2,098,936	838,717	304,790	3/	-	868,577	241,425	22,074	40,307	1.83
Plates	4,812,557	2,237,239	701,019	193,257	0.28	328,192	149,175	48,922	23,632	0.48
Sheets and strip:										
Hot rolled	14,756,573	5,166,696	1,843,166	1,380,435	0.75	934,671	353,218	64,583	63,984	0.99
Cold rolled	11,558,302	5,433,844	1,924,156	1,589,574	0.83	1,095,059	607,216	149,791	51,832	0.35
Galvanized	7,595,947	4,686,386	1,449,075	997,122	0.69	1,145,097	739,709	171,454	63,794	0.37
Other	6,188,454	3,733,318	1,218,727	855,442	0.70	138,437	102,375	34,385	1,332	0.04
Subtotal, sheets and strip	40,099,276	19,020,244	6,435,124	4,822,573	0.75	3,313,264	1,802,518	420,213	180,942	0.43
Bars:										
Hot finished	9,010,703	3,428,356	1,330,385	736,981	0.58	122,920	67,163	25,741	7,062	0.27
Cold finished	* * *	* * *	* * *	* * *	0.28	66,298	33,517	3,168	6,383	2.01
Reinforcing	* * *	* * *	* * *	* * *	0.33	118,582	31,999	185	7,971	43.09
Subtotal, bars	12,326,141	4,526,249	2,009,610	934,999	0.48	307,800	132,679	29,094	21,416	0.74
Wire rod	3,383,516	1,088,978	239,243	171,884	0.72	361,700	154,399	67,030	2,917	0.04
Wire	398,299	219,095	44,812	35,810	0.80	85,011	70,871	10,308	3,806	0.36
Wire products	535,900	319,854	53,375	28,683	0.54	186,162	130,810	5,240	13,640	2.60
Structural shapes and units	5,135,353	1,930,496	874,129	399,139	0.46	784,180	321,172	164,011	17,249	0.11
Rails and related products	556,767	279,693	151,680	40,935	0.27	125,721	59,457	53,386	162	0.00
Pipes and tubes:										
Oil country tubular goods	1,282,148	987,316	114,598	122,296	1.07	1,091,192	321,687	94,911	54,368	0.57
Line pipe	470,294	260,692	49,377	36,095	0.73	159,688	85,164	86,783	8,933	0.10
Other	1,418,405	1,013,296	163,383	162,746	1.00	606,195	334,011	98,615	43,003	0.44
Subtotal, pipes and tubes	3,170,847	2,261,304	327,358	321,937	0.98	1,857,075	740,862	280,309	106,304	0.38
Total, carbon and certain alloy steel	73,317,603	32,721,869	11,141,140	4,969,217	0.63	8,217,682	3,803,568	1,100,987	410,375	0.37
Certain stainless and alloy tool steel:										
Semifinished	165,575	337,724	15,631	3/	-	7,369	14,216	1,350	7,325	-
Stainless steel:										
Plates	201,969	409,995	* * *	16,980	* * *	4,566	10,261	1,363	215	0.16
Sheets and strip	987,874	1,959,951	213,704	137,793	0.64	40,214	113,079	40,727	19,160	0.47
Wire	31,869	113,994	12,597	5,213	0.41	4,036	12,079	748	187	0.25
Pipes and tubes	20,487	79,612	* * *	4,702	* * *	16,355	633,779	4,450	4,605	1.03
Total, certain stainless and alloy tool steel	1,407,774	2,901,276	282,961	164,688	0.58	72,540	783,414	48,638	31,492	0.65
Grand total	74,725,377	35,623,145	11,424,101	7,133,905	0.62	8,290,222	4,586,982	1,149,625	441,867	0.38

1/ As of June 30, 1987.

2/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.

3/ Inventories of semifinished steel intended for sale are estimated by the ITC staff to be negligible.

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

H-7

Table H-7.--Average number of production and related workers employed in U.S. establishments producing certain carbon and alloy steel and hours worked by, wages paid to, and productivity of such employees, July 1, 1987 -- June 30, 1988

Item	Average number employed	Man-hours	Productivity	Wages	Unit hourly labor costs
		(Thousands)	(man-hours per ton)	(1,000 dollars)	
Carbon and certain alloy steel: 1/					
Cokemaking facilities	10,035	21,204	0.92	323,492	$15.26
Ironmaking facilities	9,871	20,922	0.40	334,875	16.01
Steelmaking facilities 2/	35,903	76,609	0.84	1,193,188	15.58
Products:					
Plates	4,520	9,738	2.03	148,026	15.20
Sheets and strip:					
Hot rolled	17,805	37,157	0.82	589,308	15.86
Cold rolled	20,226	42,099	1.72	684,002	16.25
Galvanized	7,168	14,745	1.28	244,522	16.58
Other	8,877	17,924	2.78	298,742	16.67
Subtotal, sheets and strip	54,076	111,925	3/	1,816,574	16.23
Bars:					
Hot finished	11,857	24,910	2.39	344,437	13.83
Cold finished	* * *	* * *	* * *	* * *	* * *
Reinforcing	* * *	* * *	* * *	* * *	* * *
Subtotal, bars	15,423	32,330	3/	444,046	13.73
Wire rod	2,204	4,151	0.96	73,756	17.77
Wire	1,455	2,884	3.21	42,087	14.59
Wire products	1,235	2,473	4.55	34,319	13.88
Structural shapes and units	5,174	11,054	2.17	160,339	14.51
Rails and related products	687	1,445	2.46	18,930	13.10
Pipes and tubes:					
Oil country tubular goods	2,212	4,229	3.15	566,651	13.40
Line pipe	1,670	2,341	3.18	33,471	14.30
Other	4,196	7,259	5.59	106,617	14.69
Subtotal, pipes and tubes	8,078	13,829	3/	196,739	14.23
Total, carbon and certain alloy steel	148,661	308,564	3/	4,786,371	15.51
Certain stainless and alloy tool steel:					
Steelmaking facilities 2/	4,846	10,493	6.09	170,682	16.27
Stainless steel products:					
Plates	1,312	3,043	13.69	49,550	16.28
Sheets and strip	4,967	10,233	10.25	185,116	18.09
Wire	638	1,424	46.38	20,590	14.46
Pipes and tubes	336	718	38.21	8,757	12.20
Total, stainless and alloy tool steel	12,099	25,911	3/	434,695	16.78
Grand total	160,760	334,475	3/	5,221,066	15.61

1/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.
2/ Including semifinished steel.
3/ Not applicable.

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

H-8

Table H-6.--Certain carbon and alloy steel: U.S. producers' capital expenditures, by types of expenditures, and research and development expenditures, July 1, 1987 — June 30, 1988

(In thousands of dollars)

Item	Capital expenditures								
	For plant and equipment								Research and development expenditures
	Land and land improvement	For new facilities	For existing facilities: Placed in service during Jan 1, 1980-June 30, 1986	For existing facilities: Placed in service prior to Jan 1, 1981	Total	For pollution control or occupational safety and health	Other	Total 1/	
Carbon and certain alloy steel: 2/									
Cokemaking facilities	-	-	-	-	-	-	-	39,271	3,432
Ironmaking facilities	-	-	-	-	-	-	-	305,701	3,115
Steelmaking facilities 3/	* * *	* * *	* * *	* * *	* * *	* * *	* * *	537,407	44,323
Products:									
Plates	* * *	* * *	* * *	* * *	* * *	* * *	* * *	19,976	4,693
Sheets and strip:									
Hot rolled	* * *	* * *	* * *	* * *	* * *	* * *	* * *	154,503	7,327
Cold rolled	* * *	* * *	* * *	* * *	* * *	* * *	* * *	106,788	14,080
Galvanized	* * *	* * *	* * *	* * *	* * *	* * *	* * *	59,747	13,574
Other	* * *	* * *	* * *	* * *	* * *	* * *	* * *	29,056	14,115
Subtotal, sheets and strip	714	68,993	3,586	253,479	325,375	22,437	703	350,094	49,096
Bars:									
Hot finished	* * *	* * *	* * *	* * *	* * *	* * *	* * *	74,194	3,175
Cold finished	* * *	* * *	* * *	* * *	* * *	* * *	* * *	2,596	575
Reinforcing	* * *	* * *	* * *	* * *	* * *	* * *	* * *	22,626	647
Subtotal, bars	3,343	50,484	12,560	31,380	94,424	1,427	222	99,416	4,397
Wire rod	* * *	* * *	* * *	* * *	* * *	* * *	* * *	32,552	703
Wire	* * *	* * *	* * *	* * *	* * *	* * *	* * *	3,816	184
Wire products	* * *	* * *	* * *	* * *	* * *	* * *	* * *	4,431	20
Structural shapes and units	* * *	* * *	* * *	* * *	* * *	* * *	* * *	48,985	706
Rails and related products	* * *	* * *	* * *	* * *	* * *	* * *	* * *	2,314	520
Pipes and tubes:									
Oil country tubular goods	* * *	* * *	* * *	* * *	* * *	* * *	* * *	2,000	378
Line pipe	* * *	* * *	* * *	* * *	* * *	* * *	* * *	17,050	45
Other	* * *	* * *	* * *	* * *	* * *	* * *	* * *	12,671	1,978
Subtotal, pipes and tubes	* * *	* * *	3,117	5,248	23,222	807	611	31,721	2,401
Total, carbon and certain alloy steel	10,162	448,676	75,205	531,976	1,055,174	63,290	2,263	1,475,684	113,592
Certain stainless and alloy tool steel:									
Steelmaking facilities 3/	* * *	* * *	* * *	* * *	* * *	* * *	* * *	23,616	6,203
Stainless steel products:									
Plates	* * *	* * *	* * *	* * *	* * *	* * *	* * *	3,092	384
Sheets and strip	* * *	* * *	* * *	* * *	* * *	* * *	* * *	32,071	7,212
Wire	* * *	* * *	* * *	* * *	* * *	* * *	* * *	6,245	1,421
Pipes and tubes	* * *	* * *	* * *	* * *	* * *	* * *	* * *	1,387	121
Subtotal, certain stainless and alloy tool steel	1,134	15,824	7,880	33,145	56,849	3,169	905	66,411	15,341
Grand total	11,296	464,500	83,085	565,121	1,112,023	66,459	3,248	1,542,095	128,933

1/ Including nonitemized expenditures.
2/ Certain alloy refers to alloy steel other than stainless and alloy tool steel.
3/ Including semifinished steel.

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

H-9

APPENDIX I
SPECIALTY STEEL RELIEF MEASURES

On September 18, 1984, following the imposition of import relief for certain specialty steel products, the President established a national policy for the steel industry and directed the U.S. Trade Representative to coordinate and direct the implementation of that policy, including the negotiation of new arrangements and the reaffirmation of existing measures limiting steel exports to the United States, such as those applicable to specialty steel. Pursuant to this, the U.S. Trade Representative concluded voluntary restraint agreements (VRAs) with 19 countries and the EC,[1] which, among other provisions, replace with quotas the higher tariffs on imports of stainless steel sheets, strip, and plate stemming from the program of specialty steel relief in effect since 1983.[2] However, the additional tariffs remain in effect on imports of stainless sheets, strip, and plate from countries which have not participated in import restraint agreements. In addition, specialty steel long products are currently included in the VRAs for the EC and Brazil, and alloy tool steel is covered in the VRAs for the EC, Brazil, and Austria. Appropriate reductions in the specialty steel quota quantities were made for the foregoing items. Countries that have negotiated steel VRAs with the United States supplied 82 percent of total 1988 imports of stainless steel sheet, strip, and plate. Coverage under the VRAs is the next highest for alloy tool steel products, VRA imports of which accounted for 39 percent of total imports in 1988. VRA coverage for stainless steel bars and wire rod accounted for 34 percent of imports in that year.

