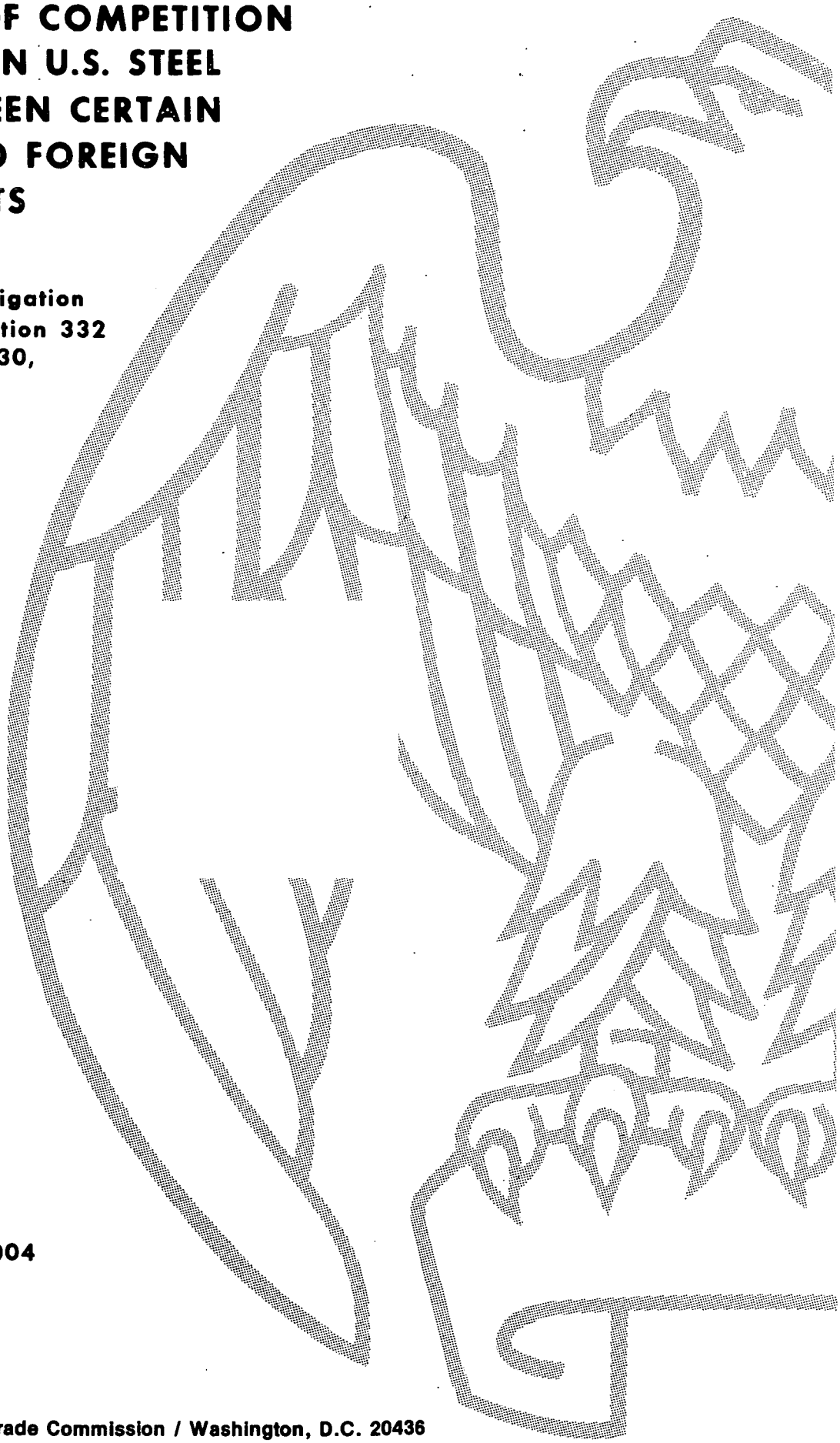
CONDITIONS OF COMPETITION IN THE WESTERN U.S. STEEL MARKET BETWEEN CERTAIN DOMESTIC AND FOREIGN STEEL PRODUCTS

Final Report on Investigation No. 332-87 Under Section 332 of the Tariff Act of 1930, as Amended



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USITC RELEASES FINAL REPORT ON CONDITIONS OF COMPETITION IN THE WESTERN U.S. STEEL MARKET

The United States International Trade Commission today issued its final report on an investigation of the conditions of competition in the Western U.S. steel market between certain domestic and foreign products of steel. The Western U.S. steel market includes California, Oregon, Washington, Idaho, Utah, Nevada, Arizona, New Mexico, Colorado, and Wyoming.

The final report, which has been forwarded to the President and Congress, was approved by Vice Chairman Bill Alberger and Commissioners George M. Moore, Catherine Bedell and Paula Stern. Chairman Joseph O. Parker did not participate in the investigation.

The investigation was undertaken by USITC under section 332 of the Tariff Act of 1930. This provision allows the Commission to investigate trade matters of immediate concern to the Government and the public.

The final report addresses conditions which existed in the Western U.S. carbon steel market from 1972 through 1978. The Commission issued an interim report in March 1979 which covered conditions during 1972-77.

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In its investigation the Commission was concerned with the effects of imports on the Western U.S. steel market and Western U.S. steel producers, foreign investment in domestic production facilities, and importers' marketing practices in the 10-state area served by Western U.S. carbon steel producers.

The report indicates apparent consumption of steel mill products in the Western States averaged 8.7 million tons over the 1972-78 period. In 1978, consumption amounted to 9.6 million tons. Demand for steel in the Western States is most strongly influenced by the economic activity of the construction and container industries. The construction industry alone accounts for more than half of the end-use market.

There are 23 producers operating 35 establishments in the Western region. Of these, 18 of the firms and 27 of the establishments are located in California. The largest four producers accounted for 77 percent of all steel mill products shipped by Western producers in 1978.

The report indicates that capacity of Western establishments is not in balance with Western consumption. Western steel mill capacity is below consumption for sheets and strip and pipes and tubes, two product lines which account for a large share of Western consumption. Western capacity exceeds consumption for other product lines such as plates and most products of minimills and wire mills. In each of the last 3 years, Western producers' capacity utilization for raw steel has been below that of the U.S. steel industry as a whole. In 1978, Western producers' capacity utilzation was 73 percent, compared with 80 percent for the entire U.S. steel industry. Total shipments of Western producers averaged 5.5 million tons

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over the 1972-78 period and exhibited a long-term downward trend. Exports of Western steel mill products averaged less than 6 percent of shipments over the period.

The average number of all persons employed in steel mill establishments located in the Western States was about 23,000 in each of the last 3 years compared to 26,000 in 1974, a year of peak employment.

As discussed in the Commission report, the Western steel industry was essentially more profitable than the U.S. steel industry as a whole from 1972-75. Since 1975, the Western steel industry has fared far worse than the total U.S. steel industry, suffering losses in each of the last 3 years.

Imports of carbon steel mill products have been a major force in the Western market, for a number of years, having supplied 43 percent of apparent consumption in 1978. Japan has traditionally been the largest single supplier of each category of carbon steel mill products imported into the Western States averaging 69 percent of imports from all sources during 1972-78. The next largest import source was the European Economic Community (EEC) which averaged 14 percent of imports from all sources over the same period.

The report indicates that in 1978, there were striking shifts in import market shares from Japan to the EEC. Japan's share of imports into the Western market decreased from 72 percent in 1977 to 53 percent in 1978 while the EEC's share increased from 13 percent to 23 percent. In absolute terms, Japan's imports decreased by 90,000 tons while imports from the EEC increased by more than 540,000 tons.

