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PART FOUR

PRODUCT REPORTS

9

IRON AND STEEL

Trade

The iron and steel division is one of two mainly semimanufactured product groups included in the study, the other being nonferrous metals (Chapter 10). It thus covers items at an earlier stage of processing, and includes a much higher proportion of standardized products than most other groups. Some of the results and subjects discussed here reflect this characteristic of iron and steel.

Germany was the leading exporter of iron and steel in 1963, followed by Belgium-Luxembourg, France, and Japan. The United Kingdom and the United States were the fifth- and sixth-ranking exporters (Table 9.1) instead of being two of the first three, as was the case in most commodity divisions. More than two-thirds of EEC exports went to OECD Europe (almost 50 per cent to other EEC countries); the proportion was much smaller for the three main non-EEC exporters. In markets outside Europe, on the other hand, the EEC countries were far less important. Japan was the leader by a wide margin, and both the United States and the United Kingdom sold more than Germany.

The bulk of exports—about 75 per cent—is accounted for by three of the nine iron and steel groups. These are bars, rods, angles, shapes, and sections (SITC 673); universals, plates, and sheets (SITC 674); and tubes, pipes, and fittings (SITC 678).

An unusual aspect of this commodity division, as contrasted with most machinery, was that a good deal of the competition for markets involved the U.S. market. U.S. imports of iron and steel were consider-

Note: SITC 67. *Value of OECD exports in 1963:* $5.7 billions; 13 per cent of study total. *Coverage:* Pig iron and ferro-alloys; ingots, bars, rods, plates, sheets, hoops, strips, and other semimanufactures; wire, rails, tubes, pipes, and fittings.

Table 9.1
OECD Exports of Iron and Steel (SITC 67),
by Origin, Destination, and Commodity Group, 1963
(dollars in millions)

	Value of Exports	Per Cent of OECD Exports in 67	Share in OECD Exports (per cent)							
						EEC				
			OECD	U.S.	U.K.	Total	Germany	France	Belgium-Luxembourg	Japan
Total, all destinations and groups	$5,693	100.0	100.0[a]	9.0	10.1	55.6	20.1	13.3	15.5	12.3
Destination										
U.S.	631	11.1	100.0		8.2	36.8	10.6	7.6	17.9	33.8
OECD Europe	2,910	51.1	100.0	3.0	7.1	73.6	28.2	16.5	21.3	2.1
U.K.	148	2.6	100.0	5.4		45.9	6.1	9.5	10.8	1.4
EEC total	1,941	34.1	100.0	2.7	4.5	78.3	28.7	17.7	25.2	2.4
Germany	586	10.3	100.0	2.6	3.6	72.5		31.4	31.4	0.2
France	464	8.2	100.0	1.5	2.8	90.9	52.2		33.6	
Belgium-Luxembourg	148	2.6	100.0	6.8	7.4	75.7	32.4	25.7		0.1
Canada	188	3.3	100.0	60.6	13.3	16.0	6.9	2.7	6.4	7.4
Japan	14	0.2	100.0	28.6	7.1	42.9	35.7	0.7	c	
Latin America	364	6.4	100.0	25.5	8.2	39.3	11.5	7.7	8.0	17.0
Other	1,586	27.9	100.0	13.6	16.3	38.7	12.5	12.3	6.9	22.1

SITC commodity group										
Pig iron, ferro alloys, etc. (671)	251	4.4	100.0[a]	3.6	4.0	43.4[b]	21.1	16.7	[c]	2.8
Ingots and other primary forms (672)	415	7.3	100.0	6.0	1.2	64.3	30.1	[c]	14.7	6.5
Bars, rods, angles, shapes, and sections (673)	1,299	22.8	100.0	4.2	7.4	67.1	23.1	14.3	27.4	11.9
Universals, plates, and sheets (674)	2,057	36.1	100.0	10.5	13.2	50.8	13.9	15.2	13.8	15.5
Hoop and strip (675)	291	5.1	100.0	10.0	10.7	60.8	22.7	11.0	23.4	4.5
Rails and railway track construction materials (676)	111	1.9	100.0[d]	15.3	9.9	45.0	18.9	13.5	10.8	7.2
Wire, excluding wire rod (677)	233	4.1	100.0	6.4	12.0	51.1	18.5	[c]	22.7	18.5
Tubes, pipes, and fittings (678)	968	17.0	100.0	13.3	11.9	52.0	25.2	12.0	[c]	13.6
Castings and forgings (679)	61	1.1	100.0[e]	31.9	8.3	27.9	12.7	[c]	10.4	

Source: Appendix A.

[a]Including Norway, 20.3 per cent; and Canada, 10.8 per cent.

[b]Excluding Netherlands exports of SITC 671.2.

[c]Not shown separately; less than 10 per cent.

[d]Including Canada, 14.4 per cent.

[e]Including Canada, 23.8 per cent.

ably greater than exports, particularly in the first three groups and in iron and steel wire. The main U.S. trade deficits were in bars, rods, etc. (SITC 673), which contained two products, wire rod and reinforcing bars, in which foreign inroads into the U.S. market were important.

Despite the amount of controversy engendered by steel imports the ratios of the value of imports to U.S. new supply (output plus imports) were still, at the end of our period, 5 per cent or less for all but one of the five-digit Standard Industrial Classification (SIC) codes included in this division, the sole exception being steel wire, at 10 per cent. The ratio for the main aggregate—blast furnace, steel mill, electrometallurgical products—was 4 per cent.[1]

These ratios are much lower than many quoted elsewhere, for two reasons. One is that the categories are fairly broad, and therefore do not distinguish individual items such as wire rod and reinforcing bars, which were meeting severe foreign competition. The second reason is that the ratios are frequently given in terms of tonnage rather than value. The imports are usually items that are less fabricated or of lower quality than most of the domestic products in the same group, and the tonnage data therefore tend to exaggerate the importance of imports. Some of the tonnage ratios for specific products in this division in 1964 are shown below: [2]

Ingots, blooms, billets, slabs, etc.	13.8%
Wire rods	45.1
Structural shapes	10.4
Plates	5.3
Reinforcing bars	11.5
Other bars and tool steel	7.2
Pipes and tubing	9.1
Drawn wire	13.5
Sheets and strip	3.4

While the tonnage data presumably exaggerate the impact of imports, the value data probably understate it, because the prices are lower for imports than for the competing American products.