The import relief was extended under Presidential Proclamation 5679 in the form previously in effect for a period from July 20, 1987 through September 30, 1989, "in order to provide time for the specialty steel industry to complete important investment projects, improve productivity, and regain profitability."[3] The extension of relief does not affect the limits on imports of specialty steel products under the VRAs.

On February 1, 1989, at a joint press conference of The Specialty Steel Industry of the United States (SSIUS) and the United Steelworkers of America (USWA), the specialty steel industry requested that the industry relief program be incorporated into the VRAs. The SSIUS and the USWA also urged a 5-year extension of the VRAs, and an expansion of country coverage to include Finland, Sweden, Thailand, and Canada, among others. A spokesman for the specialty steel industry stated that the quotas must be continued to provide time for the U.S. steel industry to continue to modernize; and to protect U.S. producers from alleged below-cost sales of imports in the U.S. market.[4]

The remainder of appendix I contains pages from the Tariff Schedules of the United States (TSUS), effective through December 31, 1988, and the Harmonized Tariff Schedule of the United States (HTSUS), effective January 1, 1989, showing the additional duties and quantitative limitations on stainless steel and alloy tool steel.

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[1] The countries with which agreements have been reached are Australia, Austria, Brazil, Czechoslovakia, the German Democratic Republic, Finland, Hungary, Japan, Mexico, People's Republic of China, Poland, Portugal, the Republic of Korea, Romania, South Africa, Spain, Trinidad and Tobago, Venezuela, Yugoslavia, and the European Communities (Belgium, Denmark, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, the United Kingdom, and West Germany).
[2] The exception to this is Finland, whose VRA does not include stainless steel flat rolled products.
[3] See Appendix I for details on the provisions of the current import relief.
[4] Press conference on February 1, 1989. Remarks by Richard Simmons, Chairman and CEO of Allegheny Ludlum Corp., and Lynn Williams, President, United Steel Workers of America, AFL-CIO. *American Metal Market*, "Specialty Steel Seeks VRAs," February 2, 1989.

I-2

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Special	2
		10. Additional duties and quantitative limitations on stainless steel and alloy tool steel.--The provisions of this headnote apply to items 926.00 through 926.23, inclusive, of this subpart. The duties provided for in items 926.00 and 926.05 and the quantitative limitations set forth in items 926.10 through 926.23, inclusive, are in addition to the duties provided for the subject articles in schedule 6, part 2B, or in item 832.00, part 3A, schedule 8, where applicable. (a) Definitions.--For the purposes of this subpart-- (i) the term "restraint period" refers to a 3-month period provided for in the Quota Quantity column for items 926.10 through 926.23, inclusive; (ii) the terms "razor blade steel" and "chipper knife steel" are defined as provided in headnotes 2(h)(x) and 2(h)(viii), respectively, of part 2B, schedule 6; (iii) the term "band saw steel" refers to alloy tool steel which contains, in addition to iron, each of the following elements by weight in the amounts specified: (A) carbon: not less than 0.47 nor more than 0.53 percent; (B) manganese: not less than 0.60 nor more than 0.90 percent; (C) sulfur: none, or not more than 0.015 percent; (D) phosphorus: none, or not more than 0.025 percent; (E) silicon: not less than 0.10 nor more than 0.25 percent; (F) chromium: not less than 0.90 nor more than 1.10 percent; (G) nickel: not less than 0.50 nor more than 0.70 percent; (H) molybdenum: not less than 0.90 nor more than 1.10 percent; and (IJ) vanadium: not less than 0.08 percent nor more than 0.15 percent; (iv) the term "cladding grade 434 stainless steel sheet" refers to stainless steel sheet, not under 0.055 inch and not over 0.065 inch in thickness, not under 25.5 inches and not over 26.25 inches in width, containing by weight not more than 0.12 percent carbon; not less than 16 percent nor more than 18 percent chromium; and not less than 0.75 percent nor more than 1.25 percent molybdenum; certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of stainless steel-clad-aluminum automobile trim; (v) the term "stainless steel of the type described in headnote 10(a)(v)" refers to the stainless steel grades described in either subparagraph (A) or (B) below which contain, in addition to iron, each of the following elements by weight in the amounts specified: (A) carbon: not more than 0.02 percent; silicon: not less than 0.2 percent nor more than 0.8 percent; manganese: not less than 0.2 percent nor more than 1.0 percent; chromium: not less than 19.5 percent nor more than 20.5 percent;				

(3rd supp. 6/1/88)

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Special	2
		nickel: not less than 17.5 percent nor more than 18.5 percent;				
		molybdenum: not less than 6.0 percent nor more than 6.5 percent;				
		nitrogen: not less than 0.18 percent nor more than 0.22 percent;				
		copper: not less than 0.5 percent nor more than 1.0 percent;				
		sulfur: not more than 0.03 percent;				
		phosphorus: not more than 0.04 percent; or				
		(B) carbon: not less than 0.05 percent nor more than 0.10 percent;				
		silicon: not less than 1.4 percent nor more than 2.0 percent;				
		manganese: not less than 0.2 percent nor more than 0.8 percent;				
		chromium: not less than 20.0 percent nor more than 22.0 percent;				
		nickel: not less than 10.0 percent nor more than 12.0 percent;				
		nitrogen: not less than 0.14 percent nor more than 0.20 percent;				
		cerium: not less than 0.03 percent nor more than 0.08 percent;				
		sulfur: not more than 0.03 percent;				
		phosphorus: not more than 0.04 percent;				
		(vi) the term "flapper valve steel" refers to stainless steel strip not over 0.05 inch in thickness, certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of stainless steel flapper valves for compressors;				
		(vii) the term "rotor steel for hysteresis motors" refers to tool steel strip not over 0.05 inch in thickness containing by weight not less than 0.5 percent carbon and not less than 5.5 percent tungsten, certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of rotor rings or cups for hysteresis motors;				
		(viii) the term "tool steel of the type described in headnote 10(a)(viii)" refers to the alloy tool steel grades described in any one of the subparagraphs (A) through (F) below which contain, in addition to iron, each of the following elements by weight in the amounts specified:				
		(A) carbon: not less than 0.85 percent nor more than 1.05 percent;				
		manganese: not less than 0.95 percent nor more than 1.75 percent;				
		sulfur: less than 0.03 percent;				
		phosphorus: less than 0.03 percent;				
		silicon: not less than 0.45 percent nor more than 0.90 percent;				
		chromium: not less than 0.90 percent nor more than 1.80 percent;				
		nickel: less than 0.35 percent;				
		copper: less than 0.35 percent;				
		molybdenum: less than 0.10 percent;				
		(B) carbon: not less than 0.95 percent nor more than 1.05 percent;				
		manganese: not less than 0.95 percent nor more than 1.25 percent;				
		sulfur: not more than 0.025 percent				
		phosphorus: not more than 0.025 percent				
		silicon: not less than 0.45 percent nor more than 0.75 percent;				
		chromium: not less than 0.90 percent nor more than 1.20 percent;				
		nickel: not more than 0.25 percent;				
		copper: not more than 0.35 percent;				
		molybdenum: not more than 0.08 percent;				

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Special	2
		(C) carbon: not less than 0.85 percent nor more than 1.00 percent; manganese: not less than 1.40 percent nor more than 1.70 percent; sulfur: not more than 0.025 percent; phosphorus: not more than 0.025 percent; silicon: not less than 0.50 percent nor more than 0.80 percent; chromium: not less than 1.40 percent nor more than 1.80 percent; nickel: not more than 0.25 percent; copper: not more than 0.35 percent; molybdenum: not more than 0.08 percent; (D) carbon: not less than 0.95 percent nor more than 1.10 percent; manganese: not less than 0.65 percent nor more than 0.90 percent; sulfur: not more than 0.025 percent; phosphorus: not less than 0.025 percent; silicon: not less than 0.20 percent nor more than 0.35 percent; chromium: not less than 1.10 percent nor more than 1.50 percent; nickel: not more than 0.25 percent; copper: not more than 0.35 percent; molybdenum: not less than 0.20 percent nor more than 0.30 percent; (E) carbon: not less than 0.95 percent nor more than 1.10 percent; manganese: not less than 1.05 percent nor more than 1.35 percent; sulfur: not more than 0.025 percent; phosphorus: not more than 0.025 percent; silicon: not less than 0.20 percent nor more than 0.35 percent; chromium: not less than 1.10 percent nor more than 1.50 percent; nickel: not more than 0.25 percent; copper: not more than 0.35 percent; molybdenum: not less than 0.45 percent nor more than 0.60 percent; or (F) carbon: not less than 0.92 percent nor more than 1.02 percent; manganese: not less than 0.25 percent nor more than 0.40 percent; sulfur: not more than 0.025 percent; phosphorus: not more than 0.025 percent; silicon: not less than 0.25 percent nor more than 0.40 percent; chromium: not less than 1.65 percent nor more than 1.95 percent; nickel: not more than 0.25 percent; copper: not more than 0.35 percent; molybdenum: not less than 0.18 percent nor more than 0.40 percent; aluminum: not more than 0.05 percent; certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of ball or roller bearings. (b) Shortfall.--During the last 30-day period of a restraint period, if the United States Trade Representative (USTR) determines that any quota quantity under an item hereof is unlikely to be used during that restraint period, the USTR may, to the extent permitted by law, modify the quota quantity for that item during the remainder of that restraint period to reallocate the shortfall or any portion thereof to the quota quantity of any other item, such modifications to be effective on the date of their publication in the Federal Register.					

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty		
				1	Special	2
		(c) Carryover.--Whenever the quota quantity specified for any of the individually named countries for an item has not been entered during any semi-annual restraint period, entry may be made during the subsequent semi- annual restraint period of an amount up to 20 percent (10 percent in the case of shortfalls occurring in the second semi-annual restraint period in any quota year) of the base limit for the restraint period in which the shortfall occurs, but not to exceed the difference between the quota quantity specified for such restraint period and the amount entered during that period; and such amount shall not be counted against the quota quantity therefor. ❸ (d) Exceeding restraint levels.--The restraint level for any quota quantity allocated to any of the individually named countries may be exceeded by not more than 10 percent during the first semi-annual restraint period in any quota year, by not more than 3 percent in the second semi-annual restraint period in an quota year and shall not exceed in the period from July 20, 1989 through September 30, 1989. If a quota quantity is exceeded during a restraint period, a downward adjustment of the corresponding quota quantity for the next semi-annual restraint period in the absolute amount the preceding restraint level was exceeded shall be made. ❸ (e) Adjustments.--If any country-by-country allocations of quota quantities are made by the USTR, the USTR may make the necessary adjustments to the appropriate quota quantities. ❷ (f) United States International Trade Commission (USITC) surveys.--The USITC shall conduct annual mandatory surveys with respect to the products subject to import relief under each item involved to obtain from domestic producers data by calendar quarter on profits, orders, and inventories, and annual data on production, shipments, employment, capital expenditures, capacity, and research and development expenditures. The initial survey shall cover calendar year 1987, and the results shall be published by March 31, 1988. The final survey shall cover calendar year 1988, and the results shall be published by March 31, 1989. With each annual survey, the USITC shall also report the production, capacity, and capacity utilization, to the extent the information can be obtained, for each country which is a major supplier of imports, and any projected changes in production, capacity, and capacity utilization for those countries. (g) Products Subject to Certain Export Restraint Agreements. (i) The duties provided for in items 926.00 and 926.05 shall not apply to products of Australia. The duties provided for in items 926.00 and 926.05 shall not apply to products of Trinidad and Tobago exported to the United States on or after October 15, 1987. Austria, Brazil, Czechoslovakia, the European Communities, German Democratic Republic, Hungary, Japan, Mexico, People's Republic of China, Poland, the Republic of Korea, Romania, South Africa, Venezuela, or Yugoslavia, exported to the United States on or after March 1, 1986, (ii) The quantitative limitations provided for in items 926.10 through 926.17 shall not apply to products of Brazil, or the following Member States of the European Communities: Belgium, Denmark, Federal Republic of Germany, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, and the United Kingdom of Great Britain and Northern Ireland. (iii) The quantitative limitations provided for in items 926.18 through 926.21 shall not apply to products of Austria, Brazil, or the following Member States of the European Communities: Belgium, Denmark, Federal Republic of Germany, France, Greece, Ireland, Italy, Luxembourg, the				