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The trigger price mechanism (TPM), introduced in 1978, was and probably will be for the indefinite future the greatest single factor influencing conditions of competition in the Western steel market. However, as a result of Japan's unilateral voluntary cutback on exports to the United States in 1978 and the complexities of the TPM itself during the initial year, it is virtually impossible to assess the effects of TPM on the level of imports and the shift in import sourcing.

Prices of carbon steel mill products imported into the Western States were generally below comparable domestically produced articles throughout the 1972-77 period except for the boom years of 1973-74. In 1978, the strengthening in demand and the introduction of the trigger price mechanism caused import prices to increase. Domestic prices also increased but only moderately by comparison. By year-end 1978, many import prices were above competing producer prices.

Among the marketing techniques discussed in this report are automatic price adjustments, allocation of Western steel purchasers among trading companies and foreign mills, and the practice of selling a primary mill product to a distributor or fabricator for further processing and then competing in the same end product market with the distributor or fabricator.

The Commission's final report, Conditions of Competition in the Western U.S. Steel Market Between Certain Domestic and Foreign Steel Products (Investigation No. 332-87), USITC Publication No. 1004, may be obtained by calling (202) 523-5178 or from the Office of the Secretary, 701 E Street, N.W., Washington, D.C. 20436.

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On May 23, 1977, the U.S. International Trade Commission instituted an investigation to study the conditions of competition in the Western U.S. carbon steel market between certain domestic and foreign products of steel, other than alloy steel. 1/ The Commission issued an interim report in March 1979 which addressed conditions of competiton in the period 1972-77. The final report includes new and revised data in regard to the period 1972-77 and, in addition, data and economic analysis for 1978, a year in which the Western steel market experienced the dramatic effects of major changes in the conditions of competition.

The Western steel market

The Western carbon steel market encompasses a 10-state region which is geographically isolated from the major steel producing regions of the country by great distances and by the natural barriers of the U.S. Plains and the Rocky Mountains. Demand for steel in this region is most strongly influenced by the economic activity of the construction and container industries. 2/ The construction industry, which accounts for approximately 53 percent of the Western end-use market, consumes large quantities of plates, structurals, and reinforcing bars. The container industry, accounting for approximately 15 percent of the Western end-market, creates heavy demand for tin mill products. In contrast, the major markets for all U.S. steel are construction (29 percent), automotive (24 percent), and machinery (16 percent).

Apparent consumption of steel mill products in the Western States averaged 8.7 million tons annually over the 1972-78 period and generally followed the swings of the business cycle--increasing in 1973 and 1974, declining precipitously in 1975 and increasing in each of the years 1976, 1977, and 1978. Consumption in 1978, which amounted to 9.6 million tons was 1.0 million tons short of the peak year of 1974. The value of consumption, which increased from $1.5 billion in 1972 to $3.4 billion in 1978, reflects the spiraling costs of production experienced by the industry.

1/ The investigation was instituted by the Commission on its own motion under section 332(g) of the Tariff Act of 1930, as amended (19 U.S.C. 1332(g)). The products covered include articles of the types provided for in part 2B of schedule 6 of the Tariff Schedules of the United States. For the purpose of this study, the Western market includes the 10 States of California, Oregon, Washington, Idaho, Nevada, Arizona, Montana, Colorado, Utah, and Wyoming. It is noted that the Western steel market does not include Hawaii and Alaska. The shipments of steel between those two states and the U.S. mainland are relatively minor, although they are a factor in the Western U.S. market.

2/ According to the Standard Industrial Classification codes, the construction industry would consist of those firms engaged in the building of such facilities as dwellings, offices, highways, dams, sewage systems, airfields, etc. The container industry would consist of those firms engaged in the production of such articles as storage vessels, metal cans, and shipping containers.

The demand for steel mill products in the Western States is met by three types of suppliers--producers located within the region, domestic producers located outside the Western States, and foreign producers. The ability of producers in the Eastern steel producing centers to market steel mill products in the Western States is limited primarily because of high inland shipping rates and limited access to ports. Ocean freight rates are much lower than inland shipping rates and as a result provide an important pricing advantage to any producer, including foreign producers, shipping by water to the Western States. Many of the big Japanese and European steel mills are located at or near ports and thus are attracted to the U.S. Western market. High inland transportation costs result in the great bulk of steel mill articles being consumed within a 300 mile radius of the producing domestic mill or, in the case of imports, within a 300 mile radius of the port where the goods enter.

During the 1972-78 period, western producers' shipments, as a share of consumption of all carbon steel mill products in the Western States, ranged from a low of 47 percent in 1974 and 1978 to a high of 58 percent in 1973. For the remaining years of the period, western producers' shipments supplied slightly in excess of 50 percent of such consumption. A factor responsible for the relatively small share of the western market supplied by producers located within the region is that they do not have sufficient capacity to meet the region's demand for sheets and strip and pipes and tubes--products which account for the bulk of consumption of all carbon steel mill products. On the other hand, the import to consumption ratio for all carbon steel mill products (43 percent in 1978) for the Western States is more than twice that for the nation as a whole, and imports are capturing an increasing share of the Western States market.

During the same period, eastern producers' shipments into the Western States supplied from 10 to 13 percent of consumption of all carbon steel mill products. However, in some product categories, such as pipes and tubes, eastern producers were significant competitors.

In distributing steel mill products, Western States producers, Eastern producers, and importers utilize both service centers/distributors and direct sales to end users. Importers sell a far larger share of steel mill products to service centers/distributors than the domestic producers. Importers sell about 60 percent of their shipments to service center/ distributors; in contrast, U.S. producers utilize service center distribution channels for only about one-fifth of their shipments. The remainder of shipments--40 percent for importers and 80 percent for domestic producers--are sold directly to end users. Importers, by using service centers/distributors, are able to ship large tonnages to fewer outlets thereby eliminating the need to service a multitude of small end-user accounts. Domestic producers offer shorter lead times and are generally better able to service end-user accounts than are foreign suppliers.

Western U.S. producers

The domestic producers located within the region can generally be characterized as integrated producers which supply a broad range of carbon steel mill articles; minimills, which specialize in a particular product

range, primarily reinforcing bars; and independent fabricators, which have no steel-making facilities, but purchase such products as sheet and strip for fabrication into pipes and tubes and wire rod for fabrication into wire or wire products.

Locations and products of firms.--There are 23 producers operating 35 establishments in the Western region. Of these, 18 of the firms and 27 of the establishments are located in California. The largest four producers accounted for 77 percent of shipments by Western producers of all steel mill products in 1978. The four largest producers in each product category accounted for no less than 62 percent of Western producers' shipments in 1978.

Capacity.--Western capacity to produce sheets and strip and pipes and tubes--products which account for the bulk of Western consumption--was well below consumption in each of the last 7 years. Capacity to produce plates exceeded consumption in all years except 1974. Capacity shortfalls (plates represent a notable exception) characterize products important to integrated mills while excess capacity exists for products of minimills and wire mills. Among the major integrated mills, Western capacity has been increased only marginally in recent years. In each of the last 3 years, Western producers' capacity utilization for raw steel has been below that of the U.S. steel industry as a whole. In 1978, Western producers' capacity utilization was 73 percent, compared with 80 percent for the entire U.S. steel industry.

Of the three major types of steel making furnaces--the open hearth, basic oxygen, and electric--the least efficient type is the open hearth. In 1978, 42 percent of the Western States' carbon steel production was accounted for by open hearth furnaces compared to 15 percent for the entire U.S. steel industry.

Shipments and inventories.--Total shipments of Western producers averaged 5.5 million tons over the 1972-78 period and exhibited a long-term downward trend. Exports of Western steel mill products averaged less than 6 percent of shipments over the period.

Based on data submitted to the Commission, Western steel producers' inventories are normally higher than those of importers, producers maintaining a 2-month supply compared to a 1-month supply for importers. Domestic steel producers' inventories are traditionally higher than those of importers since they usually attempt to inventory in depth in order to rapidly respond to customers needs in an attempt to maintain or enhance their competitive position.