[1] *U.S. Commodity Exports and Imports as Related to Output, 1965 and 1964,* U.S. Bureau of the Census, 1967. Data are given in this publication for all the four- and five-digit product codes of the Standard Industrial Classification that could be matched with export and import trade categories.

[2] *Foreign Trade Trends: Iron and Steel, 1967,* American Iron and Steel Institute, 1967, p. 67.

The severe competition encountered by U.S. producers in the U.S. market had its counterpart in Europe. European producers suffered inroads by imports into their domestic markets, and the degree of competition appeared to increase during the period covered by this study. The OECD observed a change in the international market for iron and steel during the early 1960s which it described as ". . . the increasing interpenetration of the industrialized countries' markets." To some extent this may have been a response to low demand levels in home markets even at low prices. However, the OECD report pointed out that the trend continued even in 1964 when most member countries' home markets were expanding.[3] This increasing trade may, therefore, represent a trend, rather than a cyclical phenomenon.

The outstanding change in export shares during the period of our study (Table 9.2) was the decline of the U.S. share from 22 per cent to 9 per cent between 1957 and the early 1960s. Although it recovered somewhat after 1962 it did not rise above 10 per cent. The main beneficiaries of the U.S. decline were at first the Common Market countries, whose share rose by over ten percentage points between 1957 and 1961 but then receded to the earlier level. Within the EEC, Germany replaced France as the main exporter. After 1961 the main development was the growth of Japanese exports. The Japanese growth began before 1961, although at a slower rate.

Nonprice Factors in Trade

Price competition, on which our measurement is focused, was only one of the influences determining the flow of iron and steel trade. Some large changes in trade were the result of strikes, government actions on tariffs and other restrictions, and various other factors which our price indexes do not encompass.

In the case of several strikes, for example, foreign sellers were able to win part of the domestic market of the country in which the strike had taken place and also some of that country's usual export markets. Illustrations are provided by the strikes in the United States in 1959 and in the United Kingdom in 1963–64.[4]

[3] *The Iron and Steel Industry in 1964 and Trends in 1965*, OECD, 1965, p. 29.

[4] The British strike was said to have resulted in large imports of steel coil from the United States, and even the prospect of the U.S. strikes in 1959 and 1965 stimulated

Table 9.2
OECD Exports of Iron and Steel, 1953, 1957, 1961–64
(dollars in millions)

	Value of OECD Exports	Share in OECD Exports (per cent)							
					EEC				
		OECD	U.S.	U.K.	Total	Germany	France	Belgium-Luxembourg	Japan
					INCLUDING SWITZERLAND AND SPAIN				
1964	$6,680	100.0	10.0	9.1	54.2	18.5	13.3	15.5	13.6
1963	5,693	100.0	9.0	10.1	55.6	20.1	13.3	15.5	12.3
1962	5,471	100.0	8.6	10.3	59.0	22.8	14.0	16.2	9.7
1961	5,148	100.0	9.4	11.5	65.3	25.0	17.2	16.6	7.4
					EXCLUDING SWITZERLAND AND SPAIN				
1961	5,097	100.0	9.5	11.7	65.9	25.3	17.3	16.7	7.5
1957	4,955	100.0	22.4	12.1	55.0	19.0	14.3	16.6	4.2
1953	2,577	100.0	20.0	14.7	54.4	13.0	18.5	19.3	5.4

Source: Appendix B.

Another influence on the flow of trade was the existence of capacity limitations for specific products in some of the countries outside of the United States. Some types of steel plates and sheets (SITC 674) were in short supply in the earlier years of our period, and exports of British firms were held down by an informal limit on sheet exports until 1961. Over part of the period British capacity was inadequate for the demand, and there were, in addition, some quality advantages in foreign steel, but both of these reasons for U.K. imports diminished in importance by the end of the period.[5] The issue of capacity arises in the case of steel pipe (SITC 678) because demand for pipe sometimes comes in large lumps, and few countries find it economical to have enough capacity on hand for these peak demands.

More broadly, however, the growth of capacity, protected by tariffs and quotas, in countries that were formerly net importers slowed the growth of trade in iron and steel. This was reflected in a reduction in the proportion of iron and steel trade which the United Nations has described as "deficit covering" from almost 80 per cent in 1950 to only 54 per cent in 1964.[6]

Aside from these commercial considerations, trade in iron and steel has been influenced by a variety of governmental policies and interventions. For example, exports of pipes, tubes, etc. (SITC 678) have been affected by political and military considerations. A Russian order for large-diameter pipe was turned down by Germany in 1963 under pressure from NATO, on the ground that they were strategic material. The NATO restrictions were helpful to non-NATO countries in the competition for such orders. In a number of instances, large amounts

inventory accumulation and brought into the market for foreign steel American firms which had usually confined their buying to domestic sources. "United Kingdom: SCW Buys U.S. Coil," *Metal Bulletin*, January 28, 1964; "Steel Strike in Britain Leads 2 Auto Makers to Order Foreign Steel," *Wall Street Journal*, January 2, 1964; "Scramble for Steel: More Metal Users Turn to Warehouses, Imports to Build Strike Hedge," *ibid.*, Febuary 5, 1965; *The Iron and Steel Industry in Europe, 1958–1959*, OEEC, 1960, pp. 81–83; "U.S. Steel Strike: A Long and Bitter Struggle Expected," *Metal Bulletin*, July 21, 1959.

