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

Report to the Committee on Ways and Means, U.S. House of Representatives, Investigation No. 332-256 Under Section 332 of the Tariff Act of 1930

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PREFACE

On August 3, 1988, the Commission instituted investigation No. 332-256 on the Western U.S. Steel Market, for the purpose of analyzing market conditions and assessing the economic effects of the Voluntary Restraint Agreements (VRAs) on steel-producing and steel-consuming industries in the Western United States. 1/ The investigation was initiated by the Commission after receiving a letter from the Honorable Dan Rostenkowski, Chairman of the Committee on Ways and Means, U.S. House of Representatives, requesting a study under section 332 of the Tariff Act of 1930. 2/

The Committee asked that the Commission, in assessing market conditions and the effects of the VRAs, focus on the following issues: (1) structural changes which have occurred in the Western U.S. steel industry in recent years, including developments in Western States' capacity to produce the steel products subject to the investigation; (2) consumption of steel mill products in the Western region; (3) patterns of supply to the Western region (i.e., the changes in market share of imports from both VRA and non-VRA countries, Western regional production, and nonregional U.S. production in the market); (4) factors limiting the use of domestically-produced steel manufactured outside the Western region, including industry transportation costs relative to other regions; (5) factors affecting the importation cost of steel produced in foreign mills, including foreign inland freight and port costs, ocean freight and insurance, and U.S. port costs and other importation expenses; (6) issues affecting the Western steel market with respect to steel imports from non-VRA countries, including the impact of steel exported from VRA countries to non-VRA countries for further manufacture and reexport to the Western U.S. market; and (7) the economic implications of continued import restraints on producers of steel products subject to the VRAs and selected major steel-consuming industries in the Western region.

Notice of the investigation was given by posting copies of the notice of investigation in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register (53 F.R. 30118, Aug. 10, 1988). 3/

The Commission held a public hearing on this investigation at the U.S. International Trade Commission in Washington, DC, on October 25, 1988, and received testimony from interested parties, including numerous steel industry officials. The transcript of the hearing may be seen in the Commission's Office of the Secretary, 500 E Street SW., Washington, DC, 20436 (202-252-1000).

1/ The Western United States comprises the following states: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.
2/ The request from the Committee on Ways and Means is reproduced in app. A.
3/ A copy of the Commission's Notice of Investigation appears in app. B.

During the course of this investigation, the Commission collected data and information from questionnaires sent to Western U.S. producers, Western U.S. purchasers, and Eastern U.S. producers and distributors. After receiving completed questionnaires, the Commission's staff edited and reviewed each response for accuracy, resolved questions with respondents, and tabulated the returns. In addition, information was gathered from trade and private publications; industry meetings; various public and private sources; domestic fieldwork with independent industry analysts, and industry officials representing steel producers, importers, purchasers, and distributors; and other sources.

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

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

EXECUTIVE SUMMARY

Structural Changes in the Western Steel Industry

- As a result of industrywide restructuring efforts during the 1980s, most primary (i.e., raw steel) producers in the Western U.S. region elected to withdraw from the market, as did many fabricators; most facilities continued operating, however, under new ownership.

Modernization

- Under new owners, facilities have undergone significant renovation designed to improve the various companies' competitive positions. In addition to investing in new plant and equipment during 1983-88, new owners have negotiated favorable raw material contracts and labor agreements, leading to reduced costs. Capital expenditures increased from 2.7 percent of sales ($34.5 million) in 1983 to 7.5 percent of sales ($237.4 million) in 1988, with the greatest percentage in 1988 being invested in flat-rolled products.

- Highlighting the investment activities is a joint venture undertaken by Korean and U.S. interests to construct a new finishing facility in California, the cost of which will exceed $350 million. Discussions with producers indicate that further investment can be anticipated, though more likely on a lesser scale, in the near future.

- Investment in the Western region industry has been favorably influenced by the sharp appreciation of the yen against the dollar in the past several years. The appreciation has strengthened the relative cost competitiveness of U.S. producers versus Japan, the largest foreign supplier of steel products to the region, thereby raising potential returns on capital invested in the industry.

- The modernization which has occurred has resulted in a reconfiguration of the industry. Two of the three integrated facilities that produced steel from iron ore no longer do so. At one facility (CF&I), the scale of operations has been reduced and steel is being produced in electric furnaces using scrap metal. In addition to a reduced need for raw steel, the closure of integrated capacity reflected declining resources of coal and iron ore deposits in the region. At the other facility (CSI), steel is being rolled from purchased semifinished steel slabs, the majority of which are currently being imported from Brazil, which has one of the few mills in the world that specializes in producing semifinished steel for the commercial market.

Capacity

- Reflecting the restructuring which occurred in the Western industry during the 1980's, raw steel capacity declined by 36 percent during 1983-88. Finishing capacity, however, increased markedly in flat-rolled

products, reflecting the reactivation of Kaiser's rolling mills and increased efficiency at other facilities.

Financial Position

- Strong domestic demand during the past two years, combined with the effects of restructuring and the effects of the appreciation of the yen on the competitive position of Western producers, resulted in a return to profitability of the Western steel industry. Following losses during 1983-86, producers' ratio of net income to sales equaled 4.0 and 7.5 percent, respectively, in 1987 and 1988. By comparison, in 1987 and 1988, return on sales for the entire U.S. steel industry averaged 3.8 and 10.1 percent (January-September), respectively; whereas the return on sales for all U.S. manufacturers averaged 7.3 and 8.5 percent, respectively.

Consumption of Steel Mill Products in the Western Region

- The overall increase in industrial production which occurred in the United States during 1983-88 was accompanied by increased steel demand. The Western U.S. market shared in this growth; apparent consumption of steel products increased by 29 percent during 1983-88, which compares to a 24-percent increase in the total U.S. market.

Patterns of Supply to the Western Region

- An analysis of supply patterns in the Western U.S. steel market indicates that the region depended increasingly on outside sources to meet its total steel needs during 1983-88; dependence on imports and Eastern U.S. suppliers rose from 63 percent in 1983 to 78 percent in 1988. Steel fabricators accounted for a relatively large portion of the steel purchased from non-Western sources (i.e., Eastern U.S. suppliers and imports). Netting their purchases out shows that net dependence on these outside sources to supply end users' needs declined from 54 percent in 1983 to 48 percent in 1988.

- The overall role of imports in the Western market rose from 50 percent of apparent consumption in 1983 to 57 percent in 1985, before declining to 45 percent in 1988. Net dependence on imports to supply end users (i.e., total imports less steel imported by fabricators for further processing), however, declined from 42 percent in 1983 to 32 percent in 1988.

Factors Limiting the Use of Domestically Produced Steel Manufactured Outside the Western Region

Factors that limit the ability of non-Western U.S. producers to supply the Western market include transportation costs, production costs, product availability, capacity, and lead times. During the 1980s, non-Western U.S. producers improved their cost position relative to foreign competitors, and

also improved their competitive position in transportation costs compared with both Western U.S. producers and foreign suppliers, as follows:

Production Costs

- By successfully reducing production costs in recent years through the closure of obsolete facilities, renegotiation of long-term raw materials and labor contracts, investment in more efficient plant and equipment, and increased efficiency in the use of labor, non-Western U.S. producers lowered their production costs relative to those of foreign producers. Further assisted by the effect on relative costs of the depreciation of the dollar vis-a-vis the yen, production costs for non-Western producers are currently considered by steel analysts to be 12 percent lower than for Japanese producers, their principal foreign competitors in the Western U.S. market. U.S. production costs still, however, exceed those of most other countries by 2-18 percent.

Transportation Costs

- Although it is generally less expensive to transport merchandise by water, U.S. regulations (i.e., the Jones Act) currently render such a mode noncompetitive for shipments of steel from non-Western mills to the west coast; instead, rail is commonly used for such shipments.

- The deregulation of rail rates in the early 1980s significantly improved the ability of non-Western U.S. producers to compete with imports and Western producers in the Western market. The deregulated rates are approximately one-half the prior rates, and are roughly equivalent to the cost of shipping steel from major foreign suppliers to the west coast.

Lead Times

- The average time required to ship steel from non-Western mills to the West (10-14 days) is more than double the time required for regional shipments within the West (4.5 days), which marginally affects the competitive position of non-Western mills. When compared with foreign producers, however, non-Western producers enjoy a substantial advantage, as imported steel must be ordered 90 to 120 days in advance, whereas domestic producers require an average of only 30 days from time of order to arrival of shipment. Moreover, waterborne trade tends to be less reliable than rail in terms of meeting schedules.

Product Availability and Capacity

- Non-Western U.S. producers are constrained in their ability to supply the Western market by their capacity and their ability to produce the products required in the West. Although this has not generally posed problems, during 1985-88 the U.S. Department of Commerce granted twelve short supply requests involving the Western market. One Western company

(UPI) has indicated that U.S. producers are currently unable to supply the quality of steel sheet needed to run its new rolling mill as efficiently as is planned. In response, one company testified at the Commission hearing that certain U.S. companies would likely be able to supply UPI's sheet requirements following modernization of their facilities. Another Western producer (Davis Walker) has similarly argued that certain of its wire rod requirements cannot be fully met domestically, a claim which domestic rod producers have contested.

Factors Affecting the Importation Cost of Steel Produced in Foreign Mills

- Factors affecting the cost of importing steel into the Western United States include foreign inland costs, loading costs, shipping and insurance costs, wharfage fees, applicable customs duties, and U.S. inland freight costs. Much of the steel imported from Japan and Korea involves little or no foreign inland freight charges since production facilities are located on deep water ports. The cost of insurance and freight from the two countries to the West Coast averages $36 to $40 per ton, while wharfage and other port charges add $10 to $12 per ton to the cost. Customs duties assessed during January-November 1988 averaged $19 per ton (or 4.4 percent ad valorem). U.S. inland freight charges vary according to the final destination; trucking charges from a west coast port to a local destination would add a minimum of $5 per ton. The total overseas delivery cost of $70 to $74 per ton for imports compares with an average delivery cost of $78 per ton for products shipped from the Chicago area.

Steel Imports from Non-VRA Countries

- Under the steel VRAs, steel that was produced in a VRA country and further processed in a non-VRA country was not counted against the VRA country's quota as long as the product had been substantially transformed in the non-VRA country. 1/ An examination of trade during 1983-88 suggests that there were a number of imports of substantially transformed products into the Western region. Imports of wire products from Canada, much of which appears to have been produced from imported wire rod, increased their share of total Western U.S. wire imports from 14 to 35 percent during 1983-88.

- Increases in imports from Singapore and Thailand of fabricated structural steel products and pipe and tube products, apparently

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1/ The Omnibus Trade and Competitiveness Act of 1988 (Public Law 100-418, Section 1322) includes a provision that affects the manner in which "transformed imports" are treated by specifying that any steel product covered by VRAs, manufactured in a non-VRA country from steel that was melted and poured in a VRA country may be treated as a product of the arrangement country. This provision may be applied at the President's discretion, and has not been applied to date.

produced from imported stock, also increased during the period, but to a lesser degree. Imports of galvanized sheet from New Zealand, produced from steel manufactured in Japan, also occurred; the increase in tonnage, however, was small relative to total imports.

Effects of the VRAs on Producers and Consuming Industries in the Western Region

- The results of increased levels of shipments by Western producers in response to growing demand and their return to profitability created additional financial resources, and also lowered the level of risk associated with decisions on modernization and investment. Several producers indicated that the operation of the VRAs was an important factor in their ability to acquire financing for projects.

- The VRAs have been a factor underlying the decisions by steel purchasers to alter their purchasing strategies, according to the Commission's questionnaires and fieldwork. In addition to increasing the level of domestic shipments, a number of steel service centers attribute a return to market stability in the Western market to the effects of the VRAs, which apparently served to reduce disruptive surges in imports.

Effects on Supply

- From the perspective of steel consumers, one of the effects of the VRAs has been to create shortages in certain products. The twelve short-supply requests involving Western U.S. purchasers, covered a broad range of steel mill products. Tonnage approved accounted for less than 1 percent of apparent consumption during the period. Although supply problems can be redressed through the filing of a request for increased imports, this action places a cost on petitioners in terms of the time and expense associated with the petition as well as the risk associated with an unknown outcome and potential delays in obtaining products needed to meet production schedules.

Effects on Prices

- The economic effects of the VRA's on Western steel-producing and steel-consuming industries depend largely on whether or not the VRA quotas are binding (filled). Binding quotas effectively reduce the volume of imports below that which would have entered in the absence of such quotas, causing import prices to rise as U.S. consumers compete for the restricted supply. Nonbinding quotas (i.e., those that are not filled) should have relatively little effect, if any, on the quantity of steel imported or on steel prices.

- From their initiation in 1985 through 1986, the quotas were binding. During this initial period, the price of steel in the U.S. market was undoubtedly higher than it would have been without the VRA's. In 1987 and, to a much lesser extent, in 1988 export quotas for certain products

and countries also appear to have been filled; as a result, import levels and prices may also have been affected by the restraints in these years, even though the quotas were not filled on a global (i.e., aggregate) basis.

- On an aggregate basis, some 94 percent of the total export ceilings established under the VRAs quotas were filled in 1987; the degree to which they were filled fell to an estimated 75 percent in 1988. In 1987, less than 90 percent of the quotas were filled in three product categories (bars, wire and wire products, and rails and rail products), of the nine under investigation. The effect of the VRAs on prices would therefore appear to have diminished during 1987. By 1988, imports from countries covered by the agreements fell so significantly short of VRA ceilings that it appears that the price effect of the VRA's, if any, was relatively small.

- The increase in both import and domestic steel prices which occurred during 1983-88, took place principally during 1987 and 1988, at a time when the steel VRAs were becoming less binding (i.e., fewer country and product quotas were being filled), or nonbinding, which, as noted above, limits the degree to which the measures could have affected steel prices. Further, price changes (in dollar terms) were not restricted to steel or to the United States. Prices of two other major metals, copper and aluminum, neither of which were subject to trade restraints during the period, rose by significantly greater margins and home-market prices of steel in other major producing countries increased at an equal or greater rate.

- The magnitude of the steel price increases is reflected in data collected from steel purchasers located in the Western U.S. region, which indicate that the lowest price quotes for most imported steel products rose by 25 to 35 percent from mid-1983 through the end of the third quarter of 1988; the increase in the lowest price quotes from domestic producers, however, was significantly lower, ranging from 10 to 25 percent for most products.

- Although prices were undoubtedly higher as a result of the VRAs during the initial years of their existence, information developed by the Commission suggests that other factors, such as the decline in the value of the dollar versus major foreign suppliers' currencies, and the rise in demand for steel worldwide, were of significantly greater importance in explaining the overall price increases that occurred in the Western U.S. market during 1983-88.

- In a previous study the Commission estimated that the dollar would have to depreciate by more than 8.9 percent in real terms for the steel import restraint program to become inoperative. Between 1985 and 1987, the dollar declined, on average, by 31 percent against the currencies of VRA countries.

- The greater importance of the dollar depreciation and rising steel demand in worldwide price increases indicates that the VRAs did not have a significant direct effect on wages or on employment levels in the Western steel industry, nor did they have a direct effect on product prices or production levels of downstream users of steel in the Western United States.

Potential Future Effects

- Extension of the VRA program beyond September 1989, at the 1989 restraint levels, could eventually result in binding quotas that would affect the Western region's steel employment levels and consumer prices. Three different scenarios of potential import growth, developed on the basis of a 17-year time series (1971-87), yield the following projections of when the VRAs might become binding.

First scenario: average import growth

- If steel imports were to continue to grow at 1.1 percent per year (the average annual rate observed during 1971-87), the VRAs likely would not become binding until 1997.

Second scenario: fast import growth

- If steel imports were to grow at 3.7 percent per year (the average annual rate observed between 1980 and 1984), then the VRAs likely would become binding as soon as 1990. For the second scenario to be plausible, the dollar would have to significantly appreciate against the currencies of important U.S. trading partners.

Third scenario: import decline

- If steel imports were to decline at 0.9 percent per year (the annual rate observed between 1971 and 1975), then the VRAs likely would never become binding.

Implications

- Implications of continuation of the VRAs depend in part on one's market prognosis. If the VRAs are nonbinding, there are no direct effects, although the system would still provide a form of insurance to producers that imports would not exceed a certain level; such insurance could well affect investment decisions and the terms under which financing could be obtained. On the other hand, if the VRAs are binding, they will continue to transfer income from steel consumers and foreign producers to domestic suppliers in terms of greater shipments and higher prices.

- Examination of the costs and benefits associated with continuation of the steel VRAs also has to consider what would occur in their absence. Removal of the VRAs could result in the filing of numerous unfair trade complaints, the results of which could be either more or less

restrictive than the VRAs, depending on the volume of trade affected by affirmative findings and the level of additional duties assessed.

- In terms of the effect of continuation of the VRAs on trade, to the extent that the VRAs are binding, further increases in imports from non-VRA countries can be anticipated, particularly in long products, which appear to be more susceptible to non-VRA import penetration than do flat-rolled products.

CHAPTER 1. STRUCTURE OF THE WESTERN U.S. STEEL INDUSTRY

The steel industry is composed of integrated producers, which produce steel using blast furnaces and coke ovens; nonintegrated producers, which produce steel in electric furnaces using scrap as a feedstock; and fabricators, which purchase partially advanced steel for further processing. One integrated producer, nine nonintegrated producers, and hundreds of fabricators exist in the Western region. The product area of greatest importance to the Western region's steel industry is that of sheet and strip, accounting for approximately 40 percent of shipments in 1988, as shown in table 1-1.

Integrated Producers

There were three integrated producers located in the Western United States in 1982: Kaiser, in Fontana, CA; CF&I, in Pueblo, CO; and US Steel, in Geneva, UT. The combined raw steelmaking capacity of these integrated Western producers was approximately 8 million tons per year.

In 1987, only the Geneva operation, with raw steelmaking capacity of 2.0 to 2.5 million tons per year, remained integrated, albeit under different ownership. US Steel had announced the permanent closure of its Geneva Works in April 1987 after a labor strike halted work in 1986. Months of negotiations resulted in the plant being sold to Basic Manufacturing and Technologies in August 1987 and subsequently being reopened as Geneva Steel.

Kaiser, although prosperous throughout the early and mid 1970s, closed in 1983 when its $233 million modernization program, costs associated with environmental regulations, and relatively high wage rates left the company

Table 1-1
Steel: Salient statistics for Western U.S. steel producers, by products, 1988

Product	Capacity utilization	Production	Shipments	Employment	Return on sales	Capital expenditures
	Percent	--1,000 short tons---			Percent	1,000 dollars
Semifinished steel 1/....	84.2	4,821	143	1,135	(16.0)	15,097
Plates.....	50.7	947	871	847	15.6	9,200
Sheets and strip.....	69.7 2/	3/	3,035	3,793	9.8	186,699
Bar.....	98.3	1,859	1,824	1,323	4.4	8,664
Pipes and tubes.....	52.1	574	539	1,250	7.9	10,214
Other 4/.....	3/	3/	816	2,573	5/	7,491
Total.....	3/	3/	7,228	10,921	7.5	237,365

1/ Ingots, blooms, billets, and slabs.
2/ Weighted average of hot-rolled sheet, cold-rolled sheet and coated sheet.
3/ Not available.
4/ Includes rails, structurals, wire rods and wire products.
5/ Confidential.

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

with debts it could not recoup in the soft steel market of the early 1980s. In 1984, Kaiser's rolling and finishing facilities were purchased by California Steel Industries (CSI), a joint venture which currently has two partners, Kawasaki Steel and Comphania Vale do Rio Doce, a state-owned Brazilian natural resources company.

In the early 1980s, CF&I found integrated steelmaking increasingly uneconomical as its sources of iron ore and coal were depleted. Moreover, the market for rail and oil country tubular goods experienced declining demand in the late 1970s and early 1980s. As a result, Crane Co., then the owner of CF&I, decided to scale back capacity and production by retiring its coke batteries, blast furnaces, and basic oxygen furnaces and relying on two existing electric furnaces for raw steelmaking capacity. 1/

The decline of the Western region's integrated mills appears to be caused by a number of factors. First, investment often occurred at inopportune times, as noted in the modernization program undertaken by Kaiser. CF&I, on the other hand, rebuilt its rail mill to produce longer rails in the late 1970s only to see the demand for rails decline as rail

1/ For more detailed company profiles, see app. C.

track in the United States shrank by over 20 percent between 1975 and 1985. 1/ Second, the locations of the Western region's integrated steel mills were less than optimal as a result of efforts to build Kaiser and the Geneva Works outside the range of enemy attacks during World War II. Third, production costs were higher relative to foreign producers, reflecting, in part, higher wage rates and the high value of the dollar prior to 1985 (see ch. 6). Other factors underlying the decline of the Western region's integrated mills include more stringent and costly State pollution standards along the West Coast.

One consequence of the lost raw steelmaking capacity in the Western region (now only 2 to 2.5 million tons per year) is increased imports of semifinished steel, mainly of slabs purchased by CSI, the Japanese-Brazilian joint venture. From 1983 to 1988, the Western region's imports of semifinished steel increased about eight fold, from 125,000 tons in 1983 to approximately 1,000,000 tons in 1988. In contrast, imports of all other steel products into the Western region grew by about 4 percent during 1983-88. The structural changes cited above have been accompanied by a number of joint ventures involving semifinished and partially advanced steel. In addition to the reconstitution of Kaiser's rolling facilities as CSI, for example, a joint venture (USS-POSCO Industries (UPI)) was entered into in Pittsburg, CA, the site of USX's former west coast rolling mills. This 50/50 partnership between USX and Korea's Pohang Iron and Steel began in April 1986 and has resulted in a modernization program exceeding $350 million designed to increase the quality of UPI's product. Whereas the Pittsburg plant had been supplied with hot-rolled feedstock (i.e., bands) from Geneva prior to 1986, UPI currently purchases its hot bands from USX's Eastern U.S. facilities and has arranged to purchase the bands from Pohang after October 1989. Another joint venture, currently being studied, is a partnership between CSI and Oregon Steel Mills, which would supply domestically produced slabs to CSI. The slabs would reportedly be produced in a newly constructed electric furnace facility to be located in the Northwest, where power rates are relatively low.

Nonintegrated Producers

The Western region consists of nine nonintegrated mills (including CF&I); eight specialize in long products (merchant bar, rebar, structurals, rails, and rod). Oregon Steel Mills, the exception, produces plate. All these products, with the exception of rails, have applications in the construction industry, the Western region's largest steel consumer.

Significant change has occurred since 1983; in addition to modernization programs, which have varied considerably among facilities, seven have seen ownership change, two have seen closures, six have increased capacity, and five have increased productivity and lowered costs by reducing employees. In terms of modernization, the degree has ranged

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1/ William T. Hogan, S.J., Minimills and Integrated Mills: A Comparison of Steelmaking in the United States, 1st ed. (Lexington, MA, 1987), p. 24.

from that achieved at Oregon Steel Mills, which has implemented new technology and increased capacity by nearly 70 percent while retiring one of its two electric furnaces, to Birmingham's two west coast plants, Salmon Bay Steel and Barbary Coast Steel, which have implemented limited modernization plans, mostly designed to comply with environmental standards.

One reason for the relatively good health of the minimills is their size; as smaller entities, they are more easily restructured. With much smaller capital investments than the integrated mills, for example, they are easier to acquire and modernize. Furthermore, without the coke ovens and blast furnaces of the integrated mills, minimills have fewer costs associated with pollution abatement. Additionally, minimills' unit labor costs are lower than integrated facilities', as the process is considerably less labor intensive, requiring 2 to 3 man-hours per ton (or less), compared with approximately 6 man-hours per ton in integrated facilities. Finally, minimills benefit from a natural buffer against foreign competition because of the types of commodities they traditionally produce. Bars, especially those of commodity grade, are low-priced products that are more difficult to trade profitably in foreign markets than other steel products, as transportation costs constitute a higher proportion of total cost.

Fabricators

A multitude of steel fabricators exist in the Western region. In addition to CSI, UPI, and Pinole Point, which process sheet and strip, there are fabricators of wire and wire products, pipe and tube, and structural steel located in the West.

Wire and wire products

There are approximately 20 principal fabricators of wire and wire products located in the Western region, the largest of which is Davis Walker Corp. 1/ During the 1980s, Western wire fabricators have experienced a number of structural changes, including ownership changes and market entry and exit by various producers. According to industry officials, the financial problems that producers have experienced have been motivated principally by competition with foreign wire fabricators, which allegedly have cheaper sources of wire rod; no wire fabricator in the Western region presently possesses capacity for producing wire rod. Recently, however, Georgetown Industries, which produces wire rod in Charlotte, NC, proposed an acquisition of Tree Island Industries, a producer of wire and wire products headquartered in Vancouver, British Columbia, with manufacturing facilities in San Francisco and Los Angeles,

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1/ Davis Walker Corporation filed for Chapter 11 bankruptcy during mid March 1989.

CA. 1/ Georgetown will supply the Vancouver plant with a small portion of the 100,000 tons of wire rod that Tree Island processes yearly. Additionally, Cascade Steel Rolling Mills, a rebar producer located in McMinnville, OR, has announced the construction of a new melt facility, with the result more likely being the ability to supply the Western region with up to 150,000 tons of wire rod per year.

Pipe and tube

There are approximately 10 principal fabricators of pipe and tube located in the Western region. Western pipe and tube fabricators have in the past decade experienced substantial restructuring, including a number of ownership changes and closures. Geneva, CSI, UPI, CF&I, Napa, Bernard Epps and Co., California Steel and Tube, and Kaiser Steel and Tube have all experienced changes in ownership, while Alpha Tubing and Torrance Tubing have been closed. According to industry officials, factors underlying such change included the difficulties experienced by the domestic oil industry in recent years and more intense foreign competition in both the pipe and tube market, and in the market for downstream applications of these products, such as furniture, strollers, bicycles, and fence posts.

Fabricated structural steel

About 15 principal structural steel fabricators, and hundreds of smaller structural steel fabricators, are located in the Western region. Structural steel fabricators usually process the steel used in steel building frames, bridges, transmission towers, stationary offshore oil platforms, and other related items; three of these fabricators also erect such structures. In the 1980s, this market has remained relatively unchanged, with only a few market entries and exits. Closures are most often attributed to inefficiency or overly aggressive price bidding. According to industry officials, foreign competition has been a minor factor affecting this sector, especially since the devaluation of the dollar.

1/ This acquisition was completed in late February 1989.

CHAPTER 2. CONDITIONS IN THE WESTERN STEEL INDUSTRY

As a result of modernization, a higher volume of shipments, and higher price levels, conditions in the Western steel industry improved during 1983-88. As discussed below, important indicators, such as capacity utilization, shipments, employment, and profitability registered significant increases, as did capital expenditures.

Capacity and Capacity Utilization

Largely the result of the loss of integrated production facilities, the capacity of Western steel producers to produce primary steel (i.e., raw steel) declined by 36 percent during 1983-88 (table 2-1). Additional declines occurred, though to a lesser extent, in bar and pipe and tube capacity. In contrast, capacity increases occurred in coated sheets and strip, plate, wire, and wire products.

The changes which ocurred in flat-rolled capacity during 1983-85 (i.e., plates and sheets and strips) largely reflect the effects of the reopening of Kaiser Steel's facilities. The changes in capacity recorded in flat-rolled products in 1987 largely reflect the effects of the work stoppage at USX in that year, and the subsequent sale and revaluation of the company's Utah facilities' capacity by their new owners in 1988.

Table 2-1
Steel: Western U.S. producers' capacity and capacity utilization, by products, 1983-88

Product	1983	1984	1985	1986	1987	1988	Percentage change 1983 to 1988 1/
	Capacity (1,000 short tons)						
Semifinished steel 2/.....3/	8,928	6,143	5,943	5,903	3,751	5,728	(35.8)
Plate..... 3/	568	595	1,173	1,521	1,352	1,867	228.7
Coated sheet...	1,189	1,094	1,276	1,172	1,276	1,296	9.0
Bars.....	2,015	2,015	1,865	1,801	1,903	1,891	(6.2)
Wire.....	555	605	608	617	634	642	15.8
Wire products..	329	366	371	387	414	443	34.6
Pipe and tube..	1,327	1,027	1,027	1,010	905	1,102	(17.0)
Other 4/.....	4,819	5/	3,962	4,162	2,674	4,446	(7.7)
	Capacity utilization (percent)						
Semifinished steel 2/..... 3/	50.6	73.3	76.0	60.3	81.7	84.2	6/
Plate and hot-rolled sheet..... 3/	80.0	62.6	54.2	36.0	46.0	50.7	6/
Coated sheet...	69.6	73.4	70.9	85.6	84.1	94.1	6/
Bars.....	60.5	62.3	67.9	65.4	66.7	98.3	6/
Wire.....	71.5	72.6	69.7	64.5	63.9	59.4	6/
Wire products..	64.7	59.2	51.9	50.5	48.0	42.9	6/
Pipe and tube..	30.6	39.7	26.4	23.9	38.2	52.1	6/
Other 4/.....	33.4	5/	45.7	32.4	55.8	49.9	6/

1/ Calculated from unrounded data.
2/ Includes ingots, blooms, billets, and slabs.
3/ Not including Kaiser Steel, which ceased operations during 1983.
4/ Includes capacity for the production of hot-rolled sheet, which accounts for 65-80 percent of the annual totals during 1983-88, cold-rolled sheet, rails, structurals, and wire rods.
5/ Confidential.
6/ Percentage change not calculated.

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

Shipments

Reflecting an improvement in market conditions, the effect of trade restraints on the market, and the reactivation and restructuring of major mills, total shipments by Western steel producers increased by 64 percent

during 1983-88 (table 2-2). 1/ Excluding figures for semifinished steel, the market for which is relatively small, the greatest increase, both in absolute and relative terms, occurred in sheets and strip, where shipments grew by 137 percent, from 1.3 million tons in 1983 to 3.0 million tons in 1988. The sharp increases in sheet and plate shipments in 1988 reflect in large part the entry of Geneva Steel into the market; under its previous owner (USX) much of the plant's production was captively consumed in a cold rolling facility located in Pittsburgh, CA.

The composition of Western producers' shipments is similar to that of the whole U.S. industry, the most pronounced differences being in flat products, which in 1987 constituted 62 percent of total U.S. shipments compared with 53 percent of Western region shipments, and wire products,

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1/ Product areas include long products (bars, structurals, wire rods, and railway products), semifinished steel (ingots, blooms, billets, and slabs), pipes and tubes, flat products (plates, sheets, and strip), and wire and wire products. Product data have been aggregated so as not to disclose confidential business information.

Table 2-2
Steel: Western U.S. producers' total shipments, by product, 1983-88

Product	1983	1984	1985	1986	1987	1988	Percentage change 1983 to 1988
	Quantity (1,000 short tons)						
Semifinished steel 1/	2/	2/	23	43	71	143	3/
Plate 4/	565	522	544	507	569	871	54.2
Sheets and strip 4/	1,280	1,014	1,521	2,011	2,329	3,035	137.1
Bars	1,327	1,375	1,538	1,479	1,624	1,824	37.5
Pipe and tube 4/	531	584	263	237	331	539	1.5
Other 5/	694	822	806	787	816	816	17.6
Total	4,397	4,317	4,695	5,064	5,740	7,228	64.4
	Value (1,000 dollars)						
Semifinished steel 1/	6/	6/	6	11	19	510	3/
Plate 4/	229	222	207	184	221	403	76.0
Sheet and strip 4/	7/ 682	7/ 534	710	886	1,082	1,424	108.8
Bars	7/ 372	7/ 374	7/ 431	414	455	510	37.1
Pipe and tube 4/	7/ 329	7/ 408	169	145	227	379	15.2
Other 5/	317	276	433	406	417	389	22.7
Total	1,929	1,814	1,956	2,046	2,421	3,615	87.4

1/ Ingots, blooms, billets, and slabs.
2/ Less than 1,000 short tons.
3/ Not calculated.
4/ Data for the years 1983 and 1984 are those reported in the U.S. Department of Commerce, Bureau of Census, Current Industrial Report: Steel Mill Products, 1984, December 1985.
5/ Including rails, structurals, wire rods, and wire products.
6/ Less than 1,000 dollars.
7/ Estimated by the staff of the U.S. International Trade Commission.

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

which in 1987 constituted 1 percent of total U.S. shipments and 9 percent of Western region shipments as shown in the following tabulation (in percent):

Product	United States 1/	Western United States 2/
Flat products.....	62	53
Long products.....	29	30
Pipe and tube.....	5	7
Semifinished steel.....	3	1
Wire and wire products.....	1	9
Total.....	100	100

1/ Compiled from American Iron and Steel Institute's 1987 Annual Statistical Report.
2/ Compiled from responses to questionnaires received by the U.S. International Trade Commission.

Differences in these areas reflect the greater relative importance of the automotive industry, a large consumer of sheet and strip, more frequently supplied by producers in the Eastern United States, and greater demand in the Western region for wire products to supply the construction industry.

In terms of the geographic distribution of Western producers' shipments, as shown in the tabulation below, close to 90 percent of the total was shipped to customers within the region during 1983-87. Foreign markets and Eastern U.S. markets, however, grew in their relative importance during 1988, as they combined to account for 20 percent of producer shipments, reflecting in large part the improvement in Western producers' costs relative to foreign and other domestic producers.

Year	Percent of Western U.S. producer shipments shipped to: Western U.S. markets	Eastern U.S. markets	Foreign markets
1983	91.9	7.7	0.4
1984	90.8	8.8	0.3
1985	89.2	10.6	0.2
1986	91.0	7.3	1.6
1987	89.4	9.5	1.1
1988	79.6	15.2	5.2

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

Exports

A closer examination of exports from the Western United States (which would reflect the exports of distributors as wells as producers) shows that exports have been increasing since 1985, growing by approximately 15 percent in 1986 and 1987; partial year data reveals a greater increase in store for 1988 (table 2-3). Through November 1988, exports were almost 200 percent greater than exports through November of 1987.

Discussions with producers in the Western region indicate that the primary force driving this increase is the change in exchange rates, which made them more competitive in certain markets, especially those surrounding the Pacific Rim. 1/ Other factors include efforts to maintain high operating rates and diversify markets. Western producers report sales to several countries, including Japan, China, and Australia. The strongest products for the export market are in the sheet and strip group, especially hot-rolled sheet and tinplate. In 1988, these product categories accounted for 51 percent and 28 percent, respectively, of western region exports.

Producers indicated that export sales were not as profitable as domestic sales, primarily because of the packaging and shipping costs which are incurred by the mill. Data supplied to the Commission indicate that many of the products exported have unusually high unit values, as much as two to three times higher than the unit values of imports to the Western region, indicating that the mix of products being exported are higher grade products.

1/ Information collected during fieldwork by Commission staff.

Table 2-3
Steel: Western U.S. region exports, 1983-87, January-November 1987, and January-November 1988

Product	1983	1984	1985	1986	1987	January-November-- 1987	1988
	Quantity (1,000 short tons)						
Semifinished.....	16	7	10	9	7	7	9
Plates.....	9	7	6	6	9	8	18
Sheets and strip..	35	29	23	55	60	53	224
Wire rods.....	1	2	1	1	2	1	2
Rails and railway products....	1	1	1	4	1/	1/	5
Structural shapes.....	13	30	15	9	14	13	24
Bars.....	10	8	10	7	13	12	23
Wire and wire products.....	7	5	5	7	6	6	9
Pipes & tubes.....	29	19	26	15	18	17	23
Total 2/.....	119	108	96	113	131	117	336

1/ Less than 500 tons.
2/ Columns may not add to totals shown because of rounding.

Source: Based on official statistics of the U.S. Department of Commerce.