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Special	2
		Netherlands, and the United Kingdom of Great Britain and Northern Ireland. ❸(h) Regarding shipments of mold block from Canada into the United States: ❸ (i) The term "mold blocks" refers to the products of either stainless steel bar or alloy tool steel whose chemistry meets that of either H13 hot-work tool steel forged bars, P20 mold steel forged bars, or hardenable Cr stainless steel 420 forged bars, as defined in subparts (a), (b), and (c) below: ❸(a) "H13 hot-work tool steel forged bars" refers to forged bars of the alloy tool steel grade containing by weight, in addition to iron, not less than 0.32 percent nor more than 0.45 percent carbon; not less than 4.75 percent or more than 5.50 percent chromium; not less than 0.20 percent nor more than 0.5 percent managanese; not less than 1.10 percent nor more than 1.75 percent molybdenum; not more than 0.030 percent phosphorus; not more than 0.030 percent sulfur; not less than 0.80 percent nor more than 1.20 percent silicon; and not less than 0.80 percent nor more than 1.20 percent vanadium. ❸(b) "P20 mold steel forged blocks" refers to forged bars of the alloy tool steel grade containing by weight, in addition to iron, not less than 0.28 percent nor more than 0.40 percent carbon; not less than 1.40 percent nor more than 2.00 percent chromium; not less than 0.60 percent nor more than 1.00 percent manganese; not less than 0.30 percent nor more than 0.55 percent molybdenum; not more than 0.030 percent phosphorous; not more than 0.030 percent sulphur; and not less than 0.20 percent nor more than 0.030 percent sulphur; and not less than 0.20 percent nor more than 0.80 percent silicon. ❸ (c) "Hardenable Cr Stainless Steel 420 forged bars" Refers to stainless steel forged bars containing by weight over 0.15 percent carbon; not less than 12.00 percent nor more than 14 percent chromium; not more than 1.00 percent manganese; not more than 0.040 percent phosphorous; not more than 0.030 percent sulpur; and not more than 1.00 percent silicon. ❸(ii) Mold blocks may only be forged bars of P20 mold steel, forged bars of H13 hot-work tool steel, and hardenable Cr stainless steel 420 forged bars of Canadian origin which are used in the United States to produce plastic injection molds, die-casting molds, and metal forming dies for automotive components. If rectangular, these bars must be between 4 and 40 inches in thickness and between 13 and 72 inches in width. Round bars of these steels must be between 8 and 24 inches in diameter. The rectangular bars must be machined on four faces at 90 degrees. In addition, one surface must be machined not to exceed 250AA roughness height (250 R.M.S. value), and surfaces must be perpendicular within 0.0625 inch. The round bars must be machined on both end faces, and their periphery must be machined not to exceed 250AA roughness height (250 R.M.S. value). ❸(iii) In order for the product to be considered a mold block, the Canadian government and the importer must certify that the product meets the requirements set forth in subparts (i) and (ii) above. The Canadian government will certify that the tonnage in the shipemnt, when added to other such certified shipments during the same restraint period, does				

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Special	2
		not exceed the tonnage allowed under items 926.22, 926.23, or 926.24, as appropriate. Such certification must be endorsed by the compentent Canadian government authorities and presented to U.S. Customs at the time of entry into the United States. (iv) The Government of the United States will allow entry of such mold blocks only to the extent that the quantity of mold blocks entered does not exceed the quantities set forth in items 926.22, 926,23, and 926.24, respectively. Entries in excess of such quantity will be subject to the restraint levels described in items 926,11, 926.12, 926.13, 926.19, 926.20, and 926.21 as appropriate. 11. Quantitative limitations on certain tungsten articles.- The provisions of this headnote apply to items 926.30 through 926.34, inclusive, of this subpart. The limitations imposed are in addition to the duties provided for the restrained articles in schedule 4, part 2B and part 2C, respectively, or in schedule 8, where applicable. The quantitative limitations shall include imports entered, or withdrawn from warehouse for consumption, informal entries, temporary imports under bond, and imports under schedule 8 of the TSUS. (a) Definitions. - For purposes of this subpart-- (i) the term "tungsten articles" means ammonium paratungstate provided for in item 417.40 in schedule 4, part 2C and tungstic acid provided for in item 416.40, schedule 4, part 2B; (b) Export certificate. - Effective January 1, 1988, none of the tungsten articles provided for herein that are exported from the People's Republic of China (the PRC) shall be entered, or withdrawn from warehouse for consumption, unless such tungsten articles are accompanied by a validated export certificate issued by the competent authority of the Government of the People's Republic of China; (c) Carryover.-Whenever the specified limit of imports has not been entered during a period, an amount not to exceed 5 percent (except that the United States Trade Representative may by prior determination permit a carryover of greater than 5 percent) of the limit specified in the period in which the shortfall occurred may be entered in the subsequent period. (d) Exceeding restraint levels.-The USTR may by Federal Register notice authorize an increase in the specified limits of imports by not more than 10 percent during any period, except that the USTR may by prior determination permit an increase of greater than 10 percent. If a specified limit of imports is exceeded during a period, there shall be a downward adjustment of the specified limit for the next period in the amount the proceeding specified limit was exceeded. To the extent that imports of the tungsten articles provided for herein exceed 1.7 million pounds tungsten content for calendar year 1987, the specified limits for subsequent periods will be reduced according to the following schedule: the 1988 calendar year specified limit shall be reduced by 50 percent of the excess; the specified limit of 1989 shall each be reduced by 30 percent of the excess; and the specified limit of 1990 shall be reduced by 20 percent of the excess.				

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty Special	Rates of Duty 2
		(e) United States International Trade Commission (USITC) surveys.- The USITC shall conduct annual surveys (pursuant to section 332 of the Tariff Act of 1930) to obtain data on ammonium paratungstate, tungstic acid and tungsten oxide (provided for in item 422.42, part 2C, schedule 4 of the TSUSA) from the producers in the United States by calendar quarter on shipments, profits, capacity and capacity utilization, and annual data on capital expenditures and research and development expenditures; and to obtain data on such products from importers by calendar quarter on prices, orders, and inventories. The initial survey shall cover calendar year 1987 and shall be published by March 31, 1988, and the results of subsequent annual surveys shall be published on March 31 of each year thereafter as long as the agreement is in effect. (f) Administration of import limitations.-Imports accounting for no more than 65 percent of each annual specified limit may be entered in any two consecutive quarters in that year unless authorized by a determination of the USTR.				

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1: Effective with respect to articles entered during the period-- July 20, 1987 through July 19, 1988	Rates of Duty 1: July 20, 1988 through July 19, 1989	Rates of Duty 1: July 20, 1989 through Sept. 30, 1989	Rates of Duty 2
926.00	1/	Sheets and strip of stainless steel (except as provided in headnote 10(g)(i) to this subpart, and except razor blade steel, cladding grade 434 stainless steel sheet, cold-rolled sheets of stainless steel, over 71 inches in width, stainless steel of the type described in headnote 10(a)(v), and flapper valve steel) provided for in items 607.76, 607.90, 608.29, 608.43, and 608.57, part 2B, schedule 6, all the foregoing whether or not entitled to duty-free treatment under item 832.00, part 3A, schedule 8.....	1/	3% ad val.	2% ad val.	1% ad val.	No change
926.05	1/	Plates of stainless steel (except as provided in headnote 10(g)(i) to this subpart, and except stainless steel of the type described in headnote 10(a)(v)) provided for in items 607.76 and 607.90, part 2B, schedule 6, all the foregoing whether or not entitled to duty-free treatment under item 832.00, part 3A, schedule 8.....	1/	3% ad val.	2% ad val.	1% ad val.	No change

1/ See Appendix statistical headnote 1.

Item	Stat. Suf-fix	Articles	Units of Quantity	Quota Quantity (in short tons)	
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for items 926.10 through 926.23, inclusive, has been entered in any restraint period (whether, for tariff purposes, in schedule 6 or in item 832.00 of schedule 8), no article in such item the product of such country may be entered during the remainder of such restraint period, except as provided in headnote 10:			
		Bars of stainless steel (except stainless steel of the type described in headnote 10(a)(v)), provided for in item 606.90, part 2B, schedule 6:			
926.10		If entered during the period from July 20, 1987, through October 19, 1987, inclusive:			
		Argentina	1/	55	
		Canada	1/	268	
		Japan	1/	3,442	
		Korea	1/	454	
		Mexico	1/	40	
		Spain	1/	1,069	
		Sweden	1/	330	
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	80	
				Quota Quantity (in short tons) if entered during the restraint period	
				July 20 through January 19	January 20 through July 19
926.11		If entered during the period from October 20, 1987, through July 19, 1988, inclusive:			
		Austria	1/	n/a	108
		Canada	1/	276 2/	553
		Japan	1/	3,542 2/	7,085
		Korea	1/	485 2/	971
		Mexico	1/	28 2/	57
		Spain	1/	1,100 2/	2,200
		Sweden	1/	340 2/	680
		Taiwan	1/	25 2/	50
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	110 2/	107
926.12		If entered during the period from July 20, 1988, through July 19, 1989, inclusive:			
		Austria	1/	107	108
		Canada	1/	565	565
		Japan	1/	7,245	7,245
		Korea	1/	983	984
		Mexico	1/	64	65
		Spain	1/	2,250	2,250
		Sweden	1/	695	696
		Taiwan	1/	51	52
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	119	15
926.13		If entered during the period from July 20, 1989, through September 30, 1989, inclusive:			
		Austria	1/	43	n/a
		Canada	1/	233	3/
		Japan	1/	2,985	3/
		Korea	1/	405	3/
		Mexico	1/	27	3/
		Spain	1/	927	3/
		Sweden	1/	286	3/
		Taiwan	1/	21	3/
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	49	n/a

1/ See Appendix statistical headnote 1.
2/ October 20, 1987 through January 19, 1988.
3/ The relief expires on September 30, 1989.

Item	Stat. Suf-fix	Articles	Units of Quantity	Quota Quantity (in short tons)	
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for items 926.10 through 926.23, inclusive, has been entered in any restraint period (whether, for tariff purposes, in schedule 6 or in item 832.00 of schedule 8), no article in such item the product of such country may be entered during the remainder of such restraint period, except as provided in headnote 10 (con):			
		Wire rod of stainless steel (except stainless steel of the type described in headnote 10(a)(v)), provided for in items 607.26 and 607.43, part 2B, schedule 6:			
926.14		If entered during the period from July 20, 1987, through October 19, 1987, inclusive:			
		Japan	1/	1,542	
		Spain	1/	452	
		Sweden	1/	964	
		Taiwan	1/	50	
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	299	
				Quota Quantity (in short tons) if entered during the restraint period	
				July 20 through January 19	January 20 through July 19
926.15		❷ If entered during the period of October 20, 1987, through July 19, 1988, inclusive, except as provided for in headnote 10(g)(ii) to this subpart:			
		Austria	1/	n/a	28
		Japan	1/	1,587	3,174
		Korea	1/	263	525
		Spain	1/	465	931
		Sweden	1/	992	1,984
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	97	167
926.16		❸ If entered during the period from July 20, 1988, through July 19, 1989, inclusive, except as provided for in headnote 10(g)(ii) to this subpart:			
		Austria	1/	27	28
		Japan	1/	3,246	3,246
		Korea	1/	540	541
		Spain	1/	951	952
		Sweden	1/	2,029	2,029
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	170	167
926.17		❹ If entered during the period from July 20, 1989, through September 30, 1989, inclusive, except as provided for in headnote 10(g)(ii) to this subpart:			
		Austria	1/	11	n/a
		Japan	1/	1,337	2/
		Korea	1/	223	2/
		Spain	1/	392	2/
		Sweden	1/	836	2/
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	70	2/

1/ See Appendix statistical headnote 1.
2/ The relief expires on September 30, 1989.