[5] "A Hollow Warning? The Complexities of Supply and Demand in Steel Sheets," *Metal Bulletin*, October 12, 1964; "Wanted—A Fourth Wide Strip Mill," *ibid.*, March 8, 1955; "Sir Julian Talks Horsesense," *ibid.*, March 27, 1962; *Imported Manufactures: An Inquiry into Competitiveness*, U.K. National Economic Development Council, London, 1965; "Steel Imports: Non-issues," *Economist*, August 13, 1966.

[6] *World Trade in Steel and Steel Demand in Developing Countries*, United Nations, Economic Commission for Europe, 1968, pp. 13, 47–49, 121–122. "Deficit-covering trade" is equal to the net imports of those countries that are net importers and is contrasted with "exchange trade," the rest of trade which represents mainly trade among the iron and steel exporters.

of steel pipe were sold in barter for other commodities, directly or under general understandings about reciprocal orders. In some of these trades political or balance-of-payments motivations were primary, and price, or at least nominal price, was a secondary consideration.[7]

Another governmental influence on the direction of the international steel trade was the formation of the European Coal and Steel Community (ECSC) under which a common market in steel began operations in 1953. Effects of the common market in the form of increased price competition would be captured by our indexes, but the changes in delivered prices that resulted from tariff reductions would be missing, because we used only f.a.s. or f.o.b. prices. In addition, other aspects of the common market, such as the reduction of nonprice barriers to trade, would influence the flow of trade even if they were not reflected in price changes.

At times the major steel producers have attempted through agreements among the sellers to curb the price cutting which was eroding their domestic price structures. One report stated that "a gentlemen's agreement between Germany and Japan prohibits the export of products freely available in the respective home markets." Similar agreements between the ECSC and U.K. mills were reported ". . . whereby each side undertakes not to undercut the other's home prices . . ." on steel pipe. One of the most specific reports described a purported agreement on small-diameter steel tubes in which European and Japanese firms divided up the North American market, the former taking the area roughly as far inland as Chicago and New Orleans and the latter taking the western half of the country. The cartel was to regulate prices and sales quotas.[8]

Part of the competition in the steel producers' own markets involved purchases of foreign steel by nonintegrated processors, who used imports to escape the price structure imposed by integrated producers. The processors alleged that they were being squeezed by artificially low margins between semimanufactured and finished product prices maintained by domestic integrated producers. An example of the conflict

[7] "Israel Orders Steel from West Germans," *New York Times,* December 23, 1967; "Austria Agreeable on Soviet Pipeline," *ibid.,* March 3, 1967; "Russian-Italian Talks on National Gas Pipeline Reach 'Advanced Stage,'" *Wall Street Journal,* October 25, 1966; "Tubes: Reactions to NATO Pressure," *Metal Bulletin,* January 8, 1963; "NATO Lifts Embargo on Oil Pipe to Reds," *Wall Street Journal,* November 11, 1966.

[8] "Japan-Europe Tube Cartel," *Metal Bulletin,* April 19, 1963; "ECSC-UK Rebar Agreement?" *ibid.,* July 5, 1963; "Steel Price Truce?" *ibid.,* January 25, 1963; "A Ruthless World Market," *ibid.,* May 7, 1963; "The Japanese Scene: More Hot Coil Sales," *ibid.,* May 22, 1964.

between integrated and nonintegrated firms was the claim that in times of high demand the integrated British producers met their own needs and forced rerollers to buy overseas at premium prices, and that in times of slack demand the British mills kept up their prices of semi-finished steel even when the market for finished products was weak. The nonintegrated producers were then forced to buy lower-priced steel from abroad in order to survive. A number of other examples can be found of claims by nonintegrated producers that the domestic price spread discriminated against them and that only overseas purchases permitted them to escape this discrimination. Independent wire manufacturers both in Britain and the United States purchased wire rod abroad on these grounds. In the United States independent wire drawers charged that the integrated producers kept the price of wire rod high and stable between 1959 and 1963 (after raising it rapidly before then) while the price of welded wire mesh was falling. The price differential between domestic wire rod and finished products declined so far (even to zero) they claimed, as to leave no room for profitable production using American steel, and only the import of foreign wire rod, mainly from continental Europe and Japan, permitted them to survive. An attempt by the major integrated steel companies to bring action against wire rod imports was rejected by the Tariff Commission in 1963.[9]

Price Changes

The major price developments in iron and steel were the large increases in U.S. and European prices between 1953 and 1957, the sharp de-

[9] "The Steel Billet Controversy," *Metal Bulletin,* December 4, 1962; U.K. Iron and Steel Board, *Steel Imports,* August 26, 1964; "Steel Imports and Dual Distribution: The Plight of the Independent Wire Drawer and Fabricator," *Congressional Record,* Appendix, April 28, 1965; "Imports of Steel Rods Necessary, Say Wire Producers at Hearing," *New York Times,* May 8, 1963; "Steel Men Lose Case on Dumping," *ibid.,* May 7, 1963. See also U.S. Tariff Commission, *Hot-rolled Carbon Steel Wire Rods from Belgium,* T.C. Pub. 93, June 19, 1963; *Hot-rolled Carbon Steel Wire Rods from West Germany,* T.C. Pub. 95, June 21, 1963; *Hot-rolled Carbon Steel Wire Rods from Luxembourg,* T.C. Pub. 94, June 19, 1963; and *Hot-rolled Carbon Steel Wire Rods from France,* T.C. Pub. 99, July 15, 1963.

For an analysis of competition on the U.S. market for wire rods and wire products see Walter Adams and Joel B. Dirlam, "Steel Imports and Vertical Oligopoly Power," *American Economic Review,* September 1964. Lawrence B. Krause has suggested that for several reasons, including fear of antitrust action, the integrated domestic firms in the United States might not make use of this method of undermining the independent nonintegrated producers. See Lawrence B. Krause, "Import Discipline: The Case of the United States Steel Industry," *Journal of Industrial Economics,* November 1962.