Producers' Inventories

During 1983-88, inventories reported by producers responding to the Commission's questionnaire increased by 70 percent (table 2-4). The increase is overstated, however, since it does not reflect those held by companies which subsequently sold their operations to other parties; information on their inventories is unavailable. The product categories affected include semifinished steel (1983-85), plates (1983-84), sheets and strip (1983-84), bars (1983-85) and pipes and tubes (1983-85). An analysis of inventories held by producers on whom complete data are available for the 1983-88 period indicate a relatively stable level in all years except 1986, the year in which USX was affected by a work stoppage. Inventories of yearend 1986 were 15 percent below the levels in most other years.

Table 2-4
Steel: Inventories of Western U.S. steel producers, 1/ by products, as of December 31, 1983-88

Product	1983	1984	1985	1986	1987	1988
	(In Short tons)					
Semifinished steel....	63,176	125,550	334,070	191,860	145,861	299,315
Plates.....	28,761	30,007	56,068	45,187	51,844	54,879
Sheets and strip.....	260,175	237,236	307,789	270,768	324,968	300,482
Bars.....	8,780	11,945	39,130	43,724	42,300	48,506
Wire rods.....	67,567	90,779	76,445	61,403	52,446	43,009
Pipes and tubes.....	25,881	28,229	34,557	33,450	35,387	48,898
Other 2/.....	57,544	68,376	61,702	63,767	75,653	75,470
Total.....	511,884	592,122	909,761	710,159	728,459	870,559

1/ Inventories during 1983-85 are understated due to the lack of information on companies which ceased operations during the period.
2/ Including structurals, rails, and wire products.

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

Employment in the Western States

Total employment reported by questionnaires respondents increased by 7.5 percent during 1983-88, from 10,163 workers in 1983 to 10,921 workers in 1988 (table 2-5). As in the case of inventories, data in the earlier years examined are understated due to the lack of information from companies which changed ownership during the period. For those comapnies on which a full set of data are available, employment fluctuated and was

Table 2-5
Steel: Total and production related employment in the Western U.S. region, by product 1/, 1983-88

Product	1983	1984	1985	1986	1987	1988	Percentage Change 2/
	Total employment						
Semifinished steel 1/	2,543	2,445	2,279	2,129	1,018	1,135	(55.4)
Plates	594	693	815	752	829	847	42.6
Sheets and strip	2,307	2,543	2,378	2,013	3,500	3,793	64.4
Bars	1,590	1,533	1,548	1,404	1,304	1,323	(16.8)
Pipe and tube	733	887	761	601	959	1,250	70.5
Other 2/	2,396	2,420	2,536	2,587	2,589	2,573	7.4
Total	10,163	10,521	10,317	9,486	10,199	10,921	7.5
	Production related employment						
Semifinished steel 1/	2,128	2,081	1,893	1,784	731	786	(63.1)
Plates	401	512	620	578	621	648	61.6
Sheets and strip	1,886	2,096	1,989	1,773	2,975	3,127	65.8
Bars	1,304	1,263	1,261	1,144	1,060	1,077	(17.4)
Pipe and tube	644	791	657	593	903	1,151	78.7
Other 2/	1,758	1,822	1,900	1,962	1,913	1,892	7.6
Total	8,121	8,565	8,320	7,834	8,203	8,681	6.9

1/ Ingots, blooms, billets, and slabs.
2/ Including structurals, rails, wire rod, and wire products.

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

virtually the same in 1988 as in 1983. By comparison, total employment in the U.S. steel industry declined by 32.7 percent during 1983-87. 1/

Financial Experience

Growth in the volume of steel shipped by the Western producers, combined with higher price levels, helped return the Western industry to profitability during 1984-88. After 4 consecutive years of losses (averaging 2.5 percent of sales during 1983-86), the industry earned 4.0 and 7.5 percent, respectively, on sales in 1987 and 1988 (table 2-6). In contrast, the U.S. steel industry earned 3.8 and 10.1 percent on sales in

1/ American Iron and Steel Institute.

1987 and 1988 (January-September) 1/ and all U.S. manufacturers experienced a return on sales of 7.0 and 8.5 percent during the two years (1988 data include the first three quarters). 2/ Recovery was not uniform among product areas, however, as semifinished steel and, to a lesser extent, long products and wire producers continued to experience financial problems.

Table 2-6
Steel: Net sales of Western U.S. producers, 1983-1988

Product	1983	1984	1985	1986	1987	1988
	Net sales (1,000 short tons)					
Semifinished steel 1/.....	0	0	6,496	7,648	17,347	38,068
Flat products 2/..	597,989	785,702	909,501	1,068,897	1,300,046	1,838,561
Long products 3/..	232,705	298,863	371,570	361,485	433,386	570,403
Wire and wire products.....	300,882	340,966	339,650	340,423	352,027	358,530
Pipes and tubes...	136,743	226,456	191,747	176,926	254,415	374,777
Total.....	1,268,319	1,651,987	1,818,964	1,955,379	2,357,221	3,180,339
	Return on sales (percent)					
Semifinished steel 1/.....	0	0	(13.72)	(28.45)	(17.99)	(16.03)
Flat products 2/...	(9.76)	5.62	(1.12)	1.35	7.33	11.08
Long products 3/...	(9.09)	3.62	(0.18)	(5.11)	(4.19)	2.15
Wire and wire products.....	(0.67)	0.69	(2.73)	0.81	1.45	(0.47)
Pipes and tubes....	(9.00)	(30.85)	(1.32)	(2.51)	6.43	7.90
All products.....	(7.40)	(0.76)	(1.29)	(0.40)	4.05	7.48

1/ Ingots, blooms and billets.
2/ Plates, sheet, and strip.
3/ Bars, structurals, wire rods, and railway products.

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

1/ U.S. International Trade Commission, Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize, inv. no. 332-209, 1988.
2/ U.S. manufacturers' return on sales for 1987 and 1988 estimated by USITC staff from data published in the U.S. Department of Commerce, Bureau of Census, Quarterly Financial Report, 3rd quarter, December 1988.

Investment

Capital Expenditures

Western producers' capital investments during 1983-88 are shown in the following tabulation of data received in response to Commission questionnaires (in thousands of dollars):

	Capital expenditures			
Year	Flat-rolled products	Long products 1/	All other products 2/	Total capital expenditures
1983.....	2,027	14,812	17,643	34,482
1984.....	10,533	33,189	5,088	48,810
1985.....	15,520	27,556	7,904	50,980
1986.....	43,957	36,621	15,360	95,938
1987.....	242,430	86,907	28,873	358,210
1988.....	195,899	16,155	25,311	237,365

1/ Includes bars, wire rods, wire and wire products, light structurals, and rails.
2/ Includes semifinished steel and pipes and tubes.

As above, data for the initial years studied are incomplete; their inclusion, however, would in all likelihood not substantially alter the sharp increase which occurred in the latter year of the period. The increases which occurred primarily reflect the significant expenditures initiated by the producers of flat-rolled products in 1987, and continuing in 1988, on modernization efforts including the relining of blast furnaces and the installation of a continuous pickling line, a cold reduction mill, and a continuous annealing line.

Role of foreign investment

Small-scale foreign investment in the Western region has been evident since the 1950s. Foreign capital was first directed at importing and distributing steel, but soon spread into steel fabrication. For instance, Western Tube and Conduit, located in Long Beach, CA, was established in 1968 by Sumitomo Metals (Japan); and Tree Island Steel, a wire product fabricator, located in Monrovia, CA, was established in 1972 by Tree Island Industries (Canada). Throughout the 1970s, foreign steel producers located in the Western United States were predominantly wire or pipe and tube fabricators from Japan and Canada, the exception being Canadian-owned Hawaiian Western Steel, which was established in 1959 with annual raw steelmaking capacity of 60,000 tons.

In the 1980s, changes in the nature of foreign investment in the Western region are evident; more foreign countries are involved in larger and more diverse operations. In 1983, Tokyo Steel (Japan) and Mitsui

Trading (Japan) purchased 50 percent of TAMCO, a small minimill owned by Ameron, a domestically owned wire drawer in Etiwanda, CA. Raw steelmaking capacity increased from 175,000 tons per year to approximately 300,000 tons per year, with one intended use of the additional capacity being to produce billet for export to Tokyo. Although this subsequently did not prove feasible, Tokyo and Mitsui retained their interest in TAMCO, which presently produces rebar for the Western steel market.

In 1984 and 1986, foreign investment in sheet and strip processors contributed to the formation of CSI and UPI, respectively. As noted in the previous section on the structure of the Western steel industry, these investments salvaged previously unviable operations, creating about 600 jobs at CSI, and funding UPI's costly modernization program which established about 1,200 jobs. UPI officials assert that the modernization program currently underway in Pittsburg, CA, will allow them to enter high value markets (those in which surface and shape specifications are critical) from which they would otherwise be excluded. Company officials indicate that the higher quality product markets have been ceded to foreign producers, primarily the Japanese, over time, and that the modernization will position the company to regain markets which have been and were being lost.

CHAPTER 3. THE WESTERN U.S. STEEL MARKET

Reflecting the combined effects of inventory building by purchasers and increased industrial activity, apparent steel consumption in the Western region increased during 1983-88, rising by 29 percent from 8.1 million tons in 1983 to 10.4 million tons in 1988. Purchasers' inventories, reflecting strong demand in 1987-88, increased by 72 percent during the period.

Consuming Markets

The relative importance of consuming markets differs between the Western region and the United States as a whole. The Commission determined in the late 1970s that the construction/contractor and container industries were the primary consumers of steel in the Western region, whereas the automotive and machinery industries were of greater relative importance to the United States as a whole. 1/ These findings remained the same through 1987, although the disparity in the machinery industry's relative importance to the West and to the United States as a whole narrowed as shown in the following tabulation:

Consuming Market1/	Market percentages in			
	U.S.2/	Western U.S.2/	U.S.3/	Western U.S.4/
		1979		1988
Construction 5/.....	29	53	24	56
Automotive.....	24	4	25	2
Machinery 6/.....	16	6	10	5
Containers.....	8	15	10	17
Agriculture.....	4	1	1	1
Appliances.....	3	1	4	1
Rail transportation 7/..	3	4	2	5
Oil and gas.....	2	1	3	2
Other.....	11	15	21	11
Total.....	100	100	100	100

1/ The data on consuming markets reflect only the destination of domestic producers' shipments not sent to steel service centers and processors; determining the actual structure of the market would require information on imports and service sector shipments that are not available.
2/ U.S. International Trade Commission, Conditions of Competition in the Western U.S. Steel Market Between Certain Domestic and Foreign Steel Products, Investigation No. 332-88, 1979.
3/ Compiled from American Iron and Steel Institute's 1987 Annual Statistical Report.
4/ Compiled from responses to questionnaires received by the U.S. International Trade Commission.
5/ Includes construction and contractor industries.
6/ Includes electrical and nonelectrical machinery.
7/ Figures for 1979 do not include CF&I.

1/ U.S. International Trade Commission, Conditions of Competition in the Western U.S. Steel Market Between Certain Domestic and Foreign Steel Products, Investigation No. 332-88, 1979.

The role of service centers, which usually process and distribute steel, in the Western region and in the United States as a whole appear to be similar; in 1987, approximately 30 percent of Western shipments were to steel service centers, whereas 26 percent of all U.S. shipments were to steel service centers. 1/

Apparent Consumption

Reflecting economic recovery from the conditions of the early 1980s, apparent consumption of steel in the Western region increased by 29 percent from 8.1 million tons in 1983 to 10.4 million tons in 1988.

Year	Apparent consumption (1,000 short tons)
1983.....	8,096
1984.....	9,244
1985.....	9,714
1986.....	9,723
1987.....	10,337
1988.....	10,435

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

The increase was similar to that experienced in the U.S. market as a whole, where apparent consumption increased by 24 percent during the same period.

As shown below, sheet and strip products accounted for the greatest share of products consumed (37.5 percent), followed by bars (16 percent) and tubular products (14 percent).

Product	(In percent) 1983	1988
Semifinished steel.....	1.5	3.3
Plates.....	10.1	10.3
Sheets and strips.....	37.9	37.5
Bar.....	14.3	16.3
Wire and wire products..	8.7	6.5
Pipe and tube.....	15.9	13.6
Other.....	11.6	12.5
	100.0	100.0

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

1/ Data on total U.S. shipments presented in American Iron and Steel Institute's 1987 Annual Statistical Report.

Inventories

Inventories of steel purchasers located in the Western region appeared to respond to a variety of market and nonmarket factors as they increased by over 70 percent between 1983 and 1988 (table 3-1). Domestic purchasers' and foreign suppliers' concerns about Bethlehem Steel's petition under section 201 (of the Trade Act of 1974), filed in January 1984, appears to have spurred a 50-percent increase in inventories in 1984. Inventories decreased in 1985 and remained depressed throughout 1986, reportedly because steel consumers delayed purchases believing that USX's return to the market (after a 6-month labor strike beginning in August 1986) would decrease prices. In 1986-88, as steel demand grew, inventories increased by approximately 40 percent as steel service centers and end users purchased steel to distribute and consume.

Table 3-1
Steel: Inventories of Western U.S. purchasers, by product, 1983-88

Product	1983	1984	1985	1986	1987	1988	Change
	Quantity (short tons)						(percent)
Bars	8,288	15,109	13,869	12,162	15,186	15,607	88.3
Structurals	20,696	50,268	38,772	32,222	33,685	38,203	84.6
Wire rods	782	767	848	772	765	770	(1.5)
Pipes and tubes	28,016	37,361	32,950	29,896	38,321	37,465	33.7
Plates	32,621	52,044	46,038	44,952	61,405	57,110	75.1
Sheets and strip	59,254	68,672	47,263	60,241	112,336	108,472	83.1
Wire products	1,263	1,678	1,118	1,796	2,352	2,410	90.8
Total	150,920	225,899	180,858	182,041	264,050	260,036	72.3

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

CHAPTER 4. PATTERNS OF SUPPLY TO THE WESTERN REGION

An analysis of supply patterns in the Western U.S. steel market indicates that the region depended increasingly on outside sources to meet its total steel needs during 1983-88; dependence on imports and Eastern U.S. suppliers rose from 63 percent in 1983 to 78 percent in 1988. Steel fabricators accounted for a relatively large portion of the steel purchased from non-Western sources (i.e., Eastern U.S. supplier and imports); netting their purchases out shows that net dependence on these outside sources to supply end user's needs declined from 54 percent in 1983 to 48 percent in 1988.

Overall Dependence

As shown in table 4-1, Western production of steel products manufactured entirely in the western region (i.e., from ferrous scrap or iron ore) was relatively stable during 1983-88, 1/ ranging from an estimated 3.5 to 3.7 million short tons per year.

1/ Excepting 1986 and 1987, years in which a work stoppage occurred at one of the largest mills.

Table 4-1
Western Steel: Western U.S. production, Eastern U.S. shipments, imports, exports, and apparent consumption, 1983-88

Year	Western production 1/	Eastern shipments to Western U.S. markets	Imports	Exports	Western shipments to Eastern U.S. markets	Apparent Western U.S. consumption 4/
	Quantity (1,000 short tons)					
1983	3,506	1,075	4,222	120	221	8,462
1984	3,490	1,391	5,219	108	306	9,686
1985	3,499	1,443	5,862	96	444	10,264
1986	2,760	1,893	4,851	113	339	9,052
1987	2,375	3,138	4,845	131	498	9,729
1988	3,736	3,536	4,755 2/	374 3/	1,020	10,633

1/ Estimated assuming that 1 ton of raw steel production translates into .775 tons of finished product production (i.e., assumes a yield of 75 to 80 percent).
2/ Imports for 1988 are estimated by USITC staff from data provided by U.S. Department of Commerce for the months January-November, 1988.
3/ Exports for 1988 are estimated by USITC staff from data provided by U.S. Department of Commerce for the months January-November, 1988.
4/ Western production, plus Eastern shipments, plus imports, less exports, less Western shipments to Eastern markets.

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

The Western region became increasingly dependent on outside sources, however, reflecting the efforts of Western producers to broaden their markets through increased exports and a greater level of shipments from the West to Eastern U.S. markets. As shown in the tabulation below, Eastern U.S. producers accounted for most of the increase in dependence, as reliance on imports fluctuated during 1983-88, rising from 50 percent in 1983 to 57 percent in 1985 before declining to 45 percent in 1988.

Year	Dependence on Eastern United States	Dependence on imports	Total dependence
1983	12.7	49.9	62.6
1984	14.4	53.9	68.3
1985	14.1	57.1	71.2
1986	20.9	53.6	74.5
1987	32.3	49.8	82.1
1988	33.3	44.7	78.0

Net Dependence

An examination of shipments to end markets indicates that Western producers' role in the market increased markedly during 1983-88 (table 4-2).

Table 4-2
Western Steel: Net Western U.S. shipments, net Eastern U.S. shipments, net imports, receipts from unknown sources, exports and apparent consumption in consuming markets, 1983-88

Year	Net Western Shipments 1/	Net-Eastern shipments 2/	Net imports 3/	Exports	Western shipments to Eastern U.S. markets	Apparent consumption 4/
			Quantity (1,000 short tons)			
1983	4,051	1,006	3,360	120	201	8,096
1984	4,203	1,203	4,252	108	306	9,244
1985	4,682	1,257	4,315	96	444	9,714
1986	4,988	1,430	3,757	113	339	9,723
1987	5,680	1,622	3,664	131	498	10,337
1988	6,844	1,649	3,336 5/	374 5/	1,020	10,435

1/ Total Western shipments less purchases by Western producers.
2/ Total Eastern shipments to the West, less purchases by Western producers.
3/ Total imports less imports purchased by Western producers and less receipts from unknown sources (which range from 2,000 to 7,000 tons).
4/ Shipments plus imports, less receipts from unknown sources, less exports.
5/ Estimated by USITC staff from data provided by U.S. Department of Commerce for the months January-November, 1988.

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

The 70 percent increase of shipments from 4.1 to 6.8 million tons resulted in a decline in dependence on outside sources from 54 to 48 percent. As shown in the tabulation below, this resulted in significant declines in the role of imports.

Year	Dependence on Eastern United States	Dependence on imports	Total dependence
1983	12.4	41.5	53.9
1984	13.0	46.0	59.0
1985	12.9	44.4	57.3
1986	14.7	38.6	53.3
1987	15.7	35.4	51.1
1988	15.8	32.0	47.8

Supply Patterns

Following is an examination of the changes which occurred in supply patterns on a more detailed, product by product basis. The analysis is based on total shipments (i.e, it does not net out shipments to Western producers for further processing).

Western Regional Shipments

Regional shipments by Western producers captured an expanded share of total Western supply during 1983-88, rising from 39 percent in 1983-85 to 45 percent in 1988 (table 4-3). This general upward trend between 1985 and 1987 was reflected in all product groups except wire and wire products.

The flat-rolled product area (sheets, strip, and plate) had the largest increase, reflecting the structural changes that have occurred in that sector over the period. Closed production facilities have been

Table 4-3
Steel products: Supply shares to the Western region, 1983-88

Product category	1983	1984	1985	1986	1987	1988 1/
Import share:						
Semifinished	90	88	96	93	75	67
Plate	50	46	31	28	24	20
Sheet and strip	60	58	50	37	29	24
All flat products 2/	58	56	47	36	29	23
Wire rod	81	77	76	60	69	71
Rails and rail products	19	17	25	20	14	10
Structurals	71	77	74	64	57	55
Bars	12	14	12	12	10	10
Subtotal-long products 3/	34	38	36	31	28	27
Wire and wire products	31	36	34	34	33	31
Pipe and tube	64	60	68	62	57	48
All steel products	48	49	49	41	35	31
Western producers share:						
Semifinished	0	0	3	4	9	10
Flat products 2/	33	34	44	48	44	50
Long products 3	49	45	47	49	50	52
Wire and wire products	59	57	59	58	56	57
Pipe and tube	23	25	16	21	26	35
All steel products	39	38	39	43	42	45
Eastern producers share:						
Semifinished	10	12	2	3	19	24
Flat products 2/	9	10	10	16	27	27
Long products 3/	17	17	16	20	22	21
Wire and wire products	10	8	8	8	11	13
Pipe and tube	14	15	16	17	17	17
All steel products	12	13	12	16	23	23

1/ Shares are based on estimated 1988 import data, annualized from 7 months of actual data.
2/ Flat products include plate, sheets, and strip.
3/ Long products include wire rods, rails and rail products, structurals, and bars.

Source: Based on official statistics of the U.S. Department of Commerce and responses to questionnaires of the U.S. International Trade Commission. See appendix D, table D-1 for additional information.

brought back on line, rolling facilities that were once tied to specific steelmaking facilities are now operating without a captive source of slabs or hot-rolled coils, and new ownership groups have emerged to control various facilities. The restructuring of this sector has apparently enhanced the individual companies' abilities to compete in their nearby markets.

The increasing importance of Western producers in supplying their regional market contrasts with the trend noted in the Commission's 1979 report on the Western steel market. 1/ Data collected for that investigation indicated a falling share, from 56 percent to 47 percent, for the Western suppliers between 1975 and 1978. Apparently this trend continued during the years between the two study periods (1979-82), lowering the Western suppliers' share to the 39 percent level noted above for 1983-85.

Eastern Shipments to the Western Region

The share of the Western region steel supply accounted for by Eastern producers almost doubled during 1983-88, rising from 12 percent to 23 percent, again contrasting with trends noted in the Commission's previous report. Between 1975 and 1978, the importance of Eastern producers in the Western region decreased from 13 percent to 10 percent. The recent increase is also reflected in most of the individual product groups. Much of the increase can be attributed to the shift in the source of supply for hot rolled bands for the cold rolling facility currently owned by USS/Posco Inc. (UPI) in Pittsburg, CA. Formerly supplied by a western hot strip mill, the cold mill is currently supplied from eastern facilities. During the period 1983-88, the importance of the Western region to the Eastern producers has also increased. In 1983, Western shipments accounted for 2.2 percent of net Eastern shipments. This share has risen steadily throughout the period, rising to 5.7 percent in 1988.

Some Western consumers have argued that Eastern producers treat the Western region as a secondary market, entering when capacity utilization levels are sagging and abandoning Western customers when capacity utilization levels are high. Such a situation would raise the level of uncertainty for Western steel consumers and make them more dependent on other sources, including imports. Eastern producers of lower and higher value products alike have challenged this view of how the Western region fits into their marketing strategies. 2/ Producers of certain specialty products like wire rope cite the existence of warehousing and consigned stock arrangements and the establishment of producer-operated warehouses in

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1/ Conditions of Competition in the Western U.S. Steel Market Between Certain Domestic and Foreign Steel Products, USITC Publication 1004, September 1979.

2/ See public briefs of The Committee of Domestic Steel Wire Rope and Specialty Cable Manufacturers, the Specialty Steel Industry of the United States, Weirton Steel Corp., the Committee on Pipe and Tube Imports, and Eastern Wire Rod Producers.

the Western region as examples of their commitment to supplying Western consumers. For example, since 1983, warehousing space owned by Eastern wire rope manufacturers in the Western region has increased by roughly 20 percent. 1/ Most specialty steel manufacturers also maintain warehouses or sales offices in the Western region, supporting their stated commitment to supply customers in Western States. 2/

In an effort to determine the level of variability in the supply behavior of the three supply sources, the standard deviations of the mean for supply levels in the 1983-88 period are calculated in table 4-4.

Table 4-4
Mean and standard deviation of supply shares from Eastern, Western, and import sources, by product groups, 1983-88

Product group	Mean			Standard deviation		
	Eastern	Western	Imports	Eastern	Western	Imports
Semifinished.....	11	4	85	7.8	3.4	10.3
Flat products.....	16	42	41	7.9	6.3	13.2
Long products.....	19	49	32	2.2	2.2	4.1
Wire and wire products..	10	57	33	1.8	1.0	1.7
Pipe and tube.....	16	24	60	1.2	5.7	6.3
Average.....	17	41	43	4.8	2.5	6.3

Examination of these standard deviations reveals that during 1983-88, the supply share of the Eastern producers exhibits the smallest deviations of the three supplier groups for long products and pipes and tubes. This suggests that Eastern producers compared with Western producers and imports were relatively consistent suppliers of these steel products to the Western region over the entire period. For the wire and wire products group, the absolute level of the deviation, 1.8, is relatively small in comparison with other product groups, once again indicating relatively stable supply.

The largest deviations for Eastern suppliers are for flat rolled and semifinished products: this reflects the wide variation in supply share over the period and tends to suggest that Eastern producers have not been consistent suppliers of these goods to the Western market. The variation in flat products can be largely attributed to the change in supply patterns at UPI, which were noted earlier. The fluctuation in semifinished supply seems to be a function of the market for semifinished products; 3/ during

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1/ Prehearing brief of the Committee of Domestic Steel Wire Rope and Specialty Cable Manufacturers.
2/ Prehearing brief of the Specialty Steel Industry of the United States.
3/ Since semifinished products are a low value-added item, as well as being an intermediary product for most producers, there is less of an incentive

(continued...)

periods of high national demand for finished steel products and strikes at Eastern production facilities, Eastern producers of semifinished products have failed to meet contracts for delivery to customers in both the Eastern region and the Western region. 1/ Whereas such a disruption in raw material supply has grave effects on the individual consumer, the impact on the Western regional industry as a whole tends to be greater than on the non-Western industry because of the higher relative proportion of capacity requiring purchased semifinished inputs.

Western Import Supply

Import growth over the period was moderate compared with the increase in domestic supply from Eastern and Western producers. Whereas imports increased by an estimated 12 percent between 1983 and 1988, Eastern shipments to the West increased by 229 percent and Western regional shipments increased by 101 percent. As a result, the share of supply accounted for by imports dropped 17 percentage points, from 48 percent in 1983 to 31 percent in 1988. The decrease was experienced in all product categories with the exception of wire and wire products, which was essentially unchanged. In several product groups, such as rails, structurals, wire and wire products, and pipe and tube, import share peaked in 1984 or 1985 before declining steadily through 1988.

3/(...continued)
for producers, regardless of their location, to supply semifinished product when markets for downstream products are strong.
1/ Based on examination of the public record of requests for short supply waivers.

CHAPTER 5. IMPORTS

During the past decade, steel imports have been the subject of numerous unfair trade complaints filed by U.S. producers, as well as the focus of a number of measures by the U.S. Government that have specified conditions under which steel could be imported into the U.S. market. Such measures have included: quotas and/or increased tariffs on imports of certain stainless and alloy tool steel (1976-80 and 1983-89); an import price monitoring system (i.e., the "trigger price mechanism"), which was used to detect possible instances of dumping (1978-81); and voluntary restraint arrangements (VRAs) on steel imported from selected countries. 1/ Appendix E contains a more detailed discussion of these measures.

The current VRA program limits imports from 29 countries. Most VRAs were negotiated in 1985 and were retroactive to October 1, 1984. For most steel products, imports from countries not subject to the VRAs have had greater access to the U.S. market during the program. 2/

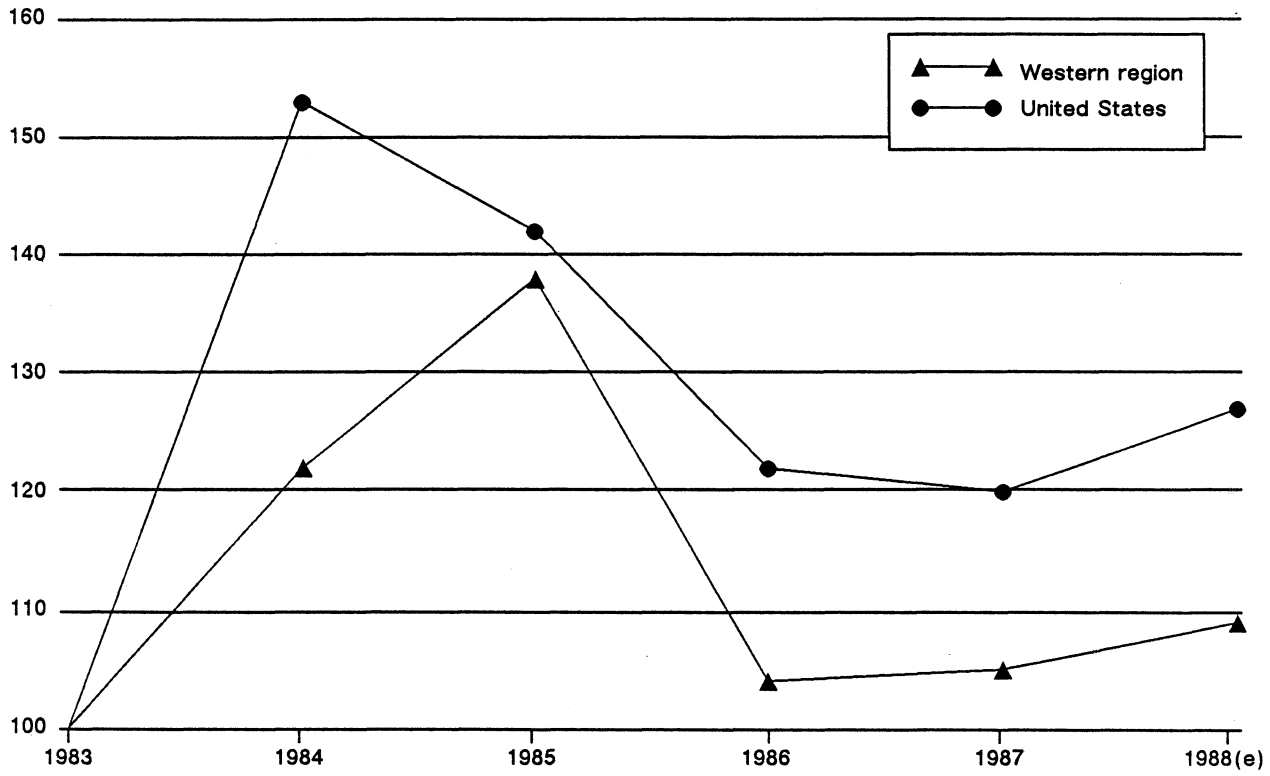
Import Trends Under the Steel VRAs

Import trends for both the Western region and the Nation as a whole have generally been the same under the VRA program, although year-to-year levels have differed, as shown in figure 5-1.

1/ The voluntary restraints currently in force began with an agreement negotiated with the EC in 1982. Subsequent agreements were negotiated beginning in late 1984.
2/ Products from certain countries have, however, been subject to unfair trade complaints.

Figure 5-1
Imports of steel products subject to VRA limits

Index (1983 = 100)



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

Although imports have been falling since the peak periods of 1984-85, 1988 levels for the Western region are 13 percent higher than those in 1983, whereas imports to the U.S. market as a whole rose 28 percent.

Import Sources

It is likely that the VRA program has contributed to broadening the composition of import sources for the Western region, paralleling the experience of the country as a whole. The import concentration (share of imports from the five largest suppliers) in both regions fell during 1983-87, reflecting to a large extent the increase in imports from non-VRA countries. According to data supplied by the U.S. Department of Commerce, imports from the five largest sources have decreased to a greater extent in the Western region than in the national market as shown in the following tabulation (share in percent):

Region	1983	1984	1985	1986	1987	1988 1/
Western.....	78	78	76	70	68	68
National.....	65	62	62	60	60	58

1/ Estimated from data for January-November 1988.

On an individual product line basis, Western imports are even more concentrated, with eight countries (the top five sources for each product line) accounting for over 77 percent of the tonnage in all product categories except wire rods and plates (see table D-4). Imports from Japan have consistently accounted for the largest share of these imports (31 to 47 percent), averaging between 2 and 2.5 million tons annually through 1985, though Japan's share of all Western region imports has declined markedly since 1983, falling from 44 percent to 31 percent in 1988. Imports from certain countries, which are not signatories of the VRAs, such as Indonesia, New Zealand, Singapore, Thailand, and Malaysia, have shown strong growth during 1983-87 in certain product lines, rising from supplying no steel to the Western region in 1983 to being among the top five supplier nations for a particular product by 1987. The non-VRA countries that have shown growth, their respective product group(s), and the share of total imports from these countries entering the Western region in 1987 are shown in the following tabulation:

Country	Product	Share entering Western region (Percent)
Indonesia.....	Wire rods	48
	Bars	26
New Zealand....	Semifinished	100
Singapore.....	Pipe and tube	81
Thailand.....	Pipe and tube	66
Malaysia.....	Wire rods	77

Geographic Shifts

The VRAs do not seem to have initiated any shift in the share of total U.S. imports that enters through Western customs districts (table 5-1). Western region imports, as a share of steel imports into the entire country have averaged around 20 percent during 1983-87, with a high of 24 percent in 1983, 1985, and 1987 and a low of 20 percent in 1984. The percentages vary somewhat on a product line basis, although the variability has narrowed over time. However, there have been downward shifts in the Western share

Table 5-1.--Steel: Western share of total U.S. imports in terms of quantity, 1983-87, January-November 1987 and January-November 1988

(In percent)

Product	1983	1984	1985	1986	1987	January-November-- 1987	1988
Semifinished.....	15	7	35	36	34	34	32
Plates.....	18	19	16	15	14	13	12
Sheet and strip...	25	21	21	20	21	21	20
Wire rods.....	28	22	24	21	21	20	18
Rails and railway products....	39	25	33	28	21	22	13
Structural shapes.....	27	29	31	25	24	24	25
Bars.....	21	16	16	17	16	16	16
Wire and wire products.....	21	20	20	20	21	21	21
Pipes and tubes...	25	15	24	24	27	26	22
Average.....	24	20	24	23	24	23	21

Source: Based on official statistics of the U.S. Department of Commerce and questionnaires of the U.S. International Trade Commission.

of total steel imports, averaging roughly 5 percentage points, in six out of nine product categories. These declines reinforce other data, which emphasize the

semifinished steel, have served to offset the decreases in other product areas. The continuing strength of semifinished imports in the Western region can be attributed largely to the operations of CSI, the largest slab buyer in the United States. CSI acquires much of its slab from offshore sources.

Role of Non-VRA Countries

Since the implementation of the VRAs in 1984, there has been a pronounced increase in the share of imports accounted for by countries that are not bound by those agreements. During 1983-87, the share of Western region imports accounted for by non-VRA nations increased from 6 percent to 20 percent; partial-year data for 1988 show this trend continuing (table 5-2 and table D-3). Imports from non-VRA countries to the total U.S. market have also been rising from 18 to 19 percent in 1983 and 1984 to about 30 percent in 1987. The difference between the Western and national market shares is largely attributable to the major role that Canada, a non-VRA country, plays in the midwestern U.S. steel markets.

An examination of individual product groups during this period shows that the increases in non-VRA imports in the two regions are similar in most groups. The exceptions are semifinished products, wire rods, wire and wire products, and rails and railway products. For three of these product groups (semifinished, wire rod, and wire and wire products), the percentage increase in non-VRA import share has been significantly greater in the Western region.

Imports of Steel Produced in VRA Countries and Transformed in Non-VRA Countries

When examining imports of steel from non-VRA countries, a central issue is the impact of steel exported from VRA countries to non-VRA countries for fabrication and re-export to the U.S. market. This practice obscures the product's country of origin and therefore makes it unclear whether the shipment should be counted against the quota of the VRA country. Throughout

Table 5-2
Share of imports accounted for by non-VRA countries, 1983-87, January-November 1987 and January-November 1988

Product	1983	1984	1985	1986	1987	Jan.-Nov. 1987	Jan.-Nov. 1988	Percentage point change, 1983-88
	Percent							
Western United States:								
Semifinished	1	7	7	10	10	10	10	9
Plates	3	10	8	9	15	27	26	23
Sheets and strip	2	4	4	4	8	8	10	8
Wire rods	11	5	22	38	45	48	59	48
Rails and railway products	0	0	0	1	14	8	0	0
Structural shapes	2	2	3	11	8	8	7	5
Bars	10	8	10	34	37	37	40	30
Wire and wire products	17	16	25	47	47	48	51	34
Pipe and tube	13	4	8	19	22	25	28	15
All products	6	5	7	14	20	18	20	14
Non-Western United States:								
Semifinished	60	35	17	25	23	22	21	-39
Plates	22	19	18	25	43	42	41	19
Sheets and strip	10	14	14	14	20	20	19	9
Wire rods	38	33	39	42	63	50	50	12
Rails and railway products	10	18	15	31	44	42	55	45
Structural shapes	16	16	19	26	24	24	22	6
Bars	30	26	31	53	55	54	56	26
Wire and wire products	29	26	31	36	40	40	42	13
Pipe and tube	15	11	17	27	41	41	35	20
All products	19	18	19	25	31	31	30	11

Source: Based on official statistics of the U.S. Department of Commerce, and questionnaires of the U.S. International Trade Commission.

the VRA program, the origin of such imports has been determined by rulings of the U.S. Customs Service; if the product had undergone a substantial transformation and become a new and different article of commerce, the non-VRA country was designated the country of origin. If the transformation was deemed to be not substantial, the import was considered to be from the VRA country.