Employment and productivity.--The average number of all persons employed in steel mill establishments located in the Western States accounts for about 5 percent of all persons employed in the U.S. establishments in which carbon steel mill products are produced. During the 1972-78 period, such employment reached its peak in 1974 (26,000 persons) as additional employees were added to meet high levels of steel demand. The recession which began in the second half of 1974 reduced steel demand and caused employment to decline in 1976 to a level of approximately 23,000 where employment remained through 1978.

In 1978, Western producers required 6.9 man-hours for each ton of carbon steel shipped compared to 7.4 man-hours per ton of carbon steel shipped in 1977. For the U.S. carbon steel industry, excluding Western producers, the number of man-hours required per ton of carbon steel shipped is somewhat less.

Profitability.--From 1972 to 1978, the profits of Western producers has followed the general trend of all U.S. producers. From 1972 to 1975 the Western steel industry was essentially more profitable than the U.S. steel industry as a whole. However, since 1975, the Western steel industry has fared far worse than the total U.S. steel industry. The Western steel industry suffered losses in each of the last 3 years, such losses exceeded 4 percent in both 1976 and 1977, and amounted to 0.2 percent in 1978 (net profits to sales). In 1977 more than half the producing establishments reported losses; in 1978 about 20 percent reported losses. The decline in profits of Western producers is apparently the result, in part, of increasing costs of production relative to price increases and low levels of capacity utilization. Facilities have been closed or curtailed in at least 18 locations during the past 7 years.

Western producers' profits tend to be more volatile than profits for all U.S. producers owing to larger import penetration, higher production costs, limited product lines, and the smaller size and number of producers in the Western market.

Foreign steel supplies

Imports of carbon steel mill products are a major force in the Western market, having supplied 43 percent of that market in 1978 compared with 18 percent for the national market. The composition of imports into the Western States is similar to that of total U.S. imports, in that flat-rolled products are the predominant import item.

Japan has traditionally been the largest single supplier of each category of carbon steel mill products imported into the Western States averaging 69 percent of imports from all sources over the seven-year period, 1972-78. Virtually all of the steel imported from Japan is marketed through Japanese trading companies which form a link between the Japanese steel mills and the U.S. Western market. Although 15 Japanese trading companies served the Western market in 1977, four of them supplied fifty-nine percent of the total tonnage of steel mill products imported into the Western market from Japan.

The next largest import source was the EEC which averaged 14 percent of imports from all sources over the same period. The sales of steel mill products by large European steel mills are often made by their American sales subsidiaries.

In 1978, there were striking shifts in import market shares from Japan to the EEC. Japan's share of the market decreased from 72 percent in 1977 to 53 percent in 1978 while the EEC's share increased from 13 percent to 23 percent. In absolute terms, Japan's imports decreased by 90,000 tons while imports from the EEC increased by 543,000 tons. Imports from developing countries also increased dramatically in 1978.

Major factors affecting the relative competitive positions of Western and imported steel

Many factors affect the market share held by imports and domestic shipments including such things as the business cycle in the U.S. and other industrialized countries, labor negotiations and strikes, foreign exchange levels, Government trade policies, and business policies and practices. Four of the factors given special consideration in the Commission investigation were U.S. trade policies, prices, marketing and sales practices, and foreign ownership.

U.S. trade policies.--Carbon steel imports are subject to U.S. import duties averaging about 6 percent ad valorem; several administrative actions under the Antidumping Act, 1921, and under import relief legislation; and provisions of so-called Buy American statutes. Other U.S. actions affecting U.S. imports of carbon steel include the Voluntary Restraint Agreement (1969-74) and the trigger price mechanism (TPM) initiated by the U.S. Treasury in January 1978.

The TPM, announced in December of 1977, was for most of 1978 and will probably continue to be for the indefinite future the greatest single factor influencing conditions of competition in all steel markets of the United States, including the Western steel market. However, as a result of Japan's voluntary cutback in exports to the United States in 1978 and the complexities of the TPM itself during the initial year, it is virtually impossible to assess the effects of TPM on the level of imports and the shift in import sourcing. The TPM is believed to be at least partially responsible for the upswing in import prices in 1978. It does not appear that the TPM caused a significant diversion of imports to the Western States from other regions of the nation.

Prices.--Prices of carbon steel mill products imported into the Western States were generally below comparable domestically produced articles throughout the 1972-77 period except for the boom years of 1973-74. In 1973-74, import prices of almost every representative carbon steel mill product surveyed by the Commission moved to levels above U.S. producers' prices. The strengthening of demand in 1978, coupled with the introduction of the TPM, caused an upswing in import prices. Domestic prices also increased but only moderately by comparison. By year-end, many import prices were at or above competing producer prices. Historically, domestic prices have not tended to exhibit the marked swings seen in the more volatile movements of import prices with the business cycle.

Marketing and sales practices.--The marketing and sales practices used in the Western States by domestic producers, distributors/service centers, and importers are in some respects similar. All sellers of steel attempt to maintain competitive prices, to offer quality steel with reliable delivery, to provide quality services, and generally offer some form of credit extension. In addition, importers as well as some domestic producers sell steel at less than the cost of production. Both importers and domestic producers engage in dual distribution, which involves selling to both a distributor and the end use customers of that distributor.

There are, however, other techniques and practices allegedly employed by importers to maintain and/or strengthen their sales in the Western United States which are not used by domestic producers. These practices include:

(1) Maintaining prices at a fixed percentage or dollar differential relative to the price of other suppliers (referred to in this report as price indexing); and

(2) Allocating customers and products by and among trading companies and foreign mills (referred to in this report as channeling).

Whether or not any of these alleged practices are violative of U.S. antitrust or unfair competition statutes can be determined only in appropriate proceedings before U.S. agencies and/or courts of competent jurisdiction. The present investigation of the Western steel market is not such a proceeding.

During the period of this investigation, the Commission was not able to measure fully the degree or frequency with which importers maintained price differentials below specific domestic articles in the Western market. However, contracts supplied to the Commission, field research, and testimony all indicate that price differentials have been maintained through price indexing. In the contract negotiating phase, price indexing appears to afford importers a method of offering lower prices than domestic competitors, but may not necessarily prohibit the domestic firm from offering additional discounts. In conclusion, price indexing could be a useful tool in increasing market penetration.

Once a contract is entered into, price adjustment clauses can be used to adjust contract prices either up or down in line with the prices of domestic steel producers. Price adjustment clauses were used in a number of contractual transactions during 1972-77. There are some indications that price indexing lessened somewhat in 1978. The implementation of the TPM in 1978 is believed to have affected the frequency and effectiveness of price indexing. The TPM has narrowed the price spread between many domestic and imported steel mill products, making it less likely that domestic discounts will be undercut through the use of price indexing.

The Commission found that the practice of channeling exists among Japanese trading companies and integrated mills. Furthermore, it appears that once an account has been established by a Japanese trading company, other trading companies respect that relationship. No facts were developed indicating that any other foreign suppliers or importers are engaged in this practice.

Both U.S. producers and importers engage in the practice of dual distribution. The extent to which this practice has affected competition in the Western steel market cannot be readily determined, but the indication is that at times it has affected the supply and price of certain carbon steel mill products.

Foreign ownership.--Foreign investment in Western States steel producing, distributing, and fabricating firms is small but growing. Of the 200 firms responding to the Commission's questionnaires, 13 firms reported foreign investment in 1972 and 31 firms in 1977. Japanese investments (15 firms which account for one-third of total sales by foreign affiliated firms) are most prevalent. It appears that subsequent to foreign investment in several key firms in the wire and wire products and pipes and tubes sectors, the market share of these firms increased largely by replacing direct imports. In some cases such investment was in firms in financial difficulty or firms seeking infusions of capital, either through equity investment or loans, to effect major expansions of their business operations. Additionally, foreign affiliated firms have a decided advantage over their competitors in obtaining long term loans. For example, the long term debt-to-equity ratio is about one to four for domestically owned firms, while firms with foreign participation have ratios as high as four to one. For the most part, pre-investment management continued to operate the business with little or no participation from the foreign investors.