Table 9.3
International Prices of Iron and Steel, 1953, 1957, 1961–64
(1962 = 100)

	1953	1957	1961	1962	1963	1964
U.S.	84	101	102	100	99	100
U.K.	99	110	102	100	96	104
EEC	101	118	104	100	96	104
Germany	94	111	104	100	96	104
Japan	NA	NA	110	100	99	100

Source: Appendix C (extrapolated indexes).

cline in European, but not U.S., prices between 1957 and 1963, and in Japanese prices (not available for earlier years) from 1961 to 1963, and then the jump in European prices in 1964 while U.S. and Japanese prices were almost stable (Table 9.3). In four of the five time intervals, price movements were in the same direction in all the countries listed, the exception being the period from 1957 through 1961, when European prices declined substantially from their Suez highs, while U.S. prices rose slightly.

It has been suggested that some of the apparent upward trend in U.S. domestic steel price indexes up to 1957 or 1958 and, presumably, in some of our international prices as well, reflected only an upward bias in them caused by the neglect of quality improvements: ". . . thickness tolerances have become much more stringent, although the AISI [American Iron and Steel Institute] standards have not been changed. . . . In many other respects, such as strength, hardness, surface characteristics and flatness, customers' requirements have become more strict without any change resulting in charges for 'extras.' " [10]

The declining price trends shown by our indexes during the early 1960s were related in the OECD annual reviews of the industry to the entry of new producers and ". . . the resulting fierce and often cutthroat competition," with mention being made specifically of rising sales by Eastern bloc countries and ". . . strong Japanese price competition on export markets. . . ." [11]

[10] Harleston R. Wood, "The Measurement of Employment Cost and Prices in the Steel Industry," *Review of Economics and Statistics,* November 1959.

[11] *The Iron and Steel Industry, 1961,* OECD, 1961, pp. 75, 79–80; *The Iron and Steel Industry in 1962 and Trends in 1963,* OECD, 1964, p. 74.

Sharpening international competition led to an increase in ECSC tariffs on most iron and steel products to the Italian level early in 1964, and to a specific duty on pig iron imports, most of which came from outside the ECSC.[12]

OECD reports for the first half of 1964 agreed with our indexes in describing a strong recovery in most steel prices, although the dating of our observations at midyear may have caused them to represent a maximum for the year rather than an average.[13]

European and Japanese international prices appear in these indexes to have been more flexible than U.S. prices after 1957, varying over a much wider range with changes in economic circumstances. This picture is confirmed by a good deal of nonquantitative comment about export price policies in the different countries. The OEEC Iron and Steel Committee suggested in 1960 that

> . . . there is a fundamental difference in the export price policy pursued by producers in the various exporting areas . . . ; the producers in the E.C.S.C. and Japan seem to adopt a much more flexible policy than others, such as those in the United Kingdom and the United States . . . ; producers in the E.C.S.C. and in Japan . . . seem to be prepared to try to expand their share of the export market by making price sacrifices in order to keep their plant in operation. This policy is in marked contrast to that followed in the United States, and, it would seem, in the United Kingdom, where the steel industries seem less disposed to offer heavy cuts in prices to overseas consumers.[14]

Our indexes do show smaller fluctuations in U.K. prices than in EEC prices but the difference is not as great as this quotation suggests, and the range of U.K. price movements after 1957 seems closer to that of the EEC than of the United States.

It is conceivable that the apparent differences in price flexibility for iron and steel as a group among the steel-exporting countries might not reflect differences on an individual product level. Even if price fluctuations for individual products were of equal size in Europe and the United States, the European aggregate indexes might swing more widely if European price movements for different products were closely synchronized while those for the various American products were unsynchronized and therefore offsetting. This possibility can be tested with

[12] *The Iron and Steel Industry in 1963 and Trends in 1964,* OECD, 1964, p. 69, and *Steel Pricing Policies,* London, PEP, December 1964, pp. 354–59.
[13] *The Iron and Steel Industry in 1964 and Trends in 1965,* OECD, 1965, pp. 50–52.
[14] *The Iron and Steel Industry in Europe, 1958–59,* OEEC, 1960, p. 97.

data for the individual subgroups (four-digit SITC). Using the data for 1961–64 (excluding 1953 and 1957 because the effect of the Suez crisis was not of equal importance to each country), we find that the frequency of very small price changes among the detailed subgroup indexes was greatest in the United States and the frequency of large price changes greatest in Japan (Table 9.4). The average and median price changes also show the United States to have had the most stable prices. The U.K. prices showed larger fluctuations, the German prices still larger, and Japanese and other EEC countries the largest of all. In other words, the greater flexibility of European and Japanese prices does reflect the movement of individual series and is not simply an aggregation phenomenon.

To some extent, the frequency of price changes represents trend rather than cyclical movements. That seems to be the case with Japan in particular, since its prices were declining relative to those of the other countries over the period as a whole. A confirmation of the Japanese trend element is that its price changes were largest of all in 1962, a year of generally declining prices, but smallest of all in 1964, a year of rising prices. There is a bias in the opposite direction, however, because we have no Japanese price data for SITC group 671, which accounted for some of the largest price changes in other countries.

These data do not confirm the idea that price flexibility in the United

Table 9.4
Distribution of Year-to-year Percentage Price Changes in Iron and Steel Subgroups, 1961–64

Price Change	Per Cent of Subgroup				
	U.S.	U.K.	Germany	EEC	Japan
15% and over	2	2	5	5	11
10% but < 15%	11	10	10	15	11
5% but < 10%	9	31	28	30	22
2% but < 5%	28	24	28	17	33
< 2%	50	33	29	33	22
Average % change	3.6	4.9	5.4	5.6	6.0
Median % change	2.0	4.1	4.2	5.0	4.5

Source: Appendix C.