The U.S. Customs Service has issued rulings on the origin of steel products in virtually all Western customs districts, covering products such

as structurals, galvanized coil, wire and wire products, pipe and tube, and plate, and operations such as coating, annealing, threading and tapping, fabrication and drawing. These rulings generally concern the level of transformation and whether it is sufficient to redefine a non-VRA country as the country of origin. 1/

The Omnibus Trade and Competitiveness Act of 1988 (Public Law 100-418) includes a provision which affects the manner in which "transformed" imports are treated. Section 1322 provides that any steel product covered by VRAs, that is manufactured in a non-VRA country from steel that was melted and poured in a VRA country, "may be treated for purposes of the quantitative restriction ... as if it were a product of the arrangement country." This clause could significantly reduce the ability of VRA countries to redirect exports to non-VRA countries for fabrication and reexport to the U.S. market. The provision is not mandatory, but rather is to be used at the discretion of the President, who has delegated the power to the United States Trade Representative (USTR). Although the USTR has to the present time refrained from directing the Customs Service to utilize section 1322 when classifying imports, industry executives have indicated that they expect the provision to play a significant role in any negotiations to extend the program beyond September 30, 1989. 2/

The transformation of VRA steel in non-VRA countries and subsequent export to the United States has become widespread, encompassing a variety of products and countries. Discussions with Customs officials, steel producers, and domestic fabricators indicate that firms in certain countries have been very active in the transformation and reexport of VRA steel to the United States. Whereas some of these companies have a history of such activity, which predates the implementation of the VRA program, others have appeared only recently. In Western region Customs districts, imports from a number of countries have been reviewed because of questions about the origin of a steel product and its level of transformation within the non-VRA country. A small sampling of cases originating in the Western region include: galvanized coils from New Zealand, wire and wire products from Canada, pipe and tube from Taiwan and Thailand, and fabricated structural steel from Singapore and Taiwan.

In some cases, companies from VRA countries are involved in third-country transformation ventures and presumably supply them with raw material. Examples include partial ownership of a structural fabrication company in Thailand by Nippon Steel, 3/ the partial ownership of the Thai Steel Pipe Industry by the Japanese firms of Sumitomo Metal Industries and Nomura

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1/ Disputes over Customs determinations regarding the degree of transformation are settled by the Court of International Trade. Through a series of cases, the court has delineated several tests in order to distinguish when a product has been substantially transformed.
2/ Interviews with industry officials.
3/ Interviews with domestic fabricators.

Trading Co., and the partial ownership of Steel Tubes of Singapore by Japan's Kobe Steel and Tokyo Boeki. 1/

The transformation of VRA steel in non-VRA countries has had a variety of effects on the consumers and producers of steel products in the Western region, some of which are summarized below.

Wire and Wire Products

Davis-Walker Corp., the largest producer of wire and wire products in the Western region, alleges that it has lost market share and incurred financial difficulties because of competition from Canadian wire imports. Western region imports of wire and wire products from Canada have more than doubled since 1983, as shown in the following tabulation, according to the U.S. Department of Commerce:

	1983	1984	1985	1986	1987	1988(e) 1/
Quantity (1,000 short tons).....	31	40	50	76	69	83
Share of Western imports (percent)..	14	14	20	31	27	35

1/ Based on January-November data.

Davis Walker argues that Tree Island Steel Inc., a Canadian-based competitor, has a significant competitive advantage since imported wire rod has cost $30 to $50 per ton less in Canada than in the United States during the VRA period. 2/ Davis Walker attributes the higher costs of this raw material in the U.S. market to the restrictions placed on imported supply by the VRA program. Tree Island responds that it has not taken advantage of the structure of the VRA restrictions and supplies Western States from facilities in both Canada and the United States. The Canadian firm emphasizes other factors that it contends offset its advantage stemming from lower cost wire rod. Although agreeing that procurement of wire rod in the Western United States is more difficult than in Canada because of U.S. import restraints (Tree Island has two plants in California), Tree Island attributes its success in selling to the Western States to its relatively modern equipment, high productivity levels, and favorable plant locations in California and Canada. Tree Island maintains that these are the factors that give it a competitive advantage over Davis Walker, not the availability of imported wire rod. However, in a 1985 prospectus for the sale of common stock, Tree Island notes that "... the United States government's (SIC) Voluntary Restraint Agreements with a number of offshore countries have reduced the supply of wire products from offshore manufacturers into the (Western) market area" and combined with closures of Western U.S. and Canadian wire mills "has created a significant market for Tree Island." The prospectus also notes

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1/ Prehearing brief of the Committee on Pipe and Tube Imports, pp. 10-11.

2/ Prehearing brief of Davis Walker Corp., p. 6.

that, in 1984, 100 percent of its wire rod came from offshore sources in South America, Western Europe, and Japan.

Fabricated Structural Steel Products

Fabricated structural steel is another product category where transformation of steel from VRA countries is being performed in non-VRA countries for sale in the U.S. market. Discussions with domestic fabricators and erectors indicate that several countries have been involved, especially Singapore, Taiwan, and, recently, Thailand. West coast fabricators talk of "waves" of imports from these countries, with a new country appearing in the market as others are closed out of the market by customs rulings. 1/ These fabricators report that early in the VRA program, significant quantities of Korean structural steel were being routed through Singapore and Taiwan for construction jobs on the west coast. The fabricators report that customs rulings denying that the transformation from structural shapes to fabricated structurals was substantial affected this practice and imports from these countries decreased. The following tabulation of U.S. Department of Commerce data depicts Western region imports of fabricated structural steel from Singapore and Taiwan, as well as their respective share of Western regional imports during 1983-88. 2/

	1983	1984	1985	1986	1987	1988(e) 1/
Western imports from--						
Singapore (short tons).....	0	0	22	2,874	2,236	159
Taiwan (short tons).....	63	440	2,289	16,653	5,344	1,488
Share from (in percent)--						
Singapore.....	0	0	0	3	3	0
Taiwan.....	0	0	2	20	6	2

1/ Based on January-November 1988 data.

1/ When a substantial transformation ruling is made for a specific product from a certain country, the ruling, in principle, applies to similar products and transformations from other countries. However, Customs generally accepts country-of-origin declarations unless there is some prior reason to believe evasion is occurring. Therefore, as each new country embarks on the practice, its actions often must be brought to the attention of the Customs Service before imports are checked and existing rulings, or new rulings, can be applied.

2/ These imports include TSUS items 609.84, 609.86, 609.88, 609.90, 652.94, 652.96, and 653.00.

Industry sources indicate that Thailand appears to be an emerging intermediate point for structurals from Japan, citing the participation of Nippon Steel in a Thai fabricating facility. This facility has won a 3,000 ton job on the west coast (Seattle) and the first imports of fabricated structural steel from Thailand, for the period under investigation, occurred in late 1988. Domestic fabricators contend that application of the "melted and poured" provision of the Omnibus Trade and Competitiveness Act of 1988 would stop such transshipments, although case history indicates that a substantial transformation ruling might also determine the steel to be of non-Thai origin. They also note that major Korean firms are currently bidding for steel framing jobs that require far more fabricated structural steel than allocated to Korea under their VRA quota. This implies one of three scenarios: the Korean firms expect to win only a fraction of what they are bidding; they expect to be able to export a substantially more fabricated structural steel to the U.S. market in coming years; or that they intend to fabricate material in other (non-VRA) countries in order to complete these jobs.

Although some Western fabricators have gone out of business, citing competition from third country transformation ventures as a factor, other firms have utilized subcontracted offshore fabrication as a business strategy to maintain a competitive position in bidding projects. 1/ In such a case, a firm splits the fabrication for an individual job, doing some in its U.S. based fabrication shop and the rest is subcontracted offshore. One firm interviewed indicated that an abrupt end to the VRAs could result in investment by Western fabricators in joint ventures located in developing Asian countries.

Pipe and Tube Products

The pipe and tube industry has identified several non-VRA countries, including Thailand and Singapore, which are purchasing flat-rolled steel stock from VRA countries and manufacturing pipes and tubes for sale in the U.S. market. The following tabulation of U.S. Department of Commerce data shows a steady rise in the levels and shares of pipe and tube imports to the Western region from Thailand and Singapore:

1/ Interviews with industry officials.

	1983	1984	1985	1986	1987	1988(e) 1/
Imports from--						
Singapore (1,000 short tons).....	0	1	13	22	30	38
Thailand (1,000 short tons).....	0	0	12	21	62	66
Share from (in percent)--						
Singapore.....	0	0	1	3	4	5
Thailand.....	0	0	1	3	8	8

1/ Based on January-November 1988 data.

The industry notes that imports of hot-rolled coil, the raw material for most pipe and tube production, from VRA countries into Thailand increased 69 percent between 1984 and 1987, and at the same time Thai exports of pipe to the U.S. market as a whole rose from none in 1984 to almost 61,519 tons in 1987. The industry has filed several cases alleging injury because of imports from Thailand and Singapore, with mixed results. For some products it has been determined that the industry has been injured, and for other products a finding of no injury has been the result. 1/

Sheet Products

Galvanized sheet from New Zealand, made from a cold-rolled substrate produced in Japan, is another Customs case involving the question of substantial transformation that originated in a Western region port. Galvanized sheet represents the largest market for sheet products in the Western region and three regional producers rely on the market for some or all of their revenues.

In this case, Customs ruled that the annealing/hot dip galvanizing process did not constitute substantial transformation and that imports had to be counted against the Japanese quota levels. However, the Court of International Trade disagreed and ruled in favor of New Zealand Steel Inc., finding that the transformation was substantial and that the product was of

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1/ Affirmative injury rulings in dumping cases have been returned for welded carbon steel pipe and tube from Thailand (Feb. 21, 1986), and welded carbon steel light-walled rectangular pipe and tube from Singapore (Nov. 3, 1986). An affirmative countervailing-duty ruling was also returned by the Commerce Department on welded circular carbon steel pipe and tube from Thailand (Aug. 14, 1985). In two other antidumping cases against Singapore, it was determined that heavy-walled rectangular carbon steel pipe and tube was not being dumped, and welded carbon steel standard pipe and tube was determined to be dumped, but not to be injuring the domestic industry.

New Zealand origin. 1/ Although there is a significant history, predating the VRA program, of imports of galvanized sheet from New Zealand, import levels to the Western region increased 56 percent between 1983 and 1987. The following tabulation, derived from U.S. Department of Commerce data, shows the annual level and share of galvanized coil imports into the Western region from New Zealand during 1983-88: 2/

Item	1983	1984	1985	1986	1987	1988
Imports (short tons)	5,475	5,694	8,720	5,679	8,534	3,604
Share (in percent)	1	1	2	2	2	1

Overall, the effect of non-VRA imports advanced from VRA steel mill products has been to contribute to an increase in imports from non-VRA countries. In the product areas noted, imports of transformed steel products from non-VRA countries have increased to represent a significant percentage (up to 35 percent) of total Western imports in certain years. However, it should be noted that in some cases (e.g., wire and wire products, fabricated structural steel) peripheral circumstances such as material substitution or inadequate technological ability have reduced the prosperity of the affected industries or companies. For other products (e.g., galvanized coil and other pipe and tube products), the indication of a substantial impact on Western producers is less clear cut.

Product Composition

During the period the VRAs have been in effect, there has been relatively little change in the product group shares of total steel imports, either on a national or Western regional basis (table 5-3). The largest shifts occurred in two product areas, semifinished steel and sheets and strip. The increase in semifinished import shares represents the continuing emergence of a commercial market for those products, and the decrease in import shares of sheets and strip in the Western region can be attributed largely to the resumption of production at the former Kaiser Steel facilities in Fontana, CA, by California Steel Industries. The only significant divergence between Western and national markets is in the pipe and tube category, where national share has fallen and Western share has remained steady.

1/ See Ferrostaal Metals Corp. v. United States, 664 F. Supp 535 (Cit 1987).

2/ Based on official statistics of the U.S. Department of Commerce. Imports include TSUS items 608.1310, 608.1315, 608.1320, 608.1321, 608.1325, 608.1330, 608.1331, and 608.1335.

Table 5-3
Steel: Product group shares of total imports, for the Nation and for the Western district, 1983 and 1987

(In percent) 1/

Product group	United States		Western district	
	1983	1987	1983	1987
Semifinished	5	11	3	19
Plates	8	7	6	4
Sheets and strip	41	38	44	34
Wire rods	7	7	8	6
Rails and railway products	1	1	2	1
Structural shapes	10	10	11	11
Bars	6	6	5	5
Wire and wire products	6	6	5	6
Pipes and tubes	16	13	17	15

1/ Because of rounding, columns may not add to 100.

Source: Based on official statistics of the U.S. Department of Commerce and questionnaires of the U.S. International Trade Commission.

CHAPTER 6. FACTORS INFLUENCING PURCHASE DECISIONS AND SUPPLY PATTERNS IN THE WESTERN REGION

Sourcing patterns depend on a number of criteria, including price, product availability/delivery reliability, product quality, and lead times. In general, all other factors being equal, the more proximate a customer is to a supplier, the greater the reliance on that particular source. As distance between customer and supplier increases, delivered prices and delivery times also increase. Delivered price increases are primarily a function of transportation cost, and delivery time increases are a function of both the rail and truck time required to deliver the product.

Relative Prices and Consumption in the Western States

In the current investigation, parties have testified that geography dictates that the Western States be treated as a separate, regional market. 1/ Other parties have claimed that the United States comprises one integrated steel market. 2/ Such assertions, though they seem contradictory, can be reconciled. Delivered prices to different geographic locations reflect transportation and other delivery cost differences. Domestic steel produced in the East is delivered overland, primarily by rail, to Western consumers. Imported steel arrives by ship and inland transportation links (usually rail). Moreover, imported steel is subject to other costs such as handling costs at the dock and customs fees. Finally, owing to longer lead times, imported steel typically needs greater warehousing services than domestic steel in order to assure the same timely availability.

Transportation and other delivery costs generally depend directly on the distance between the producer and the purchaser. Thus, excluding these costs, the prices of Eastern-produced U.S. steel between different Eastern and Western purchasers may well be equal, revealing the essential geographic integration of the Western and Eastern steel markets for domestic steel that is produced in the Eastern United States. Including transportation and delivery costs, however, prices may vary widely. (A similar explanation of market integration applies as well to the markets for imported steel and Western-produced U.S. steel in the United States.) Transportation costs, which generally depend on bulk and weight, are proportionately more important in determing the delivered price of steel than of other manufactured products that are characterized by a higher ratio of value to weight to bulk. The differences in delivered prices for steel from the same factory may thus give a false appearance of separate markets.

Since the market shares of domestic and imported steel depend on the relation between delivered prices of each, these shares will vary by location. The import market share is greater in the West than in the East largely because Western steel users are more proximate to East Asian producers and less proximate to Midwestern and Eastern producers. Thus,

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1/ Transcript, pp. 188, 190, 193.
2/ Transcript, pp. 17-18, 56.

steel users in the West respond to the relatively higher price of domestic steel in the West by consuming a larger proportion of imported steel relative to steel supplies from Eastern producers. 1/

As discussed below, however, developments with regard to transportation costs over the past several years have tended to improve the competitive position of non-Western U.S. suppliers vis-a-vis imports in the Western U.S. market. Transportation costs are not, however, the sole criteria affecting sourcing patterns, as relative production costs, lead times, and product availability and capacity are also of importance in this regard.

Transportation

Transportation costs amount to a significant proportion of the delivered cost of steel, possibly as much as 10 percent. Therefore, changes in transportation costs affect the sales and marketing of steel, and particularly affect steel products for which transport costs are a higher percentage of total cost. Even though many shippers were able to expand their markets following the decline in domestic rail transportation costs after rail deregulation (1980), industry sources state that non-Western U.S. producers are typically at a competitive disadvantage when selling to Western purchasers because of relatively high freight costs involved in shipping long distances. In previous years, lower ocean freight rates gave imported steel an advantage over Eastern U.S. steel production in the Western market. Though domestic freight rates remain slightly higher than ocean freight rates, ocean shipping costs include ancillary port and transshipment charges. The total costs of shipping imported steel are now comparable with the costs of shipping domestic steel to the Western United States.

Transportation Modes

Transportation costs in the steel industry affect both raw materials and finished products. The three primary transport modes used in transporting steel are rail, truck, and waterborne. Most domestic shipments of steel are transported via rail and truck, whereas ocean shipping is used for import and export shipments.

Rail transport

Rail shippers of steel products with whom the staff held discussions indicate that prior to deregulation in 1980, 2/ they were subject to

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1/ The relation of distance to relative price and to relative market share is illustrated in app. F.

2/ The railroad industry was deregulated by the passage of the Staggers Act (1980).

rapidly increasing freight rates and poor service. During the 1970s, rail transport costs were relatively high, particularly for longhaul shipment, with minimum costs of $100 per ton for shipping steel from Eastern steel mills 1/ to the Western United States. Current published rates 2/ for steel average $60 dollars per ton, and are significantly lower in the case of large contracts with specific suppliers. Some shippers are reportedly able to obtain rates in the $40 range. Currently, rate increases in non-contract traffic are on a par with inflation, and contract traffic has achieved rate stability. 3/ In addition, steel shippers indicate that they are being provided with much better rail service, though railroad car availability is occasionally a problem.

Truck transport

Although deregulation in the trucking industry has resulted in lower rates to users, this mode is used primarily for shipping steel short distances within geographic regions because rail is far more price competitive for longer hauls; shipment by truck is a feasible alternative for distances up to 700 miles. It is also competitive for high value commodities such as specialty steel where shipping charges are less significant, or in locations where there is no convenient rail service and transshipment charges would significantly add to the final delivered price.

Deregulation in the rail/truck transport industry has led to the development of intermodal shipping. 4/ This has increased the types of services provided and has lowered prices further. Many rail and truck companies now provide linked service; shipments of steel may move by truck/rail/truck combination, for instance, with only one bill of lading. This increased flexibility has opened up new markets to some producers. There has also been increased cooperation between steel shippers and the shipping (transport) companies.

Waterborne transport

There is currently no scheduled U.S.-flag ocean freight service operating between the east and west coasts of the United States because of the high costs associated with the Jones Act shipping trade. 5/ The Jones

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1/ Eastern mills refers to all those located outside the 12-State Western region.
2/ Published rates are book rates available to any shipper. However, many shippers are able to obtain much lower negotiated rates based on a long-term contract for the shipment of specific quantities.
3/ Contract traffic refers to multiple shipments being made under a prearranged contract for a specific rate.
4/ Intermodal shipping is transport by a combination of modes, with transshipment procedures simplified to achieve lower costs and faster service
5/ USITC staff interview with U.S. shipping industry representatives, December 1988.

Act affects those vessels engaged in U.S. domestic waterborne transport. 1/ Although subsidies are granted to ship operators (ODS), they are permitted only for those vessels engaged in international commerce, in order to place U.S.-flag operating costs on a par with those of foreign competitors. 2/ Operating subsidies are not available for domestic shipping. Thus, ocean shipping by U.S. steel producers or purchasers to move steel is used primarily for imports and exports. According to industry analysts, Jones Act domestic shipping is principally confined to those routes on which land-based transport (truck or rail) is not a feasible alternative. 3/

This particularly affects Eastern steel producers that, despite easy access to ports and waterborne transport, are unable to capitalize on their ability to serve the Western U.S. market by water because of the Jones Act limitations. Several Eastern producers have indicated that it would enhance their competitiveness in the Western U.S. market if they were able to ship by water. 4/ However, given the requirements necessary to comply with the Jones Act, it is unlikely that any domestic carrier will reenter the market because servicing this route would require the carrier to set high shipping rates.

Industry sources suggest that a Jones Act waiver permitting Eastern U.S. steel producers to ship steel on foreign-flag vessels would enable east coast producers to obtain favorable backhaul rates for shipping steel to Western markets. 5/ Backhaul rates are significantly lower than regular

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1/ U.S. domestic waterborne trade is regulated by the Jones Act, also known as the Merchant Marine Act of 1920. This act requires that all U.S. domestic waterborne trade be carried by U.S.-flag, U.S.-built, and U.S.-manned vessels. Vessels engaged in the Jones Act trade (U.S. domestic waterborne transportation) must not have received Construction Differential Subsidy (CDS) in the past, or currently be receiving Operating Differential Subsidy (ODS) from the Maritime Administration (MarAd). Because of these regulations, it is expensive to operate a vessel in the Jones Act trade. U.S. registry requires following U.S. manning requirements and paying U.S. crew salaries which are high relative to those of foreign crews; if a vessel may not receive any operating subsidies it is very unlikely to be profitable, because of the greater U.S. manning requirements and crew salaries. In addition, Jones Act requirements specify U.S.-built vessels; according to industry sources, this implies a vessel which initially cost 2 to 3 times as much to build as a foreign-built vessel, resulting in much higher fixed costs to the operator of the vessel.
2/ USITC staff telephone interview with Marad staff, November 1988.
3/ USITC staff telephone interview with transportation industry analyst, October 1988.
4/ Bethlehem Steel, located at Sparrows Point, MD, has indicated that water transportation would enhance its competitiveness with imports in the Western U.S. steel market, notwithstanding the competitive rail rates that it is currently able to obtain in the deregulated railroad environment.
5/ According to Maritime Administration staff, Jones Act policy dates from the Cabotage Law of 1817, and exists to prevent foreign-flag carriers from

(continued...)

rates because the alternative for a ship on a particular route is to complete the return voyage empty of cargo.

Estimates of rates support these statements. A backhaul rate obtainable from a foreign-flag vessel engaged primarily in the eastbound transport of lumber is about $7 per ton, negotiable. This would result in total plant-to-plant transport costs in the range of $30 per ton, with the addition of the ancillary costs associated with water transport, such as inland transport and stevedoring. 1/ This compares favorably with the lowest coast-to-coast negotiated rail rates currently available; the low rail rates, however, are available only to producers able to ship very large volumes of steel. 2/

Transportation Costs

Domestic regional costs 3/

Although transportation modes and rates are diverse, some general conclusions may be drawn from the data (see the following Tables 6-1-

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5/(...continued)
entering the domestic market. Certain waivers and exceptions to the Jones Act have been granted, however. According to MarAd, trade with certain U.S. island possessions, including Guam and Wake Island, may be carried on foreign-built U.S.-flag vessels, and the U.S. Virgin Islands are exempt from all Jones Act requirements (as amended in the Merchant Marine Act of 1936). Individual waivers have been granted through private bills passed by the U.S. Congress. Suspensions of the Jones Act are uncommon, but have precedent; for example, the Secretary of Transportation has the power to suspend the Jones Act to allow subsidized U.S.-flag ships, intended for the foreign trade, to enter Jones Act trade for up to 6 months in any 12-month period.

1/ Based on USITC staff interview with a foreign-flag shipper's agent, December 1988.

2/ USITC staff interview with U.S. steel industry representatives, September 1988.

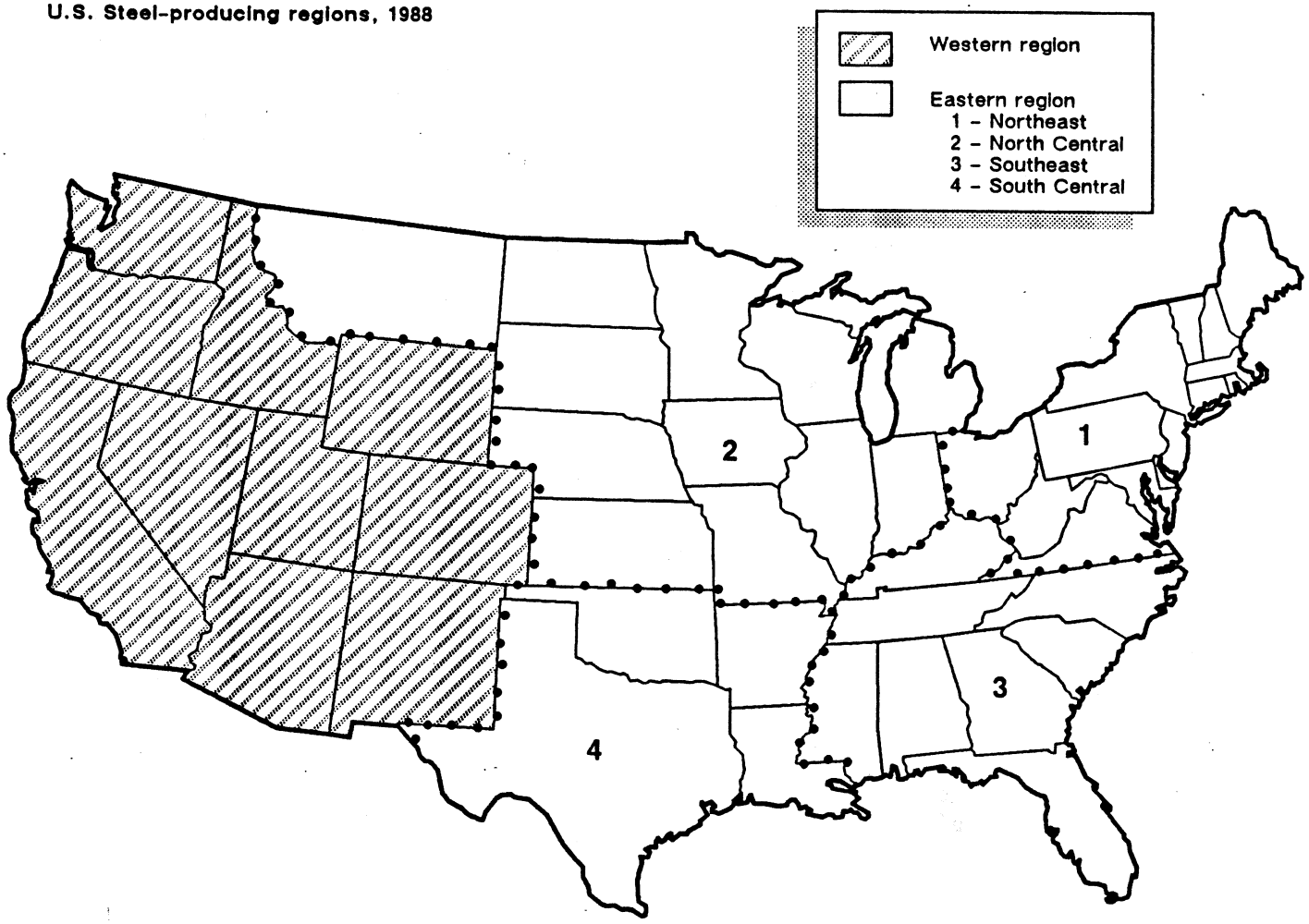
3/ This information is derived from data supplied in Commission questionnaires and obtained during interviews and telephone discussions with industry sources. For the purpose of analysis, the Eastern region has been subdivided into four separate regions. Region 1 is located in the Northeast, encompassing the New England States: New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, and Ohio. Region 2 is located in the North Central area encompassing the States of Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, the Dakotas, and Montana. Region 3 is located in the Southeast, including North and South Carolina, Kentucky and Tennessee, Mississippi, Alabama, Georgia, and Florida. Region 4 is located in the South Central area, consisting of the states of Louisiana, Arkansas, Oklahoma, and Texas.

6-4 and fig. 6-1.) 1/ Because distance is usually the most significant factor influencing freight costs, shipping to the West from the easternmost regions of the United States is more costly than shipping steel from the central United States. Figures from the Northeast and Southeast regions are comparable as are those from the North Central and South Central regions (table 6-3). Total shipping costs are much lower within regions than they are between regions, but shipping rates may be lower over longer

1/ See App. G for further information on the factors that may influence freight rates.

Figure 6-1

U.S. Steel-producing regions, 1988



distances, reflecting the use of rail for greater portions of a particular journey.

Eastern region 1.--The average shipment distance from region 1 (Northeast) to the Western region is approximately 2,425 miles. For this distance, an average shipping time of 6.7 days is shown, although shipping time often extends to 14 days when rail transport is used. For longer distances, questionnaire data show that rail, a combination of rail and truck, or some other intermodal method, such as piggyback or trailer-on-flat-car (TOFC), is used most often, giving an average figure of 5.3 cents per short ton per mile.

Reported average cost per ton is $128 from region 1 to the West, reflecting the high cost of shipping certain specialty products (some shipments were quoted at over $200 per ton), and the more widespread lower rates associated with carbon steel products ($50 to $60 per ton). For semifinished steel products, transport costs represent 10 to 20 percent of the delivered cost. For higher priced products, such as those made of stainless steel, the transportation costs incurred to the west coast were a less significant factor, averaging about 7 or 8 percent at most during 1988. 1/ For certain wire products only, the cost difference in shipping to the west coast, as opposed to the east coast, represented only 2 percent of the total cost of the product. 2/

Eastern region 2.--Average shipping costs from the North Central region to the Western region during 1988 were $78 per ton, which is 60 percent of the cost from mills further east. Data on average shipment times from the North Central region are similar to those of the Northeastern region.

Eastern region 3.--The Southeast region reflects a profile similar to that of region 1. The average distance is approximately 2170 miles, while the average shipping time is 7.1 days, and the average cost is $132. The higher costs and shipping times are most likely because of the lack of proximity to major transportation routes.

Eastern region 4.--Data for the South Central region is comparable with that of Eastern region 2. The average distance is 1525 miles, average shipping time is a surprisingly low 4.4 days, and the average cost is $61 per ton. The low shipping time may reflect proximity to rail links, and if trucking is required, lighter traffic in general; the other three regions incorporate a greater number of major metropolitan areas.

The profile for shipments within the Eastern region (table 6-2) differs distinctly from overall data for shipments from the Eastern region to the West. Within the Eastern region, the average shipment distance is 613 miles, and the average shipping time is 2.3 days. The average

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1/ Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.
2/ Ibid.

transportation cost for such a shipment is $56 per ton, however, the cost per short ton per mile is higher (9.1 cents), reflecting the predominance of more expensive direct trucking for short-haul shipping.

Table 6-1
Steel transportation averages from Eastern producers to Western destinations, by region and in total, 1988

Eastern region	Shipping distance	Shipping time	Total cost	Average cost
	Miles	Days	Per short ton	Per short ton per mile
1.....	2,423	6.7	$128	$0.053
2.....	1,853	6.7	78	.042
3.....	2,169	7.1	132	.061
4.....	1,527	4.4	61	.039
Avg.....	1,993	6.2	99	.049

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

Table 6-2
Steel transportation averages from Eastern producers to Eastern destinations, by region and in total, 1988

Eastern region	Shipping distance	Shipping time	Total cost	Average cost
	Miles	Days	Per short ton	Per short ton per mile
1.....	555	2.1	$72	$0.129
2.....	521	2.3	36	.069
3.....	499	2.3	36	.072
4.....	878	2.4	81	.092
Avg.....	613	2.3	56	.091

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

Western Region.--The cost of shipping from the West to the East in 1988 was considerably lower than from East to West. Western producers were shipping a far greater proportion of shipments by lower cost rail contracts; 73 percent of their cross-country steel shipments were by rail only, and another 15 percent were by some combination of rail and truck. The greater use of rail as compared with Eastern producers results in more economical transportation charges (an average 2.6 cents per short ton per mile), but reflects significantly longer average transportation times associated with rail (table 6-3).

For shipments both originating in and destined for other locations in the Western region, the average distance was 525 miles, at an average cost of $18 per ton, and a shipping time of 4.5 days. Even within the region, 47 percent of shipments went only by rail, another 15 percent went by some combination of rail and truck, and 36 percent went by truck only, for a composite figure of 3.4 cents per short ton per mile.

From the table of transportation charges for purchasers (Table 6-4), it can be ascertained that purchasers have the higher overall costs associated with Eastern producers' charges ($111 per short ton for coast-to-coast and $67 per short ton average), and the rates associated with long-distance shipment ($.06/short ton/mile).

Table 6-3
Steel transportation averages from Western producers to Western destinations, by regions and in total, 1988

Region	Shipping distance	Shipping time	Total cost	Average cost
	Miles	Days	Per short ton	Per short ton per mile
Western.....	525	4.5	$18	$0.034
Eastern.....	2,028	11.5	48	.024
Average.....	1,276	8.0	33	.026

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

Table 6-4
Steel transportation averages of purchasers, by destinations, by regions and in total, 1988

Region	Shipping distance	Shipping time	Total cost	Average cost
	Miles	Days	Per short ton	Per short ton per mile
Western.....	328	2.0	$22	$0.067
Eastern.....	1,895	9.3	111	.059
Average.....	1,111	5.7	67	.060

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

Freight costs as a competitive factor

Major steel producers have indicated that transport costs no longer are handled in a standard fashion in the industry. Before railroad deregulation, most steel was shipped fob mill. Now, negotiated transportation costs are one of the ways in which producers can make their product more competitive. By negotiating special rates on each contract, and working with shipping firms (whether truck, rail, deep-sea, or some combination), a company's delivered price can be made as competitive as that of a much closer company. There are limits, however, to how much a firm can reduce to transportation costs through negotiations with shippers. Shipments must be large enough to enable the producer to have some leverage with the shipper, and the shipper is of course limited to rates that enable him to remain profitable.

Industry sources maintain that Eastern U.S. producers are at a competitive disadvantage when selling in the West because of relatively high freight costs. 1/ Data indicate that overall freight costs will always be higher to more distant customers even though freight rates may be marginally lower over longer distances when analyzed on a short ton per mile basis. This is partly because of the use of railroad freight for large cross-country shipments, since railroad rates are less expensive on average than truck rates, and large shipments may command further reductions in negotiated rates.

Nevertheless, Eastern producers remain at some disadvantage when selling in the Western United States, as are Western producers that try to enter Eastern markets. Depending on the strength of the market for a particular product, a producer may have to equalize freight (absorb the difference in transportation costs) in order to compete. A producer would have to be operating at relatively low-cost levels in order to absorb the

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

freight equalization, and sell profitably; if market prices were low, they could be rendered unprofitable. 1/ However, at high levels of demand, producers can afford to be more selective about their markets, and would typically choose to sell to closer customers. Conversely, if supplies are short, freight costs become less important as purchasers are more likely to buy from anyone who can supply them, regardless of distance.

Freight costs for imports

Data and industry sources indicate that foreign sources of steel have no significant cost advantage with regard to transportation. Although ocean freight rates have been consistently low over a period of years because of overcapacity on most routes, the ancillary costs associated with ocean transport eliminate any overall cost advantage.