1978--A summary of major changes in the Western steel market

In 1978, a number of major changes occurred in the Western steel market which relate to the competitive position of domestic versus imported products.

Western producers' shipments increased by 100,000 tons, with an accompanying increase in capacity utilization in the Western industry from 73 to 80 percent. The domestic industry suffered a 0.2 percent loss (net profits to sales) in 1978 compared to a loss of 4.7 percent in 1977. Labor productivity in the Western industry increased, taking only 6.9 man-hours in 1978 for each ton of steel shipped compared to 7.4 man-hours in 1977.

Imports of all steel products into the Western States increased by 1 million tons in 1978. The ratio of imports to consumption jumped from 37 to 43 percent. The increase was accounted for mostly by plates, sheets and strip, and pipes and tubes. Japan decreased exports to the United States by 90,000 tons and experienced a drop in U.S. import share from 72 to 53 percent. EEC's share of the U.S. import market increased from 13 to 23 percent with an increase of exports to the United States of 543,000 tons.

In 1978, import prices for those products surveyed by the Commission rose from levels well below domestic prices (Jan.-Aug.) to fourth quarter levels near or above competing domestic products. The TPM, announced in December 1977, is believed to be at least partially responsible for rises in import prices, but its impact on import levels and sources is clouded by other market factors.

Introduction

On May 23, 1977, the U.S. International Trade Commission, on its own motion, instituted an investigation under section 332(g) of the Tariff Act of 1930, as amended (19 U.S.C. 1332(g)), to study the conditions of competition in the Western U.S. carbon steel mill product market between certain domestic and foreign products of steel, other than alloy steel. Such articles of steel include articles of the types provided for in part 2B of schedule 6 of the Tariff Schedules of the United States (TSUS).

In its notice of investigation and hearings, the Commission stated that the report issued in connection therewith would be concerned with, among other things, the effects on the Western U.S. steel market and Western U.S. steel producers in such market areas as (1) imports of such steel products, (2) ownership by foreign interests of domestic facilities producing such articles in such market area, and (3) practices of importers marketing such articles.

Public hearings in connection with the investigation were held on November 7, 1977, in Denver, Colo.; on November 9-11, 1977, in Los Angeles, Calif.; on January 24, 1978, in Portland, Oreg.; on May 16 and 17, 1978, in San Francisco, Calif.; and on March 29, 1979, in Los Angeles, Calif.

Notice of the institution of the investigation and of public hearings was published in the Federal Register of June 15, 1977 (42 F.R. 30555); notice of the dates and sites of public hearings was published in the Federal Register of August 17, 1977 (42 F.R. 41498); notice of the times and places of the Denver and Los Angeles hearings was published in the Federal Register of October 27, 1977 (F.R. 41498); notice of the change of date and time and place of the San Francisco hearing was published in the Federal Registers of January 31, 1978 (43 F.R. 4126), March 3, 1978 (43 F.R. 8861), and March 23, 1978 (43 F.R. 12130); and notice of the date and time of the Los Angeles hearing was published in the Federal Register on February 16, 1979 (44 F.R. 10138).

The information contained in this report was obtained from fieldwork, from questionnaires sent to domestic producers, importers, end users, and fabricators, from the Commission's files, from other Government agencies, from information received at the hearings, and from briefs filed by interested parties. It addresses conditions which existed in the Western U.S. carbon steel market through 1978.

The Structure of the Western Steel Market

The Western carbon steel market encompasses a 10-State region which is geographically isolated from the major steel-producing regions of the country by great distances and by the natural barriers of the U.S. Plains and the Rocky Mountains. 1/ Demand for steel in this region is most strongly influenced by the economic activity of the construction and container industries. The construction industry, which accounts for approximately 53 percent of the Western end-use market, consumes large quantities of plates, structurals, and reinforcing bars. 2/ The container industry, accounting for approximately 15 percent of the Western end-use market, creates heavy demand for tin mill products. In contrast, the major markets for all U.S. steel are construction (29 percent), automotive (24 percent), and machinery (16 percent). 3/

Apparent consumption of steel mill products in the Western States averaged 8.7 million tons annually over the 1972-78 period and generally followed the swings of the business cycle--increasing in 1973 and 1974, declining precipitously in 1975 and increasing in each of the years 1976, 1977, and 1978. Consumption in 1978, which amounted to 9.6 million tons, was 1.0 million tons short of consumption in the peak year of 1974. The value of consumption, which increased from $1.5 billion in 1972 to $3.4 billion in 1978, reflects the spiraling costs of production experienced by the industry.

The demand for steel mill products in the Western States is met by three types of suppliers--producers located within the region, domestic producers located outside the Western States, and foreign producers. The ability of producers in the Eastern steel-producing centers to market steel mill products in the Western States is limited primarily because of high inland shipping rates and limited access to ports. Ocean freight rates are much lower than inland shipping rates and as a result provide an important pricing advantage to any producer, including foreign producers, shipping by water to the Western States. Many of the big Japanese and European steel mills are located at or near ports and thus are attracted to the U.S. Western market. High inland transportation costs result in the great bulk of steel mill articles being consumed within a 300-mile radius of the producing domestic mill or, in the case of imports, within a 300-mile radius of the port where the goods enter.

Western steel producers can generally be characterized as integrated producers which supply a broad range of carbon steel mill articles; minimills, which specialize in a particular product range, primarily reinforcing bars;

1/ For the purposes of this investigation, the term "Western States" includes Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

2/ Carbon steel products which are the subject of this investigation are enumerated and described in app. A.

3/ To place the Western States steel industry in perspective, an overview of the U.S. and world steel industries is provided in app. B and an overview of the Japanese steel industry is provided in app. D.

and independent fabricators, which have no steelmaking facilities but purchase such products as sheet and strip for fabrication into pipes and tubes and wire rod for fabrication into wire or wire products. Western producers, not having sufficient capacity to meet Western demand for sheets and strip and pipes and tubes--products which account for the bulk of Western consumption--supplied only slightly in excess of 50 percent of total consumption during 1972-73 and 1975-77. Western producers supplied the largest percentage (58 percent) in 1973 and the lowest (47 percent) in 1974 and 1978. Shipments of Western producers to Western States averaged 4.5 million tons annually over the 1972-78 period and exhibited a long-term downward trend.

There are 23 producers operating 35 establishments in the Western region. Of these, 18 of the firms and 27 establishments are located in California. California is by far the most important consuming state within the region, accounting for an estimated 70 percent of all the steel consumed within the 10-State area. The largest four producers accounted for 77 percent of the shipments by Western producers of all steel mill products in 1978, which indicates the existence of a high degree of concentration by company. In addition, production in the region is also concentrated by product line.

Carbon steel mill products supplied to the 10 Western States from domestic producers located outside the region and referred to throughout the report as Eastern producers accounted for 10 percent of the total consumption in the Western States during each of the last 3 years and did not exceed 13 percent during any of the past 7 years. Eastern shipments to the Western States averaged 1.0 million tons annually over the 1972-78 period and exhibited a long-term downward trend. The relatively small share of consumption in the Western States accounted for by shipments of Eastern producers is the result in large part of shipping costs, primarily inland transportation costs, which make such articles noncompetitive with similar articles produced in the West or imported from foreign sources. It is believed that a substantial portion of the steel mill products shipped by Eastern producers to the Western coastal market are specialty items.