Item	Stat. Suffix	Articles	Units of Quantity	Quota Quantity (in short tons)	
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for items 926.10 through 926.23, inclusive (con.):			
		Bars, wire rods, plates, sheets, and strip, all the foregoing of alloy tool steel (except chipper knife steel, band saw steel, rotor steel for hysteresis motors and tool steel of the type described in headnote 10(a)(viii)), provided for in items 606.95, 607.28, 607.34, 607.46, 607.54, 607.72, 607.88, 608.34, 608.49, and 608.64, and round wire of high speed tool steel, provided for in item 609.45, part 2B, schedule 6:			
926.18		If entered during the period from July 20, 1987, through October 19, 1987 inclusive:			
		Argentina	1/	56 ❷	
		Canada	1/	386 ❷	
		Japan	1/	1,123 ❷	
		Mexico	1/	76 ❷	
		Poland	1/	69 ❷	
		Spain	1/	45 ❷	
		Sweden	1/	2,120 ❷	
		Other, except as provided for in headnote 10(g)(ii) to this subpart	1/	396 ❷	
				Quota Quantity (in short tons) if entered during the restraint period	
				July 20 through January 19	January 20 through July 19
926.19		❸ If entered during the period from October 20, 1987, through July 19, 1988, inclusive, except as provided for in headnote 10(g)(ii) to this subpart:			
		Canada	1/	397	793
		Japan	1/	1,156	2,313
		Korea	1/	381	762
		Mexico	1/	64	130
		Poland	1/	85	171
		Spain	1/	45	92
		Sweden	1/	2,182	4,364
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	84	163
926.20		❸ If entered during the period from July 20, 1988, through July 19, 1989, inclusive, except as provided for in headnote 10(g)(ii) to this subpart:			
		Canada	1/	811	812
		Japan	1/	2,364	2,365
		Korea	1/	786	785
		Mexico	1/	139	139
		Poland	1/	167	168
		Spain	1/	94	94
		Sweden	1/	4,463	4,463
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	164	163
926.21		❸ If entered during the period from July 20, 1989, through September 30, 1989, inclusive, except as provided for in headnote 10(g)(ii) to this subpart:			
		Canada	1/	334	2/
		Japan	1/	974	2/
		Korea	1/	324	2/
		Mexico	1/	57	2/
		Poland	1/	69	2/
		Spain	1/	39	2/
		Sweden	1/	1,838	2/
		Other, except as provided in headnote 10(g)(ii) to this subpart	1/	68	2/

1/ Effective period for reduced duties terminates at the close of December 31, 1987.
2/ See Appendix statistical headnote 1.

Item	Stat. Suf-fix	Articles	Units of Quantity	Quota Quantity (in short tons) if entered during the restraint period: July 20 through January 19	Quota Quantity (in short tons) if entered during the restraint period: January 20 through July 19
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for items 926.10 through 926.23, inclusive, has been entered in any restraint period (whether, for tariff purposes, in schedule 6 or in item 832.00 of schedule 8), no article in such item the product of such country may be entered during the remainder of such restraint period, except as provided in headnote 10 (con.):			
		Mold blocks of the type described in headnote 10(h):			
❸ 926.22		If entered during the period from November 20, 1987 through July 19, 1988, inclusive:			
❸ 926.23		Canada.....	1/	1,100	2,200
		If entered during the period from July 20, 1988 through July 19, 1989, inclusive:			
❸ 926.24		Canada.....	1/	2,200	2,200
		If entered during the period from July 20, 1989 through September 30, 1989 inclusive:			
		Canada.....	1/	880	N/a
				Quota Quantity (in Pounds of) ❸	
		Whenever the respective aggregate quantity of articles, the product of the People's Republic of China, has been entered in any period specified in any item below (whether, for tariff purposes, in schedule 4 or in schedule 8), no article in such items may be entered during the remainder of such period, except as provided in headnote 11:			
		Tungstic acid provided for in item 416.40, part 2B, schedule 4, and ammonium paratungstate, provided in item 417.40, part 2C, schedule 4:			
❸ 926.30		If entered during the period from October 1, 1987, through December 31, 1987, inclusive.....	1/	425,000	
❸ 926.31		If entered during the period from January 1, 1988, through December 31, 1988, inclusive....	1/	861,482	
❸ 926.32		If entered during the period from January 1, 1989, through December 31, 1989, inclusive....	1/	1,371,010	
❸ 926.33		If entered during the period from January 1, 1990, through December 31, 1990, inclusive....	1/	1,670,873	
❸ 926.34		If entered during the period from January 1, 1991, through September 30, 1991, inclusive...	1/	1,500,000	

1/ See Appendix statistical headnote 1.

U.S. Notes

1. This subchapter contains the temporary modifications of the provisions in the tariff schedule established pursuant to trade legislation. Unless otherwise stated, the modified provisions are effective until suspended or terminated. Unless the context requires otherwise, any article described in the provisions of this subchapter, for which rates of duty are herein provided, if entered during the period specified, is subject to duty at the rate set forth herein in lieu of the rate provided therefor in chapters 1 to 98.

2. For the purposes of subheadings 9903.17.05 through 9903.17.30, inclusive, the term "product of the European Economic Community" refers to products of the member states of this instrumentality which includes Belgium, Denmark, France, the Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom.

3. For the purposes of subheadings 9903.41.05 and 9903.41.10, the duties provided for in this subchapter are cumulative duties which apply in addition to the duties otherwise imposed on the articles involved.

4. Additional duties and quantitative limitations on certain stainless steel and alloy tool steel.--The provisions of this note apply to subheadings 9903.72.00 through 9903.72.44 of this subchapter. The duties provided for in subheadings 9903.72.00 and 9903.72.01 and the quantitative limitations set forth in subheadings 9903.72.10 through 9903.72.34 are in addition to the duties provided for the subject articles in chapter 72 or in subheading 9808.00.30, where applicable.

(a) Definitions.--For the purposes of this subchapter:

(i) The term "restraint period" refers to a period provided for in the article description column for subheadings 9903.72.10 through 9903.72.34;

(ii) The term "razor blade steel of the type described in U.S. note 4(a)(ii) to this subchapter" refers to products of stainless steel of the type described in U.S. note 4(a)(xi) to this subchapter, which are flat rolled, not over 0.254 mm in thickness and not over 2.286 cm in width--and, when cold rolled, are over 1.27 cm in width--containing by weight not less than 11.5 percent, and not over 14.7 percent chromium, and are certified at the time of entry to be used in the manufacture of razor blades. The terms "concrete reinforcing bars and rods," "chipper knife steel" and "ball bearing steel" are defined as provided in additional U.S. notes 1(c), 1(f) and 1(h), respectively, to chapter 72;

(iii) The term "band saw steel" refers to alloy tool steel which contains, in addition to iron, each of the following elements by weight in the amounts specified:

(A) carbon: not less than 0.47 nor more than 0.53 percent;

(B) manganese: not less than 0.6 nor more than 0.9 percent;

(C) sulfur: none, or not more than 0.015 percent;

(D) phosphorus: none, or not more than 0.025 percent;

(E) silicon: not less than 0.1 nor more than 0.25 percent;

(F) chromium: not less than 0.9 nor more than 1.1 percent;

(G) nickel: not less than 0.5 nor more than 0.7 percent;

(H) molybdenum: not less than 0.9 nor more than 1.1 percent; and

(IJ) vanadium: not less than 0.08 percent nor more than 0.15 percent;

(iv) The term "cladding grade 434 stainless steel flat-rolled products" refers to stainless steel flat-rolled products, not under 1.397 mm and not over 1.651 mm in thickness, not under 64.77 cm and not over 66.675 cm in width, containing by weight not more than 0.12 percent carbon; not less than 16 percent nor more than 18 percent chromium; and not less than 0.75 percent nor more than 1.25 percent molybdenum; certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of stainless steel-clad-aluminum automobile trim;

(v) The term "stainless steel of the type described in U.S. note 4(a)(v) to this subchapter" refers to the stainless steel grades described in either subparagraph (A) or (B) below which contain, in addition to iron, each of the following elements by weight in the amounts specified:

(A) carbon: not more than 0.02 percent;
silicon: not less than 0.2 percent nor more than 0.8 percent;
manganese: not less than 0.2 percent nor more than 1 percent;
chromium: not less than 19.5 percent nor more than 20.5 percent;
nickel: not less than 17.5 percent nor more than 18.5 percent;
molybdenum: not less than 6 percent nor more than 6.5 percent;
nitrogen: not less than 0.18 percent nor more than 0.22 percent;
copper: not less than 0.5 percent nor more than 1 percent;
sulfur: not more than 0.03 percent;
phosphorus: not more than 0.04 percent; or

(B) carbon: not less than 0.05 percent nor more than 0.1 percent;
silicon: not less than 1.4 percent nor more than 2 percent;
manganese: not less than 0.2 percent nor more than 0.8 percent;
chromium: not less than 20 percent nor more than 22 percent;
nickel: not less than 10 percent nor more than 12 percent;
nitrogen: not less than 0.14 percent nor more than 0.2 percent;
cerium: not less than 0.03 percent nor more than 0.08 percent;
sulfur: not more than 0.03 percent;
phosphorus: not more than 0.04 percent;

(vi) The term "flapper valve steel" refers to products of stainless steel of the type described in U.S. note 4(a)(ix) to this subchapter, which are flat rolled, not over 1.27 mm in thickness and not over 30.48 cm in width--and when cold rolled, are over 1.27 mm in width--and are certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of stainless steel flapper valves for compressors;

(vii) The term "rotor steel for hysteresis motors" refers to products of tool steel of the type described in U.S. note 4(a)(xi) to this subchapter, which are flat rolled, not over 1.27 mm in thickness and not over 30.48 cm in width--and, when cold rolled, are over 1.27 cm in width--containing by weight not less than 0.5 percent carbon and not less than 5.5 percent tungsten, and are certified by the importer of record or the ultimate consignee at the time of entry for use in the manufacture of rotor rings or cups for hysteresis motors;

(viii) The term "tool steel of the type described in U.S. note 4(a)(viii) to this subchapter" refers to the alloy tool steel grades described in any one of the subparagraphs (A) through (F) below which contain, in addition to iron, each of the following elements by weight in the amounts specified:

(A) carbon: not less than 0.85 percent nor more than 1.05 percent;
manganese: not less than 0.95 percent nor more than 1.75 percent;
sulfur: less than 0.03 percent;
phosphorus: less than 0.03 percent;
silicon: not less than 0.45 percent nor more than 0.9 percent;
chromium: not less than 0.9 percent nor more than 1.8 percent;
nickel: less than 0.35 percent;
copper: less than 0.35 percent;
molybdenum: less than 0.1 percent;

(B) carbon: not less than 0.95 percent nor more than 1.05 percent;
manganese: not less than 0.95 percent nor more than 1.25 percent;
sulfur: not more than 0.025 percent;
phosphorus: not more than 0.025 percent;
silicon: not less than 0.45 percent nor more than 0.75 percent;
chromium: not less than 0.9 percent nor more than 1.2 percent;
nickel: not more than 0.25 percent;
copper: not more than 0.35 percent;
molybdenum: not more than 0.08 percent;

(C) carbon: not less than 0.85 percent nor more than 1 percent;
manganese: not less than 1.4 percent nor more than 1.7 percent;
sulfur: not more than 0.025 percent;
phosphorus: not more than 0.025 percent;
silicon: not less than 0.5 percent nor more than 0.8 percent;
chromium: not less than 1.4 percent nor more than 1.8 percent;
nickel: not more than 0.25 percent;
copper: not more than 0.35 percent;
molybdenum: not more than 0.08 percent;

(D) carbon: not less than 0.95 percent nor more than 1.1 percent;
manganese: not less than 0.85 percent nor more than 0.9 percent;
sulfur: not more than 0.025 percent;
phosphorus: not more than 0.025 percent;
silicon: not less than 0.2 percent nor more than 0.35 percent;
chromium: not less than 1.1 percent nor more than 1.5 percent;
nickel: not more than 0.25 percent;
copper: not more than 0.35 percent;
molybdenum: not less than 0.2 percent nor more than 0.3 percent;

(E) carbon: not less than 0.95 percent nor more than 1.1 percent;
manganese: not less than 1.05 percent nor more than 1.35 percent;
sulfur: not more than 0.025 percent;
phosphorus: not more than 0.025 percent;
silicon: not less than 0.2 percent nor more than 0.35 percent;
chromium: not less than 1.1 percent nor more than 1.5 percent;
nickel: not more than 0.25 percent;
copper: not more than 0.35 percent;
molybdenum: not less than 0.45 percent nor more than 0.6 percent; or

(F) carbon: not less than 0.92 percent nor more than 1.02 percent;
manganese: not less than 0.25 percent nor more than 0.4 percent;
sulfur: not more than 0.025 percent;
phosphorus: not more than 0.025 percent;
silicon: not less than 0.25 percent nor more than 0.4 percent;
chromium: not less than 1.65 percent nor more than 1.95 percent;
nickel: not more than 0.25 percent;
copper: not more than 0.35 percent;
molybdenum: not less than 0.18 percent nor more than 0.4 percent;
aluminum: not more than 0.05 percent;

certified by the importer of record or the ultimate consignee at the time of entry for use in the anufacture of ball or roller bearings.