Kingdom was similar to that in the United States, as is suggested by the earlier quotation from the OEEC. Although the fluctuations in U.K. prices were somewhat smaller than those in Continental or Japanese prices, they were closer to them in size than to the U.S. average.

A similar conclusion that the United States stood alone in the degree of price inflexibility in iron and steel products was reached in a study covering approximately the first half of our period. For four important types of steel products it was found that ". . . U.S. export prices of steel increased in both the 1954 and the 1958 recession, and decreased in the 1954–57 expansion, relative to the export prices of steel of the other major producing countries." [15] There was also some indication that Japanese prices fluctuated over a wider range than British prices.

Comparisons with Other International Price Data

The relationship for all machinery and metals between our international price indexes and indexes derived from wholesale price and unit value data is discussed in Chapter 8. The iron and steel group, however, is particularly interesting in this respect because it consists of comparatively standardized products, because there is considerable contemporary comment about price changes, and because there are published export as well as domestic prices. Export price information on iron and steel is published in leading trade journals, particularly the *Metal Bulletin,* published in London, and the *American Metal Market.* The former especially is widely cited in discussions of export price movements. The most important alternative indexes are shown in Table 9.5.

The coverage of U.K. export prices in these sources was too limited for the computation of group indexes, but we were able to compute fairly broad indexes for EEC iron and steel export prices (from the *Metal Bulletin*) and for U.S. export prices (from the *American Metal Market*). In Table 9.5 these indexes are called published export price data. It should be stressed that the publications cited are not the authors of the indexes but are sources for the specific price series which we

[15] Hang Sheng Cheng, "Relative Movements in the Prices of Exports of Manufactures: United States Versus Other Industrial Countries, 1953–59," *IMF Staff Papers,* March 1962, p. 94.

Table 9.5
Iron and Steel Price Indexes Based on Alternative Types of Price Data, 1953, 1957, 1961–64

	1957/1953	1961/1957	1962/1961	1963/1962	1964/1963	1964/1953
NBER international prices[a]						
United States	120	100	98	99	101	118
United Kingdom	113	94	97	97	108	108
EEC	119	88	95	96	109	105
Germany	117	93	96	96	109	110
Japan	NA	NA	90	101	100	NA
Published export prices						
U.S.: *American Metal Market*	121	101	100	101	102	124
EEC: *Metal Bulletin*	118	78	93	95	118	97
U.S. export unit values	126	104	101	99	101	133
Official data on domestic wholesale prices						
United States	127	102	100	100	101	130
United Kingdom	127	103	103	100	100	135
Germany	106	110	101	98	100	116
Japan	123	98	92	100	100	112
U.K. Iron and Steel Board data on domestic prices						
United States	NA	104	100	101	102	106[b]
United Kingdom	NA	97	104	100	100	102[b]
Germany	NA	105	99	100	100	104[b]
France	NA	89	104	100	100	92[b]

Source: NBER prices: See notes to Appendix C.

American Metal Market: Prices for 35–65 items each year were taken from the issue closest to July 1. They appear to be posted prices, and there is no indication that any deviation of market prices from posted prices would be recorded. No prices are listed for SITC 671, 672, and 679. Data for SITC 678 are given only at the end of the period.

Metal Bulletin: Prices for 10–20 products, collected from issues closest to July 1. They purport to represent actual market conditions rather than posted prices. Unfortunately, very few items are listed, and only four of the three-digit SITC groups in division 67 are covered at all. These groups do, however, account for two-thirds of the value of trade in the division. The chief group omitted is tubes, pipes, fittings, etc. (SITC 678).

Unit value data: See notes to Appendix G. About half of the commodities included are semi-manufactures, and half are finished manufactures. The major gaps, from the point of view of our OECD trade weights, are ingots, bars, billets, slabs, etc. (SITC 672), and wire rods (SITC 673.1).

Wholesale price data: See notes to Appendix F.

U.K. Iron and Steel Board: Prices, covering 30–40 products, are confined to the first five three-digit groups in division 67 (see Table 9.1). These account for over three-quarters of the trade in the division but exclude the more highly manufactured products: wire, rail, pipe, and tubing. We combined the published prices into unweighted indexes for four-digit SITC subgroups and aggregated these into three-digit groups and the total index for iron and steel, using the OECD trade weights described earlier.

[a]These price indexes are calculated directly from time-to-time data for all countries, and therefore do not correspond precisely with those in Table 9.3.

[b]For 1964/1957.

combined, using our international trade weights, for comparison with the NBER international price indexes.

For the United States, the NBER international price indexes follow those computed from published export prices very closely. The discrepancies, although small, are all in one direction, and therefore cumulate through the period, with the NBER indexes declining slowly, but consistently, with respect to the *American Metal Market* data. Over the period as a whole, therefore, the difference is more substantial—about six percentage points. The differences, which are slightly larger in 1961–63 than in the other years, suggest that the published series may have missed some of the shading of prices by American companies in those years in reaction to European and Japanese competition. The apparent bias in the published series was widespread throughout the various groups of iron and steel products, and it is unlikely, therefore, that the difference, small as it is, can be attributed to chance. A revealing fact about the published U.S. prices is that reinforcing bars, subjected to intense foreign competition, were dropped from the published indexes after 1961, when published prices were withdrawn by U.S. companies. Thus the international price index from published export prices does not reflect the subsequent behavior of this price. We have some indication of the ensuing events from the BLS reports of a fall of 4 per cent from 1961 to 1962 and a further 11 per cent from 1962 to 1963 in the domestic price of reinforcing bars.[16]

[16] *Wholesale Prices and Price Indexes*, U.S. Bureau of Labor Statistics, various issues. The figures are averages of June and July.