The Western market is also heavily dependent on imports, which averaged 3.2 million tons annually over the 1972-78 period. While the share of Western consumption held by imports fluctuates from year to year, imports are capturing an increasing share of the market. During 1972-78, imports as a share of apparent consumption ranged from 29 percent in 1973 to 43 percent in 1978, more than twice the ratio for the entire nation (18 percent).

Japan has traditionally been the largest single supplier of each category of carbon steel mill products imported into the Western States, averaging 69 percent of imports from all sources over the 7-year period 1972-78. Virtually all of the steel imported from Japan is marketed through Japanese trading companies, which form a link between the Japanese steel mills and the U.S. Western market. Although 15 Japanese trading companies serve the Western market, import supply is highly concentrated among a small number of firms. Fifty-nine percent of total tonnage of Japanese steel mill products imported

to the Western market in 1977 was supplied by four trading companies. The next largest import source was the European Economic Community (EEC) which averaged 14 percent of imports from all sources over the same period. The sales of steel mill products by large European steel mills are often made by their American sales subsidiaries.

In the distribution of steel mill products in the Western States, Western States producers, Eastern producers, and importers utilize both service centers/distributors and direct selling to end users. Importers sell a far larger share of steel mill products to service centers/distributors than the domestic producers. Importers sell about 60 percent of their shipments to service center/distributors; in contrast, U.S. producers utilize service center/distributor channels for only about one-fifth of their shipments. The remainder of shipments--40 percent for importers and 80 percent for domestic producers--are sold directly to end users. By using service centers/ distributors, importers are able to ship large tonnages to fewer outlets, thereby eliminating the need to service a multitude of small end-user accounts. Domestic producers offer shorter lead times and are generally better able to service end-user accounts than are foreign suppliers. Domestic producers price steel at time of shipment, while importers price steel at time of purchase.

The Western States steel market and the business cycle 1/

Demand for steel, whether in the Western region or in the nation, is a derived demand. It depends on (1) demand for consumer durables such as automobiles and appliances, (2) the level of construction activity, and (3) demand for producer durables (capital equipment). Thus, steel demand is highly cyclical, reflecting the swings in economic activity over the business cycle.

The ups and downs of steel demand, however, are more volatile than the cyclical pattern of such economic indicators as industrial production. Steel's use as an early-phase input to the production process, plus the problems of lead time and inventory adjustment at several levels of the distribution process, reinforce and exaggerate the swings in steel demand compared with those of the business cycle. Apart from the business cycle, the volatility of the steel market also stems from steel user and mill response to inventory needs in anticipation of dock or teamster strikes and steelworker labor negotiations.

The following chart (figure 1) compares the cyclical level of economic activity (1957-78), as reflected in the industrial production indexes for the United States and for the Western States, with the pattern of demand for steel in each region as measured by apparent consumption. These indexes show that, in general, the Western States business cycle tracks that of the United States. The graph also shows the marked cyclical pattern of steel demand

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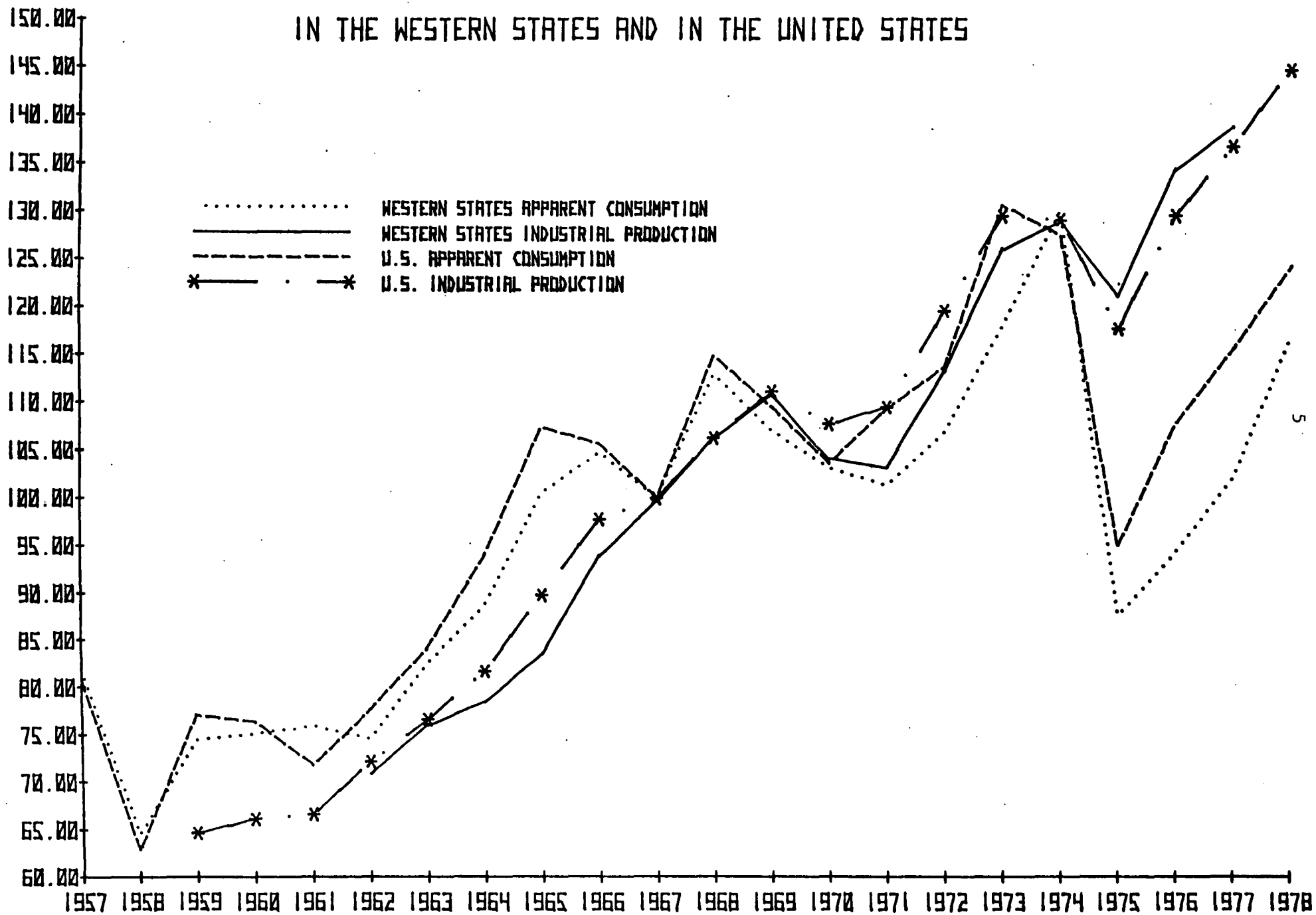
1/ An econometric analysis of the impact of major supply and demand variables on shipments of Western market steel appears in app. H.

Figure 1.--INDEXES OF APPARENT CONSUMPTION OF STEEL AND INDUSTRIAL PRODUCTION IN THE WESTERN STATES AND IN THE UNITED STATES



(apparent consumption) in each market as it roughly parallels the direction of change in the paths of the respective business cycle. The greater volatility of the steel market's response to changes in the level of economic activity is readily apparent.