(ix) The term "stainless steel of the type described in U.S. note 4(a)(ix) to this subchapter" refers to stainless steel which contains by weight less than 1 percent carbon and over 11.5 percent chromium;

(x) The term "alloy steel of the type described in U.S. note 4(a)(x) to this subchapter" refers to steel which contains one or more of the following elements in the quantity, by weight, respectively indicated:

over 1.65 percent manganese, or
over 0.25 percent phosphorus, or
over 0.35 percent sulfur, or
over 0.60 percent silicon, or
over 0.60 percent copper, or
over 0.30 percent aluminum, or
over 0.20 percent chromium, or
over 0.30 percent cobalt, or
over 0.35 percent lead, or
over 0.50 percent nickel, or
over 0.30 percent tungsten, or
over 0.10 percent of any other metallic element;

(xi) The term "tool steel of the type described in U.S. note 4(a)(xi) to this subchapter" refers to alloy steel of the type described in U.S. note 4(a)(x) to this subchapter containing the following combination of elements in the quantity, by weight, respectively indicated:

(A) Not less than 1.0 percent carbon and over 11.0 percent chromium; or

(B) Not less than 0.3 percent carbon and 1.25 percent of 11.0 percent inclusive chromium; or

(C) Not less than 0.85 percent carbon and 1.0 percent to 1.8 percent inclusive manganese; or

(D) 0.9 percent to 1.2 percent inclusive chromium and 0.9 percent to 1.4 percent inclusive molybdenum; or

(E) not less than 0.5 percent carbon and not less than 3.5 percent molybdenum; or

(F) not less than 0.5 percent carbon and not less than 5.5 percent tungsten;

(xii) The term "high speed tool steel of the type described in U.S. note 4(a)(xii) to this subchapter" refers to all tool steel of the type described in U.S. note 4(a)(xi) to this subchapter containing by weight 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;

(xiii) The term "plate of the type described in U.S. note 4(a)(xiii) to this subchapter" refers to products which are flat rolled, whether or not corrugated or crimped, 4.7625 mm or more in thickness and over 20.32 cm in width when hot rolled or over 30.48 cm in width when cold rolled;

(xiv) The term "sheet of the type described in U.S. note 4(a)(xiv) to this subchapter" refers to products which are flat rolled, whether or not corrugated or crimped, less than 4.7625 mm in thickness and over 30.48 cm in width;

(xv) The term "strip of the type described in U.S. note 4(a)(xv) to this subchapter" refers to products which are flat rolled, whether or not corrugated or crimped, less than 4.7625 mm in thickness, not over 30.48 cm in width and, if cold rolled, over 1.27 cm in width;

(xvi) The term "wire of the type described in U.S. note 4(a)(xvi) to this subchapter" refers to products which are either cold drawn, in coils, of any cross-sectional configuration and not over 17.8562 mm in maximum cross-sectional dimension; or in coils with a cold rolled finish, of solid rectangular cross section, not over 6.35 mm in thickness and not over 1.27 cm in width;

(xvii) The term "wire rod of the type described in U.S. note 4(a)(xvii) to this subchapter" refers to products which are hot rolled, in coils, approximately round in cross section, and at least 5.08 mm but not exceeding 18.796 mm in diameter.

(b) Shortfall.--During the last 30-day period of a restraint period, if the United States Trade Representative (USTR) determines that any quota quantity under an item hereof is unlikely to be used during that restraint period, the USTR may, to the extent permitted by law, modify the quota quantity for that item during the remainder of that restraint period to reallocate the shortfall or any portion thereof to the quota quantity of any other item, such modifications to be effective on the date of their publication in the Federal Register.

(c) Carryover.--Whenever the quota quantity specified for any of the individually named countries for an item has not been entered during any semi-annual restraint period, entry may be made during the subsequent semi-annual restraint period of an amount up to 20 percent (10 percent in the case of shortfalls occurring in the second semi-annual restraint period in any quota year) of the base limit for the restraint period in which the shortfall occurs, but not to exceed the difference between the quota quantity specified for such restraint period and the amount entered during that period; and such amount shall not be counted against the quota quantity thereof.

(d) Exceeding restraint levels.--The restraint level for any quota quantity allocated to any of the individually named countries may be exceeded by not more than 10 percent during the first semi-annual restraint period in any quota year, by not more than 3 percent in the second semi-annual restrain period in any quota year and shall not be exceeded in the period from July 20, 1989 through September 30, 1989. If a quota quantity is exceeded during a restraint period, a downward adjustment of the corresponding quota quantity for the next semi-annual restraint period in the absolute amount the preceding restraint level was exceeded shall be made.

(e) Adjustments.--If any country-by-country allocations of quota quantities are made by the USTR, the USTR may make the necessary adjustments to the appropriate quota quantities.

(f) United States International Trade Commission (USITC) surveys.--The USITC shall conduct annual mandatory surveys with respect to the products subject to import relief under each item involved to obtain from domestic producers data by calendar quarter on profits, orders and inventories, and annual data on production, shipments, employment, capital expenditures, capacity, and research and development expenditures. The initial survey shall cover calendar year 1987, and the results shall be published by March 31, 1988. The final survey shall cover calendar year 1988, and the results shall be published by March 31, 1989. With each annual survey, the USITC shall also report the production, capacity and capacity utilization, to the extent the information can be obtained, for each country which is a major supplier of imports, and any projected changes in production, capacity and capacity utilization for those countries.

(g) Products Subject to Certain Export Restraint Agreements.--

(i) The duties provided for in subheadings 9903.72.00 and 9903.72.01 shall not apply to products of Australia, Austria, Brazil, Czechoslovakia, the European Communities, German Democratic Republic, Hungary, Japan, Mexico, People's Republic of China, Poland, the Republic of Korea, Romania, South Africa, Venezuela or Yugoslavia, exported to the United States on or after March 1, 1986. The duties provided for in subheadings 9903.72.00 and 9903.72.01 shall not apply to products of Trinidad and Tobago exported to the United States on or after October 15, 1987.

(ii) The quantitative limitations provided for in subheadings 9903.72.10 through 9903.72.24, inclusive, shall not apply to products of Brazil, or the following Member States of the European Communities: Belgium, Denmark, Federal Republic of Germany, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, and the United Kingdom of Great Britain and Northern Ireland.

(iii) The quantitative limitations provided for in subheadings 9903.72.30 through 9903.72.34, inclusive, shall not apply to products of Austria, Brazil, or the following Member States of the European Communities: Belgium, Denmark, Federal Republic of Germany, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, and the United Kingdom of Great Britain and Northern Ireland.

(h) Regarding shipments of mold blocks from Canada into the United States:

(i) The term "mold blocks" refers to products of either stainless steel bar or alloy tool steel whose chemistry meets that of either H13 hot-work tool steel forged bars, P20 mold steel forged bars, or hardenable Cr stainless steel 420 forged bars, as defined in subparagraphs (a), (b), and (c) below:

(A) "H13 hot-work tool steel forged bars" refers to forged bars of the alloy tool steel grade containing by weight, in addition to iron, not less than 0.32 percent nor more than 0.45 percent carbon; not less than 4.75 percent nor more than 5.50 percent chromium; not less than 0.20 percent nor more than 0.5 percent manganese; not less than 1.10 percent nor more than 1.75 percent molybdenum; not more than 0.030 percent phosphorous; not more than 0.030 percent sulfur; not less than 0.80 percent nor more than 1.20 percent silicon; and not less than 0.80 percent nor more than 1.20 percent vanadium.

(B) "P20 mold steel forged blocks" refers to forged bars of the alloy tool steel grade containing by weight, in addition to iron, not less than 0.28 percent nor more than 0.40 percent carbon; not less than 1.40 percent nor more than 2.00 percent chromium; not less than 0.60 percent nor more than 1.00 percent manganese; not less than 0.30 percent nor more than 0.55 percent molybdenum; not more than 0.030 percent phosphorous; not more than 0.030 percent sulfur; and not less than 0.20 percent nor more than 0.80 percent silicon.

(C) "Hardenable Cr Stainless Steel 420 forged bars" refers to stainless steel forged bars containing by weight over 0.15 percent carbon; not less than 12.00 percent nor more than 14 percent chromium; not more than 1.00 percent manganese; not more than 0.040 percent phosphorous; not more than 0.030 percent sulfur; not more than 1.00 percent silicon.

(ii) Mold blocks may only be forged bars of P20 mold steel, forged bars of H13 hot-work tool steel, and hardenable Cr stainless steel 420 forged bars of Canadian origin which are used in the United States to produce plastic injection molds, die-casting molds, and metal forming dies for automotive components. If rectangular, these bars must be between 10.16 and 101.6 cm in thickness and between 33.02 and 182.88 cm in width. Round bars of these steels must be between 20.32 and 60.96 cm in diameter. The rectangular bars must be machined on four faces at 90 degrees. In addition, one surface must be machined not to exceed 250AA roughness height (250 R.M.S. value), and surfaces must be perpendicular within 0.1588 cm. The round bars must be machined on both end faces, and their periphery must be machined not to exceed 250AA roughness height (250 R.M.S. value).

Heading/ Subheading	Stat. Suf. & cd	Article Description	Units of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
9903.72.00	1/	Flat rolled products and bars and rods which have been flat rolled, all the foregoing of stainless steel of the type described in U.S. note 4(a)(ix) to this subchapter, under 4.7625 mm in thickness and, if cold rolled, over 1.27 mm in width (except when: over 30.48 cm in width and coated, plated or clad with metal; 30.48 cm or under in width and electrolytically coated or plated with base metal other than tin, lead or zinc; cut, pressed or stamped to nonrectangular shape; worked after rolling other than by corrugation or crimping; as provided for in U.S. note 4(g)(i) to this subchapter; razor blade steel of the type described in U.S. note 4(a)(ii) to this subchapter; cladding grade 434 stainless steel flat-rolled products over 30.48 cm in width; cold-rolled flat-rolled products of stainless steel over 180.34 cm in width; stainless steel of the type described in U.S. note 4(a)(v) to this subchapter; and flapper valve steel) provided for in subheading 7219.12, 7219.13, 7219.14, 7219.22, 7219.23, 7219.24, 7219.31, 7219.32, 7219.33, 7219.34, 7219.35, 7219.90, 7220.11, 7220.12.10, 7220.12.50, 7220.20.10, 7220.20.60, 7220.20.70, 7220.20.90, 7220.90, 7222.10, 7222.20, 7222.30 or 7223.00.50, all the foregoing, whether or not entitled to duty-free treatment under subheading 9808.00.30.....	1/	3%	2%	1%	No change
9903.72.01	1/	Flat-rolled products and bars and rods which have been flat-rolled, all the foregoing of stainless steel of the type described in U.S. note 4(a)(ix) to this subchapter, 4.7625 mm or more in thickness, over 20.32 cm in width if hot rolled or over 30.48 cm in width if cold rolled (except if: coated, plated or clad with metal; cut, pressed or stamped to nonrectangular shape; worked after rolling other than by corrugation or crimping; as provided for in U.S. note 4(g)(i) to this subchapter; and stainless steel of the type described in U.S. note 4(a)(v) to this subchapter) provided for in subheading 7219.11, 7219.12, 7219.21, 7219.22, 7219.31, 7219.90, 7220.11, 7220.20.10, 7220.90, 7222.10, 7222.20 or 7222.30, all the foregoing, whether or not entitled to duty-free treatment under subheading 9808.00.30.....	1/	3%	2%	1%	No change

Rates of Duty 1 Effective with respect to articles entered during the period-- July 20, 1987 through July 19, 1988	July 20, 1988 through July 19, 1989	July 20, 1989 through Sept. 30, 1989
3%	2%	1%
3%	2%	1%

1/ See chapter 99 statistical note 1.