The relation between NBER and *Metal Bulletin* prices for EEC exports was of a different nature. There was no consistent difference in one direction, but the index from published prices showed more violent fluctuations. It is possible that the index derived from *Metal Bulletin* prices is more volatile than EEC export prices in general because of the small number of commodities covered. These tended to be the ones most important in trade and include several, such as wire rods and concrete reinforcing bars, that were subject to particularly severe international competition. Products of alloy steels or those incorporating other special features, not as standardized as the items in the *Metal Bulletin* list, or those playing a less important role in international competition, may have undergone less violent price fluctuations. The NBER price collection, taken in large part from the purchase experience of private companies, includes more of these items.

The third section of Table 9.5 gives an index derived from U.S. export unit values, constructed, as far as possible, from data for the commodities used by the U.S. Department of Commerce in its official export value index (for which no separate iron and steel component is published). No effort was made to pass judgment on the quality of the individual unit value series used. Our main alteration in the unit value data was the use of single-year OECD trade weights in place of the Commerce Department's shifting U.S. export weights.

The largest difference between the unit value and NBER indexes is in 1953–57, when the unit value index rose by six percentage points more than the NBER one. The unit value index again outpaced the international price index in the next two periods, but the differences were smaller in the later years when price changes were smaller. Over the whole time span we cover, however, the export unit value index exaggerates the rise in U.S. prices by a considerable amount.

Comparisons of the unit value and NBER price indexes for the individual SITC groups show wider differences and more frequent cases of movements in opposite direction. The unit values for tubular goods (SITC 678) exhibit particularly erratic behavior (see Appendix G). Between 1957 and 1961, for example, they increased by 19 per cent while the NBER index declined by 1 per cent, and the wholesale price index showed virtually no change. This discrepancy cannot be explained as a vagary of the unit value series for one or two commodities, since it is based on fourteen relatives, of which twelve showed increases of

more than 11 per cent. Apparently the tightness of supplies in Europe following the Suez crisis led, in 1957, to the purchase from American suppliers, especially for Venezuela and Canada, of large quantities of cheaper types of pipe not ordinarily bought in the United States. By 1961 U.S. exports again consisted of the smaller, more specialized, and therefore more expensive types of pipe. Because the system of pipe classification in U.S. trade statistics omits some critical price factors, such as diameter, the unit value index is vulnerable to this kind of error.

The unsatisfactory performance of unit value indexes in this category casts them in a dubious light, since steel products present fewer problems for the construction of unit value indexes than most other kinds of manufactured goods. Physical quantity data are given in the trade statistics, and the degree of commodity detail is substantial: Over 100 separate commodity numbers are available in Schedule B (the U.S. export trade commodity classification) for products in SITC 67. Furthermore, steel products are comparatively homogeneous, certainly more so than the machinery or transport equipment discussed in later chapters. The size of discrepancies in this division, therefore, suggests that the unit values from customs data are not useful for the construction of price indexes over a wide range of products.

Comparisons with Domestic Prices

From 1953 to 1957 our index of U.S. domestic prices of iron and steel based on BLS data rose substantially relative to international prices, and there was a similar, but smaller, difference in the following three periods. From 1963 to 1964, the two indexes showed the same price movement. The U.S. index based on U.K. Iron and Steel Board data showed a stronger and more persistent upward bias as a measure of international price movements.

The differences between domestic and international price movements were larger in the case of the United Kingdom. Domestic prices rose by twice as much as international prices in 1953–57, and then, if we judge by the wholesale price data, continued to rise in 1957–61 and 1962, when international prices fell. The Iron and Steel Board data were a little closer to the international price index in 1957–61. However, both domestic series were stable in 1963 in the face of a further

decline in international prices. In each of these cases we can say that the domestic price index was biased upward, using the word "bias" to describe any movement different from that of the international price index. In 1964, however, the domestic price index, in both versions, was stable in a year when international prices rose sharply. Overall, the wholesale price index described a rise of 35 per cent from 1953 through 1964, and the international prices only an 8 per cent increase.

Except in 1953–57, the relationship was similar for Germany: an upward bias in the index from domestic prices until 1963, and then stability in domestic prices accompanying a large rise in international prices. In the first period, however, domestic prices, presumably less influenced by the Suez crisis, rose much less than international prices.

Since domestic prices are often used as proxies for international prices, these differences in movement are important. They were noted in published reports on the iron and steel industry as well.[17]

The differences in movement between the indexes of home and export prices reflect not only the behavior of the two types of prices but also differences in the degree to which the reported prices correspond to actual transactions prices. The 1958–59 report of the OEEC stated that ". . . the export prices used correspond in general to transactions actually carried out, while the home price quotations, at least in the E.C.S.C. . . . . do not necessarily reflect the prices consumers actually had to pay for their steel. . . ." The point was made specifically in the report for 1962, one of the years in which the domestic price index appeared to be biased upward. The OECD reported that list prices of Luxembourg and German firms, except for those of one company, had remained constant during the year and French list prices had risen at a time when real prices were declining. Consequently, ". . . the effect that this sometimes unrestrained competition had on prices is not clearly discernible from the published price lists." The same remarks were made about both EEC and U.K. prices in 1963, and are in accordance with the results in Table 9.5. Similarly, the OECD reported that the movement of home market list prices in 1964 failed to reflect the improvement in prices that occurred in the first half of that year. One reflection

[17] The OEEC report for 1955–56 stated that ". . . export prices, being directly subject to the fluctuations and pressure of demand, rose more sharply than certain home prices" (*The Iron and Steel Industry in Europe,* Iron and Steel Committee, OEEC, 1957, p. 43). The 1958–59 report, in the same vein, stated that ". . . export prices were again more flexible than home prices from July 1958 to the end of 1959" (*ibid., 1958–59,* p. 95).

of the change was that the volume of ECSC sales aligned on offers from third countries, which had increased in 1962 and 1963, when we found home list prices to be biased upward, fell off by almost half in 1964, a year in which we found home prices to be biased downward in comparison to international prices.[18]