Ocean shipping costs applicable to steel imported into the Western U.S. region are gradually approaching truck and rail costs. Future trends in ocean shipping costs are difficult to assess or predict, however. Ocean rates typically fluctuate a great deal, reflecting shifting supply/demand patterns for many traded commodities. In addition, the industry is subject to long periods of declining rates whenever trade patterns change and overcapacity on routes becomes a problem. 2/

Port charges, such as wharfage and stevedoring, may add another $10 to $12 per ton to a typical shipment, when tariffs, ranging from 0.5 to 5.7 percent as of January-November 1988 are assessed, depending on the commodity imported (table 6-5). 3/ With the costs of moving steel from the port to a local distribution point at a minimum of $5 per ton, ocean rates no longer give imported steel the transport cost advantage it once had in the Western U.S. market. This is especially true in the case of shipments

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1/ Ibid.
2/ The Shipping Act of 1984 made it possible for shippers to negotiate a service contract directly with a conference carrier. Previously, shippers were only able to obtain published rates from conference carriers. The current law enables shippers moving a large volume to obtain more favorable liner rates, the same situation that applies to rail. Rate-setting liner conferences create some stability with respect to rates, although much of the steel moving from the Pacific Rim countries to the United States moves at lower cost nonconference rates. Therefore, steel may be subject to even greater rate fluctuation, according to industry sources.
3/ The average duty rate for all steel products is 4.4 percent. Duty rates range from 0.5 percent on rails and railway products to a high of 5.7 percent on plates, and sheet and strip.

moving much further inland, where transshipment costs, and longer hauls by truck or rail, further increase costs.

Table 6-5
Duty rates for certain imported steel products

Product	Rate
	Percent
Semifinished steel	4.6
Plates	5.7
Sheet and strip	5.7
Wire rods	2.4
Rails/railway products	0.5
Structural shapes	1.8
Bars	5.6
Wire and wire products	3.1
Pipes and tubes	3.9
Average, all products	4.4

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

Industry sources indicate that foreign inland transportation costs have a negligible impact on the cost of imported steel. In several of the countries that are the dominant sources of foreign steel, such as Japan and Korea, major mills have direct water access and thus are able to bypass major inland transportation charges. Most of these mills operate their own dock facilities, and therefore do not incur charges for these services. Table 6-6 lists ocean freight charges, by commodity, from Pohang (Korea) to U.S. west coast ports.

Table 6-6
Ocean freight charges 1/ from Pohang, Korea, for certain steel products, in berth terms, by destination, 1988

Destination	Product					
	Coil	Plate	Sheet	Wire rod	Slab	Billet
Los Angeles	$29	$33	$32	$34	$28	$31
Oakland/Richmond	31	35	34	36	30	33
Seattle/Vancouver/ Portland	34	39	37	40	33	36

1/ Per short ton.

Source: Reported to USITC staff by certain importers.

Lead Times

In general, domestic steel is preferred over foreign steel with regard to lead times, because of a minimum delivery time advantage of one-third that of foreign steel. Delivery dates for foreign steel are also difficult to predict because most ships on which steel is transported have a variable itinerary.

Domestic Purchases

Although longer lead times occur with the greater distances between east coast mills and buyers on the west coast, the shipping time of 10 to 14 days for products transported by rail remains well within the transport timeframe of imports. Data supplied to the Commission indicate that shipments from an east coast producer to an east coast destination can be as fast as one day within a radius of 500 miles. The mode of transport is highly significant when discussing lead times. Truck transport is usually faster, unless the steel producer and buyer are in close proximity to the railroad. The reasons for this vary, but much time is saved because of the need for fewer transshipment points where products need to be moved from truck to railcar or vice versa. Generally, intermodal shipments may be somewhat faster than rail, and cheaper than truck, because the transshipment process has become more streamlined.

Lead times may be much less for certain automotive and appliance manufacturers purchasing coiled sheet. Conrail's SteelNET 1/ program enables buyers to obtain steel as quickly as they would if they had ordered a direct over-the-road truckload shipment, and yet save approximately 20 percent in cost over direct truck. 2/ With Conrail's service, the mill still owns the steel but warehouses it in one of 13 cities with SteelNET service and can deliver it within a day. The savings in shipping is primarily because of the more economical carload freight rates obtained from Conrail, and the simplification of the interchange between rail, truck, and warehouse.

Foreign Purchases

West coast users have indicated to the Commission that domestic steel is generally preferred over foreign steel because it can be received on a more frequent, reliable basis. Although west coast users can obtain domestic steel from any transport made within 30 days from the time of

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1/ Conrail moves steel from mills to warehouses at less costly carload rates in general freight trains. When a customer orders steel from a participating mill, it need only be trucked from the nearest warehouse.
2/ "The Case for Coiled Steel: New Intermodal Markets," Intermodal Age, November-December 1988, p. 16.

order, 1/ imported steel commonly takes at least 90 to 120 days. In addition, west coast users are not able to predict a fixed delivery date because of the fact that most imported steel is shipped nonliner; this means that the ship does not operate on a regular schedule and may have many intermediate ports-of-call before the steel reaches its destination. According to steel and shipping industry sources, nonliner ocean shipments seldom arrive on time, and arrival dates up to a month late are common. This is a significant problem to users when inventories are low.

Other problems delaying receipt of import orders include the reduction in capacity of the steeldocks at major ports such as Los Angeles, where there is no longer any storage of steel at the docks. Steel at one time was a major product at that port, ranking 3rd or 4th; now it has dropped markedly in importance. A major problem for steel importers is the conversion of much of the shipping industry to large bulk ships or containerships. These vessels are not commonly used for steel; moreover, there are often inadequate facilities on the docks at U.S. ports overseas for handling steel. All of these factors contribute to an instability with regard to scheduling and timely delivery of foreign-sourced steel.

Production Costs

The ability of producers to compete in various markets depends in large part on relative production costs. All other things equal, the lower a producer's production costs in relation to the competitors, the more likely this producer is to succeed in a given market. Historically, the relatively low production costs of foreign producers have encouraged their participation in the Western U.S. market. Over time, however, the differential between foreign and domestic production costs has diminished because of cost cutting measures adopted by U.S. integrated producers, expansion of lower cost "minimill" producers, and shifts in exchange rates. The improvement has assisted not only U.S. producers located in the Western United States but also those located outside the region, as it has enhanced their respective abilities to sell profitably in the Western markets.

In the years preceding initiation of the VRAs, production costs for imported steel were much below similar domestic products. In 1982, for example, the average final pretax cost per ton of steel for integrated U.S. producers, most of which are located outside the Western U.S. region, was estimated to be $685 per short ton, 2/ 52 percent higher than for Japanese producers, the highest cost Pacific Rim source and, by far, the largest source of imports into the Western U.S. market (table 6-7).

1/ Industry sources indicate that lead times for certain fence manufacturers are in the range of 7 to 10 days with domestic producers, rather than several months lead time with imported steel.
2/ World Steel Dynamics, Cost Monitor Report #10. Figures represent adjusted pretax costs per metric ton of carbon steel, unless otherwise indicated. Figures for this type of product will be lower than those for higher value products, such as cold rolled or coated sheets.

Table 6-7
Comparison of production costs 1/ for steelmakers, selected years 1982-88

Item	Japan U.S. dollars	United States U.S. dollars	Cost differential 2/ Percent
Labor:			
1982.....	$101	$262	159
1984.....	92	181	97
1986.....	132	167	27
1988.....	145	160	10
Materials:			
1982.....	253	355	40
1984.....	229	315	38
1986.....	260	288	11
1988.....	277	291	5
Financial:			
1982.....	98	68	(30)
1984.....	97	60	(38)
1986.....	128	51	(60)
1988.....	105	43	(59)
Total:			
1982.....	452	685	52
1984.....	417	557	34
1986.....	520	506	(3)
1988.....	552	484	(12)

1/ Per metric ton of finished steel.
2/ Estimated U.S. production costs as a percent of Japanese costs.

Source: World Steel Dynamics, Price/Cost Monitor Report #10.

This cost differential is attributable to a strong U.S. dollar, and to higher domestic costs of raw materials 1/ and labor, which accounted for approximately 45 and 25 percent, respectively, of total production costs. In addition, domestic operating rates were relatively low in 1982, leading to higher fixed costs of production per ton of output. 2/

1/Major raw materials include iron ore, coking coal, scrap, and energy.
2/ At lower levels of capacity, fixed cost items, such as depreciation, are allocated over a smaller volume of production, thereby raising total costs per ton of output.

Subsequently, a number of U.S. mills initiated measures to reduce production costs by decreasing input prices and raising labor productivity. Many integrated producers closed obsolete and costly steelmaking plants, coking facilities, and ore mines. Such closures and consolidations allowed companies to avoid mandated expenditures for environmental upgrading of such facilities, and to concentrate capital expenditures on fewer operations. In addition, long-term raw materials' contracts were renegotiated in many cases, permitting companies to purchase needed materials on a "spot market" basis, with contract prices more reflective of changes in market prices. Also renegotiated were contract rates for electricity and natural gas, which contributed to an average 73 percent decline in the energy costs for integrated steel producers during 1982-87. Currently, the cost of raw materials for U.S. producers is 18 percent lower than it was in 1982, although still above that for most other countries.

Labor contracts, too, were renegotiated by many domestic integrated producers, with a subsequent 20-40 percent improvement in man-hours per ton over the early 1980s. Many foreign producers continue to have a distinct advantage in absolute labor costs, however, even with the U.S. industry adjustments for productivity, which contributes to the relative cost advantage of foreign producers vis-a-vis domestic producers (table 6-8).

Table 6-8
Level of labor compensation, productivity index, and unit labor cost index, by countries

Country	Hourly compensation, 1988	Productivity index, 1987	Unit labor cost index, 1987
	Per hour	Percent	
United States	$25.40	100.0	100.0
Brazil	3.50	58.6	17.2
Korea	6.00	63.0	16.3
France	19.30	77.4	76.6
West Germany	19.60	89.0	76.9
Canada	21.70	85.0	81.2
Japan	22.00	87.2	82.8

Source: World Steel Dynamics, various publications.

Such differentials are influenced by exchange-rate fluctuations even more than dollar-denominated materials' costs (see chap. 7). In Japan, for example, during 1981-86, labor productivity improved 10 percent. However, with the appreciation of the yen against the dollar, wages and benefit costs have risen from an estimated $11 per hour in 1984 to $22 per hour in 1988. By comparison, Korean and Brazilian steelmakers are currently compensated at $3.50 per hour and $6 per hour, respectively.

The cost savings available to domestic producers through renegotiation of material and labor contracts have been estimated at $72 per metric ton (table 6-9). 1/

Table 6-9
Maximum cost variation between an established and reconstituted 1/ major U.S. mill, 1987 2/

(Per metric ton shipped)

Item	Established major plant	Reconstituted plant
Operating rate (percent)	80	90
Wage (per hour, all benefits)	$24	$19
Manhours (per tonne shipped)	6.6	5.8
Employment cost (per tonne shipped	$158	$110
Iron ore: price (per tonne)	$41	$33
Usage (metric tons)	1.6	1.6
Cost (metric ton shipped)	$66	$53
Metallurgical coal	$47	$42
Steel scrap	$11	$11
Energy	$50	$45
Fluxes, alloys, additions	$24	$23
Refractories and rolls	$19	$18
Miscellaneous materials & selling, general, and administrative expenses	$58	$54
State and local taxes	$4	$2
Depreciation expense	$26	$10
Interest expense	$12	$4
Pretax cost	$475	$372

1/ A facility that commences production after a bankruptcy or bankruptcy threat.
2/ Late in that year.

Source: World Steel Dynamics, Steelquake: West Coast Style.

One type of domestic producer that has achieved production costs which are lower than those of many integrated mills, are the nonintegrated producers (frequently referred to as minimills). Minimills have been generally profitable due to several factors: the steelmaking process is less labor intensive than integrated production, requiring 1.5 to 2 man-hours per short ton of raw steel compared with 4.5 to 6 man-hours per ton for integrated producers; capacity utilization has been higher (73 to 96 percent); and production efficiency is high because of the utilization of

1/ World Steel Dynamics, Steelquake: West Coast Style.

continuous casting technology. 1/ Minimills currently specialize in long products (e.g., bar, wire and related products, and light-structural shapes), and some, led by Nucor Corp., are exploring the possibility of producing flat products through adoption of a technology that enables continuous casting of thin slabs.

Since inception of the VRAs, then, U.S. integrated producers have reduced production costs through renegotiation of contracts and closing certain obsolete facilities. As shown in table 6-10, these measures, coupled with depreciation of the dollar and high operating rates, have resulted in domestic steel costs that compare favorably with those of the Japanese, and have improved against those of other Pacific Rim producers (app. H).

Table 6-10
Estimated pretax steelmaking costs, November 1988

	Per metric ton of steel
United States 1/	484
Japan	552
W. Germany	473
Canada	470
France	454
Taiwan	422
Brazil	422
United Kingdom	420
South Korea	418
USSR 2/	399

1/ Cost estimates are for an integrated mill. A typical minimill merchant bar producer has estimated total pretax costs of $295 per metric ton; Nucor thin slab mill has estimated total pretax costs of $409.
2/ The U.S.S.R. facility is Novolipetsk, which continuously casts 100 percent of production. This is the best flat-rolling facility in the Soviet Union.

Source: World Steel Dynamics, Steelquake: West Coast Style.

The position of domestic producers with respect to production costs is not static, however, it is certain to be affected by changes in raw materials' prices (several labor contracts are due for renegotiation in 1989 and purchased materials' costs are beginning to rise), as well as exchange-rate fluctuations. In addition, other countries are cutting costs

1/ Annual Survey Concerning Competitive Conditions In the Steel Industry and Industry Efforts To Adjust and Modernize, Investigation No. 332-209, September 1988, USITC Publication 2115.

and raising labor productivity, measures that will continue to affect their ability to compete in the Western U.S. market.

CHAPTER 7. THE ECONOMIC EFFECTS OF THE STEEL VRAs ON THE WESTERN UNITED STATES

This section assesses the effects of the VRAs on steel-producing and steel-consuming industries in the Western U.S. region. Findings are based on an examination of information obtained from Commission fieldwork and questionnaire responses, and on the application and analysis of economic theory on the effects of import restraints. The VRAs have had both direct and indirect effects on Western steel producers and consumers in a number of areas, including capital investments, modernization efforts, material availability, market stability, and prices. Factors other than the VRAs, such as exchange-rate changes and rising demand for steel worldwide, were also found to have affected Western steel prices and VRA country import levels.

Effects of VRA Quantity Restrictions

Twenty VRAs, covering the European Community and 19 other countries are currently in effect. 1/ The effect of the VRA quotas is either binding or nonbinding. A quota is binding if it is filled. Binding quotas effectively reduce the volume of imports below that which would have entered in the absence of such quotas, causing import prices to rise as U.S. consumers compete against each other for the restricted supply. In the case of VRAs, foreign exporting interests generally receive the benefit of the higher prices. By contrast, nonbinding quotas (i.e., those that are not filled) generally have no direct effect on quantity imported or on prices, although their mere existence may affect certain marketing decisions.

The VRA quotas were binding from their initiation, in 1985, through 1986. However, in 1987, primarily because of the dollar's depreciation and the rise in demand for steel worldwide, the VRA quotas began to move toward a nonbinding status. Based on 1987 data provided by the Commerce Department's International Trade Administration (ITA), less than 90 percent of quotas were filled in four of the nine product categories under investigation. Overall, on a global basis, 94 percent of the total export ceiling established under the VRAs was filled in 1987. In 1988, available information suggests that about 75 percent of the 1988 ceiling was filled. Table 7-1 shows the extent to which aggregated VRA ceilings exceeded total imports from all VRA countries in 1987 and 1988. 2/ 3/

1/ A more detailed discussion of the VRA program is presented in app. E.
2/ App. I presents a set of detailed tables that summarize by country and product category the extent to which VRA ceilings exceeded 1987 imports and 1988 imports.
3/ The export data for 1988 are not complete and will be revised upward as additional export certificates are processed by the Commerce Department.

Table 7-1
Steel exports from VRA countries, total export ceilings negotiated under the VRAs, and the share of the total export ceiling filled, by product categories, 1987 and 1988 (incomplete data)

Category	Total	Final export ceiling 1/	Share of export ceiling filled
	Metric tons		Percent
1987:			
Semifinished	1,667,166	1,673,204	99.64
Plates	544,758	545,920	99.79
Sheet and strip	6,184,247	6,521,617	94.83
Bars	484,615	607,743	79.74
Wire rods	701,186	776,342	90.32
Wire and wire products	624,349	742,873	84.05
Structural shapes	1,530,536	1,643,914	93.10
Rails and rail products	107,845	123,383	87.41
Pipes and tubes	1,684,432	1,772,089	95.05
Unspecified 3/	103,968	130,112	79.91
Total	13,638,271	14,537,197	93.82
1988:			
Semifinished	2/ 1,125,830	1,577,915	2/ 71.35
Plates	2/ 495,020	741,012	2/ 66.80
Sheet and strip	2/ 4,641,960	7,581,402	2/ 61.23
Bars	2/ 387,069	761,377	2/ 50.84
Wire rods	2/ 504,422	838,507	2/ 60.16
Wire and wire products	2/ 443,641	790,008	2/ 56.16
Structural shapes	2/ 1,345,095	2,018,455	2/ 66.64
Rails and rail products	2/ 94,074	156,726	2/ 60.02
Pipes and tubes	2/ 1,400,653	2,310,374	2/ 60.62
Unspecified 3/	2/ 65,091	139,040	2/ 46.81
Total	2/ 10,502,855	16,895,765	2/ 4/ 62.16

1/ Preliminary export ceiling for 1988.
2/ Data for 1988 are incomplete and will be revised upward as additional export certificates are processed by the U.S. Department of Commerce.
3/ Quota products which could not be assigned to any specific product group.
4/ Final 1988 export data are expected to result in an estimated 75 percent quota fill rate.

Source: Calculated by the staff of the U.S. International Trade Commission from U.S. Department of Commerce, International Trade Administration data.

Relative Efficiency of Various National Producers

In 1987 and, to a much lesser extent, in 1988, VRA export quotas on some products from some countries appeared to have been filled. It is possible that these quotas were binding and restricted U.S. imports below total levels that would have otherwise occurred.

The fact that some countries continued to fill quotas while others did not can be explained in part by changes which occurred in exchange rates and industry conditions during the VRA period. National producers that had grown more cost competitive and efficient relative to others, for example, may have reached their export ceilings, whereas those producers that had grown less competitive (relative to other producers), may not have reached quota levels.

The methodology used in this study focuses on global export ceilings rather than on individual, national export ceilings; it therefore does not identify the effects which the filling of individual quotas may have had on the market. Thus, the estimated effect on prices is biased downward.

Calculating the price effect of individual quota fulfillment would depend in part on the extent to which foreign suppliers traded among themselves. The maximum effect would occur in instances in which no trade took place between high and low cost VRA countries. Under this scenario, U.S. import prices would exceed the levels that would have been attained absent VRAs; the amount of the import price variation would be equal to the difference between delivered unit costs in the high cost countries and delivered unit costs in the low cost countries whose exports were bound by the quota ceiling. 1/

Direct Effects of Binding Quotas on Western Steel-Producing Industries

The typical result of VRA quotas that are filled (and binding) is a greater proportion of exports of higher valued products within each steel category subject to export restriction. 2/ Therefore, when VRA quotas are filled and therefore binding, the resulting increased import prices encourage U.S. consumers to substitute domestic and non-VRA supplied steel

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1/ See Appendix O for an example illustrating why the ability of countries without binding VRAs to purchase steel from countries with binding VRAs tends to reduce the price effects of the VRAs.

2/ Since the cost of using an export quota right is the same for one unit of exports, regardless of the value of the export, the proportional price increase for the higher valued product is less than for the lower valued product. Thus, after imposition of the VRA, consumers may purchase fewer units of the lower valued product in place of each unit of the higher valued product. See, for instance, Eugene Silberberg, The Structure of Economics: A Mathematical Analysis, 1978, pp. 345-349.

products for VRA country-sourced steel products. 1/ Domestic suppliers, in turn, respond to increased demand with higher prices and greater shipments. Since the demand for both capital and labor used in the steel industry are derived from the demand for steel, greater demand for steel results in higher wages and returns on capital in the steel industry.

As indicated above in the analysis of industry conditions, the role of imports in the Western region diminished during the period that the VRAs were in effect, even as domestic shipments and non-VRA imports increased. The extent to which this was a result of the VRAs cannot, however, be precisely determined since other factors such as changes in exchange rates and market developments are also of importance. It would appear that the VRAs were most influential during 1985-86, and less so during 1987-88. Following is an assessment which examines the nature of the changes which occurred in three key segments of the Western U.S. industry (flat-rolled products, long products, and pipe and tube products) and analyzes the role that the VRAs appear to have played in effecting these changes.

All three groups of producers have supplied documentation to indicate that the VRAs have fostered capital improvements by reducing imports; however, the arrangements have also been somewhat detrimental to their operations in that they have reduced the availability of raw materials (e.g., slabs, wire rods), thereby raising the prices of these inputs and adversely affecting producers' profit levels. 2/ Several companies indicated that the VRAs had affected their abilities to purchase steel products from preferred sources; in particular, they noted that restrictions on shipments from their foreign sources had caused them to

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1/ The insight that imports are often not perfectly substitutable for domestic product is attributable to Paul S. Armington, "A Theory of Demand for Products Distinguished by Place of Production," IMF Staff Paper, March 1969, pp. 159-176.

Specifically with respect to steel, direct evidence strongly suggests product differences between imported and domestic steel products. See James M. Jondrow, David E. Chase, and Christopher L. Gamble, "The Price Differential Between Domestic and Imported Steel," Public Research Institute of the Center for Naval Analyses, October 1977. These authors found important differences in optimal inventory level, order size, and inventory costs between use of domestic and imported steel.

In the current investigation, representatives of service centers have confirmed repeatedly that lead times for acquiring imported steel far exceed lead times for domestic steel.

2/ Companies may file short supply requests with the U.S. Department of Commerce in an effort to gain access to greater quantities of imported steel (generally raw material supplies). As shown in the section of the report titled "Short Supply Considerations", three Western steel producers (CSI, UPI, and Davis Walker) filed four separate short supply requests during 1985-88. Three of the requests were approved, albeit at a lower tonnage than requested, and the fourth was withdrawn.

shift to sourcing from non-VRA countries and U.S. suppliers. 1/ Extension of the VRAs in their present form apparently would facilitate continued modernization in a relatively protected market, but could also restrict access to needed steel supplies, thereby jeopardizing revitalization efforts of certain producers.

Flat-Rolled Product Producers

The five producers of flat-rolled steel products in the Western United States 2/ contend that termination of the VRAs would jeopardize their modernization plans by permitting increased foreign competition, which could curtail the industry's access to vital capital sources and result in the reduction or cancellation of modernization programs. Nevertheless, three of the producers that rely, at least partly, on imports to supply their raw material requirements (e.g., slabs, flat-rolled products) have stated opposition to the limitations imposed by the VRAs; they contend that the VRAs unnecessarily restrict their ability to acquire raw material supplies from preferred sources, which directly affects their ability to compete in the west coast market.

The VRA program was likely a factor in the reopening of Geneva Steel in 1987. The import protection afforded by the VRAs and the effects of exchange-rate changes on imports from VRA countries (see section entitled "Effects of Exchange Rate Changes on Imports From VRA Countries"), in conjunction with restructured operating costs and financing terms, permitted the company to operate at improved profit levels. The VRAs most likely provided further benefits to Geneva in that the limits they imposed on foreign steel availability resulted in increased purchases of domestic steel during the relief period. 3/ Geneva is in the midst of extensive renovations and has indicated that it is considering additional expenditures. The company maintains that continuation of the VRAs in their present form would allow Geneva an extended period of profitability. Such profitability would appear to be required to enter private debt markets to finance modernization. Geneva's continued success, therefore, is seen by the company as being tied to the continuation of the VRAs, which would allow time for full modernization to proceed. 4/

1/ Based on responses to the Commission's Western Producer questionnaire, 17 out of 32 respondents stated that the VRAs had affected their sourcing patterns; only 2 companies, however, specifically noted that they had increased their domestic purchases as a result.
2/ The producers are Geneva Steel (which produces plate and hot-rolled sheet), Oregon Steel (plate); CSI (plate, hot-rolled sheet and strip, cold-rolled sheet, galvanized sheet), UPI (cold-rolled sheet, galvanized sheet, tin mill products), and Pinole Point Steel (galvanized sheet and coil).
3/ Transcript, pp. 140-141.
4/ Fieldwork conducted at Geneva Steel in December 1988, and Transcript, pp. 118-119.

CSI contends that the benefits of the VRA program have been offset by the limits on imports of semifinished steel, which it requires for production of its finished products. 1/ The benefits of the program include reduced import penetration levels, which the company states has been helpful in its sales of finished products. 2/ However, CSI, which operates exclusively from purchased semifinished inventory (slabs) to produce flat-rolled products, asserts that the limitation on imports of semifinished steel under the VRAs has prevented the company from purchasing adequate supplies of steel slabs, thereby reducing its output of finished steel. The company noted that inadequate supplies of slab had resulted in closure of its plate mill in mid-1987, delayed startup of its electric-weld pipe mill, and reduced operation of its hot strip mill in 1987 and 1988. 3/ These reductions and delays occurred during a period of market upswing, and could have resulted in business being lost to overseas operations.

CSI's concern about restricted access to steel supplies is shared by UPI and Pinole Point, the other two Western producers of flat-rolled products, which depend on purchased raw materials for manufacture of their final products. According to testimony presented at the Commission hearing, the VRAs gave UPI the time and cash-flow necessary to install new, modern equipment (at a cost in excess of $350 million) capable of world-class steel production. 4/ However, UPI, which buys hot-rolled steel sheets (or bands) for further processing, stated that it was forced to reduce production, resulting in lost market share, when it was unable to obtain an adequate supply of hot bands from domestic sources during the USX strike, or from POSCO, its 50-percent owner in Korea because of restrictions on flat-rolled product imports under the VRA program. Although UPI initiated a short supply request with the Department of Commerce, USX resumed supplies of hot bands following the strike settlement, before Commerce acted on the request.

Further, UPI stated that its ability to realize the benefits of the modernization now underway and to service the debt incurred to finance the investments requires that the company supply its new facilities with large

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1/ Firms such as CSI, UPI, and Pinole Point have dual roles in that they are both steel producers and steel consumers. The effects of the VRAs on steel consumers are further discussed in the section of the report entitled "Direct Effects of Binding VRA's on Steel Consuming Industries."
2/ Fieldwork conducted at CSI in September 1988.
3/ Under the VRA program, imports of semifinished steel from VRA countries are restricted to about 1.7 million tons annually and requests for special waivers (short supply requests) have been required to exceed the established quota level. CSI has filed short supply requests with the Department of Commerce and was granted short supply licenses for approximately 150,000 tons for the last quarter of 1987 through the third quarter of 1988. (Information contained in post-hearing brief filed by CSI, p. 9.)
4/ Transcript, p. 89, p. 93.

diameter, high-quality hot bands from POSCO. UPI claims that no domestic steel producer has the capability of supplying the appropriate hot bands, and that the VRAs (in their current form), which limit the purchase of sufficient quantities of such hot bands, would have a detrimental effect on UPI's modernization efforts should they be extended. 1/ Geneva Steel challenged UPI's statement in its testimony at the Commission hearing, stating that equipment similar to that installed by POSCO in Korea is being installed in plants in various areas of the United States, and that most mills that plan to modernize will use that same equipment. Companies cited by Geneva as potentially able to supply UPI's hot band requirements include Bethlehem, Armco, and Inland. 2/

Pinole Point, which uses full hard cold-rolled steel 3/ for galvanizing, also indicated that the VRAs have limited its ability to purchase steel from preferred sources, which in turn has reduced its ability to meet customer requirements for steel of specific tonnage and quality. 4/ The company emphasized its investment in modernization during the period of the VRA program which enabled its shipments to grow from 120,000 tons in 1984 to 220,000 tons in 1988, and stated that continuation of the VRAs on finished sheet products will perpetuate improvements in the west coast steel sheet market provided there are sufficient supplies of raw materials for conversion operations. 5/

Oregon Steel, the electric furnace-based plate producer, does not share views on the benefits of the VRAs expressed by the other four Western producers of flat-rolled products. The company, which considers itself a highly competitive manufacturer of carbon steel plate, believes that there should be a regional limit on the amount of foreign steel that, when landed in the ports of the Pacific region Customs district, is permitted to remain in the Western steel market. 6/ Oregon Steel's position is that the VRAs have had little influence on reducing total U.S. imports of steel, particularly on the west coast, where imports continue to be significant. Oregon Steel further states that the lack of price constraints under the VRA program permits very low-priced (potentially unfairly traded) steel to enter the United States.

1/ Transcript, p. 92, p. 100, p. 104.
2/ Transcript, p. 127 and p. 129.
3/ Full hard cold-rolled steel is steel sheet that has not been annealed and is in a brittle state.
4/ Pinole Point's full hard cold-rolled sheet imports are classified, for purposes of the VRAs, as sheet and strip products. During the period of the VRAs, imports of cold-rolled products into the west coast fell from 2.2 million short tons in 1984 to 1.6 million short tons in 1987. Pinole Point would like its raw material imports to be classified as semifinished products, rather than cold-rolled steel.
5/ Comments presented by Pinole Point Steel Co. to West Coast American Metal Market Forum, Dec. 8, 1988.
6/ Post-hearing brief filed by Oregon Steel, p. 5.

In summary, the VRAs have provided the flat-rolled producers with a period of reduced competition from imports of their finished products during which they were able to invest in considerable modernization of their operations. Continuation of the VRAs could have a mixed effect on these companies' future competitiveness, depending on the extent to which they rely on foreign sources for their raw materials.

Long Product Producers

There are numerous Western U.S. producers of long products, which include bars, wire rods, wire and wire products, light structurals, and rails. The production of all these products except wire products occurs in electric furnace-based operations, and most production of wire and wire products is by fabricators that buy wire rod for further processing.

Similar to the flat-rolled product producers, the producers of bars, wire rod, and rails (raw steel producers) stress the importance of the VRAs in fostering capital investment by reducing a major element of market risk, i.e., uncertain import levels. Several million dollars have been invested by these producers during the period of the VRAs, including expenditures on improvements in rolling mills, energy use, and environmental quality. 1/ These expenditures have contributed to improvements in product quality and production efficiency.

In contrast, wire producers generally believe that the VRAs, by limiting the availability of foreign rod for processing in the Western United States, have caused raw material prices to rise, thereby undermining company profitability. 2/ In addition, these companies state that the VRAs have limited rod quality selection, restricted their ability to make capital expenditures, and caused reductions in wire product manufacturing operations. The reduced supply of rod available for processing by outside facilities has caused Western rod processors to turn to suppliers with whom they compete directly in sales of wire products. 3/

Pipe and Tube Producers

There are about 40 producers of pipe and tube in the Western United States. Their operations typically involve the purchase of flat-rolled steel products for further processing into welded pipes and tubes.

The west coast pipe and tube producers, similarly to the flat-rolled product and long product producers, have indicated that the VRA program has resulted in improved operating rates principally by limiting imports which,

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1/ Information received in response to Commission questionnaires.
2/ Transcript, p. 179, and information submitted in response to Commission questionnaires.
3/ Information submitted in response to Commission questionnaires.

in turn, has promoted further investment in facility modernization. 1/ Some producers have been adversely affected by the program, particularly in the area of raw material (sheet) prices. They indicate that the tightened availability of flat-rolled steel has resulted in price increases, placing these producers at a cost disadvantage not incurred by their domestic competitors, which produce substitute products such as ductile iron and prestressed concrete pipe. Other pipe and tube producers agree that the VRA program has limited the availability of imported raw material, but they claim not to have experienced any shortage of supply, because they have shifted their steel purchases from foreign to domestic sources. 2/

Direct Effects of Binding Quotas on Steel-Consuming Industries 3/

In a binding quota market environment, higher prices for domestic and imported steel raise production costs for downstream steel users. To some extent, the higher production costs are likely to be passed forward to final consumers of products made with steel. The proportion of these higher costs passed forward to steel users depends on the nature of existing supply and demand elasticity. 4/

The closer the downstream industry is to operating at full capacity, the more supply becomes inelastic and the less able the industry will be to pass forward cost increases. If the downstream product has good internationally traded substitutes that are supplied at reasonably fixed world prices, the demand facing domestic downstream producers will be highly elastic. As a result, downstream users will be unable to pass forward the cost increase and will face a price-cost squeeze in an effort to remain competitive. 5/

The effects of VRAs on Western steel consumers--including steel service centers, purchasers, warehousers, processors, and distributors of

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1/ Information received in response to Commission questionnaires, and Transcript, p. 227.
2/ Transcript, p. 226.
3/ A discussion of VRA effects on nonsteel consuming industries is contained in app. J.
4/ Elasticity is a concept which measures the responsiveness of buyers and sellers to changes in price. Supply elasticity is the percentage increase in the quantity produced and sold induced by a 1 percent increase in price received. Demand elasticity is the percentage decrease in the quantity demanded by consumers induced by a 1 percent increase in price paid.
5/ For a detailed discussion of how the prices of downstream products, by sector, might be affected by increased steel prices, based on the relative intensity of steel used in each sector, see The Effects of Restraining U.S. Steel Imports on the Exports of Selected Steel-Consuming Industries, USITC Publication 1788, December 1985.

foreign and domestic steel mill products--have been mixed. 1/ The views most consistently expressed by steel purchasers responding to the Commission's questionnaire and by steel consumers interviewed by Commission staff during the course of the study are that the VRAs have created market shortages and thereby higher prices in certain markets for the steel they consume. 2/ Tight supplies have also resulted in longer delivery times and shortages of certain raw materials such as plates and special quality bars and billets, according to questionnaire respondents. 3/ Steel consumers contend that these conditions have caused some of them to lose both domestic and export business because of their inability to supply their customers with the desired quantity and quality of steel in the specified time period. 4/

Caterpillar, Inc., a producer of earthmoving, construction, and materials handling machinery, has 1 manufacturing plant in the Western United States, which is scheduled to close, 5/ and 14 plants outside that region. The company is opposed to the VRAs, stating that the agreements are sharply increasing steel prices, creating manufacturing inefficiencies, compromising modernization plans, and frustrating efforts to increase U.S. production and meet export demand. 6/ Specifically, Caterpillar states that quota-induced shortages during 1987 and early 1988 increased Caterpillar costs by forcing the company to (1) temporarily resource

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1/ The following discussion is based on information drawn from fieldwork and responses to Commission questionnaires in which purchasers were asked to discuss the effects of the VRAs on various aspects of their operations.
2/ The effect of VRAs on prices is discussed in the section of the report entitled "Effects of VRAs on Steel Prices," Chapter 7.
3/ Companies may file short supply requests with the U.S. Department of Commerce in an effort to gain access to greater quantities of imported steel (generally raw material supplies). As shown in the section of the report titled "Short Supply Considerations", 10 Western steel purchasers filed 15 separate short supply requests during 1985-88. Nine of the requests were approved, three were denied, two were withdrawn, and one is pending.
4/ Submissions to the Commission concerning investigation No. 332-256, "Western U.S. Steel Market," by Caterpillar Inc. and the Forging Industry Association, and information received in response to Commission questionnaires.
5/ In its submission to the Commission, Caterpillar noted that its Western region facility, located in Dallas, OR, manufactures and assembles large lift trucks. The company stated that during the VRA period it had consistently paid more for steel plate delivered to its Oregon facility than for plate deliverd to its non-Western U.S. plants. In January 1987, Caterpillar announced that "to consolidate manufacturing space as part of its long-term plan to reduce costs and improve efficiency, it planned to close its Oregon facility." Subsequently, it announced that large lift trucks would be manufactured at its Monterrey, Mexico, facility. Although production is being moved from Oregon to Mexico, Caterpillar is manufacturing lift trucks at both sites. The transition is scheduled to be completed during 1989.
6/ Submission to the Commission by Caterpillar, Inc.

products to countries where steel was available; (2) at times build incomplete prime products; (3) tend to move from just-in-time manufacturing/inventory systems to "just-in-case" management; and (4) purchase steel from warehouses at a 50-percent premium. 1/

In response to the alleged adverse effects of the restraint program, a number of organizations of steel consumers have announced their opposition to continuation of the VRAs. These organizations include the American Institute for Imported Steel, the Association of Home Appliance Manufacturers, the Construction Industry Manufacturer's Association, the Farm and Industrial Equipment Institute, the Industrial Fasteners Institute, the National Association of Food Equipment Manufacturers, the Precision Metal Forming Association, and the Forging Industry Association. In general, these groups have stated that the VRAs favor steel producers at the expense of steel consumers, and have resulted in longer lead times for steel deliveries, product quality problems, and increased prices for steel. In addition, Caterpillar is organizing a consumers group in opposition to the restraint program. This last group, whose members include appliance and precision metal producers and heavy-equipment makers, argues that extension of the steel quotas would constitute a direct threat to the long-term competitiveness of American manufacturing. 2/ As an alternative to the import restraints, a number of steel users state that the VRA program should be ended and a fair steel trade system be negotiated either country by country or worldwide through the mechanisms of the General Agreements on Tariffs and Trade. 3/

Although the majority of steel consumers expressing their views concerning the effects of VRAs on their operations have cited negative outcomes, certain steel consumers have benefited from the import relief program and advocate its continuation, at least temporarily. For example, Western region service centers appear to support the continuation of the VRAs, expressing satisfaction that the VRAs have helped to reduce volatility in the market by eliminating price-destabilizing surges of imports. 4/ The Steel Service Center Institute (SSCI), a national association representing about 85 percent of U.S. steel service centers, has stated publicly that it supports a temporary (three-year) extension of the VRAs. The SSCI recommends that the extension be accompanied by modifications to avoid short-supply situations and negotiations to establish a new international steel trade regime aimed at reducing governmental interference in the steel market. 5/

1/ Ibid.
2/ 33 Metal Producing, p. 18, December 1988.
3/ The Journal of Commerce, "Steel Users, Producers, Take Sides on Quotas," Dec. 6, 1988.
4/ Fieldwork conducted with west coast service centers in September 1988 and December 1988.
5/ American Metal Market, "SSCI Seeks Extension of Three Years," Feb. 7, 1989.