Figure 2 presents quarterly data on Western States and U.S. industrial production as a proxy for the business cycle for the period 1962-78. This time span covers one business cycle recovery period and two complete business cycles that followed:

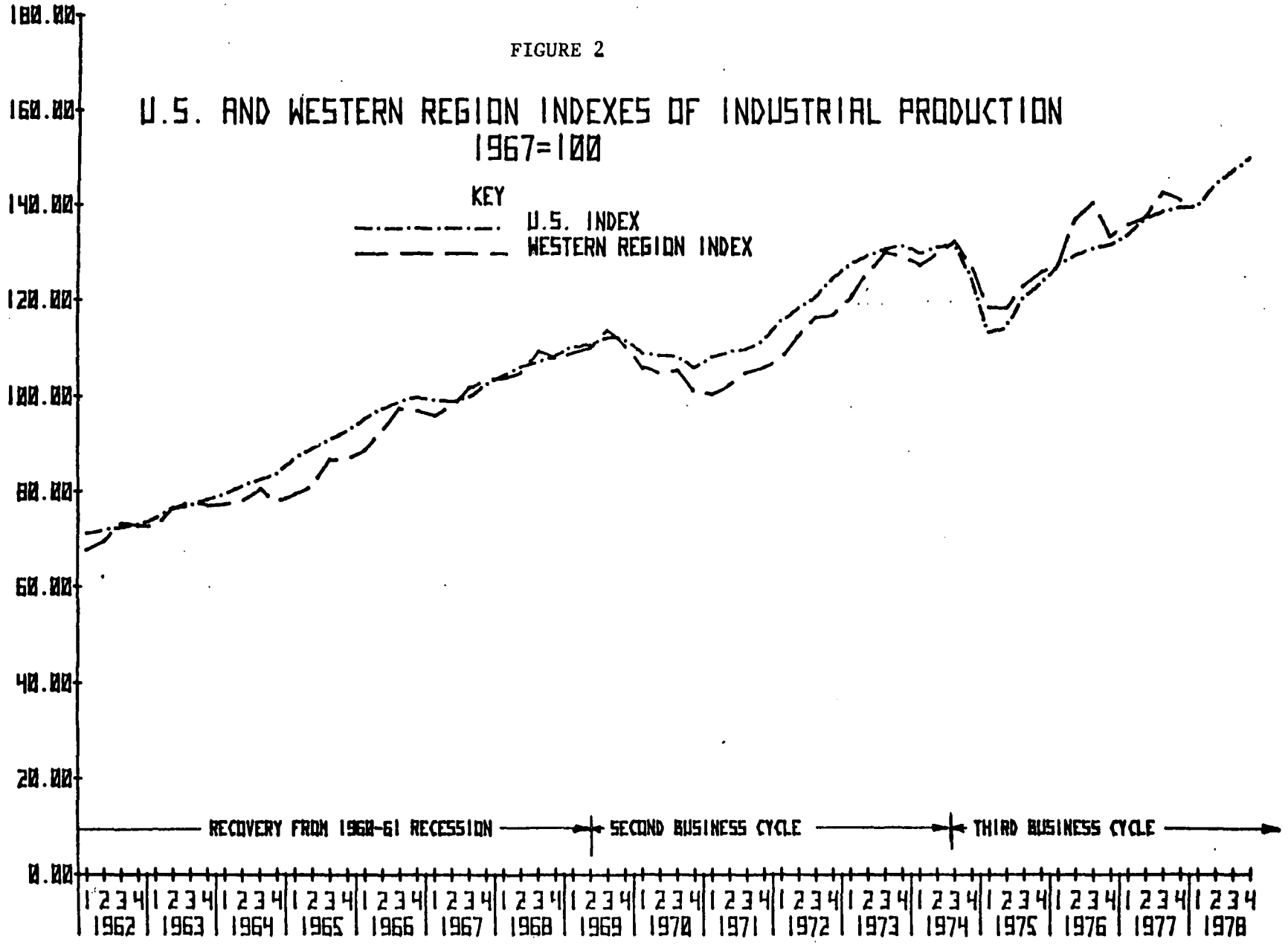
Cycle I (1962-69) 1/	the long recovery period following the 1960-61 recession punctuated by the minor slow-downs or mini-recessions in 1963-64 and 1966-67 and subsequent economic expansion until mid-1969;
Cycle II (1969-74)	the major downturn that continued to 1971 and the recovery and uptrend to mid-1974; and
Cycle III: (1974-78)	the sharp recession in 1974-75 and slow recovery through 1978.

The quarterly data tracing the business cycles in the Western States as measured by industrial production reflect certain independent aspects of the region's growth pattern compared with the steady expansion of the U.S. economy during the 1960's. After the recession trough of 1960-61, U.S. economic expansion was interrupted only by a brief mini-recession in the first quarter of 1967. Over the same time span, Western States industrial production also grew steadily but shows an independent sub-cycle of minimal growth in 1963-65 and a recession period that spanned two quarters in 1966-67. A decline in defense contracts and aerospace production plus a drop in construction activity in California dampened the economic expansion of the Western region until mid-1965. The Western economy then continued its long-run expansion with a minor recession downturn from late 1966 to the spring of 1967.

The first major business cycle downswing in the Western States appears in mid-1969 after almost nine quarters of steady economic growth. At that time, industrial production declined for two quarters, held firm for most of 1970, and fell again to bottom out in the first quarter of 1971. The Western economy then began a steady uninterrupted expansion to a third quarter 1973 plateau which continued to mid-1974, when industrial production turned down sharply. Recovery from this most recent recession began slowly in 1975, strengthened in early 1976, softened later that year, and showed little gain in 1977.

1/ The period 1962-69 covers the recovery and expansion period of the 1959-69 business cycle.

FIGURE 2



Source: Appendix C, table 2A and Federal Reserve Index.

The business cycle impact on steel consumption in the Western States and in the United States

Although the business cycle of the Western States in general tracks that of the total United States, a year-to-year comparison reveals unique differences in growth or decline of steel consumption in the respective markets of the two regions. As shown in the following table, significant differences in annual steel market demand in the two regions appear in more than half the time span 1963-77. The Western States steel market and the U.S. market had close to or the same growth rate, or decline in demand, in 7 years of the 15-year period. Three of these 7 years (1967, 1969, and 1970) show about equal recession declines in the Western steel market and the U.S. market.

On the cyclical expansion side, virtually equal expansion of steel demand in the respective markets occurred in 1965, 1968, 1972, and 1977. Sharply different, but in the same direction, rates of change in steel market demand are revealed in five years of the period. Four of these years, 1963, 1964, 1973, and 1976, were years of expanding growth in steel demand and one, 1975, was a year of cyclical decline in steel market growth.

The most unique differences in the two region's growth patterns appear in 1966, 1971, and 1974. In those years, the two regions' steel markets reflect different directions of change in apparent steel consumption. In 1966 and 1974 the Western States steel market grew by 4 percent and 10 percent, respectively; the U.S. market declined by 2 percent in each of those years. Conversely, in 1971, the U.S. market grew by 6 percent, but the Western market fell by 2 percent.

These divergent regional steel market growth patterns result in part from different regional timing or duration of cyclical recession or recovery periods. Viewed in a business cycle framework, the 1969 recession impact extended to 3 years in the Western steel market compared with 2 years in the U.S. steel market. The 1966 cyclical decline in growth in the U.S. steel market stretched into 1967 but appears only in 1967 in the Western steel market. The 1973-75 recession (Nov. 1973-March 1975) is reflected in both 1974 and 1975 by declines in steel market growth in the total U.S. steel market. In 1974, the Western steel market grew by 10 percent while the U.S. market fell 2 percent in 1974 and 26 percent in 1975. Although the decline in the Western market was sharper, 33 percent in 1975, it lagged the decline in the United States and was only one year in duration.

Differences in the duration of recession or the time and rate of recovery or expansion of the Western steel market compared with the national market are the result of differences in the relative importance of end-use markets in the respective markets and of the differences in steel mill product mix that are linked to these distinctive market structures which make up the overall derived demand for steel.