For the United States, these differences between international and domestic prices of iron and steel apparently cannot be attributed to the use of list rather than transactions prices in domestic indexes. Stigler and Kindahl found that in this industry transactions prices moved very closely with the BLS indexes.[19]

The difference in trend between home and international price indexes partly reflects a major change in the relationship between the absolute levels of home and export prices which accompanied a shift from a sellers' to a buyers' market. At the beginning of our period export prices were higher than home prices, in some cases by substantial amounts, particularly in the United Kingdom. That relationship, at least in the United Kingdom, was still maintained in 1956. By the 1960s, however, the United States was complaining about dumping of some products by the United Kingdom, the EEC countries, and Japan, and these charges implied export sales at prices below those of home sales. Similar price-cutting was reported in intra-European trade, one article pointing out in 1963 that ". . . British mills, like those in the ECSC and elsewhere, are selling steel overseas at prices below national market levels, have been doing it for years, and sometimes recently have quoted virtually dumping prices." [20]

The shift in the relationship between export and domestic prices was paralleled by a corresponding change in the relationship between actual export prices charged by ECSC countries and the "Brussels Convention" official minimum prices. ". . . In the sellers' market from 1953 to 1958, effective export prices were significantly higher than the official minimum prices. In the recession of 1958, on the other hand, effective export prices fell well below the official minimum prices, despite severe reductions in the latter." [21]

[18] *Ibid.*, p. 96; *ibid., 1962,* p. 73; *ibid., 1963,* pp. 71–72; *ibid., 1964,* p. 49.

[19] George J. Stigler and James K. Kindahl, *The Behavior of Industrial Prices,* New York, NBER, 1970, Chap. 6.

[20] "The Export Market: Re-Rolled Steel Prices Reduced," *Metal Bulletin,* July 24, 1953; "Steel Prices on the March," *ibid.,* November 6, 1956; "Imports: U.S. Gets Tougher," *ibid.,* January 1, 1963; "Limiting the Steel War," *ibid.,* July 2, 1963; "Steel Consumers in Revolt," *ibid.,* July 20, 1963.

[21] Hang Sheng Cheng, *op. cit.*

Price Competitiveness

The price competitiveness of the United States in iron and steel relative to each of its main competitors declined sharply between 1953 and 1962 (Table 9.6). There was no change in 1963 relative to Japan, but a continued decline relative to the EEC countries and the United Kingdom. In 1964 the movement of the price relationships was reversed, with the United States gaining on all the countries except Japan. Over 1961–64 U.S. price competitiveness declined relative to Japan but gained slightly relative to the EEC and United Kingdom. But, over the whole period after 1953 the United States lost heavily in comparison to all the other countries. No Japanese index is shown for the years before 1961 but the few fragments of data available for universals, plates, and sheets (SITC 674) suggest a large improvement between 1953 and 1957 in Japanese price competitiveness relative to all the listed countries.

Data for individual groups within iron and steel, given in Appendix D, spell out much the same story of U.S. decline until 1962 or 1963 followed by a recovery in 1964. The main exceptions to the pattern were tubes and pipes, in which 1961 was the low point in U.S. price competitiveness, and some groups and subgroups in which the U.S. position improved temporarily in 1957, as a consequence of the rapid rise in EEC prices which resulted from the Suez crisis. But this brief gain was quickly erased, and the period after 1957 showed a decline

Table 9.6
U.S. Price Competitiveness, Iron and Steel, 1953, 1957, 1961–64
(1962 = 100)

	1953	1957	1961	1962	1963	1964
Relative to						
U.K.	117	108	101	100	97	104
EEC	119	117	102	100	98	104
Germany	111	109	102	100	97	104
Japan	NA	NA	108	100	100	100

Source: Appendix D.

in U.S. price competitiveness throughout the range of iron and steel products.

The published export and domestic price data discussed earlier imply alternative indexes of U.S. international price competitiveness, which are compared with the NBER indexes in Table 9.7. The differences are sometimes large, but vary from one index to another. The index relative to the EEC countries that is based on published export prices magnifies the fluctuations shown in the NBER index. The declines are larger in each period between 1957 and 1963, and the rise is much larger in 1964. The former index shows not only larger fluctuations than the latter, but also a greater deterioration in U.S. price competitiveness over the whole span of years: 22 per cent instead of the NBER estimate of

Table 9.7
U.S. Price Competitiveness in Iron and Steel: Indexes Based on Alternative Types of Price Data, 1953, 1957, 1961–64

	1957/1953	1961/1957	1962/1961	1963/1962	1964/1963	1964/1953
NBER international prices						
United Kingdom	93	93	99	97	107	89
EEC	98	88	98	98	107	88
Germany	98	93	98	97	107	93
Japan	NA	NA	92	100	100	NA
Published export prices						
EEC	98	77	94	95	116	78
Official data on domestic wholesale prices						
United Kingdom	100	100	103	100	100	103
Germany	83	107	101	100	98	87
Japan	96	96	92	100	99	85
U.K. Iron and Steel Board data on domestic prices						
United Kingdom	NA	94	104	99	99	96[a]
Germany	NA	102	99	99	98	98[a]
France	NA	85	105	99	98	87[a]

Source: Table 9.5.
[a]For 1964/1957.

12 per cent after 1953, and 20 per cent instead of 10 per cent after 1957.

The indexes from published export price series, although they seemed to exaggerate movements in price competitiveness, generally changed in the same direction as the NBER series. The indexes derived from domestic price data, on the other hand, frequently moved oppositely to the NBER indexes or were stable in the face of large changes in the price competitiveness measures based on international prices. The wholesale price data showed a slight gain in U.S. price competitiveness relative to the United Kingdom over the whole period while the international price data showed a substantial loss. Relative to Germany, the wholesale price data index moved opposite to the international price data index in 1957–61, 1962, and 1964. These comparisons clearly show that domestic prices frequently give highly misleading indications of the extent and direction of changes in international price competitiveness in iron and steel.