An official of Gary Steel, a west coast service center specializing in steel plate, testified at the Commission hearing that the company had been very profitable during the period of the VRAs, a time when it shifted its sources of supply from foreign mills almost exclusively to domestic facilities that offer lower price steel and more reliable and flexible delivery service. 1/ The company feels that the VRAs have given order and discipline to the west coast steel market by permitting controlled quantities of steel to enter the United States (at any price) without the possibility of market disruption caused by the filing of unfair trade cases, a view shared by other west coast steel service centers. 2/

Indirect Effects of VRAs on Producers and Purchasers

VRAs as Future Export Option Rights

When exports to the United States under a given VRA fall short of the annual export ceiling, the U.S. and foreign governments will typically negotiate a partial or full carryover of unused export rights to the following year's ceiling. From the U.S. standpoint, allowing a carryover discourages exporters from feeling compelled to use or lose export rights in the current year.

Carryovers from one year to the next, however, mean that VRAs that appear to be nonbinding in a given year may be binding if one looks at a period covering more than one year. In other words, exporters may intend to use all currently available export rights, but not necessarily in the current year. Thus, currently allocated export rights represent valuable assets, since exporters most likely would expand overseas sales if additional rights were made available. 3/ In order to export a unit of steel, an enterprise must bear marginal production costs plus the opportunity cost of using a scarce VRA export right. The export price must cover both types of costs, and hence will often be higher than in the absence of VRAs, even if the annual ceiling exceeds current annual exports. 4/

1/ Transcript, p. 142, p. 149, and pp. 158-159. Shifts in purchasing patterns were also reported by other steel consumers. Based on responses to the Commission's questionnaire, 21 out of 51 respondents indicated that the VRAs had affected their ability to purchase steel products from preferred sources. Less than five of those respondents whose purchasing patterns were affected stated specifically that they had begun purchasing more domestic products.

2/ Fieldwork conducted by Commission staff in September 1988 and December 1988.

3/ See, for instance, James E. Anderson, "Quotas as Options: Optimality and Quota License Pricing under Uncertainty," Journal of International Economics, August 1987, pp. 21-39.

4/ A simple mathematical model of VRAs that are binding over a number of years is presented in app. K. It illustrates the various determinants of the price premium caused by export rights allocated over time.

Use of VRA Quota Rights

The steel VRAs are scheduled to expire at the end of September 1989. Some U.S. producers allege that exporters are trying to fill current export quotas in order to maintain a history of shipments in anticipation of the possible negotiation of new agreements for 1990 and beyond. 1/ Other market participants deny that this is occurring. 2/ VRA export ceilings have typically been linked to historical export rates or market share.

The potential of fully using quotas now in anticipation of increased VRA allocations of greater worth in the future depends on several factors. For instance, exporters must believe that revenue earned would increase if the VRA export quotas are expanded. 3/ Exporters must also believe that their own governments will allocate VRA quota rights directly to existing exporters rather than by other methods, such as by auction. 4/ Moreover, the expected future benefits have to be sufficiently large and certain relative to current losses to ensure that the discounted benefits of future profits exceed the current cost of foregone profits entailed by this strategy. Based on partial-year 1988 data provided by the U.S. Department of Commerce, it is unlikely that exporters are trying to fulfill current ceilings so as to increase renegotiated future ceilings. 5/

Investment Risk and Market Stability

Many steel producers and users, including some service centers, contend that the VRAs, although not currently binding, help stabilize the domestic market. 6/ Basically, VRAs in effect with nonbinding quotas limit potential price reductions by imposing an upper bound on imports that would be reached at a sufficiently low import price. To the extent downward price movements are limited, holders of domestic steel inventory and owners of capital specific to the U.S. steel industry reduce the downside risk of unexpected capital losses.

In effect, when VRA quotas are nonbinding, VRAs offer valuable insurance benefits to steel inventory and capital owners because steel prices are implicitly subject to a lower bound. This insurance, however, is not financed by premiums charged to the steel industry beneficiaries,

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1/ American Metal Market, "Oregon Steel Counters Imports of Carbon Steel Plate by Lowering Tags," Sept. 15, 1988.
2/ American Metal Market, "West Coast Mills in Plate Battle," Sept. 21, 1988.
3/ Technically, exporters will believe that revenue would be greater with more export rights if they expect that future demand will be elastic, i.e., that a 1-percent decrease in price would lead to more than a 1-percent increase in quantity purchased.
4/ The revenue benefits of auctioned quotas would accrue to the exporter's government, rather than to the exporter itself.
5/ See section titled "Effects of VRA Quantity Restrictions," Chapter 7.
6/ Information received during the course of Commission fieldwork.

but rather is paid for by intermediate steel users. The insurance benefits conferred by VRAs appear consistent with support for VRAs by the U.S. steel industry and some U.S. inventory holders, 1/ the apparent nonbinding status of the export quotas, and the expressed concern by domestic market participants about the relation between VRAs and market stability.

Short Supply Considerations

Although the VRAs to a large extent are not currently binding, export quotas on certain products from particular countries may be binding. If binding quotas result in sufficiently severe material availability problems for U.S. downstream producers, the Department of Commerce, upon application, may grant a short-supply license for additional imports. Because of this exemption procedure, potential supply shortages should not greatly alter the general nonbinding status currently apparent in VRAs. Western region short supply requests filed with the U.S. Department of Commerce during the period of the VRAs are presented in table 7-2. As shown in the table, the sheet and strip purchasers filed the largest number of requests, although the slab purchasers filed requests for the greatest amounts of tonnage. Insufficient domestic capacity was the reason most frequently cited for a supply short fall, but in many instances approval was granted for the purchase of a smaller tonnage than was requested.

Effects of Exchange-Rate Changes on Imports From VRA Countries

Since the initiation of the VRAs, the dollar has, on average, depreciated against the currencies of major exporters of steel to the United States. The effect of the depreciation on steel imports depends on whether the quotas negotiated under the VRAs become binding or

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1/ Other inventory holders, who might not support the VRA's, are primarily importers who benefit more from lower import prices.

Table 7-2

Western region short supply requests, by product, 1985-88

Product	Requesting company	Request date	Tonnage requested	Reason for request	Disposition
			Short tons		
Semifinished:					
Slabs	CSI	November 1986	400,000	1/	Approved 80,000 tons
Slabs	CSI	January 1988	210,800	2/	Approved 73,341 tons
Sheet and strip:					
Certain tin-free steel	NAPP Systems, Inc.	April 1986	3/	2/	Approved 4,057.6 tons
		January 1987	3/	2/	Approved 3,782 tons
		December 1987	3/	2/	Approved 3,790.8 tons
Coater blade steel	Pacific Hoe	October 1985	4/ 85	5/	Approved 85 tons 6/
		January 1987	4/ 140	5/	Approved 12 tons
		December 1988	300	7/	Pending
Cold-rolled strip	Terry Hinge and Hardware	October 1986	41.5	7/	Denied
Hot-dipped tin plate	Weatherill	September 1985	165	5/	Approved 165.3 tons
		September 1987	190	5/	Approved 209.4 tons
Hot-rolled bands	USS-POSCO, Inc.	November 1986	274,000	8/	Withdrawn
Wire rod:					
Rimmed wire rod	Davis Walker	May 1988	51,400	2/	Approved 5,580 tons
Wire products:					
Certain wire rope	Whittaker Survival Systems	December 1986	17.9	7/	Denied
Fabricated structural steel:					
Certain telephone boxes	Pacific Bay Telephone	September 1986	2.5	5/	Approved 34 tons 9/
Railway products:					
Certain railroad axles	Southern Pacific RR	October 1988	1,730	2/	Withdrawn
Pipe and tube:					
16-inch line pipe	Chevron	January 1985	30,500	2/	Denied
26-inch line pipe	ARCO	January 1985	664	7/	Approved 664 tons
Certain line pipe	Standard Oil of Alaska	July 1988	14,836	2/	Withdrawn

1/ Shortfall in domestic supply contracts.
2/ Insufficient domestic capacity.
3/ Not available.
4/ Request covered two companies; one in the West (Pacific Hoe) and another in the East.
5/ Not produced by domestic industry.
6/ Approval was for both companies.
7/ Specifications not met by domestic firms.
8/ Strike by domestic supplier.
9/ Approval is open ended. Product is a historical item effectively exempted from VRA constraints.

Source: U.S. Department of Commerce.

nonbinding. 1/ If the quotas were binding, then a depreciation of the dollar might not cause VRA imports to decrease. 2/ However, if the quotas are nonbinding, then a decline of the dollar would increase the U.S. market share held by domestic steel producers relative to imports from all countries. This latter occurrence has been illustrated by the current data on quota levels and market share information analyzed.

An important question is whether the decline of the dollar was large enough to cause the quotas to become nonbinding in 1987. A 1985 Commission study estimated that the dollar would have to depreciate by more than 8.9 percent in real terms for the steel import restraint program to become inoperative. 3/ Since the quotas' initiation, the decline of the dollar against the currencies from VRA countries has been larger than the magnitude necessary to make the quotas nonbinding: between 1985 and 1987, the dollar declined, on average, by 30 percent against the currencies of VRA countries.

Table 7-3 shows real-exchange-rate indices for Japan and South Korea, two major VRA-exporters of steel mill and fabricated steel products to the United States. The depreciation of the dollar against the Japanese yen and the South Korean won is of particular significance to this investigation since these two VRA countries are the major sources of steel imports in the Western U. S. market. For comparison, indices for three separate groupings of currencies from VRA and non-VRA countries and the EC are also presented in table 7-3. 4/

1/ The quotas established under the VRAs are binding if they are being filled and nonbinding if the level of imports falls below the negotiated ceilings.

2/ In this case, increases in the level of domestic steel shipments and market share would come from the displacement of non-VRA imports and imported products that were good substitutes with domestic steel.

3/ See U.S. International Trade Commission, The Effects of Restraining U.S. Steel Imports, USITC Publication 1788. A quota on imported steel would cause imports to receive a price premium in the domestic market. The 1985 ITC investigation estimated the price premium caused by the VRA quotas to be 8.9 percent.

Theoretically, a depreciation of the dollar that is larger than the VRA-price premium would cause the price of domestic steel products in the U.S. market to fall relative to both VRA and non-VRA imports and the level and market share of steel imports from both country groups to decline. Conversely, if the decline in the dollar were less than or equal to the VRA-price premium caused by the quotas, the level of VRA imports would remain unaffected. The quotas would remain filled, and only the price premium received by VRA imports would be reduced by the dollar's depreciation. See USITC Publication 1788 for further discussion of this topic.

4/ See app. L for a discussion of the construction of the real-exchange-rate indices for the three groupings of currencies from the EC, the VRA, and the non-VRA countries.

Table 7-3
Real-exchange-rate indices 1/ for currencies of major exporters of steel mill products and certain fabricated steel products against the U.S. dollar, quarterly, 1984-88.

Year and quarter	Japan	South Korea	EC	VRA countries	Non-VRA countries
1984:					
January-March------	100.00	100.00	100.00	100.00	100.00
April-June---------	100.19	100.71	99.29	100.05	101.96
July-September-----	105.12	101.15	105.47	104.53	103.20
October-December---	106.30	101.90	109.48	106.45	103.46
1985:					
January-March------	110.01	104.11	114.73	110.03	105.10
April-June---------	108.42	107.61	107.44	107.51	105.26
July-September-----	103.81	108.62	99.53	102.59	102.71
October-December---	93.37	109.70	92.51	95.31	102.49
1986:					
January-March------	85.13	108.63	86.83	89.64	101.03
April-June---------	78.50	108.87	83.33	85.98	99.84
July-September-----	73.49	106.69	78.74	81.95	99.78
October-December---	76.67	106.30	77.24	82.33	100.45
1987:					
January-March------	74.64	105.50	72.30	80.66	96.62
April-June---------	71.21	102.55	71.71	77.59	95.64
July-September-----	73.23	101.08	73.62	78.83	96.38
October-December---	68.21	100.04	68.26	74.50	93.10
1988:					
January-March------	65.38	95.52	67.15	72.85	91.04
April-June---------	65.54	92.67	69.01	72.03	89.23
July-September-----	70.06	91.55	2/	2/	2/

1/ The real exchange rate was calculated by multiplying the number of units of currency per dollar by the quotient of the U.S. wholesale price index and the foreign wholesale price index. In those cases where the wholesale price index was not available, the consumer price index was used. The base period used in the calculation of the real exchange rate index was Jan.-Mar. 1984. See app. J for a discussion of the construction of the real-exchange-rate indices for the groupings of currencies from the EC and VRA and non-VRA countries.
2/ Not available.

Source: International Monetary Fund and U.S. Department of Commerce, Bureau of the Census.

During most of the period that the VRAs were in effect, the dollar declined against the currencies of Japan and South Korea, and, on average, declined against the currencies of the EC and VRA and non-VRA countries. In addition to showing very similar trends over time, the movements of the dollar against the yen and the grouping of EC currencies showed the largest declines. Also, the decline of the dollar was larger against the currencies of VRA countries than against the currencies of non-VRA countries. Table 7-4 shows the dollar's decline against the currencies of Japan, Korea, the EC, VRA- and non-VRA countries between 1985 and 1987.

Table 7-4
Average real-exchange-rate indices for currencies of Japan, South Korea, the EC, VRA countries and Non-VRA countries against the U.S. dollar, 1985 and 1987

Item	1985	1987	Percentage change
	-----Index------		Percent
Average real-exchange-rate indices: 1/			
Japan	103.90	71.82	-30.88
South Korea	107.51	102.29	- 5.22
EC	103.55	71.47	-31.00
VRA countries	103.86	77.90	-30.00
Non-VRA countries	103.89	95.44	- 8.13

1/ Base period for indices is January-March 1984.

Sources: International Monetary Fund, U.S. Department of Commerce, and U.S. International Trade Commission, Monthly Report on the Status of the Steel Industry, March 1988.

Effects of VRAs on Steel Prices

During the initial period of the steel trade restraints, in particular 1985 through 1986, the price of steel in the U.S. market was higher than it would have been without the existence of the VRAs. In a 1985 study, for instance, the Commission found that the then-binding quotas led to a 9-percent increase in the price of imported steel and a 1-percent increase in the price of domestic steel. On average, in 1985, steel prices are estimated to have risen by 3 percent as a result of the VRA program. 1/

More recently, specifically 1987 and 1988, there have undoubtedly been instances in which prices of certain steel products from certain countries have risen as a result of the steel trade restraints (semifinished steel appears to be an example); however, the increase in

1/ The Effects of Restraining U.S. Steel Imports on the Exports of Selected Steel-Consuming Industries, USITC Publication 788, December 1985, table 12.

both import and domestic prices in 1987 and 1988 occurred principally at a time when the steel VRA quotas were becoming less binding, or nonbinding (see section entitled "Analytical Results"), raising questions as to the actual effect the measures could have had on steel prices. Despite the possibility that the VRAs may be binding over time, rather than within a single year (see app. K), imports from countries covered by the agreements fell so significantly short of VRA ceilings in 1988 that it appears overwhelmingly likely that the current price effect of the VRAs, if any, is negligible. 1/ Alternatively, information developed by the Commission suggests that other factors, such as the decline in the value of the dollar against major foreign suppliers' currencies and the rise in demand for steel worldwide, were of significantly greater importance in explaining the overall price increases that occurred in the Western U.S. market in 1987 and 1988. 2/

As to the magnitude of the price increases, data collected from steel purchasers located in the Western U.S. region indicate that the lowest price quotes for most imported steel products rose by 25 to 35 percent from mid-1983 through the end of the third quarter of 1988 (table 7-5); the

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1/ David J. Cantor, in his Mar. 15, 1988, Congressional Research Service study, Steel Prices and Import Restraints, concluded with respect to 1987 that,

> The argument can be made that domestic steel buyers were able to obtain as much imported steel as they wanted before being confronted by the import barriers. ... While there is a possibility that the quota regime of the steel program could result in product shortages, the fact remains that for all steel products taken together, the VRA countries are not filling their quotas in 1987.

Pages 1-2, 15. In addition, Cantor extended this observation to 1988 in a Feb. 3, 1989, report. See David J. Cantor, Steel Imports: Are the VRA Countries Filling Their Quotas?, Congressional Research Service, Feb. 3, 1989.

Moreover, in 1987 and 1988, U.S. spot prices do not systematically exceed spot prices in Japan, at the German-French border, or in Canada. This relationship appears inconsistent with the direct price premium that would be attributable to binding VRAs. See Paine Webber's World Steel Intelligence, Steel Price Track #26, Sept. 29, 1988, especially graphs on pp. 23-26, and supporting tables.

2/ See David J. Cantor, Steel Prices and Import Restraints, Congressional Research Service, Report No. 88-204 E, March 15, 1988, and Putnam, Hayes, & Bartlett, Inc., Government Policies and the Domestic Steel Industry, Cambridge, Massachusetts, May 1987. In addition, several interested parties provided testimony to the Commission supporting the argument that VRA's have not had a significant effect on the price of steel imported from VRA countries: Prehearing brief of Geneva Steel at 32-34 and written statement of the American Iron and Steel Institute at 14.

Table 7-5
Western U.S. steel prices: Changes in lowest price quotes to purchasers for imported and domestically produced steel, by products, between June 30, 1983 and Sept. 30, 1988

Carbon steel product	Change in price quotes	
	Imported	Domestically produced
	Percent	
Semifinished shapes.....	1/	1/
Plates.....	35	23
Uncoated sheets.....	34	19
Tinplate.....	-3	12
Galvanized sheets.....	2/	11
Bars.....	34	14
Wire rods.....	27	18
Wire products.....	1	12
Structural shapes.....	33	13
Pipes.....	26	20

1/ Confidential.
2/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission. See app. M (tables M-1 through M-4) for more detailed information.

increase in the lowest price quotes from domestic producers, however, was significantly lower, ranging from 10 to 25 percent for most products. 1/

As indicated above, most of the price increases occurred during 1987 and 1988, as the effects of the VRAs were diminishing. One likely explanation for the price increases is the increase in worldwide demand for steel that occurred during this later period of the steel restraint program. An examination of industrial production in major developed countries shows that activity increased by about 21 percentage points from 1983 to mid-1988 (see app. M, table M-5). This increase was accompanied by a corresponding increase in demand for steel products, the result of which is reflected in a 19-percent increase in steel production during the period (see app. M, table M-6).

A number of analysts familiar with the industry worldwide have indicated that the peak production levels reached during 1987 and 1988 may well represent the maximum level of steel that could be produced by the industry under current conditions (i.e., without a costly restarting of idled facilities and an expansion in employment levels; without clear indication that demand will continue to maintain the levels reached in

1/ Data collected from steel producers parallels that supplied by the purchasers (see app. M).

1987-88, it is unlikely that producers would take actions to expand their current production capability).

The increase in prices during 1983-88 is not restricted to steel alone. Prices of two other major metals, copper and aluminum, neither of which were subject to trade restraints during the period, rose by significantly greater margins. Further, price changes (in dollar terms) were not restricted to the United States, as home-market prices in other major producing countries increased at an equal or greater rate (table 7-6).

Table 7-6
Steel prices: Home-market prices of cold-rolled steel coil, by countries, as of October 1983 and September 1988

Country	As of October 1983	As of September 1988	Percentage change
	---------Per short ton---------		
Canada.....	$420	$502	20
EC.....	338	451	33
Japan:			
Dealer.....	384	596	55
Big buyer 1/.....	391	643	64
United States.....	420	502	20

1/ "Big buyer" prices are those quoted to big contract buyers (such as the automobile industry) in Japan.

Source: PaineWebber Inc., World Steel Dynamics, Steel Price Trak, various issues.

In addition to the increased world demand balance, the changes in the value of the dollar that occurred during the period would also explain a large portion of the observed price increases (see section titled "Effects of Exchange Rate Changes on Imports from VRA Countries"). As the dollar declined, foreign producers became less active in the U.S. market, with sales becoming less profitable. Under these conditions, price increases would normally occur. An examination of trends in the unit value of Japan's exports to the United States and other countries indicates that similar increases occurred which lends further evidence that the trade restraints were not a major cause of the price increases which occurred during the past two years (table 7-7). Figure 7-1 illustrates the relationship between steel production levels, import prices, domestic steel prices, and exchange rates during 1983-88.

Table 7-7
Japanese exports: Percentage change in the dollar unit values of exports to the United States and other countries, by products, January 1983 to July-September 1988 1/

Product	Exports to the United States	Exports to Other countries
Cold-rolled sheets.....	29	38
Galvanized sheets.....	26	60
Heavy structural shapes....	36	58

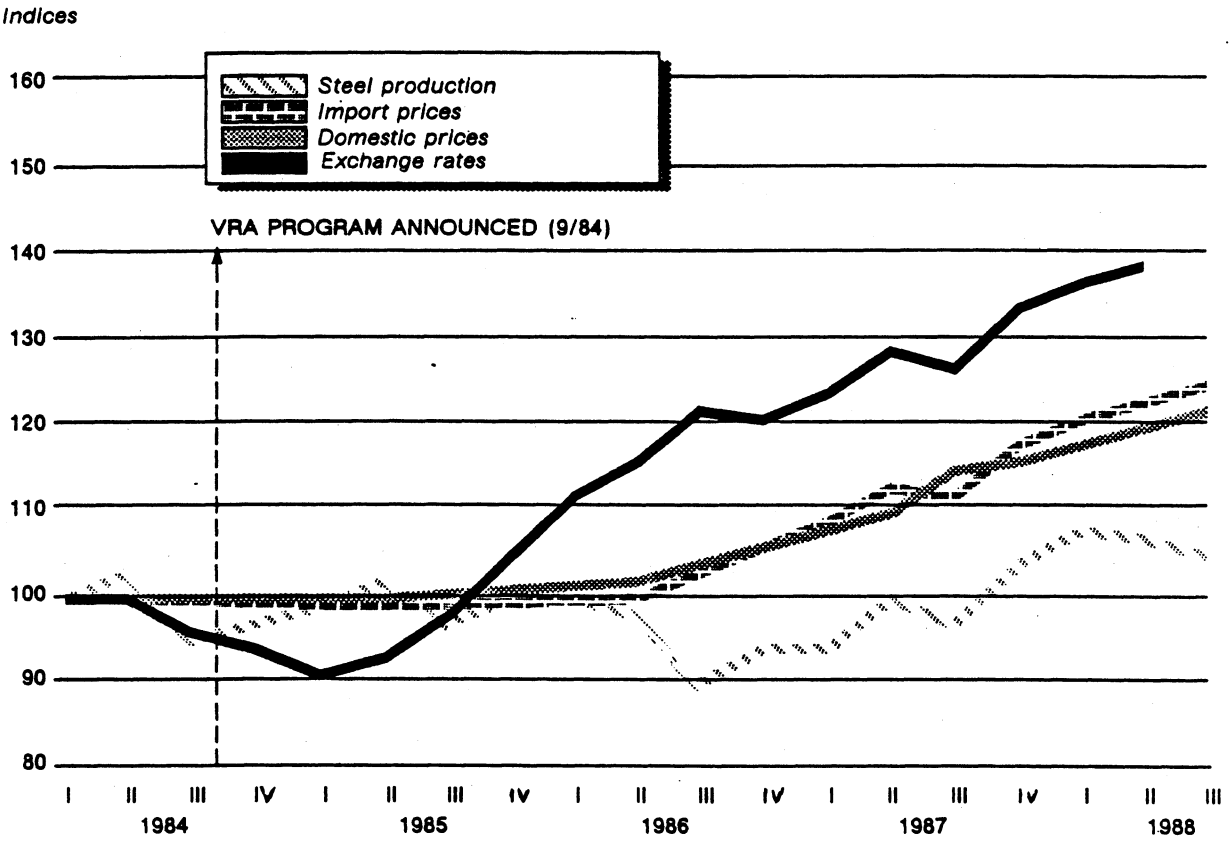
1/ See app. M, table M-7 for more detailed information.

Source: Compiled from Japanese trade statistics.

Also, any improvements in the competitive position of U.S. steel products in the domestic market resulting from the depreciation of the dollar would be reflected by increases in the prices of imported steel relative to those of U.S. steel. This did occur, as the price of imported steel increased relative to the price of domestic steel during the dollar's depreciation as would be expected. 1/ Table 7-8 presents the change in unit values of steel products imported from these countries relative to the unit values of steel products of Eastern and Western U.S. producers. Data collected from steel consumers, which solicited price quotes from both domestic and foreign sources, lend further support to this. During 1983-88, the differential in price quotes fell by 5 to 10 percentage points in most products. During 1988, domestic price quotes were lower than import

1/ See also Cantor, Steel Prices and Import Restraints. Relative prices observed in trend data usually do not adjust by the full magnitude of the dollar's movement. See Rudiger Dornbusch, "Exchange Rates and Prices," American Economic Review, March 1987 for further discussion on the adjustment of relative prices to exchange rate movements.

Figure 7-1
Prices and exchange rates: Purchase price indices for domestic and imported uncoated steel sheet and strip,[1] real exchange rate indices for VRA countries, and raw steel production in selected countries[2] by specified periods, 1984-88.



[1] Indices of the lowest quoted prices as of the final day of the respective quarters.
[2] Indices represent three-month averages for the respective quarters.

Source: Compiled from official statistics of the Department of Commerce, data submitted in response to questionnaires of the U.S. International Trade Commission and the data of the International Iron and Steel Institute.

quotes in certain cases, and less than 5 percent greater than import quotes in most other products (see app. M).

Table 7-8
Unit values of steel imports from Japan, the EC, Korea, VRA countries, and non-VRA countries relative to unit values of domestic shipments of Western and Eastern U.S. steel producers, 1985 and 1987 1/

Product and country	Shipments of Western U.S. producers: Relative unit values 2/ 1985	1987	Percentage change	Shipments of Eastern U.S. producers: Relative unit values 3/ 1985	1987	Percentage change
Plate:						
Japan	1.25	1.39	11.25	1.00	1.15	14.99
EC	.83	.85	2.76	.67	.71	6.21
Korea	.76	.86	13.07	.61	.72	16.88
VRA	.77	.83	7.55	.62	.69	11.16
Non-VRA	.89	.89	.52	.71	.74	3.90
Sheet and strip:						
Japan	1.04	1.09	4.80	.95	.98	2.85
EC	.81	.86	6.75	.74	.78	4.76
Korea	.78	.83	6.28	.72	.75	4.31
VRA	.88	.94	7.30	.80	.84	5.30
Non-VRA	.83	.88	6.52	.76	.79	4.54
Bars:						
Japan	1.48	1.44	-2.17	.90	.92	2.40
EC	1.35	2.63	93.93	.82	1.67	102.98
Korea	.86	.96	11.64	.52	.61	16.85
VRA	1.20	1.75	45.10	.73	1.11	51.87
Non-VRA	1.29	1.16	-9.54	.78	.74	-5.32
Wire rod:						
Japan	1.20	1.52	27.03	1.01	1.10	8.88
EC	1.03	1.30	26.95	.87	.95	8.82
Korea	1.17	1.50	28.28	.99	1.09	9.95
VRA	.97	1.23	27.35	.82	.89	9.15
Non-VRA	.97	1.04	7.88	.82	.76	-7.53
Wire:						
Japan	1.10	1.09	-1.19	.74	.88	20.20
EC	1.10	1.20	8.48	.74	.97	31.96
Korea	.85	.96	12.57	.57	.78	36.94
VRA	1.06	1.11	5.15	.71	.90	27.90
Non-VRA	.98	.89	-9.54	.66	.72	10.04

Table 7-8--Continued
Unit values of steel imports from Japan, the EC, Korea, VRA countries, and non-VRA countries relative to unit values of domestic shipments of Western and Eastern U.S. steel producers, 1985 and 1987 1/

Product and country	Shipments of Western U.S. producers: Relative unit values 2/ 1985	1987	Percentage change	Shipments of Eastern U.S. producers: Relative unit values 3/ 1985	1987	Percentage change
Structural steel:						
Japan	0.84	0.56	-33.81	0.85	0.83	-2.30
EC	.90	.64	-28.96	.91	.95	4.86
Korea	1.04	.82	-21.67	1.05	1.22	15.61
VRA	.88	.61	-30.80	.89	.91	2.14
Non-VRA	1.31	.99	-24.17	1.32	1.48	11.93
Pipes and tubes:						
Japan	.87	.80	.42	.81	.78	-3.66
EC	.79	.75	-4.11	.73	.74	.87
Korea	.59	.60	2.88	.55	.59	8.23
VRA	.74	.70	-5.41	.69	.69	-.49
Non-VRA	.72	.62	-13.50	.67	.61	-9.01

1/ Unit values for both imports and domestic shipments of steel were calculated by dividing value by short tons. Imports consisted of carbon steel products while domestic shipments consisted of carbon, alloy, and stainless steel products. In addition, within categories, there is variation in the product mix among import sources. For instance, the product mix of wire from Japan is different from the product mix of wire from Korea. Nonetheless, the change in ratios between 1985 and 1987 is indicative of the movement of relative unit values, and prices, during this period.
2/ Relative unit values are unit values of foreign steel products relative to unit values of domestic shipments of steel products by Western U.S. producers.
3/ Relative unit values are unit values of foreign steel products relative to unit values of domestic shipments of steel products by Eastern U.S. producers.

Source: Compiled on the basis of data of the U.S. Department of Commerce, Bureau of the Census and data received in response to Commission questionnaires.

Methodology 1/

An extension of the VRAs beyond 1989, at the VRA-countries' prevailing market share, may well result in the export quotas becoming binding in a future year. 2/ The focus of this methodology is on estimating when extended VRAs would become binding under various scenarios.

The VRA program is designed to limit imports from subject countries to no more that 18.5 percent of the U.S. steel market. Over a long period of time--17 years in the time series used in this analysis (1971-87) -- domestic production has declined at a faster average annual rate than has domestic consumption. 3/ This implies that the share of the U.S. market made up of imports, VRA and non-VRA combined, has risen over this period. By extending the long-term trend, it is possible to project what share of the U.S. market will consist of imports in future years.

In conducting the analysis, we assumed that the latest observed ratio of VRA imports to non-VRA imports would remain unchanged. This assumption leads to a less distant estimate of when the VRAs would become binding because some substitution of non-VRA imports for VRA imports, increasing the ratio of non-VRA to VRA imports, would be likely. 4/

In addition to estimating when the VRA's would become binding if long-term production and consumption trends continued, we also performed the estimates under two alternate scenarios. First, within the 17-year time series, we selected the four-year period in which steel imports grew most rapidly and estimated when the VRAs would become binding if import growth resumed that rate. The fastest import growth took place between 1980 and 1984, a period corresponding roughly to the most rapid strengthening of the dollar. Second, we selected the four-year period in which the growth of imports was slowest, namely, between 1971 and 1975. Since import growth during this period was negative, if the growth rate

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1/ A technical exposition of the methodology is given in app. N.

2/ The request from the Committee on Ways and Means, which is reproduced in app. A, directed the Commission to conduct its analysis under this assumption.

3/ Long-term decline in consumption appears most strongly linked to technological progress that has facilitated the substitution of other materials for steel. Year-to-year changes in consumption that include deviations from trend are, by contrast, most strongly influenced by the business cycle.

Long-term declines in production have been spurred by the decline in demand and increased supply from the rest of the world. Year-to-year changes in product, which include deviations from trend, are strongly influenced by the historic strength or weakness of the dollar vis-a-vis our trading partners.

4/ On the other hand, VRA coverage might well be extended to include imports from countries not currently subject to VRA agreements, as has happened in past years. We did not assume this because we were asked to analyze an extension of the VRAs in their present form.

then prevailing were to resume, the VRAs would never become binding unless domestic consumption fell even faster than imports.

Finally, if the quotas were binding, the effect of the VRAs would generally be to increase the quantity of labor employed by the steel sector and to decrease the quantity of labor employed by downstream sectors that use steel as a factor of production. Since the VRA quotas were not binding in 1988, there were no calculated effects on labor employment in the Western United States in the steel sector or in the downstream industries that use steel as a factor of production. 1/ However, as noted above, the VRAs may become binding because of growth in the market share of imports from VRA countries. Therefore the effect of a 1 percent increase in the price of steel--induced by VRAs that might be binding in future years--on the employment of labor in the Western U.S. steel industry and in important Western downstream industries was estimated using 1986 employment and production data as the baseline.

Analytical Results

During the initial years of the VRAs, binding limitations on imports acted to increase prices of both imported and domestic steel products. Specifically, the quotas directly increased the price of steel during the period from their initiation, in 1984, through 1986/87 (i.e., during the period when they were binding). In a 1985 study, the Commission assumed that the then-binding quotas reduced imports by 30 percent. This, in turn, led to a 9-percent increase in the price of imported steel and a corresponding 1-percent increase in the price of domestic steel, which consumers view as partially substitutable for imported steel. On average, in 1985, steel prices rose by 3-percent as a result of the VRA program. 2/ However, the focus of our analysis in this investigation is the more recent effect of the VRAs. The principal conclusion of this study's analysis is that the VRA quotas were nonbinding for certain product categories in 1987 and non-binding for all product categories in 1988. Therefore, for those product categories where the quotas were nonbinding, the VRAs had no direct effect on steel prices in the Western United States, or for that matter, on steel prices elsewhere in the United States. For instance, on a global basis, the quotas were totally binding only for semifinished steel and plates in 1987. In 1988, from projections constructed from U.S. Department of Commerce data, the quotas appear to have been nonbinding on a global basis for all product categories.

1/ As noted above, if the carryover of unused quota rights to subsequent years is allowed, then VRAs that appear nonbinding in a given year may be binding over the entire period that the VRAs are in existence. However, this is unlikely to have occurred in 1988. For further discussion on this topic, see app. K.

2/ USITC, The Effects of Restraining U.S. Steel Imports on the Exports of Selected Steel-Consuming Industries, USITC Publication 1788, December 1985, table 12.

Any observed increase in the price of domestic and imported steel in the last two years appears to have been primarily the result of the dollar's depreciation and rising worldwide demand for steel during this period. Consequently, during the last two years, the VRAs did not have a direct effect on wages or on employment levels in the Western U.S. steel industry, nor did they have a direct effect on product prices or production levels of downstream users of steel in the Western United States. One important question remains, however: When might the VRAs, at their current level, become binding? Our analysis focuses on when the quotas might become binding if they are extended beyond 1989 at their 1989 level.