Note: The shaded area indicates that the provision has expired.

HARMONIZED TARIFF SCHEDULE of the United States

Annotated for Statistical Reporting Purposes

Heading/ Subheading	Stat. Suf. & cd	Article Description	Units of Quantity	Quota Quantity (in kilograms) If entered during the restraint period: July 20 through January 19	Quota Quantity (in kilograms) If entered during the restraint period: January 20 through July 19
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for subheadings 9903.72.10 through 9903.72.34 has been entered in any restraint period (whether, for tariff purposes, in chapter 72 or in subheading 9808.00.30), no article in such subheading the product of such country may be entered during the remainder of such restraint period, except as provided in U.S. note 4 to this subchapter: Bars and rods, flat-rolled products and wire, all the foregoing of stainless steel of the type described in U.S. note 4(a)(ix) to this subchapter (except if: worked after rolling other than by corrugation or crimping; plate, sheet, strip, wire and wire rod of the type described in U.S. notes 4(a)(xiii), 4(a)(xiv), 4(a)(xv), 4(a)(xvi) and 4(a)(xvii), respectively, to this subchapter; concrete reinforcing bars and rods; and stainless steel of the type described in U.S. note 4(a)(v) to this subchapter) provided for in subheading 7220.11, 7220.20.10, 7220.20.60, 7220.90, 7221.00, 7222.10, 7222.20, 7222.30, 7223.00.10, 7223.00.50 or 7223.00.90:			
9903.72.10	1/	If entered during the period from October 20, 1987, through July 19, 1988, inclusive:			
		Austria	1/	n/a 2/	97,977
		Canada	1/	250,396 2/	501,678
		Japan	1/	3,213,281 2/	6,427,470
		Korea	1/	439,989 2/	880,885
		Mexico	1/	25,401 2/	51,710
		Spain	1/	997,913 2/	1,995,827
		Sweden	1/	308,446 2/	616,892
		Taiwan	1/	22,680 2/	45,360
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	99,791 2/	97,070
9903.72.12	1/	If entered during the period from July 20, 1988, through July 19, 1989, inclusive:			
		Austria	1/	97,070	97,977
		Canada	1/	512,565	512,565
		Japan	1/	6,572,621	6,572,621
		Korea	1/	891,772	892,679
		Mexico	1/	58,060	58,968
		Spain	1/	2,041,187	2,041,187
		Sweden	1/	630,500	631,407
		Taiwan	1/	46,267	47,174
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	107,956	104,327
9903.72.14	1/	If entered during the period from July 20, 1989, through September 30, 1989, inclusive:			
		Austria	1/	39,009	3/
		Canada	1/	211,376	3/
		Japan	1/	2,707,974	3/
		Korea	1/	367,414	3/
		Mexico	1/	24,494	3/
		Spain	1/	840,969	3/
		Sweden	1/	259,457	3/
		Taiwan	1/	19,051	3/
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	44,453	3/

1/ See chapter 99 statistical note 2.
2/ October 20, 1987 through January 19, 1988.
3/ The relief expires at the close of September 30, 1989.

Note: The shaded area indicates that the provision has expired.

I-19

Heading/ Subheading	Stat. Suf. & cd	Article Description	Units of Quantity	Quota Quantity (in kilograms) If entered during the restraint period: July 20 through January 19	Quota Quantity (in kilograms) If entered during the restraint period: January 20 through July 19
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for subheadings 9903.72.10 through 9903.72.34 has been entered in any restraint period (whether, for tariff purposes, in chapter 72 or in subheading 9808.00.30), no article in such subheading the product of such country may be entered during the remainder of such restraint period, except as provided in U.S. note 4 to this subchapter (con.):			
		Bars and rods of stainless steel of the type described in U.S. note 4(a)(ix) to this subchapter, approximately round in cross-section, at least 5.08 mm but not exceeding 18.796 mm in diameter (except concrete reinforcing bars and rods and stainless steel of the type described in U.S. note 4(a)(v) to this subchapter) provided for in subheading 7221.00:			
9903.72.20	1/	If entered during the period from October 20, 1987, through July 19, 1988, inclusive:			
		Austria	1/	n/a 2/	25,401
		Japan	1/	1,439,717 2/	2,879,434
		Korea	1/	238,592 2/	475,277
		Spain	1/	421,845 2/	844,588
		Sweden	1/	899,836 2/	1,799,673
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	87,996 2/	151,501
9903.72.22	1/	If entered during the period from July 20, 1988, through July 19, 1989, inclusive:			
		Austria	1/	48,988	25,401
		Japan	1/	2,944,752	2,944,752
		Korea	1/	489,885	490,792
		Spain	1/	862,742	863,649
		Sweden	1/	1,840,697	1,840,697
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	129,729	151,501
9903.72.24	1/	If entered during the period from July 20, 1989, through September 30, 1989, inclusive:			
		Austria	1/	9,979	3/
		Japan	1/	1,212,918	3/
		Korea	1/	202,304	3/
		Spain	1/	355,620	3/
		Sweden	1/	758,414	3/
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	63,504	3/

1/ See chapter 99 statistical note 2.
2/ October 20, 1987 through January 19, 1988.
3/ The relief expires at the close of September 30, 1989.

Note: The shaded area indicates that the provision has expired.

Heading/ Subheading	Stat. Suf. & cd	Article Description	Units of Quantity	Quota Quantity (in kilograms)	
				If entered during the restraint period:	
				July 20 through January 19	January 20 through July 19
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for subheadings 9903.72.10 through 9903.72.34 has been entered in any restraint period (whether, for tariff purposes, in chapter 72 or in subheading 9808.00.30), no article in such subheading the product of such country may be entered during the remainder of such restraint period, except as provided in U.S. note 4 to this subchapter (con.): Flat-rolled products, bars and rods and wire, all the foregoing of tool steel of the type described in U.S. note 4(a)(xi) to this subchapter (except if: worked after rolling other than by corrugation or crimping; plate of the type described in U.S. note 4(a)(xiii) to this subchapter which has been coated, plated or clad with metal or cut, pressed or stamped to nonrectangular shape; sheet of the type described in U.S. note 4(a)(xiv) to this subchapter which has been coated, plated or clad with metal or cut, pressed or stamped to nonrectangular shape; strip of the type described in U.S. note 4(a)(xv) to this subchapter which has been coated or plated with base metal other than tin, lead or zinc or cut, pressed or stamped to nonrectangular shape; concrete reinforcing bars and rods; wire of the type described in U.S. note 4(a)(xvi) to this subchapter other than round wire of high speed tool steel as described in U.S. note 4(a)(xii) to this subchapter; chipper knife steel; band saw steel; ball bearing steel; rotor steel for hysteresis motors; and tool steel of the type described in U.S. note 4(a)(viii) to this subchapter) provided for in subheading 7208.11, 7208.12, 7208.13.10, 7208.13.50, 7208.14.10, 7208.14.50, 7208.21.10, 7208.21.50, 7208.22.10, 7208.22.50, 7208.23.10, 7208.23.50, 7208.24.10, 7208.24.50, 7208.31, 7208.32, 7208.33.10, 7208.33.50, 7208.34.10, 7208.34.50, 7208.35.10, 7208.35.50, 7208.41, 7208.42, 7208.43, 7208.44, 7208.45, 7208.90, 7209.11, 7209.12, 7209.13, 7209.14, 7209.21, 7209.22, 7209.23, 7209.24.50, 7209.31, 7209.32, 7209.33, 7209.34, 7209.41, 7209.42, 7209.43, 7209.44, 7209.90, 7210.70.30, 7210.90.90, 7211.11, 7211.12, 7211.19.10, 7211.19.50, 7211.21, 7211.22, 7211.29.10, 7211.29.30, 7211.29.50, 7211.29.70, 7211.30.10, 7211.30.30, 7211.30.50, 7211.49.10, 7211.49.30, 7211.49.50, 7211.90, 7212.10, 7212.21, 7212.29, 7212.30.10, 7212.30.30, 7212.30.50, 7212.40.10, 7212.40.50, 7212.50, 7212.60, 7213.20, 7213.41.30, 7213.41.60, 7213.49, 7213.50, 7214.10, 7214.30, 7214.50, 7214.60, 7215.10, 7215.30, 7215.40, 7215.90.10, 7215.90.30, 7215.90.50, 7217.21.10, 7217.21.30, 7217.21.50, 7217.22.10, 7217.22.50, 7217.23.10, 7217.23.50, 7217.29.10, 7217.29.50, 7217.31.10, 7217.31.30, 7217.31.50, 7217.32.10, 7217.32.50, 7217.33.10, 7217.33.50, 7217.39.10, 7217.39.50, 7219.11, 7219.12, 7219.13, 7219.14, 7219.21, 7219.22, 7219.23, 7219.24, 7219.31, 7219.32, 7219.33, 7219.34, 7219.35, 7219.90, 7220.11, 7220.12.10, 7220.12.50, 7220.20.10, 7220.20.60, 7220.20.70,--Continued on the next page			

Heading/ Subheading	Stat. Suf. & cd	Article Description	Units of Quantity	Quota Quantity (in kilograms) If entered during the restraint period: July 20 through January 19	January 20 through July 19
		Whenever the respective aggregate quantity of articles the product of a foreign country specified below for subheadings 9903.72.10 through 9903.72.34 has been entered in any restraint period (whether, for tariff purposes, in chapter 72 or in subheading 9808.00.30), no article in such subheading the product of such country may be entered during the remainder of such restraint period, except as provided in U.S. note 4 to this subchapter (con.): Continued from previous page--7220.20.80, 7220.20.90, 7220.90, 7221.00, 7222.10, 7222.20, 7222.30, 7223.00.10, 7223.00.50, 7223.00.90, 7225.20, 7225.30.10, 7225.30.30, 7225.30.50, 7225.30.70, 7225.40.10, 7225.40.30, 7225.40.50, 7225.40.70, 7225.50.10, 7225.50.60, 7225.50.70, 7225.50.80, 7225.90, 7226.20, 7226.91.10, 7226.91.30, 7226.91.50, 7226.91.70, 7226.91.80, 7226.92.10, 7226.92.30, 7226.92.50, 7226.92.70, 7226.92.80, 7226.99, 7227.10, 7227.90.10, 7227.90.20, 7227.90.60, 7228.10, 7228.30.60, 7228.30.80, 7228.40, 7228.50.10, 7228.50.50, 7228.60.10, 7228.60.60, 7228.60.80, 7229.10, 7229.90.10, 7229.90.50, 7229.90.90:			
9903.72.30	1/	If entered during the period from October 20, 1987, through July 19, 1988, inclusive:			
		Canada	1/	360,156 2/	719,405
		Japan	1/	1,048,716 2/	2,098,340
		Korea	1/	345,841 2/	691,282
		Mexico	1/	58,060 2/	117,935
		Poland	1/	77,111 2/	155,130
		Spain	1/	40,824 2/	83,462
		Sweden	1/	1,979,497 2/	3,958,995
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	76,204 2/	147,873
9903.72.32	1/	If entered during the period from July 20, 1988, through July 19, 1989, inclusive:			
		Canada	1/	735,734	736,642
		Japan	1/	2,144,607	2,145,514
		Korea	1/	713,055	712,147
		Mexico	1/	126,100	126,100
		Poland	1/	151,501	152,409
		Spain	1/	85,276	85,276
		Sweden	1/	4,048,807	4,048,807
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	148,780	147,873
9903.72.34	1/	If entered during the period from July 20, 1989, through September 30, 1989, inclusive:			
		Canada	1/	303,003	3/
		Japan	1/	883,607	3/
		Korea	1/	293,931	3/
		Mexico	1/	51,710	3/
		Poland	1/	62,596	3/
		Spain	1/	35,381	3/
		Sweden	1/	1,667,423	3/
		Other, except as provided in U.S. note 4(g)(ii) to this subchapter	1/	61,689	3/

1/ See chapter 99 statistical note 2.
2/ October 20, 1987 through January 19, 1988.
3/ The relief expires at the close of September 30, 1989.