Comparisons between changes in price competitiveness and in export shares are hindered by the effect of the Suez crisis in 1957. If we compare 1953 to 1961, ignoring 1957, the indexes show large declines in U.S. price competitiveness relative to both the U.K. and EEC countries, with the decline relative to Germany not as large as that relative to other European countries (Table 9.6). The U.S. decline is reflected in a sharp cut in the U.S. share of exports—from 20 to less than 10 per cent (Table 9.2). The German price record, apparently less impressive than that of the United Kingdom or other European countries, was associated with an excellent export performance—almost doubling Germany's share of OECD steel exports.

From 1961 through 1963 the main development in price competitiveness was the improvement in Japan's position, and this gain was matched by a major gain in export share. The continuing deterioration in U.S. price competitiveness relative to the United Kingdom and the EEC countries did not have any apparent effect on export shares.

In 1964, both Japan and the United States improved their price competitiveness relative to the United Kingdom and the EEC countries, and both Japan and the United States increased their export shares at the expense of the United Kingdom and the EEC countries. The deterioration in price competitiveness was slightly larger for Germany than for

the other EEC members, and it was Germany that accounted for the fall in the EEC's export share.[22]

We have discussed the effects of changes in price competitiveness in terms of the share of export markets. In several items of this group, however, much of the competition has been on the U.S. domestic market between imports from abroad, which appear in our export data, and U.S. domestic sales, which do not. The extent to which exports by Japan and the European countries replace U.S. domestic rather than export sales is not revealed in our tables here. However, it has been the focus of much of the recent discussion of the declining competitiveness of the American steel industry, and our indexes should relate to this competition as well as to that on foreign markets.

Adams and Dirlam, in a study concentrating on wire rod and wire prices, found a large decline in U.S. price competitiveness in wire rods on the U.S. market between 1958 and 1962.[23]

This fits the pattern of our price data although we do not find U.S. prices quite as stable as the published domestic prices they use. The consequence of the decline in U.S. price competitiveness was a rise in the ratio of imports to U.S. production of wire rods from 1 per cent in 1957 to almost 15 per cent in 1962, and a rise in the ratio of imports to noncaptive production from 5 per cent to 39 per cent in the same period.[24]

Price Levels

Despite the considerable improvement in the U.S. price position in iron and steel in 1964, price level differences between the United States and the competing European and Japanese producers at the end of our period were larger than for any other commodity division for which we

[22] Hang Sheng Cheng (*ibid.*), examining changes in exports over shorter periods than ours for the early years, concluded that ". . . a significant part of these changes in the U.S. share can be attributed to changes in U.S. export prices of steel relative to those of other exporting countries. . . ." He found that relative U.S. prices increased in the 1954 and 1958 recessions and decreased in the 1954–57 expansion, and that the U.S. export share fell during the recessions and rose between 1954 and 1957.

[23] Walter Adams and Joel B. Dirlam, "Steel Imports and Vertical Oligopoly Power," *American Economic Review*, September 1964, p. 636.

[24] *Ibid.*, p. 631. Adams and Dirlam have suggested that since independent wire fabricators continued, for reasons of safety among others, to purchase part of their requirements at the high domestic price, the integrated companies found it more profitable to keep the price structure at the cost of losing part of their market than to risk a widening of price competition among domestic firms (*ibid.*, pp. 638 ff.).

Table 9.8
Price Levels, Iron and Steel, 1953, 1957, 1961–64
(U.S. for each year = 100)

	1953	1957	1961	1962	1963	1964
U.S.	100	100	100	100	100	100
U.K.	92	85	79	78	76	82
EEC	88	87	76	74	72	78
Germany	85	83	77	76	73	78
Japan	NA	NA	75	70	70	70

Source: Appendix E.

had data. The United Kingdom was the highest priced of the competitors listed, followed by the EEC countries, at 22 per cent below the U.S. level, and Japan at 30 per cent lower (Table 9.8). The gap was largest in 1963, when the European countries' prices were approximately 25 per cent below the U.S. level. The EEC price level was below that of the United Kingdom in every one of the years except 1957, when the Suez crisis led to larger fluctuations in EEC than in U.K. prices. Japan's positions as the lowest-priced exporter was clear by 1962, but it may have been reached earlier. However, Japanese export prices were probably fairly high at the beginning of the period. The data in Hang Sheng Cheng's article, referred to earlier, imply large gains between 1953 and 1959 in Japanese price competitiveness relative to the United States in bars, plates, sheets, and structural steel, and relative to the United Kingdom and the ECSC countries in all except plates.[25] Since the Japanese levels were similar to those of the United Kingdom and the ECSC countries in 1961, these gains in price competitiveness suggest that the Japanese prices were probably above European levels before 1961.

The large price level differences ran consistently through the individual groups of iron and steel products. All the EEC price levels for three-digit SITC groups were 20 per cent or more below the U.S. level in 1962 and 1963 (see Appendix E). Japanese price levels were generally lowest of all in the later years; they were below those of the European countries in 1964 in all four of the groups for which we could calculate them.

[25] Hang Sheng Cheng, *op. cit.*, p. 92.

Summary

U.S. prices of iron and steel products increased relative to those of the European countries and Japan before 1963 but held even with Japan and gained on the other countries in 1964. The main price changes seem to have been at least roughly reflected in shifts in trade shares: large losses for the United States and large gains for Japan.

Published export price data appear to distort the size, but not the direction, of changes in price competitiveness, while domestic prices are often misleading even as to direction. The U.S. unit value data appear to exaggerate the rise in U.S. export prices seriously and also to incorporate changes in average values which clearly do not represent price changes even in some of the more narrowly defined commodity groups.

The U.S. price level for iron and steel relative to that of other countries was higher than that of any other commodity division in 1964. Japan was the lowest-priced seller, but even the European countries were undercutting U.S. prices by about 20 per cent.