First Scenario: Average Import Growth

If steel imports were to continue to grow at 1.1 percent a year, the average annual rate observed during the 16 years between 1971 and 1987, the VRAs would not become binding until 1997. This estimate assumes, as noted in the methodology, that the ratio of VRA to non-VRA imports remains unchanged from 1988. 1/

Second Scenario: Fast Import Growth

If, instead, steel imports were to grow at 3.7 percent a year, the annual rate observed between 1980 and 1984, then the VRAs would become binding as soon as 1990. Imports were increasing at a faster rate during this period than during any other period of four or more years in the overall 1971-87 annual time series. This period also coincided with the greatest appreciation of the dollar during the entire 16-year timeframe. Between the first quarter of 1980 and the first quarter of 1984, the dollar appreciated in real terms by 25 percent. 2/ For the second scenario to be plausible, the dollar would have to recover strongly against the currencies of important U.S. trading partners.

1/ In this first scenario, as in the other two that follow, it is assumed that domestic output will grow at the average annual rate that was observed during the selected time period. For the first scenario's time period, 1971 to 1987--the period selected to reflect average import growth--domestic steel output declined at an average annual rate of 2.5 percent. For scenario two--the period selected to reflect fast import growth--domestic output declined at an average annual rate 4.7 percent. Finally, for scenario three--the period selected to reflect import decline--domestic output declined at an average annual rate of 3.3 percent.

2/ W. Michael Cox, "A Comprehensive New Real Dollar Exchange Rate Index," Economic Review, March 1987, Federal Reserve Bank of Dallas.

Third Scenario: Import Decline

Finally, if steel imports were to decline at 0.9 percent a year, the annual rate observed between 1971 and 1975, then the VRAs would never become binding. Import growth rates were at their lowest during this period. Further, during this period the dollar depreciated in real terms by 20 percent. 1/

Employment Effects

Since the VRA quotas were not binding in 1988, there were no resulting effects on labor employment in the Western United States in the steel sector or in the downstream industries that use steel as a factor of production. 2/ In future years, however, the VRAs may become binding because of growth in the market share of imports from VRA countries, or because VRA quotas are renegotiated. This section presents estimates for the steel industry and important Western downstream industries of the employment effect of each 1-percent increase in the price of steel induced by VRAs that might be binding in future years.

Table 7-9 presents the estimated increase in labor employment in the primary iron and steel sector and the heating, plumbing, and fabricated structural metal products sector that would result from a 1-percent increase in the price of steel. 3/ The increases were estimated under two different assumptions: first, where the elasticity of domestic supply (e_d) was assumed to be 1.38, and second, where the elasticity of domestic supply was assumed to be 3.5. 4/

1/ Ibid.

2/ For a discussion of the effects of the VRAs on labor employment during the period when the quotas were binding, see Jose A. Mendez, "The Short Run Trade and Employment Effects of Steel Import Restraints," Journal of World Trade Law, vol. 20, No. 5, September/October 1986 and Arthur T. Denzau, How Import Restraints Reduce Employment, Publication No. 80, Center for the Study of American Business, Washington University, St. Louis, June 1987.

3/ These sectors correspond to the steel sector classifications in "The Input/Output Structure of the U.S. Economy," Current Survey of Business, March 1977.

4/ The elasticities of supply were taken from Crandall, The U.S. Steel Industry in Recurrent Crisis, and Jondrow, The Impact of International Trade and Investment on Employment. This range, in addition to having a basis in the literature, is wide enough so that it very likely encompasses the "true" supply elasticity.

Table 7-9
Estimated range 1/ of the employment effects (the increase in the number of jobs) in the Western U.S. steel sector resulting from a 1-percent increase in the price of steel

Input/output Industry No.	Industry sector	Effects	
		Lower range	Upper range
37	Primary Iron and Steel.....	650	1,640
40	Heating, plumbing, and fabricated structural metal products.....	800	2,060

1/ Ranges correspond to the lower range and upper range of the steel industry's supply elasticity, 1.38 and 3.5, that were used to make these calculations.

Source: Compiled by the staff of the U.S. International Trade Commission from data provided by the Bureau of Labor Statistics and the U.S. Department of Commerce.

In 1987, the largest sectors that were downstream users of steel in the Western United States were, in descending order, construction and contractors, containers, rail transportation, and machinery. Therefore, these industries would experience the largest declines in employment as the result of an increase in steel prices. These industries accounted for 83 percent of steel consumption in the Western U.S. market. Table 7-10 presents the estimated declines that would occur in the corresponding two-digit input/output sectors for these industries. In addition, the estimates were made under two different assumptions: first, where the elasticity of demand (n_d) for the final product is inelastic, -0.5, and second, where the elasticity of demand was moderately elastic, -2.0. 1/

1/ The range for the elasticity of demand, -0.5 and -2.0, is wide enough so that it probably encompasses the "true" demand elasticity.

Table 7-10
Estimated range 1/ of the downstream employment effects (decrease in the number of jobs) in the Western United States resulting from a 1-percent increase in the price of steel

Input/output Industry No.	Industry	Effects Lower range	Upper range
11-12	Construction 1/.....	1,220	6,040
39	Metal containers.....	30	130
65	Transportation and warehousing.....	20	90
58	Miscellaneous electrical, machinery, and supplies.....	0	10

1/ Ranges correspond to the lower range and upper range of the downstream industries' demand elasticity, -.5 and -2, that were used to make these calculations.
2/ Labor employment and output data from the Bureau of Labor Statistics were available only for the aggregate "construction" industry. However, input/output (I/O) coefficients from the Department of Commerce were not available for this same level of aggregation. Rather, I/O coefficients were available for the industry categories "new construction" (I/O 11) and "repair and maintenance construction" (I/O 12). I/O 11 has a higher steel input coefficient than I/O 12. Using the available coefficients, it was assumed that all of the labor employment in construction was either "new" or "repair and maintenance," and low and high estimates of employment loss were constructed. That is, the steel input coefficient for I/O 12 was used for the entry under "lower range" (n_d=-.5) and the steel input coefficient for I/O 11 was used for the entry under "upper range" (n_d=-2). In reality, the loss in employment in the construction industry falls between this low and high range.

Source: Compiled by the staff of the U.S. International Trade Commission from data provided by the Bureau of Labor Statistics and the U.S. Department of Commerce.

CHAPTER 8. ECONOMIC IMPLICATIONS OF CONTINUATION OF THE STEEL VRAs

Effect on Supply Patterns

Importers

Should the VRA program be continued in its present form, its effect on imports would depend on whether or not the quotas were binding. As discussed in the section entitled "The Economic Effects of the Steel VRAs on the Western United States," the quotas were not binding in 1987 and 1988. If the VRA quotas remain nonbinding in the foreseeable future, then VRA continuation would generally have no direct effect on the Western U.S. market. It could have an important indirect effect, however, to the extent that the program precluded U.S. producers from filing unfair trade cases against VRA countries, and thereby permitted increased imports of subsidized and/or dumped imports. Were quotas to become binding, effectively limiting imports from VRA countries, then it is likely that non-VRA suppliers would continue to increase their share of the Western U.S. market.

Western and Eastern Suppliers

To the extent that the VRA quotas are binding, the restraints provide domestic producers with an opportunity to increase their shipments. Their ability to accomplish this depends on the existence of sufficient capacity to adequately supply Western region demand.

Within the past decade, the U.S. steel industry has progressively reduced its ability to produce semifinished steel (i.e., raw steel) by over 20 percent, or 30 million tons, as producers have chosen to lower costs and maximize the efficiency of their facilities by eliminating inefficient operations. Excess steel refining capacity has been permanently shut down by firms as they seek to adjust to changing competitive conditions. 1/ These closures, combined with potential increases in internal consumption of semifinished products by raw steel producers, could create a tight supply situation for Western U.S. producers whose operations depend on purchased semifinished and flat-rolled products. 2/

Effect on Supply

Western producers that rely to a certain extent on imports to supply their raw material requirements have experienced a mixed effect with the VRA program. During the period of the VRAs, some of these companies have at times been unable to acquire adequate amounts of steel for further processing, which they state has adversely affected their ability to meet

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1/ Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize, USITC Investigation No. 332-209, September 1988, pp. 72-73.

2/ To alleviate such a situation, producers may petition for a short supply waiver, as discussed in the section entitled "Effect on Supply," Chapter 8.

customer needs. 1/ The short supply provisions of the agreements, however, provide a vehicle for relieving specific imbalances, 2/ although they do pose a cost to petitioners in terms of the time and expense associated with making a request, and the uncertainty and opportunity costs that may be associated with delays in obtaining products needed to meet production schedules.

Effect on Investment

Continuation of the VRA program would most likely facilitate further modernization efforts by Western producers either through continuation of ongoing programs or through investment in new projects. During the period of the VRAs, producers have undertaken numerous investments in facility improvements. 3/ The VRAs have encouraged such improvements by limiting imports, thereby reducing the degree of risk affecting investment decisions in the Western market and allowing Western producers greater access to funds for capital improvements. Continuation of the VRAs would enhance steelmakers' ability to borrow funds for future modernization by providing them, and their lenders or investment partners, with a form of "insurance" against potential price reductions that could result from unlimited imports.

New investment in U.S. facilities by foreign producers of steel, such as Japan and Korea, may also be influenced by the status of the VRA program. These countries are currently involved in a number of joint ventures in the United States, including the USX-POSCO venture undertaken by Korea and the United States in Pittsburg, CA. A number of potential incentives exist for joint venture participation, including access to foreign capital and domestic employment for the U.S. partner, and access to the U.S. market for the foreign partner. Joint venture participation within the Western region may help to ensure completion of modernization efforts.

1/ "Short Supply Approval Process Upsets Domestic Steel Industry," American Metal Market, Mar. 18, 1988.

2/ Companies may file short supply requests with the U.S. Department of Commerce in an effort to gain access to greater quantities of imported steel (generally raw material supplies). Approval of a short supply request results in domestic producers being given the initial opportunity to supply the additional quantities demanded; if they are unable to fulfill the demand, then the purchaser is permitted to import the required steel products in excess of the VRA ceiling. See also section of report titled "Short Supply Considerations," Chapter 7.

3/ These investments are described in the section of this report titled "Direct effects of Binding Quotas on Western Steel-Producing Industries," Chapter 7.

Effect on Unfair Trade

Under the VRA program, import levels are limited in quantity but there are no bounds on the prices at which imports may be sold in the United States. The system thereby permits the sale by foreign producers of subsidized or less-than-fair-value steel products in the U.S. market. 1/ Retaliation (i.e., the filing of antidumping or countervailing duty suits) in the event of VRA continuation is not likely because it could lead to material alteration of the VRA system.

The more binding the VRA quotas, the greater the protection from increased import levels afforded to producers and the lower the relative benefit of the alternative form of relief (i.e., unfair trade cases). However, in instances in which quotas are nonbinding (i.e., unfilled), there would be greater relative benefit to producers were they able to secure relief under the unfair trade laws.

Effect on Prices

The effect on prices of VRA continuation would depend on the extent to which the quotas were binding, or filled. Binding quotas would most likely cause prices to rise in response to restricted supplies. Prices have risen during the period of the VRAs, with increases during the agreements' early years (1985-86) likely the result of binding quotas. However, more pronounced price increases occurred during a time when the VRA quotas were not binding, implying that other factors, such as the decline in the value of the dollar relative to major foreign suppliers' currencies, and the rise in demand for steel worldwide, contributed to the price increases. In the event of VRA extension, if the quotas remain nonbinding, then they will not likely have any effect on steel prices.

1/ Information received in response to Commission questionnaires.

APPENDIX A

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

COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

July 6, 1988

The Honorable Ann Brunsdale
Acting Chairman
U.S. International Trade Commission
501 E Street, N.W.
Washington, D.C. 20436

Dear Madam Chairman:

On behalf of the Committee on Ways and Means, I request that the Commission conduct a study pursuant to section 332 of the Tariff Act of 1930 on the Western U.S. steel market. The study should analyze market conditions and assess the economic effects of the voluntary restraint agreements (VRA's) on steel-producing and steel-consuming industries in the Western region.

As you know, the volume of steel which can be imported into the U.S. market is currently restricted through a series of bilateral VRA's which were negotiated by the U.S. Government with most major foreign steel suppliers. Of particular interest to the Committee are the effects which the restraints are having on both steel-consuming and steel-producing industries in 12 Western States.

In assessing market conditions and the effects of the VRA's, please address the following issues:

-- Structural changes which have occurred in the Western steel industry in recent years, including developments in Western States' capacity to produce the steel products listed below;

-- Consumption of steel mill products in the Western region;

-- Patterns of supply to the Western region (i.e., the changes in market share of imports from both VRA and non-VRA countries, Western regional production, and nonregional U.S. production in the market);

-- Factors limiting the use of domestically-produced steel manufactured outside the Western region, including industry transportation costs relative to other regions;

-- Factors affecting the importation cost of steel produced in foreign mills, including foreign inland freight and port costs, ocean freight and insurance, and U.S. port costs and other importation expenses;

-- Issues affecting the Western steel market with respect to steel imports from non-VRA countries, including the impact of steel exported from VRA countries to non-VRA countries for further manufacture and reexport to the Western U.S. market; and

-- Economic implications of continued import restraints on producers of steel products subject to the VRA's and selected major steel-consuming industries in the Western region.

To the extent feasible, the investigation should provide product-by-product market information on a nonconfidential basis, on the following products: semifinished steel, plates, sheets and strip, bars, wire rods, wire and wire products, structural shapes and units, rails and railway products, and pipes and tubes. The Western region should include California, Oregon, Washington, Idaho, Utah, Nevada, Arizona, New Mexico, Colorado, Wyoming, Alaska, and Hawaii.

The Committee would appreciate receiving the final report on this investigation on or before March 31, 1989. To afford interested parties an opportunity to discuss their views, a hearing in Washington, D.C., is recommended. Please let us know if you require further information regarding this request.

Sincerely yours,

Dan Rostenkowski
Chairman

DR/jnc

APPENDIX B

NOTICE OF INSTITUTION OF INVESTIGATION NO. 332-256 IN THE FEDERAL REGISTER

provided for in item 692.32 of the Tariff Schedules of the United States, that are alleged to be subsidized by the Government of Brazil.

The Commission hereby also gives notice of the institution of preliminary antidumping investigation No. 731-TA-420 (Preliminary) under section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)) to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Brazil of steel wheels that are alleged to be sold in the United States at less than fair value.

As provided in sections 703(a) and 733(a), respectively, the Commission must complete preliminary countervailing duty and antidumping investigations in 45 days, or in this case by September 12, 1988.

For further information concerning the conduct of these investigations and rules of general application, consult the Commission's Rules of Practice and Procedure, Part 207, Subparts A and B (19 CFR Part 207), and Part 201, Subparts A through E (19 CFR Part 201).

EFFECTIVE DATE: July 29, 1988.

FOR FURTHER INFORMATION CONTACT: Judith Zeck (202-252-1199), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-252-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-252-1000.

SUPPLEMENTARY INFORMATION:

Background

These investigations are being instituted in response to a petition filed on July 29, 1988, by The Kelsey-Hayes Co., Romulus, MI.

Participation in the investigations

Persons wishing to participate in the investigations as parties must file an entry of appearance with the Secretary to the Commission, as provided in § 201.11 of the Commission's rules (19 CFR 201.11), not later than seven (7) days after publication of this notice in the **Federal Register**. Any entry of appearance filed after this date will be referred to the Chairman, who will determine whether to accept the late entry for good cause shown by the person desiring to file the entry.

Service list

Pursuant to § 201.11(d) of the Commission's rules (19 CFR 201.11(d)), the Secretary will prepare a service list containing the names and addresses of all persons, or their representatives, who are parties to these investigations upon the expiration of the period for filing entries of appearance. In accordance with § 201.16(c) and 207.3 of the rules (19 CFR 201.16(c) and 2073.), each document filed by a party to the investigations must be served on all other parties to the investigations (as identified by the service list), and a certificate of service must accompany the document. The Secretary will not accept a document for filing without a certificate of service.

Conference

The Commission's Director of Operations has scheduled a conference in connection with these investigations for 9:30 a.m. on August 19, 1988, at the U.S. International Trade Commission Building, 500 E Street SW., Washington, DC. Parties wishing to participate in the conference should contact Judith Zeck (202-252-1199) not later than August 17, 1988, to arrange for their appearance. Parties in support of the imposition of countervailing/antidumping duties in these investigations and parties in opposition to the imposition of such duties will each be collectively allocated one hour within which to make an oral presentation at the conference.

Written submissions

Any person may submit to the Commission on or before August 23, 1988 a written statement of information pertinent to the subject of the investigations, as provided in § 207.15 of the Commission's rules (19 CFR 207.15). A signed original and fourteen (14) copies of each submission must be filed with the Secretary to the Commission in accordance with § 201.8 of the rules (19 CFR 201.8). All written submissions except for confidential business data will be available for public inspection during regular business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary to the Commission.

Any business information for which confidential treatment is desired must be submitted separately. The envelope and all pages of such submissions must be clearly labeled "Confidential Business Information." Confidential submissions and requests for confidential treatment must conform with the requirements of § 201.6 of the Commission's rules (19 CFR 201.6).

Authority: These investigations are being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.12 of the Commission's rules (19 CFR 207.12).

By order of the Commission.

Kenneth R. Mason,

Secretary

Issued: August 2, 1988.

[FR Doc. 88-18110 Filed 8-9-88; 8:45 am]

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covered by classes 1, 2, and 3, are, generally, light trucks, for example pickup trucks, panel vans and mini-vans with gross vehicle weights of form under 6,000 lbs. up to 14,000 lbs.), as provided for in items 692.3230 of the *Tariff Schedules of the United States Annotated* (1987) (*TSUSA*); they are provided for in subheading 8708.70.80 of the proposed Harmonized Tariff Schedules of the United States (USITC Pub. 2030).

[332-256]

The Western U.S. Steel Market: Analysis of Market Conditions and Assessment of the Economic Effects of the Voluntary Restraint Agreements on Steel-Producing and Steel-Consuming Industries

AGENCY: United States International Trade Commission.

ACTION: Institution of investigation and scheduling of hearing.

EFFECTIVE DATE: August 3, 1988.

FOR FURTHER INFORMATION CONTACT: Mr. Peter Avery, Minerals and Metals Division, Office of Industries, U.S. International Trade Commission, Washington, Dc 20436 (telephone 202-252-1429).

Background And Scope Of Investigation

The Commission instituted investigation No. 332-256 on the Western U.S. steel market under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), following receipt of a letter on July 7, 1988 from the Chairman of the Committee on Ways and Means, United States House of Representatives. As requested, the study will analyze market conditions and assess the economic effects of the volunfary restraint agreements on steel-producing and steel-consuming industries in the Western region.

As requested by the Committee, the Commission, in assessing market conditions and the effects of the voluntary restraint agreements (VRA's), will address the following issues:

(1) Structural changes which have occurred in the Western steel industry in recent years, including developments in Western States' capacity to produce the steel products subject to the investigation (see list below);

(2) Consumption of steel mill products in the Western region;

(3) Patterns of supply to the Western region (i.e., the changes in market share of imports from both VRA and non-VRA countries, Western regional production, and nonregional U.S. production in the market);

(4) Factors limiting the use of domestically-produced steel manufactured outside the Western region, including industry transportation costs relative to other regions;

(5) Factors affecting the importation cost of steel produced in foreign mills, including foreign inland freight and port costs, ocean freight and insurance, and U.S. port costs and other importation expenses;

(6) Issues affecting the Western steel market with respect to steel imports from non-VRA countries, including the impact of steel exported from VRA countries to non-VRA countries for further manufacture and reexport to the Western U.S. market; and

(7) The economic implications of continued import restraints on producers of steel products subject to the VRA's and selected major steel-consuming industries in the Western region.

In addition, as requested by the Committee, to the extent feasible, the investigation will provide product by product market information on a nonconfidential basis, as follows: Semifinished steel, plates, sheets and strip, bars, wire rods, wire and wire products, structural shapes and units, rails and railway products, and pipes and tubes. The Western region is defined to include California, Oregon, Washington, Idaho, Utah, Nevada, Arizona, New Mexico, Colorado, Wyoming, Alaska, and Hawaii.

The Committee has requested that the Commission furnish its report to the Committee on or before March 31, 1989.

Public Hearing

A public hearing in connection with this investigation will be held in the Hearing Room of the International Trade Commission, 500 E Street SW., Washington, DC 20436, on October 25, 1988, at 9:30 a.m. All persons shall have the right to appear by counsel or in person, to present information and to be heard. Requests to appear at the public hearing should be filed with the Secretary, U.S. International Trade Commission, 500 E Street, SW., Washington, DC 20436, not later than noon, October 18, 1988. Prehearing briefs (original and 14 copies) should be filed not later than noon, October 19, 1988. Post-hearing briefs are required by November 17, 1988.

Written Submissions

Interested persons are invited to submit written statements concerning the investigation in lieu of or in addition to appearing at the hearing. Written statements should be received by the close of business on November 17, 1988. Commercial or financial information which a submitter 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 § 201.6 of the Commission's *Rules of Practice and Procedure* (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. All submissions should be addressed to the Secretary, United States International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting our TDD terminal on (202) 252-1809.

By order of the Commission.

Kenneth R. Mason,

Secretary.

Issued: August 5, 1988.

[FR Doc. 88-18109 Filed 8-9-88; 8:45 am]

BILLING CODE 7020-02-M

INTERSTATE COMMERCE COMMISSION

[Finance Docket No. 31295]

Service on the Delaware and Hudson Railway Co.

[Directed Service Order No. 1504]

The New York, Susquehanna and Western Railway Corp.—Directed Service—the Delaware and Hudson Railway Co.; Supplemental Order No. 2

AGENCY: Interstate Commerce Commission.

ACTION: Directed Service Order No. 1504, Supplemental Order No. 2.

SUMMARY: The Commission is extending for 10 days the authority for The New York, Susquehanna and Western Railway Corporation (NYS&W) to act as a directed rail carrier without federal subsidy or compensation under 49 U.S.C. 11125 over the lines of the Delaware and Hudson Railway Company (D&H), and in doing so the use D&H equipment (under a private compensation agreement), pending its consideration of comments the Commission recently requested.

EFFECTIVE DATE: Supplemental Order No. 2 shall be effective on August 7, 1988.

FOR FURTHER INFORMATION CONTACT: Joseph H. Dettmar (202) 275-7245 or Bernard Gaillard (202) 275-7849.

(TDD for hearing impaired: (202) 275-1721)

SUPPLEMENTARY INFORMATION: In a notice served July 20, 1988 (53 FR 27773, July 22, 1988), the Commission sought comment from affected parties, including localities and States (including the D&H trustee in bankruptcy), on several issues concerning service over the D&H system. The date set for filing comments was August 1, 1988. NYS&W's authorization to provide service on the D&H system is due to expire August 7, 1988. In order to prevent interruption of rail service on the D&H system while the Commission considers the comments, NYS&W authorization to provide service will be extended for 10 days.

This notice will be served on all parties to this proceeding including those listed in our June 22, 1988 decision, as well as the trustee in bankruptcy and the U.S. District Court for the District of Delaware (Bankruptcy Filing No. 88-2427).

This action will not significantly affect either the quality of the human environment or energy conservation.

It is ordered

1. NYS&W is authorized for an additional 10 days to continue to operate D&H's lines under the conditions previously established.

2. This decision and order shall be effective on August 7, 1988.

Decided: August 4, 1988.

By the Commission, Chairman Gradison, Vice Chairman Andre, Commissioners Sterrett, Simmons, and Lamboley. Vice Chairman Andre and Commissioner Sterrett did not participate.

Noreta R. McGee,

Secretary.

[FR Doc. 88-18039 Filed 8-9-88; 8:45 am]

BILLING CODE 7035-01-M

[Docket No. AB-290 (Sub-15X)]

Exemption; Norfolk and Western Railway Co.—Abandonment Exemption—Between Connersville and Beesons, IN

Applicant has filed a notice of exemption under 49 CFR 1152 Subpart F—*Exempt Abandonments* to abandon its 4.8-mile line of railroad between milepost 0.0 near Connersville, Fayette

Appendix C

STRUCTURE OF THE WESTERN STEEL INDUSTRY, BY COMPANIES

STRUCTURE OF THE U.S. WESTERN STEEL MARKET: PRODUCERS

The steel industry is composed of integrated producers, which produce steel using blast furnaces and coke ovens, nonintegrated producers, which produce steel in electric furnaces using scrap as a feedstock, and fabricators, which purchase partially advanced steel for further processing.

Integrated Producers

There were three integrated producers located in the Western United States in 1982: Kaiser, CF&I, and US Steel's Geneva Works. The combined raw steel capacity of these producers was approximately 8 million tons. In 1988, only Geneva, with raw steelmaking capacity of 2.0 to 2.5 million tons per year, remained integrated, as Kaiser closed operations and CF&I switched to electric furnace production in 1983.

Geneva Steel

Geneva Steel, formerly USS's Geneva Works located in Provo, UT, was purchased in August 1987 by Basic Manufacturing and Technologies (BMT) after USS announced its permanent closure in April 1987. Geneva is primarily a producer of plate, but also produces hot-rolled sheet, pipe, and slab. Geneva's principal market is the Western United States, where 50 percent of its sales are consumed by the construction industry. Other markets include automotive stampers and other fabricators. Geneva has recently entered nontraditional markets in the Midwest and on the east coast, where it has been able to negotiate favorable freight rates; its sales efforts to these regions have been assisted by Mannesmann Pipe and Steel, a West German subsidiary, which has acted as its distributor. Geneva began to export in August 1988 and intends to maintain its current level of overseas shipments in order to maintain targeted production levels. 1/

Geneva presently employs approximately 2,200 workers, a decline from 7,000 workers less than a decade ago. BMT negotiated a new labor contract with the United Steelworkers of America (USW), which reduced wages by 30 percent, instituted profit sharing, and reduced work rules. Other negotiations produced special incentive power rates from Utah's major electric power utility, price reductions from Geneva's Kentucky-based coal suppliers, and favorable payment terms from other suppliers. 2/

Geneva operates four coke ovens and three blast furnaces, built during World War II, to produce molten iron which it charges with scrap into four oxygen-lanced open-hearth furnaces. Because of cost reductions and strong plate demand, Geneva posted profits substantially above the

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1/ Interview with officials of Geneva Steel, December 1988.
2/ Geneva Steel's Prehearing Brief at 5.

industry average in 1988. 1/ Geneva's management recognizes that the company's long-term competitiveness, however, will depend on modernization. Efforts to modernize have included rebuilding the open-hearth furnaces, rebuilding two blast furnaces, and purchasing a recoil line which, with the installation of an inline welder, would permit production of welded 50,000-pound bands. Geneva asserts that installation of a continuous caster, ladle metallurgy facility, new reheat furnaces, roll-bending equipment, and coilbox are under serious consideration. 2/

Nonintegrated Producers

In 1983, 10 nonintegrated producers were in the West, whereas, in 1987, only 9 existed. Among nonintegrated producers, there have been notable attempts to modernize facilities, decrease labor costs, and expand markets.

CF&I

CF&I, located in Pueblo, CO, has been a publicly held company since 1985, when Crane Co. sold its interest in CF&I after 16 years of ownership. CF&I is primarily a producer of rails and oil country tubular goods, although it produces small amounts of bar, rod, and wire products. CF&I's primary market is the West, but it sells rail as far east as Norfolk, VA, where the Burlington Northern Railway is headquartered. 3/

The company's labor force has decreased from approximately 6,000 workers in 1982 to 2,100 workers at present. Both salaried and hourly workers were subject to wage reductions in 1983 and 1986, reduction of vacations and holidays, and partial loss of medical benefits. Since 1983, capacity has decreased by more than 50 percent, from 2 million tons per year to approximately 800,000 tons per year; 4 blast furnaces, 2 basic oxygen furnaces (BOFs) and the plant's only coke battery were retired as a result of the depletion of coal and iron ore sources. CF&I has modernized by adding capacity to its two 150-ton electric furnaces and by introducing a new continuous caster. Minor modifications have been made in the finishing end of the plant. Peripheral holdings such as land, water, and coal mining rights have been sold, and the company's mining department and railway subsidiary have been closed.

CF&I, which is the only producer of long-length and standard rails and seamless oil country tubular goods west of the Mississippi River, has freight advantages over other domestic producers of rail and tubular goods. Net sales increased in 1987 relative to those in 1986 because of greater shipments of tubular goods and higher tubular good prices. In 1987, there was an operating loss of $10.5 million (4.14 percent of net sales) compared

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1/ Telephone interview with legal counsel for Geneva Steel in December 1988.
2/ Interview with officials of Geneva Steel, December 1988.
3/ Telephone interview with CF&I official in December 1988.

with a $25.9 million loss (13.12 percent of net sales) in 1986. 1/ CF&I's profitability is adversely affected by large unfunded pension liabilities, the current level of which increased as a result of the sizable labor reductions in 1981 and 1983. 2/

Seattle Steel

Seattle Steel, Inc., was established in January 1985 when Carl E. Meitzen purchased Bethlehem Steel's Seattle division. Seattle produces a number of products, including carbon and alloy bars, rebar, rounds, structural shapes, plates, and railroad products. Seattle markets its low-priced products like carbon bar and rebar in the West and markets alloy bars and structurals in Midwestern and Eastern original-equipment manufacturers (OEM) markets.

Employment at Seattle has dropped from approximately 850 workers in 1985 to 625 workers in mid-1988, and remaining employees have agreed to 25 percent pay cuts (including benefits) and substantially reduced work rules under a separately negotiated USW agreement. Seattle has spent $5 million annually on modernization, one result being the installation of a continuous billet caster. Raw steelmaking capacity has risen by 12.5 percent, from 480,000 tons per year to 540,000 tons per year, and the annual finishing capacity has remained steady at 225,000 tons of bar and 125,000 tons of structurals and flats. Seattle's excess melt capacity has led it to seek export markets for its billet.

Since 1985, significant cost reductions have increased the company's competitiveness, resulting in increased sales and decreased net losses. 3/

Oregon Steel Mills

Portland-based Oregon Steel Mills, formerly a division of Gilmore Steel Corp., was established in 1984-85 when Oregon's management purchased the mills from the Gilmore family and reorganized under an Employee Stock Ownership Plan. Oregon is primarily a producer of plate, and its principal market is the West.

Employment at Oregon's Portland facility has increased from 460 workers in 1985 to 510 workers in 1988, and Oregon's acquisition of Napa Pipe Corp., formerly a division of Kaiser, has added 100 more employees. Following a strike in 1983, Oregon's workers decertified their union in 1984, and all employees were given salaries and comparable benefits. Although Oregon retired one of its two electric furnaces, its raw steelmaking capacity has increased markedly from 250,000 tons per year to 420,000 tons per year as the remaining furnace has been modernized to

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1/ CF&I's 1987 Annual Report at 7.
2/ CF&I's 1987 Annual Report at 2.
3/ Interview with official of Seattle Steel, December 1988.

afford faster "tap-to-tap" times; Oregon's previous 13.5 heats per day has increased to 19 heats per day. Since 1985, Oregon has widened its plate mill, added a scarfing machine, expanded its slab yard capacity, and expanded its shipping bays by 25 percent.

Oregon has budgeted $25 million for capital expenditures through 1989. Since 1984, Oregon Steel's sales have grown 256 percent due to the strong plate market and the addition of Napa Pipe, and its small losses posted in the mid-1980s have been replaced by profits above the industry average. 1/

Salmon Bay and Barbary Coast

Birmingham Steel, a publicly held operator of six U.S. minimills, has two mills in the West. Salmon Bay Steel, a producer of merchant bar and rebar, was established in 1986 when Birmingham purchased Northwest Steel Rolling Mills in Seattle, WA. Barbary Coast Steel, which manufactures only rebar, was established a year later when Birmingham purchased the Emeryville, CA, site of Judson Steel.

Salmon Bay currently employs 290 workers and lists its raw steelmaking capacity as 250,000 tons per year. The company shipped 200,000 tons in 1987, a considerable increase over previous levels. 2/ No significant capital investments will be made at Salmon Bay until at least 1990, when Birmingham will consider building a larger, more modern rolling mill closer to its existing melt facility. 3/ Salmon Bay's product mix is shifting away from rebar toward merchant bar, and its market will predominantly be in the Northwest, whereas in recent years significant shipments have been made to San Francisco and as far east as Chicago. Salmon Bay's relatively low labor costs, low hydroelectric power costs, and high productivity are among its competitive strengths.

Barbary Coast presently employs 120 workers and lists the plant's raw steelmaking capacity as 220,000 tons per year. 4/ The facility achieved full capacity production in October-December 1988. As Birmingham holds only a 10-year lease on the Emeryville site, no significant modernization will be undertaken at Barbary Coast, and construction of a new mill, perhaps in Utah, is being considered. 5/ Barbary Coast's market is California, the largest rebar market in the United States. Although electricity and pollution control costs are high in Emeryville, Birmingham officials expect Barbary Coast to contribute significantly to Birmingham's 1989 sales and earnings. 6/

1/ Oregon Steel's Posthearing Brief at 4.
2/ Salmon Bay's predecessor, Northwest Steel, employed 350 workers and shipped 125,000 tons in 1985.
3/ Interview with Birmingham Steel officials, December 1988.
4/ Judson employed 200 workers and listed capacity of 160,000 tons in 1983.
5/ Interview with Birmingham Steel officials, December 1988.
6/ Birmingham Steel's 1988 Annual Report at 25.

Nucor Corporation

Nucor, a publicly held company, is the largest minimill operator in the United States. Its Plymouth, UT, facility was built in 1981 to produce angles, channels, flats, small beams, wire rod, and merchant and reinforcing bar, all of which is marketed throughout the Western region and as far east as Michigan.

Plymouth presently employs 390 workers, an increase from the 320 workers employed in the early 1980s. Raw steelmaking capacity is approximately 550,000 tons, and shipments exceed 470,000 tons, one-fifth of which is rebar. Nucor's Vulcraft division in Brigham City, UT, receives approximately 25 to 30 percent of Plymouth's products, which are fabricated into joists. Nucor is the largest and most consistently profitable mini-mill in the United States. 1/

Cascade Steel Rolling Mills

Cascade, located in McMinnville, OR, became a privately held subsidiary of Schnitzer Steel Products in 1984. Cascade produces rebar, round bar, square bar, and posts for the Western United States.

During 1983-88, employment at Cascade remained approximately the same, at 400 workers. Cascade's raw steelmaking capacity appears to have remained the same, at between 250,000 tons per year to 300,000 tons per year, although the mill's rolling capacity increased significantly, growing by nearly 90 percent, from 240,000 tons per year in 1983 to 450,000 tons per year in 1988, as a result of the construction of a new rolling facility in 1985.

Potentially important to the Western region is Cascade's intention of constructing a new melt facility, capable of producing 600,000 tons of continuously cast billets per year. It appears that Cascade will either export the billet it can not process in-house, or roll the excess billet into wire rod, of which there is no present production in the Western region.

TAMCO

TAMCO, located in Etiwanda, CA, is a joint venture between Ameron (50 percent), Tokyo Steel (25 percent), and Mitsui Trading (25 percent). Though the original intention of the venture, arranged in 1983, was to export billet to Tokyo, TAMCO currently produces rebar for the Western U.S. market alone.

TAMCO employs approximately 360 unionized workers, who have been subject to wage and pension benefit reductions since the beginning of

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1/ Prescott Ball and Turben, Inc., Portfolio Alert, Sept. 8, 1988.

operations. Raw steelmaking capacity has increased as a result of the joint venture, from 175,000 tons per year in 1983 to 300,000 tons per year in 1987. Since 1983, TAMCO has installed new rolling lines, rebuilt a reheat furnace, and added a crane to its melt shop at a cost of $10 to $12 million.