Note: The shaded area indicates that the provision has expired.

Heading/ Subheading	Stat. Suf. & cd	Article Description	Units of Quantity	Quota Quantity (in kilograms)		
				If entered during the restraint period:		
				July 20 through January 19	January 20 through July 19	
		Mold blocks of the type described in U.S. note 4(h) to this subchapter:				
		If entered during the period from November 20, 1987, through July 19, 1988, inclusive:				
9903.72.40	1/	Canada.....	1/	997,913	1,995,827	
		If entered during the period from July 20, 1988, through July 19, 1989, inclusive:				
9903.72.42	1/	Canada.....	1/	1,995,827	1,995,827	
		If entered during the period from July 20, 1989, through September 30, 1989, inclusive:				
9903.72.44	1/	Canada.....	1/	798,311	3/	
				Rates of Duty		
				1		2
				General	Special	
9903.87.00	2/	Motor vehicles for the transportation of goods valued $1,000 or more (provided for in subheading 8704.10.50, 8704.21, 8704.22.50, 8704.23, 8704.31, 8704.32 or 8704.90).....	2/	25%	No change (B,E,IL) Free (CA)	No change

1/ See chapter 99 statistical note 2.
2/ See chapter 99 statistical note 1.
3/ The relief expires at the close of September 30, 1989.

Note: The shaded area indicates that the provision has expired.

APPENDIX J
REVISED STATISTICAL TABLES, SELECTED MINIMILL OPERATIONS

Table J-1

Certain carbon and alloy steel: Ratio of U.S. minimill producers' reported capacity to total industry capacity, by selected products, July 1, 1984- June 30, 1985 (1984/85), July 1, 1985-June 30, 1986 (1985/86), July 1, 1986-June 30, 1987 (1986/87), and July 1, 1987-June 30, 1988 (1987/88)

Item	*1984/85*	*1985/86*	*1986/87*	*1987/88*
	Percent			
Carbon and certain alloy steel:[1]				
Steelmaking facilities:[2]				
Electric furnace	45.1	45.6	52.4	52.3
Basic oxygen furnace	(3)	(3)	(3)	(3)
Other furnaces	(3)	(3)	(3)	(3)
Total	14.2	14.8	17.2	18.1
Continuous casting	(4)	33.1	29.4	30.4
Products:				
Bars:				
Hot finished	39.7	41.1	50.0	45.6
Reinforcing	89.9	80.9	97.0	81.5
Wire rod	51.4	57.9	69.7	63.4
Wire	38.9	28.8	57.9	59.2
Wire products	64.9	81.0	81.3	77.8
Structural shapes and units	57.0	45.2	48.7	56.6

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

[2] Including semifinished steel.

[3] Not applicable.

[4] Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from data contained in USITC investigation no. 332-209, *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*, various issues.

Table J-2

Certain carbon and alloy steel: U.S. minimill producers' capacity utilization, by selected products, July 1, 1984–June 30, 1985 (1984/85), July 1, 1985–June 30, 1986 (1985/86), July 1, 1986–June 30, 1987 (1986/87), and July 1, 1987–June 30, 1988 (1987/88)

Item	*1984/85*	*1985/86*	*1986/87*	*1987/88*
	Percent			
Carbon and certain alloy steel:[1]				
Steelmaking facilities: [2]				
Electric furnace	73.8	80.7	81.3	86.6
Basic oxygen furnace	(3)	(3)	(3)	(3)
Other furnaces	(3)	(3)	(3)	(3)
Total	73.8	80.7	81.3	86.6
Continuous casting	(4)	78.5	83.5	83.5
Products:				
Bars:				
Hot finished	62.0	77.5	75.0	81.2
Reinforcing	52.3	83.0	95.5	80.0
Wire rod	85.9	85.9	97.1	99.1
Wire	63.2	74.6	61.7	79.2
Wire products	61.3	64.6	77.5	72.8
Structural shapes and units	54.1	77.2	80.9	88.5

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

[2] Including semifinished steel.

[3] Not applicable.

[4] Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from data contained in USITC investigation no. 332-209, *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*, various issues.

Table J-3

Certain carbon and alloy steel: Ratio of U.S. minimill producers' production to total industry production, by selected products, July 1, 1984–June 30, 1985 (1984/85), July 1, 1985–June 30, 1986 (1985/86), July 1, 1986–June 30, 1987 (1986/87), and July 1, 1987–June 30, 1988 (1987/88)

Item	*1984/85*	*1985/86*	*1986/87*	*1987/88*
	Percent			
Carbon and certain alloy steel:[1]				
Steelmaking facilities:[2]				
Electric furnace	54.4	54.0	58.1	54.1
Basic oxygen furnace	(3)	(3)	(3)	(3)
Other furnaces	(3)	(3)	(3)	(3)
Total	16.6	17.6	21.0	18.6
Continuous casting	(4)	33.8	32.3	29.1
Products:				
Bars:				
Hot finished	47.0	53.1	59.3	52.2
Reinforcing	89.0	88.3	98.9	83.3
Wire rod	64.6	69.1	87.1	76.6
Wire	45.7	43.0	66.4	75.6
Wire products	76.3	85.9	86.6	90.6
Structural shapes and units	67.2	52.5	62.6	62.7

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

[2] Including semifinished steel.

[3] Not applicable.

[4] Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from data contained in U.S.I.T.C. investigation no. 332-209, *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*, various issues.

Table J-4

Certain carbon and alloy steel: U.S. minimill producers' shipments, by selected products, July 1, 1984-June 30, 1985 (1984/85), July 1, 1985-June 30, 1986 (1985/86), July 1, 1986-June 30, 1987 (1986/87), and July 1, 1987-June 30, 1988 (1987/88)

Item	*1984/85*	*1985/86*	*1986/87*	*1987/88*
	Thousand short tons			
Carbon and certain alloy steel products:[1]				
Semifinished	([2])	494	789	759
Bars:				
Hot finished	2,942	3,253	4,387	5,514
Reinforcing	3,076	3,845	3,480	2,442
Wire rod	1,902	2,152	2,273	2,491
Wire	132	128	142	190
Wire products	[329]	[374]	[459]	[462]
Structural shapes and units	2,340	2,341	2,526	3,200

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

[2] Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from data contained in U.S.I.T.C. investigation no. 332-209, *Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize*, various issues.

J-5

APPENDIX K
MAJOR COMPANIES NET INCOME AND CASH FLOW DATA, OCTOBER 1, 1987–SEPTEMBER 30, 1988

Table K-1

Calculation of major companies' net income from steel product operations, October 1, 1987 - September 30, 1988

(In thousands)

Item	*Calculation*
Net sales	$29,047,241
Cost of goods sold	25,301,274
General, selling, and administrative expenses	1,093,779
Interest expense	459,041
Reserves, provisions, special charges and other unusual items	3,130,422
All other expenses or (income)	(75,203)
Current income taxes	398,217
Tax effect of operating loss carry forward	(309,406)
Investment tax credit refund	(51,604)
Deferred taxes	0
Net income from steel operations	(899,279)

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

K-2

Table K-2

Sources and uses of cash and cash equivalents in steel product operations, October 1, 1987 - September 30, 1988

(In thousands)

Item	*Calculation*
Cash provided from (cash used in) operations:	
Net income	$(899,279)
Depreciation, depletion, and amortization	1,232,015
Non-cash income tax expense	(4,740)
Non-cash charges (credits):	
relating to reserves, provisions, special charges and other unusual items	2,995,816
Other	2,774
Cash flow from earnings	3,326,586
Changes in working capital, excluding financing activities	(499,267)
Cash flow from operations	2,827,319
Cash provided from (used in) financing activities:	
Net additions to or (reductuions) in long and short term debt	(1,229,779)
Changes in capital stock	346,059
Transfers from or (to) corporate	(428,588)
Other	(96,733)
Subtotal	(1,409,041)
Investment,[1] dividends paid, and other cash provided (used)	(1,783,809)
Increase (decrease) in cash and cash equivalents	(365,531)
Cash and cash equivalents:	
Beginning of period	1,049,359
End of period	683,828

[1] Includes capital expenditures and cash generated from the disposal of assets.

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

Table K-3

Calculation of major companies' cash flow on steel product operations[1], October 1, 1987 - September 30, 1988.

(In thousands)

Item	*Calculation*
Cash flow from earnings	$ 3,326,586
Net changes in long and short term debt and liabilities[2]	(1,729,046)
Dividends paid	(235,296)
Net cash flow from steel product operations[3]	1,362,244

[1] Under P.L. 98-573, section 806 (b)(2)(B) net cash flow is defined as "annual net (after-tax) income plus depreciation, depletion allowances, amortization, and changes in reserves minus dividends and payments on short-term and long term debt and liabilities." The Conference report on the bill states that payment on short and long term debt and other liabilities means the net reduction in such debt and liabilities.

[2] Includes net changes in working capital.

[3] Including net income pertaining to prior periods and net increases in debt and liabilities, exclusion of which would reduce cash flow to $810.9 million.

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

K-4

Table K-4

Major U.S. steel companies: Net cash flow from steel product operations, October 1, 1987 - September 30, 1988.

(1,000 dollars)

Source	*Net cash flow*[1]	*Net income pertaining to prior period*	*Net increase in short and long term debt and liabilities*[2]
Armco	***	***	***
Bethlehem	***	***	***
Inland	***	***	***
LTV	***	***	***
National	***	***	***
Nucor	***	***	***
Rouge	***	***	***
USX	***	***	***
Weirton	***	***	***
Wheeling- Pittsburgh	***	***	***
Total	1,362,244	411,811	139,569

[1] Including net income pertaining to prior periods and net increases in long and short debt and liabilities.

[2] Includes net changes in working capital.

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

Table K-5
Major U.S. steel companies: Net cash flow from steel product operations, and steel related expenditures, October 1, 1987-September 30, 1988

Company	Net cash flow (1)	Steel related expenditures: Plant and equipment (2)	Research and development[2] (3)	Retraining workers[2] (4)	Other (5)	Total expenditures (6)	Expenditures reflected in net cash flow (7)	Net expenditures (6-7) (8)	Adjusted net cash flow (1+ 4) (9)	Ratio of expenditures for retraining workers to adjusted net cash flow (10)
Armco	***	***	***	***	***	***	***	***	***	***
Bethlemen	***	***	***	***	***	***	***	***	***	***
Inland	***	***	***	***	***	***	***	***	***	***
LTV	***	***	***	***	***	***	***	***	***	***
National	***	***	***	***	***	***	***	***	***	***
Nucor	***	***	***	***	***	***	***	***	***	***
Rouge	***	***	***	***	***	***	***	***	***	***
USX	***	***	***	***	***	***	***	***	***	***
Weirton	***	***	***	***	***	***	***	***	***	***
Wheeling-Pittsburgh	***	***	***	***	***	***	***	***	***	***
Total	1,362,244	1,946,503	104,316	58,204	126,133	2,235,156	176,417	2,058,739	1,414,448	4.1

[1] Including income pertaining to prior periods and net increases in short and long term debts and liabilities (see table 17).
[2] Included as expenses in net income calculations.