U.S. steel market: Total steel received in the U.S. market and the Western States market, 1963-77

Year	United States steel market 1/					
	Total		7 Western States		Ratio of 7 Western States' steel market to total U.S. steel market	
	Quantity of steel received 1/	Change from preceding year	Quantity of steel received 2/	Change from preceding year	Ratio	Change from preceding year
	1,000 net tons	Percent	1,000 net tons	Percent	Percent	Percent
1963--	78,778	8	6,975	11	8.9	0.2
1964--	87,942	12	7,500	8	8.5	-.4
1965--	100,553	14	8,500	13	8.5	-
1966--	99,024	-2	8,859	4	8.9	.4
1967--	93,667	-5	8,455	-5	9.0	.1
1968--	107,646	15	9,558	13	8.9	-.1
1969--	102,682	-5	9,056	-5	8.8	-.1
1970--	97,101	-5	8,728	-4	9.0	.2
1971--	102,514	6	8,575	-2	8.4	-.6
1972--	106,613	4	9,035	5	8.5	.1
1973--	122,527	15	9,985	11	8.1	-.4
1974--	119,608	-2	11,021	10	9.2	1.1
1975--	89,016	-26	7,412	-33	8.3	-.9
1976--	101,077	14	7,982	8	7.9	-.4
1977--	108,451	7	8,648	8	8.0	.1

1/ Total domestic shipments plus imports less exports.

2/ The Western steel market comprises the number of tons shipped by steel mills, both domestic and foreign, to customers in the 7 Western States of California, Oregon, Washington, Nevada, Arizona, Utah, and Idaho.

Source: Compiled from data supplied by Kaiser Steel Corp. and the AISI Annual Statistical Report.

The national market for steel and the Western States market differ significantly in the relative importance of their respective end-use markets, as shown in the following table. Two industrial sectors, construction (29 percent) and automotive (24 percent) use about half of the national steel consumed annually. In contrast, construction alone accounts for slightly more than half of annual total steel used in the Western States. The automotive industry as an end-use market in the Western States consumes only 4 percent annually, compared with roughly one-fourth of the steel used nationally. The machinery industry accounts for about 16 percent of the U.S. market for steel, but only 6 percent of the Western steel market.

End-use demand for steel by the container industry (15 percent) is more important in the Western States than in the United States as a whole (8 percent). Shipbuilding and the railroad industry each account for about 4 percent of the Western steel market, but are of minor importance in the national market. 1/

Differences in the relative importance of end-use markets, in turn, create differences in the steel mill product mix in the Western States compared with that of the United States. The greater importance of nonresidential construction as an end-use market in the West is reflected in heavy products such as plates, structurals, and bars. The national automotive and residential construction markets translate into end-use demand for light, flat-rolled products, i.e., sheet and strip. In time of recession or recovery, diversity in the cyclical strength or weakness of these different end-use markets--for example, nonresidential construction versus automotive--can affect recovery or dampen recession in one market more than in the other.

If, as in 1976, consumer durables demand is expanding and capital spending is weak in the entire economy, the Western steel market growth would falter compared with that of the nation. Or, conversely, if, as in mid-1979, residential construction and automotive demand is weakening, while nonresidential construction is strong and expanding, especially in the Western market, that region's overall steel demand is cushioned far more than the national steel market from the recession impact of softening demand for consumer durables. In the steel mill product market, flat-rolled steel would show weakness while structural and plate steel would reflect strength. 2/

Demand for steel and cyclical trends in nonresidential construction and nonbuilding construction

Although the Western States business cycle movements are mirrored in the levels of industrial production, the relative importance of industrial production amounts to less than half of end-use market demand for steel in the Western region, according to industry estimates. The impact on demand for

1/ Defining the Western market as a 10-State market that includes Colorado increases the end-use market share of the railroad industry by adding heavy tonnage of rails supplied by CF&I Steel Corp., which accounts for a large share of total CF&I shipments.

2/ See Tables 4 through 14 in app. C, which present data by product categories on the quantity and annual changes in the Western steel market.

Comparison of characteristic distribution of the steel market in the United States and in the 7 Western States, by end-use markets

(In percent)

End Use Market	Market distribution	
	United States	Western States
Construction	29	53
Automotive	24	4
Machinery (non-electrical and electrical)	16	6
Containers	8	15
Domestic and commercial equipment	4	5
Shipbuilding	1	4
Agricultural	4	1
Appliances	3	1
Rails, R.R. rolling stock and equipment	3	1/ 4
Oil and gas drilling	2	1
Mining, quarrying, and lumbering	1	1
Miscellaneous	5	5
Total	100	100

1/ This percentage would sharply increase if a 10-State Western market was the base. CF&I rail tonnage would boost the figure.

Source: Estimated by ITC staff based on AISI data and field survey figures.

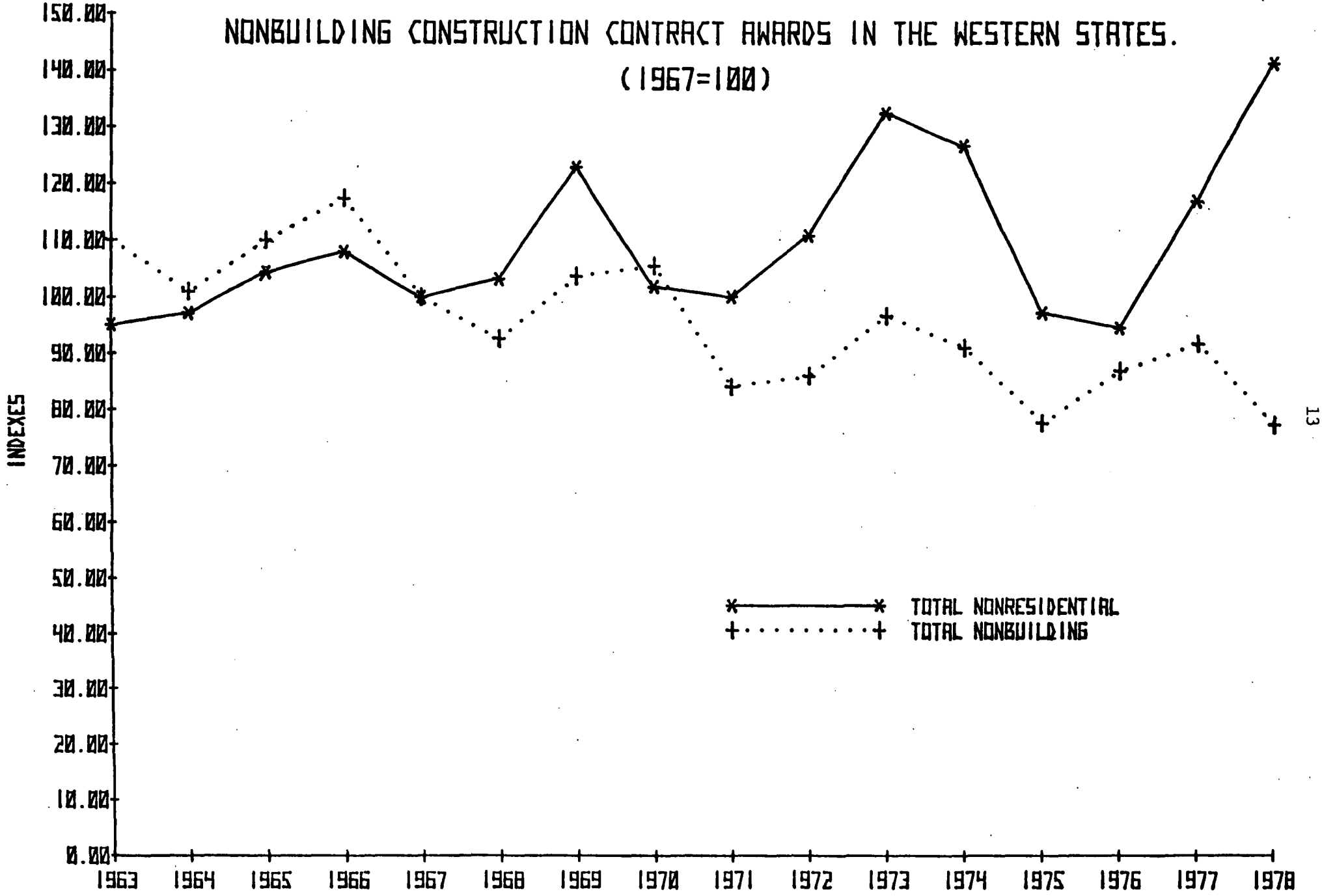
steel derived from demand for consumer durables and for producer durables are both reflected in the level of industrial production. Demand for steel originating as a result of residential construction activity--appliances, hot water heaters, air conditioners, etc.--also is included in the level of industrial production. Steel demand elements not reflected in the level of industrial production are nonresidential construction and nonbuilding construction. Nonresidential construction includes commercial, industrial, and institutional construction; nonbuilding construction includes projects such as highways, bridges, treatment facilities, and power plants. Together, these construction activities account for over 50 percent of Western States steel market demand.