Hawaiian Western Steel

Hawaiian Western Steel is a privately held subsidiary of a Canadian holding company, Cominco. It is primarily a producer of rebar, and ships only to Hawaii. Hawaiian Western has raw steelmaking capacity of 60,000 tons, and employs 70 unionized workers.

Marathon Steel and Soule Steel

Marathon and Soule, rebar and light-structural manufacturers with combined capacity of 250,000 tons per year, closed and liquidated assets in 1985 and 1986, respectively. Marathon Corp., the parent company of Marathon Steel, indicated its action resulted from high operating costs, overcapacity in its geographical area, and competition from imports. Soule Steel cited falling demand, overcapacity in its market, and imports as factors underlying the mill's closure. 1/

Fabricators

Approximately 300 steel fabricators with diverse backgrounds and businesses exist in the West, about 40 of which are pipe and tube makers. Following are profiles of some of the larger producers.

California Steel Industries

Kaiser's Fontana, CA, plant became California Steel Industries (CSI) in 1984. This company is currently a 50/50 joint venture between Companhia Vale do Rio Doce (CVRD), a State-owned, Brazilian natural resources company, and Kawasaki Steel Corp. of Japan. CSI is primarily a hot-rolled sheet and strip producer, but also produces plate, cold-rolled sheet, and galvanized sheet for the Western region, although there are plans to export sheet to the People's Republic of China and to Australia. 2/

CSI employs approximately 850 salaried workers and has an annual finished capacity of over 1 million tons. It does not operate its basic oxygen furnace and slab caster, but rather purchases slabs, predominantly

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1/ U.S. International Trade Commission, Conditions of Competition in the Western U.S. Steel Market Between Certain Domestic and Foreign Steel Products, investigation No. 332-88, 1979.
2/ California Steel's Posthearing Brief at 2.

from Brazil; CSI is the largest purchaser of slab in the United States. 1/ Common applications for CSI's products include structurals, pipe and tube, appliances, furniture, wall panels, drums and tanks, and culverts. CSI plans to upgrade and to install entry equipment and a tension leveler on its galvanized products mill, and to install a flash welder, entry and exit equipment, and delivery tension reels on its pickle lines. 2/

CSI posted its first profit since its reconstitution in 1987, and projected profits in 1988. According to company officials, CSI's future competitiveness will depend on the extent to which it is successful in obtaining the necessary quantities and qualities of slab, domestic or foreign, needed to produce the sheets Western consumers desire.

USS-POSCO Industries

USS-POSCO Industries (UPI), formed in 1986, is a 50/50 joint venture between USX and POSCO-California Corp., an indirect subsidiary of Pohang Iron and Steel Co. of Korea. Located on the site of USX's former Pittsburg, CA, Works, UPI currently manufactures cold-rolled sheet, galvanized sheet, and tin mill products from hot bands currently provided by USX's Fairless and Gary Works and POSCO, and formerly provided by Geneva. 3/ By late 1989, UPI plans to obtain all its hot bands from POSCO. 4/ Before the formation of the joint venture, the Pittsburg plant was the finishing mill for hot bands produced by USX's Geneva Works. UPI employs approximately 1,300 workers, most of which have agreed to reductions in wages and benefits over the next 4 years. At present, UPI has an annual capacity of 1.1 million tons per year, most of which is used in applications where surface and shape specifications are not critical. After a 3-year modernization program is completed, the cost of which will exceed $350 million, capacity will increase to 1.35 million tons per year, but markets will expand significantly to include areas where surface and shape are critical. Under the modernization plan, which is to be completed in October 1989, the company's cold-rolling and annealing facilities, much of which was installed in the late 1940s and early 1950s, are being replaced in their entirety with new equipment that is being installed in close proximity to the current facilities. The new processes to be employed will enable the company to compete in markets where surface and shape are critical. Company officials indicate that the higher quality product markets have been ceded to foreign producers, primarily the Japanese, over time, and that the modernization will position the company to regain markets that have been and were being lost. In addition to the Western U.S. market, the company is also exploring exporting to Far East markets.

1/ California Steel's Posthearing Brief at 1.
2/ California Steel sales brochure at 1.
3/ Geneva Steel's Prehearing Brief at 7.
4/ USS-POSCO's Information Package to the International Trade Commission at 2.

UPI has posted healthy profits since opening in 1986, and the company had an outstanding year in 1988 as it experienced record sales in virtually every product. In order to maximize the efficiencies of its operations, UPI officials have indicated a need to use high-quality hot-rolled sheet products (i.e., bands). The company's intention is to source these bands from a new mill being built in South Korea by Pohang (one of the joint venture partners). 1/

Pinole Point Steel Company

Pinole Point, privately held by the Marwais Steel Co. since 1979, was once Bethlehem Steel's west coast continuous galvanizing plant. Pinole Point fabricates galvanized sheets and coils from full-hard, cold-rolled sheets, primarily purchased from UPI (domestic), Hoogovens (Netherlands), and BHP Trading Co. (Australia). Approximately 100 workers are employed by Pinole Point, which has a 260,000 ton capacity and hopes to ship 200,000 tons in 1988. Pinole Point markets its product to the construction, vending, and electrical equipment industries on the west coast. Pinole Point has experienced rapidly growing profits since posting a modest loss in 1983. 2/

Davis Walker Corporation

Davis Walker is the largest fabricator of carbon steel wire and wire products in the West with plants in Los Angeles, Irwindale, and Hayward, CA; Kent, WA; Vancouver, British Columbia (Canada); and Edmonton, Alberta (Canada). Davis Walker produces bright basic wire, galvanized wire, high-carbon spring wire, chain link fence, poultry netting, and stucco netting from domestically and foreign-sourced wire rod.

Davis Walker officials assert that the voluntary restraint agreements, in their current form, injure the company by limiting imports of low-carbon rimmed wire rod, from which Davis Walker draws the wire which is used in stucco netting, a product reportedly important to the company's financial solvency. As the company has not been able to purchase sufficient quantities of low-carbon rimmed wire rod from domestic sources, it has attempted to draw wire from domestically manufactured rimmed substitutes, but reports little success in these endeavors.

Although sales have been relatively steady since 1983, Davis Walker has posted losses since 1985.

1/ USS-POSCO Information Package to the International Trade Commission at 1 and 8.
2/ Interview with officials of UPI in December 1988.

APPENDIX D

IMPORTS

Table D-1
Steel products: Supply of mill products to Western region, by supplier groups, and by products, 1983-88

(In short tons)

Product category	1983	1984	1985	1986	1987	1988 1/
Imports into Western customs districts:						
Semifinished.....	124,536	129,000	871,000	900,000	908,000	978,000
Plate.....	255,643	345,833	273,935	218,553	210,706	238,401
Sheet and strip..	1,838,052	2,205,769	1,926,834	1,624,087	1,640,345	1,435,193
Wire rods.....	328,333	348,970	347,818	284,537	306,728	291,523
Rails and rail products.....	69,158	91,635	126,141	76,452	51,284	40,782
Structurals.....	477,763	710,955	746,459	537,840	515,645	554,800
Bars.....	201,151	269,827	240,862	244,620	215,322	229,658
Wire and wire products.....	223,580	281,748	252,714	248,115	257,005	237,286
Pipes and tubes..	703,705	835,709	1,076,942	715,987	738,977	727,150
Total.....	4,221,921	5,218,891	5,862,380	4,851,278	4,844,548	4,733,022
Domestic producers' shipments to the West:						
Semifinished.....	13,954	17,456	38,467	72,960	296,043	491,257
Plate.....	259,109	411,866	620,100	569,001	684,392	930,175
Sheet and strip..	1,239,348	1,608,599	1,900,024	2,742,541	3,934,996	4,594,918
Wire rods.....	76,939	101,521	111,539	190,709	138,689	121,181
Rails and rail products.....	298,325	458,740	382,536	297,196	303,671	358,696
Structurals.....	197,248	212,839	260,810	303,671	393,232	447,517
Bars.....	1,509,648	1,593,799	1,792,362	1,788,087	1,985,895	2,136,102
Wire and wire products.....	502,412	506,867	500,971	486,448	532,990	533,285
Pipes and tubes..	401,246	561,122	517,862	429,747	547,561	799,194
Total.....	4,498,229	5,472,809	6,124,671	6,633,656	7,734,008	9,122,927

Table D-1—Continued
Steel products: Supply of mill products to Western region, by supplier groups, and by products, 1983-88

(In short tons)

Product category	1983	1984	1985	1986	1987	1988 1/
Gross supply to the West:						
Semifinished.....	138,490	145,901	909,142	974,047	1,204,579	1,469,486
Plate.....	514,752	757,699	894,035	787,554	895,098	1,168,576
Sheet and strip..	3,077,400	3,814,368	3,826,858	4,366,628	5,575,341	6,030,111
Wire rods.....	405,272	450,491	459,357	475,246	445,417	412,704
Rails and rail products.....	367,483	550,375	508,677	373,648	354,955	399,478
Structurals.....	675,011	923,794	1,007,269	841,511	908,877	1,002,317
Bars.....	1,710,799	1,863,626	2,033,224	2,032,707	2,201,217	2,365,760
Wire and wire products.....	725,992	788,615	753,685	734,563	789,995	770,571
Pipes and tubes..	1,104,951	1,396,831	1,594,804	1,145,734	1,286,538	1,526,344
Total	8,720,150	10,629,700	11,970,051	11,034,934	12,152,556	13,729,949

1/ Data for 1988 estimated, based on 11 months data.

Source: Based on official statistics of the U.S. Department of Commerce and responses to questionnaires of the U.S. International Trade Commission.

Table D-2
Steel: Countries subject to VRAs, and the overall import share, 1988

Agreement and country	Quantity	Overall import share of U.S. apparent consumption, 1988 1/
	Short tons	Percent 3/
Market share agreements:		
Australia	2/	.24
Austria	2/	.23
Brazil	2/	1.42
EC	2/	5.36
Finland	2/	0.23
Japan	2/	5.93
Mexico	2/	0.42
South Africa 3/	2/	0
South Korea	2/	1.82
Spain	2/	.69
Quota agreements:		
Quota level for 1988: 4/		
Czechoslovakia	40,100	0.04
East Germany	228,500	.23
Hungary	33,300	.03
Poland	87,200	.87
People's Republic of China	77,400	.08
Portugal	29,300	.03
Romania	111,400	.11
Trinidad and Tobago	43,500	.04
Venezuela	143,900	5/ .14
Yugoslavia	20,900	0.02

Table D-2--Continued
Semifinished steel agreements:
Quota level for 1988

Australia	50,000	2/
Brazil	700,000	2/
EC	6/ 840,000	2/
Finland	15,000	2/
Japan	100,000	2/
Mexico	100,000	2/
South Africa 3/	0	2/
South Korea	50,000	2/
Spain	50,000	2/
Venezuela	71,225	2/

1/ Including semifinished steel for all countries. Does not include adjustments for overages in 1987.
2/ Not applicable.
3/ Steel imports from South Africa are reduced by the Comprehensive Anti-Apartheid Act of 1986 which embargoes certain steel products.
4/ Estimated share of apparent U.S. consumption, including semifinished steel, except as noted. Does not include adjustments for overages in 1987. Estimates based on Feb. 26, 1988, DRI forecast.
5/ Excluding semifinished steel.
6/ Includes approximately 200,000 tons, which may be imported at the discretion of the U.S. Trade Representative.

Source: Monthly Report on the Status of the Steel Industry, December 1988, USITC PUB.2141.

Table D-3
Western region imports from VRA countries, 1978-87, January-November 1987, and January-November 1988

(In short tons)

Country	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	January-November 1987	January-November 1988
Australia	97,907	95,795	94,120	94,332	82,902	118,046	136,568	133,742	138,495	147,704	142,396	226,422
Austria	6,031	3,751	1,941	5,006	3,281	3,160	24,342	52,909	3,420	5,991	5,614	4,219
Belgium and Luxemb.	182,443	164,967	169,847	151,794	140,326	75,355	123,759	193,550	176,667	123,754	119,170	89,316
Brazil	2,015	25,081	29,770	30,516	58,706	247,524	168,552	654,632	259,191	341,883	315,197	437,580
China	1,172	4,545	2,520	4,598	3,946	6,862	6,777	15,364	3,821	12,064	11,553	16,877
Czechoslovakia	3,419	84	24	2,535	5,729	6,083	22,120	14,154	6,251	4,557	4,557	712
Denmark	3,601	31	418	71	435	20	214	1,384	725	135	135	354
Finland	18	0	33	489	1,229	1,471	3,130	2,816	4,772	2,985	2,902	2,735
France	250,273	117,716	201,061	242,666	128,039	98,259	99,474	202,672	147,734	103,569	100,279	203,490
Germany, East	3	82	23	76	0	1,969	31,498	14,541	1,091	11,283	10,927	6,007
Germany, West	303,108	189,217	199,458	266,775	302,683	167,576	172,684	183,093	160,769	114,421	108,355	140,987
Greece	0	8,090	292	39	0	0	238	260	0	75	20	4
Hungary			0	182	0	0	4,996	4,704	0	0	0	0
Ireland	0	0	0	0	0	0	0	390	221	0	0	0
Italy	152,603	6,185	463	13,482	15,259	21,188	3,816	7,637	5,681	6,915	5,740	2,582
Japan	2,415,656	2,353,654	2,464,865	2,458,090	2,100,145	1,867,741	2,422,885	2,450,316	1,582,356	1,535,808	1,412,402	1,307,253
Korea, South	516,246	387,143	516,913	514,809	456,886	821,366	1,066,601	953,042	781,628	797,030	726,902	732,670
Mexico	19,997	6,939	1,092	986	25,522	182,113	185,029	46,539	75,328	60,348	51,151	56,662
Netherlands	240	11,419	19,065	58,136	113,731	103,018	107,381	48,139	89,175	82,939	71,194	37,846
Poland	986	47	95	80	97	0	768	480	400	602	602	798
Portugal	0	0	11	14	19	29	28	21,366	34	103	65	11
Republic of South.	166,661	84,792	98,319	89,937	170,506	81,063	85,198	120,782	136,342	22,729	22,729	141
Romania	9,876	227	893	27,937	135	0	16,407	22,388	0	0	0	0
Spain	23,965	18,755	24,932	28,067	33,416	47,817	111,798	46,941	75,659	55,480	49,550	39,266
Trinidad and Tobago	0	0	0	0	0	48,856	35,369	26,858	2,990	20,429	16,753	3,328
United Kingdom	60,725	59,621	47,579	87,591	101,547	61,721	45,596	97,673	87,253	61,355	57,842	41,921
Venezuela	0	0	0	29,524	970	920	26,926	111,157	5,579	56,699	50,461	48,801
Yugoslavia	1,260	20	0	0	2	19	230	77	557	970	970	3
Unspecified	0	0	0	0	0	0	60,000	16,000	436,000	404,000	371,000	102,000
Total VRA imports	4,218,205	3,538,161	3,873,734	4,107,732	3,745,511	3,962,176	4,962,384	5,443,606	4,182,139	3,973,826	3,666,471	3,501,982
Total imports	4,482,044	3,714,006	4,007,240	4,246,197	3,991,579	4,221,923	5,218,892	5,862,411	4,851,297	4,844,548	4,455,364	4,360,645
Percent VRA imports	94	95	97	97	94	94	95	93	86	82	82	80
Percent non-VRA imports	6	5	3	3	6	6	5	7	14	20	18	20

Source: Based on official statistics of the U.S. Department of Commerce and questionnaires of the U.S. International Trade Commission.

Table D-4
Import shares, by quantity, of the top five sources (1987) in Western region, by products, 1983-87, January-November 1987, and January-November 1988

Item	1983	1984	1985	1986	1987	Jan.-Nov. 1987	Jan.-Nov. 1988
	Percent						
Semifinished:							
Brazil.....	0	70	70	47	52	51	45
Canada.....	0	3	0	11	9	8	3
Venezuela.....	0	0	5	0	8	8	6
Netherlands....	8	0	0	3	7	8	0
New Zealand....	0	0	0	0	6	6	6
Total.....	8	73	75	61	82	81	60
Plates:							
Korea.....	18	23	24	27	25	26	23
Canada.....	0	2	2	3	16	16	7
Japan.....	12	16	14	10	11	11	12
Brazil.....	27	1	4	4	9	9	21
Indonesia.....	0	0	0	1	9	5	10
Total.....	57	42	44	45	70	67	73
Sheet and strip:							
Japan.....	56	53	55	51	48	47	48
Korea.....	14	17	17	20	20	20	18
Australia.....	5	5	5	7	7	7	10
W. Germany.....	4	4	6	5	5	5	5
Brazil.....	9	5	1	1	4	4	2
Total.....	88	84	84	84	84	83	83
Wire rods:							
Indonesia.....	0	0	2	9	15	17	17
Mexico.....	28	35	11	19	15	14	16
Malaysia.....	0	0	1	4	12	13	1
Spain.....	12	17	4	10	10	9	8
Japan.....	16	14	17	11	8	9	9
Total.....	56	66	35	53	60	62	51
Rails and railway products:							
Japan.....	83	80	76	51	59	64	79
W. Germany.....	13	12	18	45	15	17	10
Sweden.....	0	0	0	0	14	8	0
Belgium/Lux....	3	1	2	1	8	8	2
Korea.....	0	1	3	1	4	3	9
Total.....	99	94	99	98	100	100	100

Table D-4—Continued
Import shares, by quantity, of the top five sources (1987) in Western region, by products, 1983-87, January-November 1987, and January-November 1988

	1983	1984	1985	1986	1987	Jan.-Nov. 1987	Jan.-Nov. 1988
	Percent						
Structural shapes:							
Japan	58	62	61	44	53	52	55
Korea	10	12	11	6	13	12	17
Belgium/Lux.	7	9	11	16	9	10	8
U.K.	10	5	9	11	8	9	6
Spain	1	1	1	5	3	4	3
Total	86	89	93	82	86	87	89
Bars:							
Japan	43	43	45	27	32	31	20
Korea	26	32	32	24	20	20	29
Indonesia	0	0	0	0	12	12	23
Taiwan	8	4	9	32	12	12	9
France	1	2	2	4	3	3	3
Total	78	81	88	87	79	78	84
Wire and wire products:							
Canada	14	14	20	31	27	27	35
Korea	38	43	36	26	25	25	27
Japan	34	28	22	15	11	11	5
Taiwan	0	1	2	13	10	10	4
Belgium/Lux.	1	2	3	3	5	5	6
Total	87	88	83	88	78	78	77
Pipe and tube:							
Japan	37	51	54	42	41	41	37
Korea	46	37	28	31	29	30	32
Thailand	0	0	1	3	8	8	8
Taiwan	13	2	3	11	6	6	6
Singapore	0	0	1	3	4	4	5
Total	96	90	87	90	88	89	88
All products:							
Japan	44	47	42	36	35	35	31
Korea	19	21	16	18	18	18	17
Brazil	6	3	11	6	8	8	10
Canada	1	1	1	4	4	4	3
Taiwan	3	2	2	6	4	4	3
Total	73	74	72	70	69	69	64

Source: Based on official statistics of the U.S. Department of Commerce.

Table D-5
Steel: Western U.S. steel imports

Product	1983	1984	1985	1986	1987	January-November-- 1987	1988
	Quantity (1,000 tons)						
Semifinished.....	125	128	871	901	909	844	917
Plates.....	256	346	274	219	211	189	214
Sheet and strip...	1,838	2,206	1,927	1,624	1,640	1,520	1,330
Wire rods.....	328	349	348	285	307	272	258
Rails and rail-way products....	69	92	126	76	51	47	37
Structural shapes.....	478	711	746	538	516	474	510
Bars.....	201	270	241	245	215	203	217
Wire and wire products.....	224	282	253	248	257	237	219
Pipes and tubes...	704	836	1,077	716	739	668	657
Total.....	4,222	5,219	5,862	4,851	4,845	4,454	4,359
	Value (1,000 dollars)						
Semifinished.....	27,187	29,660	147,550	144,060	151,790	141,830	204,580
Plates.....	68,785	108,080	85,362	65,152	74,653	67,100	89,543
Sheet and strip...	706,764	899,136	808,980	670,630	729,139	674,757	670,615
Wire rods.....	84,888	92,912	93,818	82,345	85,533	75,839	84,768
Rails and rail-way products....	30,912	31,924	50,144	30,252	18,018	16,617	16,869
Structural shapes.....	161,346	244,964	264,281	209,901	197,373	180,808	225,517
Bars.....	75,660	97,877	93,927	89,511	142,101	136,450	89,638
Wire and wire products.....	126,696	159,916	143,984	159,884	158,962	146,773	140,674
Pipes and tubes...	268,940	270,068	503,008	326,027	333,451	297,812	367,401
Total.....	1,551,178	1,934,537	2,191,084	1,777,762	1,891,020	1,737,986	1,889,615

Source: Based on official statistics of the U.S. Department of Commerce and questionnaires of the U.S. International Trade Commission.

Appendix E

MEASURES IMPLEMENTED BY THE U.S. GOVERNMENT THAT HAVE AFFECTED IMPORTS

Stainless and Alloy Tool Steel, 1976-80

On July 16, 1975, the Tool and Stainless Steel Industry Committee for Import Relief and the United States Steelworkers of America, filed a section 201 petition on stainless steel and alloy tool steel. In January 1976, the Commission made an affirmative injury determination with respect to imports of bars, wire rods, and plates, sheets and strip, not cut, notpressed, and not stamped to nonrectangular shape, of stainless or alloy tool steel. At the same time, a negative injury determination was made with respect to imports of ingots, blooms, billets, slabs, and sheet bars of stainless steel or alloy tool steel. Following this determination, but prior to the Commission's final report to the President, Japan negotiated an orderly marketing agreement (OMA) with the United States under which Japanese exports of stainless steel and alloy tool steel to the U.S. market were subject to annual restraints for the 3-year period beginning June 14, 1976, and ending June 13, 1979.

In its final report to the President, 1/ transmitted in January 1976, the Commission recommended that quotas be imposed for a 3-year period on four products of stainless or alloy tool steel: sheets and strip; plate; bar; and rod. On June 11, 1976, the President issued a proclamation imposing import quotas for the period June 1976 to June 1979. The quotas were on a trading area or country-by-country basis with respect to the larger suppliers.

On October 14, 1976, the Commission received a request from the USTR that a section 203 investigation be conducted on terminating in part the relief imposed under the recent 201 decision on certain stainless steel and alloy tool steel (commonly known as bearing steel). Under section 203, the Commission advises the President of its judgment as to the probable economic effect on the relevant industry of extending, reducing, or terminating the existing import relief. On February 14, 1977, the Commission advised the President that the effect of such termination would be negligible, and on June 15, 1977, the Presidewnt terminated the quantitative restrictions on the steel. 2/

On June 19, 1977, the Commission instituted a second 203 investigation on stainless steel and alloy tool steel following a request from the USTR. On October 14, 1977, the Commission advised the President that termination or reduction of the relief (except for chipper knife or bandsaw steel) could have a serious economic effect. 3/ On April 5, 1978, the President modified the import relief so as to exclude chipper knife steel and bandsaw steel from the quota on alloy tool steel. The quotas

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1/ Stainless Steel and Alloy Tool Steel: Report to the President on Investigation No. TA-201-5. . . ,USITC Publication 756, January 1976.
2/ Certain Alloy Tool Steel: Report to the President on Investigation No. TA-203-2. . . , USITC Publication 805, February 1977.
3// Stainless Steel and Alloy Tool Steel: Report to the President on Investigation No. TA-203-3. . . , USITC Publication 538, October 1977.

applicable to the remaining articles from the primary sources of alloy tool steel were then reduced because of the change in quota coverage.

On December 11, 1978, following receipt of a petition on November 30, 1978, filed by the Tool and Stainless Steel Industry Committee and the United Steelworkers of America, the Commission instituted a 203 investigation to assess the probable economic effect on the domestic industry of the termination of import relief in effect on stainless steel and alloy tool steel. Import relief was scheduled to terminate on July 13, 1979, unless extended by the President. On April 24, 1979, the Commission advised the President that termination would have little if any adverse impact on the domestic industry, though two Commissioners advised that termination would have a serious economic effect. 1/ On June 12, 1979, the President extended the terporary import relief measures for 8 months, to February 13, 1980.

Trigger Price Mechanism (TPM) 1978-1982

In 1975, a global recession resulted in lower demand for steel worldwide as well as in the United States. Consequently, the U.S. steel industry experienced a drop in output and capacity utilization. As world demand declined, import pressure increased in the U.S. market, where import penetration rose from 13 percent in 1973-74 to 17.8 percent in 1977. In response to a number of antidumping petitions against Japanese and European exporters, the TPM was implemented during 1978 as a system based on import reference prices ("trigger prices"), allowing the immediate initiation of antidumping investigations against imports entering the United States at prices below the established floor. The trigger prices were based on Japanese production costs (Japan was acknowledged at that time as the world's low-cost producer) plus an 8-percent profit margin; the prices were subject to quarterly revisions in accordance with changes in Japanese production costs and exchange-rate fluctuations.

The purpose of the TPM program was to limit the importation of steel being sold in the United States at less-than-fair value (LTFV) (i.e., dumped). As the system was based on Japanese production costs, it allowed other higher cost producers to continue selling at less than fair value without being subject to dumping complaints. 2/ The effect of the measure was to equalize the terms of entry for all steel import sources. The TPM therefore had the potential to result in significant trade shifts and entry into the market by new sources. However, a shift in the regional composition of imports was not apparent during the period that TPMs were in place (1978-81); Western imports accounted for 21 percent of national imports in both 1978 and 1981, after having risen briefly to 26 percent in

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1/ Stainless Steel and Alloy Tool Steel: Report to the President on Investigation No.TA-203-5. . . , USITC Publication 968, April 1979.
2/ U.S. Government officials indicated that the filing of dumping complaints in all likelihood would lead to a suspending of the TPM in light of the resources which would be required to process the cases.

1980. In addition, imports into the West decreased 15 percent from almost 4.5 million to just under 4 million tons.

U.S. producers supported the TPM until March 1980, at which time they filed trade suits against steel producers in seven European countries, an action which led to the immediate suspension of the TPM. In October 1980, the suits were withdrawn and trigger prices were reimposed with some modifications, including changes in the methods for reflecting dollar/yen exchange rate movements. In addition, a surge provision was included for imports of carbon steel products, whereby significant increases in imports of a product from a country could trigger a self-initiated antidumping or countervailing duty investigation by the U.S. Government.

In 1981, as the U.S. dollar started to appreciate, steel imports rose steadily. In January 1982, domestic producers filed numerous antidumping and countervailing duty suits. In response, the administration abolished the trigger price system for virtually all products and processed the complaints. Those filed against EC producers were ultimately settled through the negotiation of an import restraint agreement (hereafter "VRA").

U.S.-EC Steel VRAs, 1982-85

As indicated above, in January 1982, the domestic industry filed a number of antidumping and countervailing cases covering 20 percent of the 1981 total U.S. carbon steel imports. In an attempt to settle the suits against European producers, the United States negotiated an arrangement which went into effect in November 1982. Originally set to expire in December 1985, the arrangement has since been modified and extended through September 1989. Under the arrangement, the EC agreed to limit exports of 10 carbon steel products to a fixed percentage of the projected U.S. market, ranging from 2.2 percent for tin plate to 21.5 percent for sheet piling. The 10 products involved accounted for about 64 percent of total U.S. steel imports from the EC in 1982. 1/ The EC agreed to the restraints in return for the withdrawal of steel trade cases filed against EC producers; any new proceeding with regard to the covered products constitutes grounds for terminating all or parts of the arrangement.

The reduction in the EC share of U.S. imports, although influenced by the VRAs, also reflected a growing diversification of imports from traditional sources such as the EC, Canada, and Japan. Imports of steel mill products into the United States from sources other than these three areas (principally Brazil, Spain, and Korea) rose from 20-24 percent of all U.S. imports in 1978-82 to close to 40 percent in 1984. 2/ Reductions in imports resulting from the VRA were therefore more than offset by increases from other suppliers. This upsurge in imports, largely from developing countries, is indicative of the ongoing shift in global steel production

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1/ USITC, Summary of Trade and Tariff Information, Iron and Steel, January 1985, p. 9.
2/ American Iron and Steel Institute, 1982, 1985 Annual Statistical Report.

capacity away from traditional regions. It also reflects the fact that, after 1980, economic conditions in the U.S. market were favorable to increased foreign competition: the dollar was appreciating and, as import penetration increased, low operating rates were pushing the costs of U.S. producers upwards relative to foreign manufacturers. 1/

Antidumping and Countervailing Duty Cases

Steel products have accounted for a significant share of the antidumping (AD) and countervailing duty (CVD) cases filed by the U.S. industry with the Department of Commerce and the International Trade Commission. Since 1979, 194 cases alleging less-than-fair-value sales and 207 cases alleging subsidized production of imported steel products have been filed by U.S. steel producers. The bulk of these cases were filed during 1982-86 and targeted countries with which VRAs were subsequently negotiated.

Specialty Steel

On July 19, 1983, the President announced his decision to grant import relief to the specialty steel industry for a period of 4 years (48 Federal Register 33233). The relief was scheduled to expire on July 19, 1987. Under the relief, quotas were put on imports of stainless steel bars, stainless steel wire rods, and certain alloy tool steel products; increased duties were imposed on stainless steel plates and stainless steel sheets and strip. On July 16, 1987, the President announced his decision to extend the import relief in the form currently in effect for a period from July 20, 1987 through September 30, 1989. Under the steel VRAs, which are discussed below, in return for their agreement to limit exports of stainless steel plates and sheets and strip, the VRA countries were exempted from having to pay additional duties (with the exception of Finland, whose VRA does not include stainless steel flat-rolled products). Quotas were unaffected by the VRAs for all countries except the EC-10, which negotiated limits on rods, bars, and alloy tool steel as part of its VRA; Brazil, whose VRA now includes the specialty steel products subject to quotas; and Austria, which included alloy tool steel in its VRA.

Background of the Current VRAs

On September 18, 1984, the President determined, under section 202(b)(1) of the Trade Act of 1974, that taking "escape clause" action was not in the national economic interest (49 Federal Register 36813). The decision followed an investigation conducted by the Commission in which

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1/ G.C. Hufbauer, D.T. Berliner, K.A. Elliott, Trade Protection in the United States, 31 Case Studies, Institute for International Economics, Washington, DC, 1986, p. 171.

imports of certain steel products 1/ were found to be a substantial cause of serious injury, or threat thereof, to certain domestic industries (investigation No. TA-201-51). At the same time, however, the President announced a nine-point policy to address the concerns of the industry. Under this policy, the President directed the United States Trade Representative to negotiate voluntary restraint arrangements to cover a 5-year period (from Oct. 1, 1984, through Sept. 30, 1989) with countries whose exports to the United States had increased significantly in recent years because of an unfair surge in imports. These measures were expected to return the share of imports in the U.S. market to a more normal level of approximately 18.5 percent, excluding semifinished steel (which, subsequent administration statements indicate, would be limited to about 1.7 million tons per year).

Current Status of VRAs

To date VRAs have been negotiated with 19 countries and the EC (excluding Portugal and Spain, which negotiated separate agreements). The agreements have taken the form of market share arrangements and quotas, or a combination thereof. The agreements are tailored to each country, with considerable variation in the number of individual product categories subject to limitation. A list of countries subject to the VRAs and estimates of their respective overall limitations on a market share basis for 1988 is contained in table D-2.

1/ Affirmative decisions were rendered in the case of semifinished steel, plates, sheets and strip, wire and wire products, and structural shapes and units. Negative determinations were rendered in the case of wire rod, railway type products, bars, and pipes and tubes.

APPENDIX F

DELIVERED PRICES, MARKET SHARES, AND TRANSPORTATION COSTS

Delivered Prices, Market Shares, and Transportation Costs

This appendix contains a stylized model that suggests why delivered prices of imported and domestic steel in the Western States might well vary from those charged in the Eastern or Midwestern States. Suppose that delivered steel prices equal ex-factory prices plus transportation costs, and that transportation costs are proportional to the distance between factory and customer. Suppose further that there are two producers, Asia, and Eastern United States. Finally, suppose that customers are located continuously on a line between the two producers, which are located 15,000 miles apart. Delivered prices of Eastern and Asian steel to customers at any specified location may be found by referring to a diagram such as figure F-1.

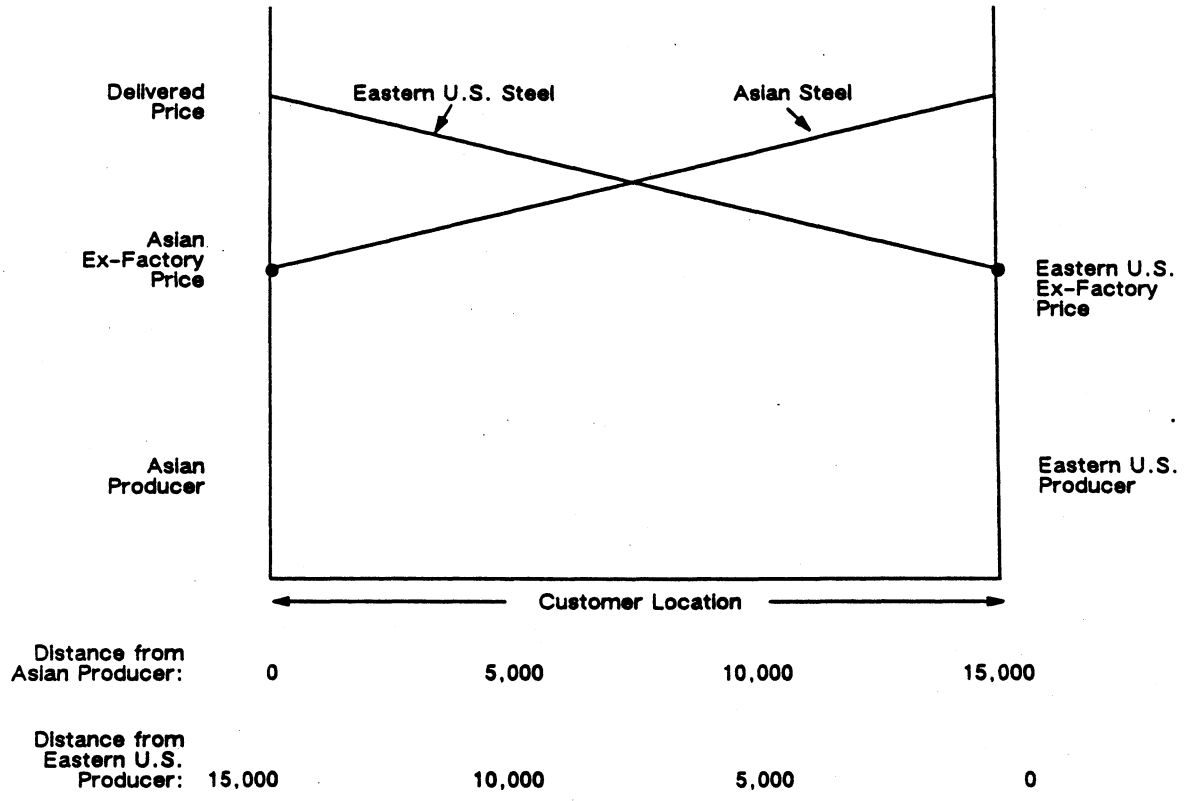
Notice that the ratio of the delivered price of Asian steel to the price of steel from the Eastern United States is higher for customers further from Asia and closer to the Eastern United States.

If Eastern U.S. and Asian steel are imperfect substitutes for each other, consumers who face a higher price ratio of Asian to Eastern U.S. steel will consume a smaller share of Asian steel. Thus, the market share of the Eastern United States producer will be higher in the Eastern United States than in the Western United States (i.e., closer, rather than farther, from the Eastern producer).