Table K-6

Major U.S. steel companies: Net cash flow from steel product operations, and steel related expenditures, July 1, 1989-September 30, 1989 (estimate)

		Steel related expenditures								
Company	*Net cash flow (1)*	*Plant and equipment (2)*	*Research and development[1] (3)*	*Retraining workers[1] (4)*	*Other (5)*	*Total expenditures (6)*	*Expenditures reflected in net cash flow[2] (7)*	*Net expenditures (6-7) (8)*	*Adjusted net cash flow (1+ 4) (9)*	*Ratio of expenditures for retraining workers to adjusted net cash flow (10)*
Armco	***	***	***	***	3***	***	***	***	***	***
Bethlemen	***	***	***	***	***	***	***	***	***	***
Inland	***	***	***	***	***	***	***	***	***	***
LTV	***	***	***	***	***	***	***	***	***	***
National	***	***	***	***	***	***	***	***	***	***
Nucor	***	***	***	***	***	***	***	***	***	***
Rouge	***	***	***	***	***	***	***	***	***	***
USX	***	***	***	***	***	***	***	***	***	***
Weirton	***	***	***	***	***	***	***	***	***	***
Wheeling-Pittsburgh	***	***	***	***	***	***	***	***	***	***
Total	61,120	605,458	29,531	17,757	14,607	638,139	47,288	590,851	78,877	22.5

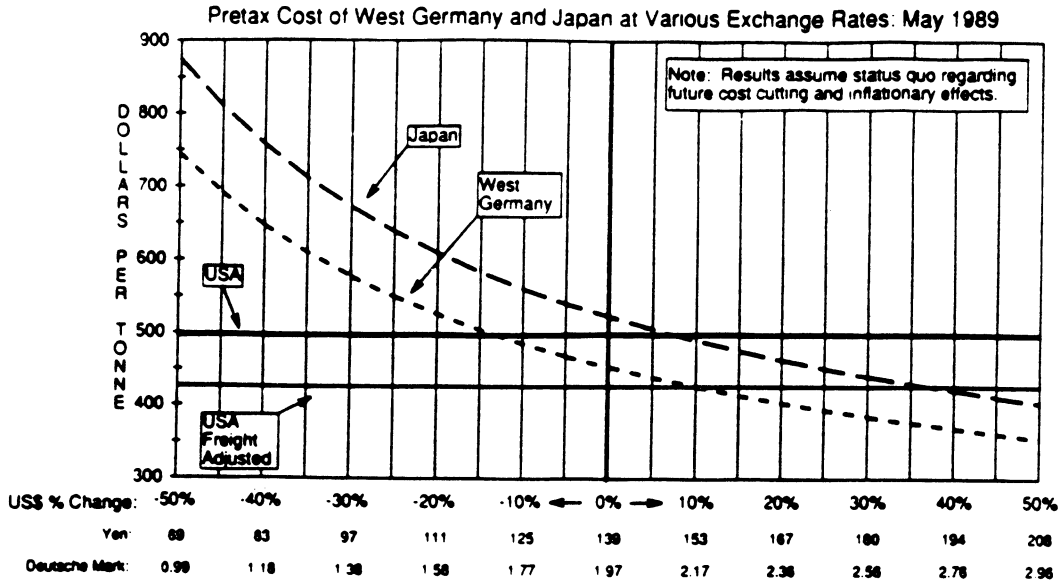
[1] Included as expenses in net income calculations.

[2] Estimated assuming funds used for research and development and for worker retraining will be reflected in net cash flow.

K-7

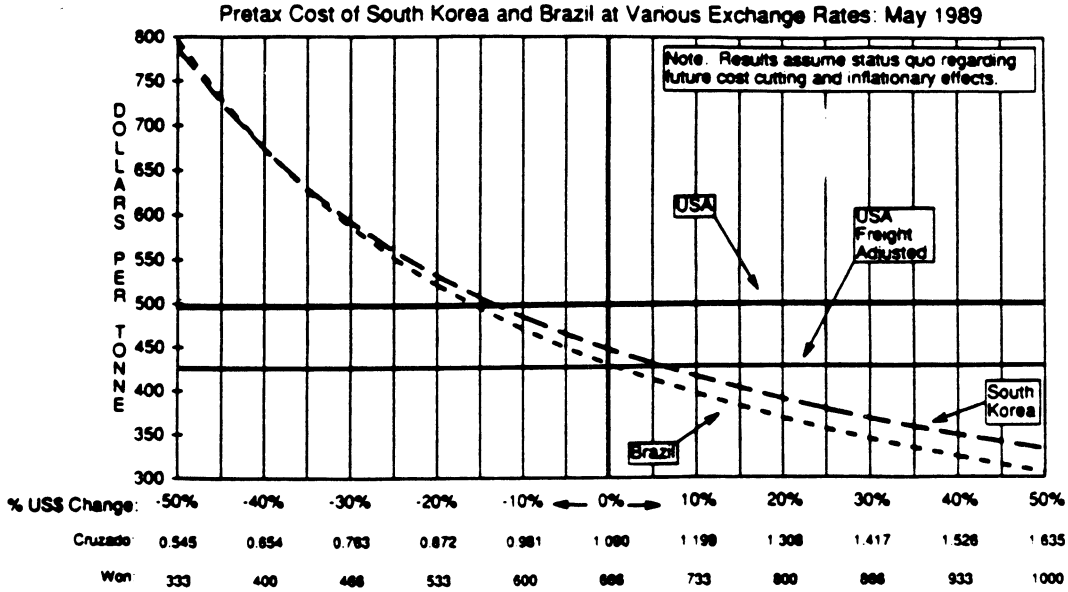
APPENDIX L
PRE-TAX COST AT VARIOUS EXCHANGE RATES

Figure L-1



Source: World Steel Dynamics, International Steel Cost Monitor

Figure L-2



Source: World Steel Dynamics, International Steel Cost Monitor

L-2

APPENDIX M
FOREIGN EQUITY INVESTMENT IN SELECTED STEELMAKING FACILITIES

Table M-1

Foreign equity investment in selected U.S. steelmaking facilities:[1]

U.S. facility	Foreign partner/owner	Foreign country	Asset	Share of foreign ownership	Investment Foreign	Investment U.S.	Investment Total	Primary steelmaking, annual[2]	Finishing facilities, annual[3]	Start-Up date
				Percent	Million dollars			1,000 tons		
Armco	Kawasaki	Japan	Eastern Steel Division	50	700	(4)	700	4,000	(4)	1989
*Birmingham	Danielli	Italy	Buffalo Steel, Houston, Tx	15	30	170	[6]200	800	(4)	1991
Calif. Steel	Kawasaki/CVRD	Japan/Brazil	Fontana Plant, Fontana, Ca	100	275	(4)	[7]275	(4)	2,500	1984
Inland Steel	Nippon Steel	Japan	I/N Tek, New Carlisle, IN (Cold rolling mill)	40	310	90	400	(4)	1,000	1987
Inland Steel	Nippon Steel	Japan	New Carlisle, In (galvanizing line)	50	160	40	[8]200	(4)	800	1988
Laclede	Ivaco	Canada	All facilities	51	(5)	(5)	(5)	(5)	200	1983
LTV	Sumitomo Metal	Japan	Cleveland, OH facility (galvanizing line)	50	100	(4)	100	(4)	400	1987
LTV	Sumitomo Metal	Japan	Columbus, OH facility (galvanizing line)	50	180	25	205	(4)	360	1989
National Steel	NKK	Japan	All facilities[9]	50	320	(4)	320	[1]6,000	(4)	1984
*Nucor Yamato	Yamato Kogyo	Japan	Blytheville Ark. facility	49	86	89	175	1,000	650	1989
Phoenix Steel	CitiSteel	Peoples Republic of China	Claymount, DE facility	100	14	(4)	14	[10]246	175	1989
USX	Kobe	Japan	Lorain, OH facility	50	300	(4)	[8]300	3,300	(4)	1989
USX	Posco	Republic of Korea	USS-Posco, Pittsburgh, CA	50	250	150	400	(4)	1,350	1986
Wheeling-Pitt.	Nisshin Steel	Japan	Follansbee, WV (coating line)	67	70	(4)	70	(4)	275	1986
Wheeling-Pitt.	Nisshin Steel	Japan	All facilities	10	15	(4)	15	2,800	(4)	1986
Al Tech	Sammi Steel Specialty	Republic of Korea	All facilities in U.S. and Canada	100	350	0	350	60	(5)	1989
*Atlantic Steel	Ivaco	Canada	All facilities	100	***	***	***	750	630	1979
*Auburn Steel	Ataka/Kyoei facility	Japan	Auburn, NY	100	***	***	***	300	330	1977

See footnotes on next page.

Table M-1—*Continued*

Foreign equity investment in selected U.S. steelmaking facilities:[1]

U.S. facility	*Foreign partner/owner*	*Foreign country*	*Asset*	*Share of foreign ownership*	*Investment*			*Primary steelmaking, annual*[2]	*Finishing facilities, annual*[3]	*Start-Up date*
					Foreign	*U.S.*	*Total*			
				Percent	*Million dollars*			*1,000 tons*		
*Bayou Steel	Voest-Alpine Getraco/ Finmetal	Austria France	Louisiana facility	100	***	***	***	700	600	[12]1981
*Georgetown	Korf Ind.	West Germany	U.S. facilities	100	(5)	(5)	(5)	600	(4)	[13]1982
*Hawaiian Western	Western Canada Steel	Canada	Hawaii facility	51	(5)	(5)	(5)	50	(5)	1959
*New Jersey Steel	Von Roll	Switzerland	Sayreville, NJ facility	100	***	***	***	480	500	[11]1983
*Raritan River facility	Co-Steel	Canada	Perth Amboy, NJ	100	***	***	***	800	775	1980
*Slater Steel/ Fort Wayne Specialty	Slater Industries	Canada	U.S. facilities	100	(5)	(5)	(5)	60	(5)	(5)
*Tamco	Tokyo Steel/ Mitsui	Japan	Etiwanda, CA facility	50	***	***	***	280	(5)	1977

[1] Does not include equity investment in the distribution chains and service centers by either domestic or foreign companies.
[2] Total steelmaking capacity of the integrated facility. Collected from various public sources, including *Directory of Iron and Steel Plants, 1988*, Association of Iron and Steel Engineers.
[3] Total finishing capacity of the facility. Collected from various public sources, including *U.S. Steel Industry Data Handbook, 1989*, 33 Metal Producing.
[4] Not applicable.
[5] Not available.
[6] Includes 35-percent share ($70 million) investment by Proler International, a domestic scrap processor.
[7] AUS estimate.
[8] Proposed expansion. Project has been approved for engineering design.
[9] National Steel formed a joint venture with Marubeni Corp. to operate a processing center, Pro Coil Corp., opening November 1988 following an investment of $20 million. The company offers full-service blanking and slitting.
[10] Re-Start following modernization of facilities. Under new ownership.
[11] New Jersey Steel was recapitalized in 1987 through an initial public offering of common stock which reduced the share of foreign equity ownership to to 62 percent.
[12] Bayou Steel was sold to domestic investors in 1986.
[13] Korf Industries subsequently sold the facility in Beaumont, TX to Cargill, Inc, and the facility in Georgetown, SC to Georgetown Ind.

*Minimill

Source: Compiled by the staff of the U.S. International Trade Commission on the basis of data obtained from AUS Consultants.

M-3