Nonetheless, the prices paid by consumers at all locations are linked to each other by transportation cost differences. Prices net of cost differences are equal. In this sense, there is only one market for steel.

Figure F-1

Delivered prices based on customer location



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

Appendix G

FACTORS INFLUENCING FREIGHT RATES AND THE MODE OF TRANSPORT SELECTED

FACTORS THAT INFLUENCE FREIGHT RATES AND THE MODE OF TRANSPORT SELECTED

The type, size, and/or weight of a product may often dictate the mode of transport selected. Both type of product and mode selected have some effect on the freight rates available, as does shipment size. Examples of factors that affect freight rates are as follows:

-Smaller and/or specialty products often cost more to ship than primary steel products because order and shipment size are often small.

-Shipping costs also vary based on the type of railroad and other equipment necessary to transport the product. Semifinished steel (such as coils, rods, or billets) move via rail gondola, flatcar, flatbed truck, or barge. Further advanced products such as nails, wire, and fence move via rail boxcar, piggyback, or in van-type trucks. Different types of equipment are priced differently, and may be handled differently; for instance, the typical flatbed semitrailer that hauls steel coils is too heavy, too specialized with regard to construction, and too expensive to be loaded on a piggyback car. 1/

-The value of a product may affect the freight rate; for example, hot-rolled plates are shipped at lower rates than brass plates, reflecting the higher intrinsic value of the material. 2/

-Some wire products are very light, so the shipping cost per ton may be quite high, reflecting a higher number of truckloads necessary for a shipment.

-The length of structural steel or pipe may affect transport mode and/or freight rates available. For instance, trucks carry a maximum 45 foot length of structural steel, while rail shipment accommodates up to 65 feet at no extra cost (but would take longer for shipment.) Pipe (conduit) 10 foot lengths or less can be loaded in boxcars at lower rates than longer pipe, which must be transported by flatcar. 3/

1/ "The Case for Coiled Steel: New Intermodal Markets," Intermodal Age, November-December 1988, p. 18.
2/ Information submitted in response to questionnaires of the U.S. International Trade Commission.
3/ Information submitted in response to questionnaires of the U.S. International Trade Commission.

Appendix H

COMPARATIVE COSTS FOR STEEL PRODUCTION

Table H-1
Steelmaking cost comparisons per metric ton, as of November 1988

Item	United States 1/	Japan	West Germany	United Kingdom	France	Canada	South Korea	Taiwan	Brazil	U.S.S.R. 2/
Composite cost:										
Labor:										
MH/metric ton..	6.3	6.8	6.5	6.5	6.5	7.0	8.5	9.0	14.5	14.5
Emp. Cost/ hour.....	$25.4	$22.0	$19.6	$16.0	$19.3	$21.7	$6.0	$8.0	$3.5	$3.8
Labor cost.....	$160	$150	$127	$104	$125	$152	$51	$72	$51	$55
Material costs.....	$291	$297	$288	$295	$280	$278	$272	$275	$241	$300
Operating costs.....	$451	$447	$415	$399	$405	$430	$323	$347	$292	$355
Depreciation expense.....	$23	$80	$42	$20	$32	$25	$80	$65	$85	$44
Interest expense.....	$10	$25	$16	$1	$17	$15	$15	$10	$45	3/
Pretax costs.....	$484	$552	$473	$420	$454	$470	$418	$422	$422	$399

1/ Cost estimates are for an integrated mill. A typical minimill merchant bar producer has estimated total pretax costs of $295 per metric ton; Nucor thin slab mill has estimated total pretax costs of $409.
2/ The U.S.S.R. facility is Novolipetsk, which continuously casts 100 percent of its production. This is the best flat-rolling facility in the Soviet Union.
3/ Not available.

Source: World Steel Dynamics, Steelquake: West Coast Style.

H-2

Appendix I

STATISTICAL TABLES, STEEL EXPORTS AND EXPORT CEILINGS NEGOTIATED UNDER THE VRAs

Table I-1
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1987

Category	Total	Final export ceiling	Share of export ceiling filled
	------Metric tons-------		Percent
Australia:			
Semifinished	49,189	46,866	104.96
Sheet and strip	132,718	146,089	90.85
Wire rods	5,276	5,282	99.89
Wire and wire products	2,637	2,641	99.85
Pipes and tubes	15,135	16,521	91.61
Total	204,955	217,399	94.28
Austria:			
Sheet and strip	95,274	117,375	81.17
Bars	2,216	2,131	103.99
Wire rods	597	5,122	11.66
Pipes and tubes	25,252	35,403	71.33
Total	123,339	160,031	77.07
Finland:			
Semifinished	12,653	13,608	92.98
Plate	51,003	50,215	101.57
Sheet and strip	93,888	97,063	96.73
Bars	1,480	1,784	82.96
Wire rods	3,452	4,164	82.90
Pipes and tubes	4,832	5,163	93.59
Total	167,307	171,997	97.27

Table I-1--Continued
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1987

Category	Total	Final export ceiling	Share of export ceiling filled
	---------Metric tons---------		Percent
Japan:			
Semifinished	83,876	95,683	87.66
Plate	20,353	23,512	86.56
Sheet and strip	2,342,048	2,549,497	91.86
Bars	109,563	184,231	59.47
Wire rods	236,357	297,732	79.39
Wire and wire products	106,466	174,796	60.91
Structural shapes	569,790	681,545	83.60
Rails and rail products	57,869	70,454	82.14
Pipes and tubes	635,980	680,169	93.50
Total	4,167,472	4,757,619	87.60
Korea:			
Semifinished	24,622	24,632	99.96
Plate	39,946	39,857	100.22
Sheet and strip	575,511	580,402	99.16
Bars	53,797	61,597	87.34
Wire and wire products	208,711	215,269	96.95
Structural shapes	139,019	143,217	97.07
Rails and rail products	3,406	3,500	97.31
Pipes and tubes	400,018	395,334	101.18
Total	1,445,030	1,463,808	98.72
Mexico:			
Semifinished	60,599	113,623	53.33
Plate	10,779	11,750	91.74
Sheet and strip	62,016	57,326	108.18
Bars	13,515	12,036	112.29
Wire rods	48,998	53,978	90.77
Wire and wire products	12,099	12,847	94.18
Structural shapes	17,619	17,235	102.23
Pipes and tubes	86,365	80,167	107.73
Total	311,990	358,962	86.91

Table I-1--Continued
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1987

Category	Total	Final export ceiling	Share of export ceiling filled
	------Metric tons-------		Percent
Spain:			
Semifinished	38,701	48,989	79.00
Plates	46,011	44,279	103.91
Sheet and strip	115,732	155,850	74.26
Bars	33,167	45,128	73.50
Wire rods	42,499	48,435	87.74
Wire and wire products	20,893	34,938	59.80
Structural shapes	151,781	155,085	97.87
Pipes and tubes	28,644	46,338	61.82
Total	477,428	579,042	82.45
Brazil:			
Semifinished	728,485	652,468	111.65
Plates	33,609	32,680	102.84
Sheet and strip	314,641	325,771	96.58
Bars	67,053	70,641	94.92
Wire rods	53,721	53,719	100.00
Wire and wire products	26,220	27,814	94.27
Structural shapes	25,975	26,755	97.08
Pipes and tubes	64,946	66,188	98.12
Total	1,314,650	1,256,036	104.67
Eastern European Countries, Venezuela, Portugal, China, Trinidad and Tobago:			
Semifinished	81,748	91,564	89.28
Plates	110,020	113,552	96.89
Sheet and strip	216,335	232,166	93.18
Bars	12,398	12,273	101.02
Wire rods	88,439	77,894	113.54
Wire and wire products	56,306	55,671	101.14
Structural shapes	16,507	16,119	102.41
Pipes and tubes	63,679	61,954	102.78
Unspecified 1/	103,968	130,112	79.91
Total	749,400	791,305	94.70

See footnotes at end of table.

Table I-1--Continued
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1987

Category	Total	Final export ceiling	Share of export ceiling filled
	---------Metric tons---------		Percent
European Communities:			
Semifinished	587,293	585,771	100.26
Plates	233,037	230,075	101.29
Sheet and strip	2,236,084	2,260,078	98.94
Bars	191,426	217,922	87.84
Wire rods	221,847	230,016	96.45
Wire and wire products	191,017	218,897	87.26
Structural shapes	609,845	603,958	100.97
Rails and rail products	46,570	49,429	94.22
Pipes and tubes	359,581	384,852	93.43
Total	4,676,700	4,780,998	97.82

1/ Quota products which could not be assigned to any specific product group.

Source: Calculated by the staff of the U.S. International Trade Commission from U.S. Department of Commerce, International Trade Administration data.

Table I-2
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1988

Category	Total 1/	Preliminary export ceiling	Share of export ceiling filled 2/
	Metric tons		Percent
Australia:			
Semifinished	13,094	43,037	30.42
Sheet and strip	106,972	172,987	61.84
Wire rods	4,092	5,951	68.76
Wire and wire products	2,048	2,975	68.84
Pipes and tubes	13,257	17,814	74.42
Total	139,463	242,764	57.45
Austria:			
Sheet and strip	80,191	159,856	50.16
Bars	2,279	3,075	74.11
Wire rods	416	3,192	13.03
Pipes and tubes	24,663	55,063	44.79
Total	107,549	221,186	48.62
Finland:			
Semifinished	2,938	14,563	20.17
Plate	65,216	76,904	84.80
Sheet and strip	77,147	117,194	65.83
Bars	1,600	2,341	68.35
Wire rods	3,736	5,463	68.39
Pipes and tubes	5,527	6,883	80.30
Total	156,164	223,348	69.92

See footnotes at end of table.

Table I-2--Continued
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1988

Category	Total 1/	Preliminary export ceiling	Share of export ceiling filled 2/
	Metric tons		Percent
Japan:			
Semifinished	68,927	98,374	70.07
Plate	18,724	36,004	52.01
Sheet and strip	1,632,450	3,005,054	54.32
Bars	53,761	212,518	25.30
Wire rods	177,275	329,841	53.75
Wire and wire products	60,051	181,780	33.03
Structural shapes	456,559	835,662	54.63
Rails and rail products	59,797	91,619	65.27
Pipes and tubes	527,489	913,025	57.77
Total	3,055,033	5,703,877	53.56
Korea:			
Semifinished	27,696	45,370	61.04
Plate	32,019	58,735	54.51
Sheet and strip	334,671	677,439	49.40
Bars	42,697	81,475	52.41
Wire and wire products	130,307	232,670	56.01
Structural shapes	105,491	163,165	64.65
Rails and rail products	2,747	3,594	76.43
Pipes and tubes	265,023	497,878	53.23
Total	940,651	1,760,326	53.44
Mexico:			
Semifinished	51,403	121,767	42.21
Plate	15,241	20,350	74.89
Sheet and strip	59,716	69,225	86.26
Bars	15,021	18,109	82.95
Wire rods	45,479	70,015	64.96
Wire and wire products	19,308	19,911	96.97
Structural shapes	20,922	23,370	89.53
Pipes and tubes	91,591	108,376	84.51
Total	318,681	451,123	70.64

See footnotes at end of table.

Table I-2--Continued
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1988

Category	Total 1/	Preliminary export ceiling	Share of export ceiling filled 2/
	Metric tons		Percent
Spain:			
Semifinished	26,257	49,279	53.28
Plates	48,208	67,797	71.11
Sheet and strip	85,635	180,800	47.36
Bars	24,066	50,609	47.55
Wire rods	30,703	55,998	54.83
Wire and wire products	11,724	35,426	33.09
Structural shapes	146,693	189,824	77.28
Pipes and tubes	28,569	62,003	46.08
Total	401,855	691,736	58.09
Brazil:			
Semifinished	413,116	559,023	73.90
Plates	17,578	50,681	34.68
Sheet and strip	201,835	369,320	54.65
Bars	45,212	78,416	57.66
Wire rods	32,353	54,187	59.71
Wire and wire products	18,458	24,575	75.11
Structural shapes	10,084	22,123	45.58
Pipes and tubes	55,641	80,172	69.40
Total	794,277	1,238,497	64.13
Eastern European Countries, China, & Trinidad:			
Semifinished	45,027	67,422	66.78
Plates	93,575	111,585	83.86
Sheet and strip	122,105	206,740	59.06
Bars	9,443	13,490	70.00
Wire rods	43,600	56,186	77.60
Wire and wire products	39,206	58,873	66.59
Structural shapes	11,908	11,850	100.49
Pipes and tubes	35,668	45,781	77.91
Unspecified 3/	65,091	139,040	46.81
Total	465,623	691,916	67.29

See footnotes at end of table.

Table I-2--Continued
Steel exports, export ceilings negotiated under the VRAs, and the share of the export ceiling filled, by exporting countries and product categories, 1988

Category	Total 1/	Preliminary export ceiling	Share of export ceiling filled 2/
	Metric tons		Percent
European Communities:			
Semifinished	477,372	579,080	82.44
Plates	204,459	318,956	64.10
Sheet and strip	1,941,238	2,622,787	74.01
Bars	192,990	301,344	64.04
Wire rods	166,768	257,674	64.72
Wire and wire products	162,539	233,798	69.52
Structural shapes	593,438	772,461	76.82
Rails and rail products	31,530	61,513	51.26
Pipes and tubes	353,225	523,379	67.49
Total	4,123,559	5,670,992	72.71

1/ Data for 1988 are incomplete and will be revised upward as additional export certificates are processed by the U.S. Department of Commerce.
2/ Final 1988 export data are expected to result in a higher quota fill rate.
3/ Quota products which could not be assigned to any specific product group.

Source: Calculated by the staff of the U.S. International Trade Commission from U.S. Department of Commerce, International Trade Administration data.

Appendix J

VRA EFFECTS ON NONSTEEL CONSUMING INDUSTRIES

VRA Effects on Nonsteel Consuming Industries

A binding quota situation under the VRAs also affects consumers of products other than steel or steel-using products by causing the exchange rate to appreciate. This appreciation reduces the domestic price of nonprotected tradeable products relative to the price of nontradeable products (including most services, particularly labor services), and the price of nontradeables relative to the price of protected import-substitute products. Thus, for example, consumers whose income is the direct result of labor, but who consume disproportionate volumes of nonprotected tradeable goods, will benefit from the appreciation. By contrast, consumers who earn their income through labor, but who consume disproportionate volumes of protected imports (steel, and steel-using products without readily available importable foreign substitutes) will suffer from the exchange-rate appreciation. Although the effect of binding VRAs on exchange rates will be much smaller than their direct effect on the relative price of steel, the total impact of the exchange-rate change may well be comparable to that of the direct effect since the exchange-rate effect applies to a much larger base, altering the relative prices of all tradeable goods to nontradeable goods. 1/

1/ Donald Rousslang and John Suomela consider the exchange rate effects of trade barriers (in their case, tariffs), in Calculating the Consumer and Net Welfare Costs of Import Relief, ITC Staff Research Study 15, July 1985, and observe that, "The total terms-of-trade [exchange rate] effects are often significant relative to the other welfare effects of a tariff and thus should not be overlooked in the welfare calculations." pp. 38-9.

APPENDIX K

INTERTEMPORALLY BINDING VRAs

Intertemporally Binding VRAs

This appendix contains a stylized model that illustrates how VRAs may increase the price of steel even if imports fall short of annual export ceilings. This may happen if unused export rights are at least partially carriedover and used to augment subsequent annual quotas.

If exports fall short of annual VRA quota ceilings, a partial or full carryover of unused export rights may be negotiated. If carried-over rights are demanded for future use, current rights become valuable assets, even if the quota is not filled in the current period. The opportunity cost of an exporter using a current right is part of the cost of exporting, and will be reflected as a price premium in the export price of steel. This means a quota can raise the price in the current period, even if it is not binding, as long as unused quota rights can be carried to a future period when the quota is expected to be binding. The continuous time model presented here derives the factors on which such a price premium depends.

Suppose that $\bar{Q}$ rights are assigned now, at date 0, and expire T years hence. In the intervening years, unused rights evaporate at rate d. For instance, a VRA right that permits current exportation of one ton of steel will permit exportation of only e^{-d} tons of steel one year from now if not currently used. The evaporation of the rights corresponds to the possibility either that the negotiated carryover will be less than full or that the quota might not be binding in the future. This constraint is summarized in (1) --

$$(1) \quad \bar{Q} = \int_0^T Q_t * e^{-d*t}\, dt \qquad \text{Quota allocation and use}$$

where Q_t is the rate of use at time t.

VRA rights are noninterest bearing assets. As such, expected capital appreciation alone must be sufficient to entice owners to hold the assets over time. This means asset holders must expect to earn as much through capital appreciation as they could have earned through an interest-bearing asset. Moreover, VRA holders must expect to be compensated through appreciation for the decay of rights over time due to partial carryover. Assuming expectations are realized, condition (2) specifies the appreciation required --

$$(2) \quad V_t = V_0 * e^{(r + d)t} \qquad \text{Quota value over time}$$

where V_t is the value of an export right at time t and V_0 is the initial value of an export right.

Exports to the United States sold competitively will be priced at marginal production cost plus a premium that reflects the cost of using one VRA export right. This premium is V_t. Condition (3) specifies the export price to the United States at each time t in terms of marginal production cost (assumed fixed at K dollars per ton) and V_t --

$$(3) \quad P_t = K + V_t \qquad \text{Export price to United States}$$

U.S. consumers purchase less of each imported steel product at higher prices. For simplicity, assume the relation between quantity purchased and price is linear, given by condition (4) --

(4) $Q_t = A - B * P_t$ **U.S. consumer demand**

where both A and B are positive, constant demand parameters.

The system of equations (1) through (4) may be simplified by substituting (2) into (3), (3) into (4), and (4) into (1). The resulting condition, equation (5), is a single equation in one unknown variable, V_0 --

(5) $\bar{Q} = [A - B * (K + V_0 * e^{(d + r)t})] * e^{-d * t}\, dt$
Conditions (1)-(4) combined

Solving equation (5) for V_0 yields --

(6) $V_0 = \{[(A - BK)(1 - e^{-d*T})]/d - \bar{Q}\} * r/[B(e^{rT} - 1)]$
Solution for V_0

The export price at time t may now be written as --

(1') $P_t = K + V_0 * e^{(r + d)t}$ **Export price over time**

where V_0 is given by (6).

By taking derivatives of (1') with respect to the various determinants of P_t, it may be shown unambiguously that P_t falls as Q, the initial quota allocation, increases; rises as A, demand at any given price, increases; falls as B, the slope of the demand curve, increases; rises as d, the rate of decay (loss of rights due to carryover) in quota rights, increases; falls as K, the marginal production cost, rises; and falls as r, the interest rate, increases.

APPENDIX L

CONSTRUCTION OF REAL-EXCHANGE-RATE INDICES

Construction of Real Exchange Rate Indices

The real-exchange-rate indices for the EC, VRA, and non-VRA countries were constructed by calculating the average real-exchange-rate index for a basket of currencies from each of the three groups. The index for each basket of currency was calculated by averaging the real-exchange-rate index of each country in the group weighted by the value of its U.S. steel imports. 1/ This steel-import weighted index was calculated as --

$$R_t = \sum_{i=1}^{n} w_{it} * \left(\frac{E_{it} * P_t}{P_{it}} \right) / \left(\frac{E_{ib} * P_b}{P_{ib}} \right)$$

where

R_t = the real-exchange-rate index for the country group in quarter t,

E_{it} = the number of units of currency per dollar for country i in quarter t (subscript b refers to the base period, first quarter 1984),

w_{it} = is the steel-import weight assigned country i in quarter t, or

$$w_{it} = \frac{V_{it}}{\sum_{i=1}^{n} V_{it}}$$

V_{it} = is the value of steel mill products and certain fabricated steel products that were imported from country i in quarter t.

The VRA and non-VRA country groups included those countries that were the largest exporters to the United States of steel mill products and certain fabricated steel products and for which good exchange rate and price index data were available. The countries in the VRA group were the EC, Japan, South Korea, Brazil, Mexico, Finland, Venezuela, and Australia. This VRA group accounted for 92 percent of steel imports from VRA countries in 1987. The countries in the non-VRA group were Canada, Sweden, Turkey, Indonesia,

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1/ A similar real index and further discussion on the construction of real-exchange-rate indices for country groups is presented in W. Michael Cox, "A Comprehensive New Real Dollar Exchange Rate Index," Economic Review, Federal Reserve Bank of Dallas, March 1987.

Singapore, Norway, and Thailand. These seven countries accounted for 84 percent of steel imports from non-VRA countries in 1987.

APPENDIX M

STATISTICAL TABLES, PRICES

Table M-1
Western U.S. steel prices: Import purchase price indices, 1/ by products and by specified periods, 1983-88

Type of carbon steel product	As of June 30—				As of—						
	1983	1984	1985	1986	Mar. 31, 1987	June 30, 1987	Sept. 30, 1987	Dec. 31, 1987	Mar. 31, 1988	June 30, 1988	Sept. 30, 1988
Semifinished shapes..	2/	2/	100	99	104	105	108	114	122	129	144
Plates.....	100	107	108	109	116	122	127	133	133	133	135
Uncoated sheets.....	100	108	107	107	117	121	120	126	130	132	134
Tinplate.....	100	2/	2/	2/	89	89	89	89	99	97	97
Bars.....	100	97	101	107	111	115	118	121	129	131	134
Wire rods.....	100	109	108	111	108	110	108	115	123	125	127
Structural shapes....	100	99	97	101	106	110	117	119	128	133	133
Pipes.....	100	96	102	107	109	111	113	115	123	125	126

1/ Indices of the lowest quoted prices for the specified steel products.
2/ Confidential.

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

M-2

Table M-2
Western U.S. steel prices: Purchase price indices for domestically produced steel, by products and by specified periods, 1983-88

Type of carbon steel product	As of June 30—				As of—						
	1983	1984	1985	1986	Mar. 31, 1987	June 30, 1987	Sept. 30, 1987	Dec. 31, 1987	Mar. 31, 1988	June 30, 1988	Sept. 30, 1988
Semifinished shapes..	2/	2/	2/	2/	100	102	106	112	135	144	145
Plates.....	100	101	99	98	102	103	109	115	117	124	123
Uncoated sheets.....	100	98	98	100	106	107	113	113	116	118	119
Galvanized sheets....	100	104	97	99	103	105	106	2/	112	111	111
Tinplate.....	100	103	106	106	105	107	107	107	109	111	112
Bars.....	100	101	95	99	99	101	103	106	111	114	114
Wire rods.....	100	102	101	101	102	104	106	111	117	117	118
Wire products.....	100	97	95	98	106	102	101	104	110	111	112
Structural shapes....	100	94	96	95	98	100	103	104	110	112	113
Pipes.....	100	102	102	105	108	109	110	113	116	120	120

1/ Indices of the lowest quoted prices for the specified steel products.
2/ Confidential.

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

M-3

Table M-3
Western U.S. steel prices: Western producer price indices, by products and by specified periods, 1983-88

Type of carbon steel product	As of June 30—				As of—						
	1983	1984	1985	1986	Mar. 31, 1987	June 30, 1987	Sept. 30, 1987	Dec. 31, 1987	Mar. 31, 1988	June 30, 1988	Sept. 30, 1988
Semifinished shapes..	1/	1/	100	108	127	127	125	122	127	125	126
Plates.....	100	1/	88	89	91	93	95	102	112	115	113
Uncoated sheets.....	100	99	98	104	106	108	109	110	112	112	112
Galvanized sheet.....	100	1/	1/	102	106	111	103	103	107	111	112
Bars.....	100	109	106	106	99	97	99	106	113	116	119
Wire products.....	100	99	101	100	98	98	98	97	101	102	103
Pipes.....	100	103	103	97	99	101	104	105	113	114	115

1/ Confidential.

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

M-4

Table M-4
Western U.S. steel prices: Western producer price indices for sales to the Western U.S. region, by products and by specified periods, 1983-88

Type of carbon steel product	As of June 30—				As of—						
	1983	1984	1985	1986	Mar. 31, 1987	June 30, 1987	Sept. 30, 1987	Dec. 31, 1987	Mar. 31, 1988	June 30, 1988	Sept. 30, 1988
Carbon steel:											
Plates	100	113	96	91	90	93	98	100	115	117	119
Uncoated sheets	100	102	102	96	98	98	101	105	110	112	113
Tin mill products	100	1/	99	94	94	92	91	91	94	95	97
Bars	100	99	97	91	93	92	92	95	102	106	106
Wire rods	100	108	88	95	94	94	95	102	107	111	112
Wire products	100	102	99	98	93	92	94	93	96	96	95
Structural shapes	100	102	98	100	98	99	98	105	111	116	117
Pipes	100	100	95	93	96	98	100	103	111	113	113
Stainless steel:											
Plates	100	104	104	105	103	98	99	104	108	161	173
Bars	100	96	91	82	76	71	77	74	76	83	96
Wire rods	100	84	103	99	100	90	85	89	89	115	141

1/ Confidential.

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

M-5

Table M-5
Indices of industrial production in OECD countries, by selected area, by specified period, 1983-88

Area	As of June 30—				As of—					
	1983	1984	1985	1986	Mar. 31, 1987	June 30, 1987	Sept. 30, 1987	Dec. 31, 1987	Mar. 31, 1988	June 30, 1988
United States.....	100	111	114	115	117	118	121	123	124	125
Japan.....	100	111	116	116	117	117	117	121	126	125
Canada.....	100	115	122	124	126	128	130	133	134	136
All OECD countries..	100	107	111	112	114	116	116	119	120	121

Source: Organisation for Economic Co-operation and Development, Main Economic Indicators, various issues.

M-6

Table M-6
Raw steel production: Selected country shares of production in 1983 and indices of production, by countries, 1/ by specified periods, 1983-88

Country	Share of production 1983	Import purchase price indices— 1983	1984	1985	1986	Jan.-Mar. 1987	Apr.-June 1987	July-Sept. 1987	Oct.-Dec. 1987	Jan.-Mar. 1988	Apr.-June 1988	July-Sept. 1988
	Percent											
United States..	19	100	109	105	97	94	108	108	115	121	122	119
Japan.....	25	100	109	108	101	95	100	100	110	109	108	108
Canada.....	3	100	114	114	110	117	121	107	114	120	122	103
Brazil.....	4	100	125	140	145	146	138	157	165	166	159	177
Taiwan.....	1	100	97	102	111	112	111	112	126	155	167	171
South Korea....	3	100	109	114	122	121	137	152	154	152	159	172
Other.....	45	100	109	111	107	107	112	103	112	117	116	112
Total.....	100	100	109	110	106	104	110	107	116	119	119	117

1/ Reflects production data of 32 countries that report monthly to the International Iron and Steel Institute.

Source: International Iron and Steel Institute.

M-7

Table M-7
Japanese exports: Unit values and indices of the dollar unit values of exports to the United States and other countries, by products and by specified periods, 1983-88

Products	Unit value	1983	1984	1985	1986	Jan.-Mar. 1987	Apr.-June 1987	July-Sept. 1987	Oct.-Dec. 1987	Jan.-Mar. 1988	Apr.-June 1988	July-Sept. 1988
	Per metric ton											
Cold-rolled carbon sheets:												
United States.....	$422	100	108	109	107	112	114	115	120	123	125	129
All other countries.....	391	100	103	101	97	100	103	105	113	116	126	138
Galvanized sheets:												
United States.....	493	100	108	113	110	113	114	116	121	125	130	126
All other countries.....	395	100	106	101	104	108	109	112	125	136	148	160
Heavy structural shapes:												
United States.....	314	100	101	103	99	95	104	108	117	128	135	136
All other countries.....	261	100	106	98	108	107	108	122	143	152	152	158

Source: Compiled from Japanese trade statistics.

M-8

APPENDIX N

METHODOLOGY AND SOURCES

Methodology and Sources

This appendix presents technical details of the method used to estimate when the VRAs will become binding and that used to estimate the changes in employment in the steel industry and important Western downstream industries that would result from each 1-percent increase in the price of steel induced by VRAs that become binding in the future.

Projecting when the VRAs become binding

To estimate when the VRAs will become binding, we need several pieces of information: 1) the current market share of U.S. producers in the U.S. steel market (S_0), 2) the growth rate of imports (m), 3) the current ratio of non-VRA to VRA country imports (q), and 4) the maximum market share allowed to VRA imports under the VRA program (W). We shall consider several scenarios. In all scenarios, the following values were used:

$S_0 = 0.813$
$q = 0.456$
$W = 0.185$

S_0 and q apply to early 1988, the last period for which data are available. W is set to 18.5 percent, the policy target for the maximum U.S. market share allowable under the current VRA program. Each scenario is distinguished by having its own value for the growth rate of imports (m).

Equation 1 calculates the share of the U.S. market that U.S. producers would enjoy if VRA market share ever reached 18.5 percent and the quotas became binding. Denoting this U.S. market share as low as S_T, we have

$$(1) \quad S_T = 1 - [(1 + q) * W]$$

By substituting the actual values of q and W, S_T equals 0.730. Thus, the VRA quotas become binding if the U.S. market share ever falls as low as S_T.

The U.S. producers' market share at any future time, t, is given by equation 2.

$$(2) \quad S_t = S_0 * e^{-mt}$$

By substituting S_T for S_t, equation 2 may be rewritten so that the only unknown variable is the time, T (counted in years from the current time, 0), when the quotas become binding. This substitution is made in equation 3.

$$(3) \quad S_T = S_0 * e^{-mT}$$

Solving equation 3 for T yields equation 4.

$$(4) \quad T = -\ln(S_T/S_0)/m$$

By substituting the actual values for S_T and S_0, T equals 0.108/m.

Finally, since the current year (time 0) in the analysis is 1988, the estimated year when the VRAs become binding is given by equation 5.

(5) $Y = 1988 + T$

Employment effects. If the domestic price of steel increases, for instance, as a result of the VRAs becoming binding in a future year, U.S. steel producers will expand production. As they do so, they will hire more workers. To estimate how many more man years will be required by Western steel producers if steel prices increase by 1 percent requires three pieces of information: 1) the elasticity of U.S. supply (E), 2) total revenue earned by Western producers (R), and 3) the additional labor employed to produce an additional dollar's worth of output (L).

Direct measures of L are not available, but the average labor per dollar of steel (labor-output ratio) may serve as a surrogate provided the output elasticity of steel with respect to labor is close to unity. The labor-output ratio may be calculated from Bureau of Labor Statistics data and the Commerce Department's input-output table. High and low values of E were taken from estimates by Crandall and Jondrow. 1/ Total revenue of Western producers, R, was estimated by using 1986 BLS data (the most recent available) for national revenue, pro-rated by the West's share of national income in that year. To the extent the size of the downstream industry, as measured by R, increases (decreases) in future years from its size in 1986, the calculated employment effects will proportionally underestimate (overestimate) the true effects.

Equation 6 gives the change in labor, 1, associated with a 1 percent increase in the price of steel, in terms of E, R, and L.

(6) $1 = E * R * L * .01$

Turning to steel consumers, the downstream users of steel will face steeper costs for raw materials if the price of steel increases. As a result, unit costs will rise and consumers will purchase fewer downstream products. As downstream producers reduce production in response to the decline in quantity demanded, they will employ less labor. To estimate the reduction in employment in a Western downstream industry (industry i) consequent to each 1-percent increase in the price of steel requires the following information: 1) the elasticity of demand for industry i's product, N_i, 2) the share of production cost accounted for by steel, B_i, 3) revenue earned by industry i in the West, R_i, and 4) the labor required to produce an additional dollar's worth of output, L_i.

Domestic demand elasticities for Western downstream producers, N_i, have not been estimated econometrically, and data permitting such estimations are not available. Employment estimates were prepared using a range of demand elasticities for each downstream industry. The lower bound of the range was 0.5 and the upper bound was 2.0. The bounds were selected to bracket unity since experience suggests demand elasticities for most manufactured products congregate close to one.

The share of production costs accounted for by steel is taken from the input-output table of the Department of Commerce, which is the latest avail-

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1/ Crandall and Jondrow, "Effects of Trade Restrictions on Imports of Steel," The Impact of International Trade and Investment on Employment (1978), U.S. Department of Labor, Bureau of International Labor Affairs.

able. The revenue earned by each Western downstream industry is from 1986 BLS data (latest available) pro-rated by the share of national income in the West. The resulting estimate was then adjusted to reflect the importance of each industry in the Western steel market relative to the importance of that industry in the overall national steel market. Market share data for downstream users in the U.S. steel market are from the American Iron and Steel Institute's 1987 Annual Report. Similar data for the Western steel market are from responses to questionnaires received by the U.S. International Trade Commission.

Finally, as in the steel sectors, the BLS-Commerce Department calculated labor-output ratios serve as surrogates for the desired marginal labor requirement, L.

The estimated change in employment in industry i associated with each percent increase in the price of steel, l_i, is given by equation 7.

(7) $$l_i = N_i * B_i * R_i * L_i * .01$$

Appendix O

THE EFFECTS OF INTER-COUNTRY VRA TRADE ON U.S. IMPORT PRICES

The ability of VRA countries to trade steel among themselves may limit the price effect of binding national VRA export quotas. To illustrate the importance of such inter-VRA country trading opportunities, and transportation costs, consider the following example.

Country A produces steel at $100/ton, whereas country B produces the first 1,000 tons at $90/ton, and the next 1,000 tons at $150/ton, reflecting rising marginal cost. Country B consumes 1,500 tons regardless of price (demand is inelastic). The United States imports a total of 1,200 tons from countries A and B combined regardless of price (import demand is inelastic). Transportation costs total $100/ton from country A to the United States and $95/ton from country B to the United States, and $20 from country A to country B. Country A is restricted to a VRA ceiling of 600 tons whereas country B is restricted to a ceiling of 800 tons. Following is a summary of the parameters:

Production Costs

Country A:	$100/ton
Country B:	$90/ton, first 1,000 tons; $150/ton, next 1,000 tons

Consumption

Country B:	1,500 tons
U.S. imports:	1,200 tons total, combined from A and B

Transportation Costs

To United States:	
From Country A:	$100/ton
From Country B:	$95/ton
Country A to B:	$20/ton

VRA Ceilings

Country A:	600 tons
Country B:	800 tons

Under these conditions, the United States will import 600 tons directly from country A at a total cost of $200/ton ($100/ton production cost plus $100/ton transportation cost).

If no trade were possible between countries A and B, the United States would import the next 600 tons from country B at a cost of $245/ton ($150/ton production cost plus $95/ton transportation cost). The price of imported steel in the United States would be $245/ton and exporters in country A would earn a "quota rent" of $45/ton. Thus, the VRA would have caused the import price in the United States to exceed the price absent VRA export quotas by $45/ton.

If, however, trade between countries A and B occurred, country A would still export 600 tons to the United States at a delivered cost of

$200/ton. But country B would produce 1,000 tons itself at $90/ton and import 1,100 tons from country A at a delivered cost of $120/ton ($100/ton production cost plus $20/ton transportation cost). The price in country B would be $120/ton since the price would be determined by the cost of the marginal unit consumed. Consumers in country B would consume all 1,100 tons imported from country A together with 400 tons produced domestically. Country B would then export 600 tons of its own domestic product to the United States at a delivered cost $215/ton ($120/ton price in country A plus $95/ton transportation cost to the United States). The import product's price in the United States would be $215/ton.

Since absent VRAs the U.S. price of imports would have been $200/ton and all of the imports would have come directly from country A, the VRAs caused the price to increase by $15/ton. Note that under these conditions country A filled its quota of 600 tons whereas country B has exported less than its quota of 800 tons.

This example demonstrates why the price effect is limited by the ability of VRA countries to trade among themselves. Specifically, the price effect of the VRAs will equal the difference between the direct transportation cost from the low cost delivered producer to the United States and the transportation cost from the low cost delivered producer to the third country (country B) plus the cost from that country to the United States.

Thus, a proper inquiry into cost-based price effects would have to examine all transportation opportunities between VRA countries, as well as production costs in each country.