Figure 3 shows the cyclical trends in nonresidential construction and nonbuilding construction activity in the Western States, 1963-78. It is based on the table that follows. The business cycle pattern these construction indexes reveal is, in general, quite similar to the cyclical pattern of industrial production. The timing of recession downturns and of expansion peaks, especially for nonresidential construction, parallels the recognized recession and recovery year patterns of the period. Steady growth marked the early and mid-1960's, with a mini-recession in 1964 and 1967, and then a sharp upturn that peaked in 1969 for nonresidential construction and in 1970 for nonbuilding construction. The second business cycle for nonresidential construction spans the period 1969-73 as it did for industrial production, except that for nonresidential construction the recession trough continued into 1971 and the sharp downturn did not occur until 1975. The third business cycle for nonresidential construction activity started in the turning point year 1973; the index of contract awards fell 29 percent from that year's record level to a level in 1976 lower than in any year of the entire period. Nonresidential construction, however, shows more longrun strength than nonbuilding construction, which reveals a slow but steady decline. The level of nonresidential activity increased 50 percent from an index of 95 in 1963 to a high of 142 in 1978. In contrast, nonbuilding construction decreased 30 percent from an index of 110 in 1963 to a low of 77 in 1978.

Figure 4 shows the individual patterns of commercial construction, industrial construction, and institutional construction. It is clearly evident that the strength of total nonresidential construction activity is based on commercial construction--62 percent of the total in 1978. Institutional construction has been on a steady downturn since 1974 to a level 35 percent below that of 1963.

Nonbuilding construction and institutional construction activities are steel-intensive end-use markets which contributed strongly to the Western States steel demand in the early and mid-1960's. Their steady decline since 1965-66 has dampened steel demand but has been more than offset by the increases in commercial and industrial construction. These downward trends are evident in figure 5 and contrast with the volatile patterns of industrial and commercial construction.

FIGURE 3.--INDEXES OF NONRESIDENTIAL CONSTRUCTION CONTRACT AWARDS AND NONBUILDING CONSTRUCTION CONTRACT AWARDS IN THE WESTERN STATES. (1967=100)



Source: Following table.

Western steel market demand indicators: Indexes of nonresidential construction, by components, and of nonbuilding construction, 1963-78

(1967=100)

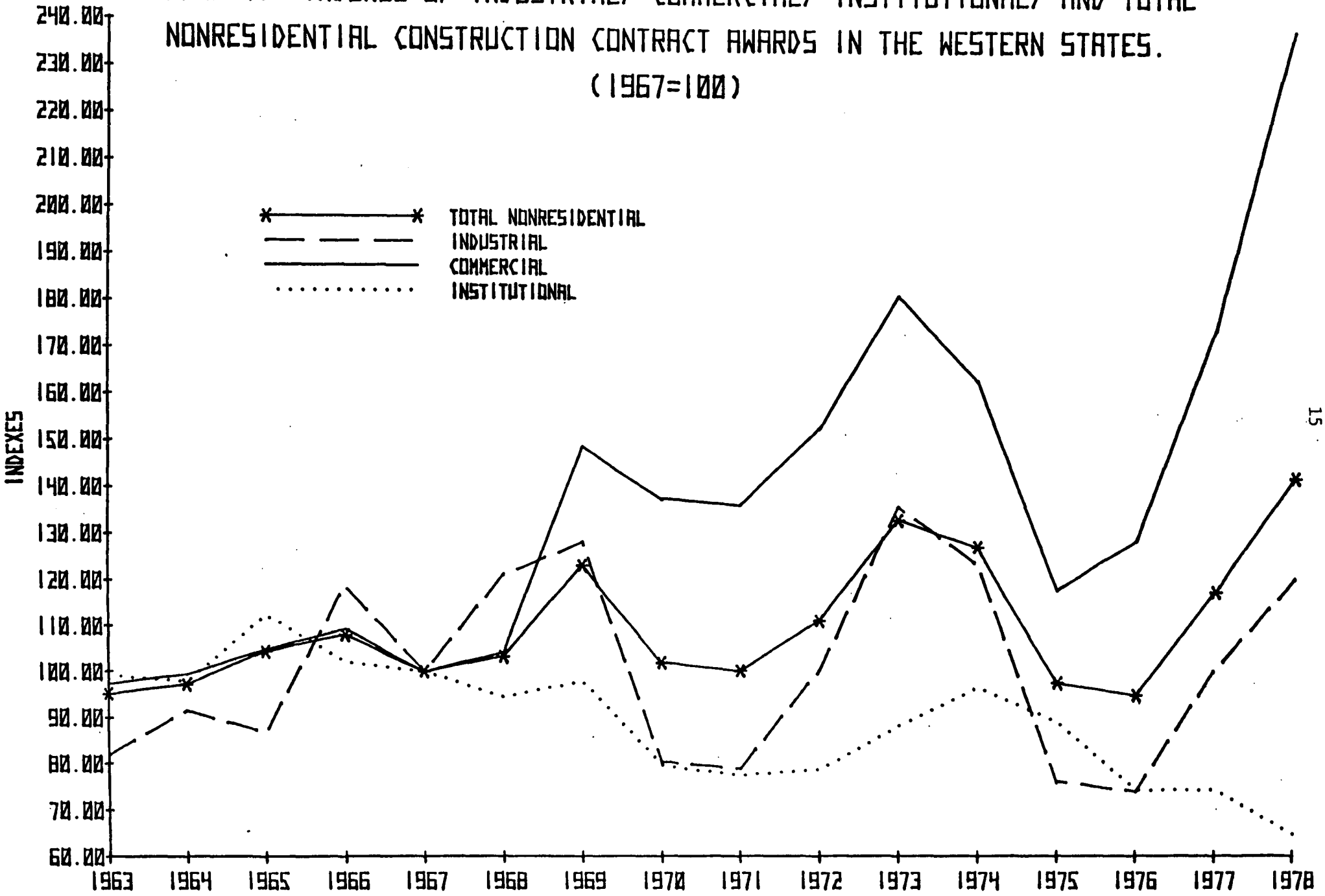
Year	Nonresidential construction 1/				Nonbuilding construction 2/
	Commercial	Industrial	Institutional	Total	
1963	97	82	99	95	110
1964	99	91	98	97	101
1965	105	87	112	104	110
1966	109	119	102	108	118
1967	100	100	100	100	100
1968	104	121	94	103	93
1969	148	128	98	123	104
1970	137	80	80	102	106
1971	136	79	77	100	84
1972	152	100	79	111	86
1973	181	136	88	133	97
1974	163	123	96	127	91
1975	118	76	89	98	78
1976	128	74	74	95	87
1977	174	101	74	118	92
1978	238	120	65	142	77

1/ Calculated from F. W. Dodge data on contract awards in the Western States, based on millions of square feet.

2/ Calculated from F. W. Dodge data on dollar value of contract awards in the Western States, adjusted using nonresidential structures price deflator as contained in the 1979 Economic Report of the President.

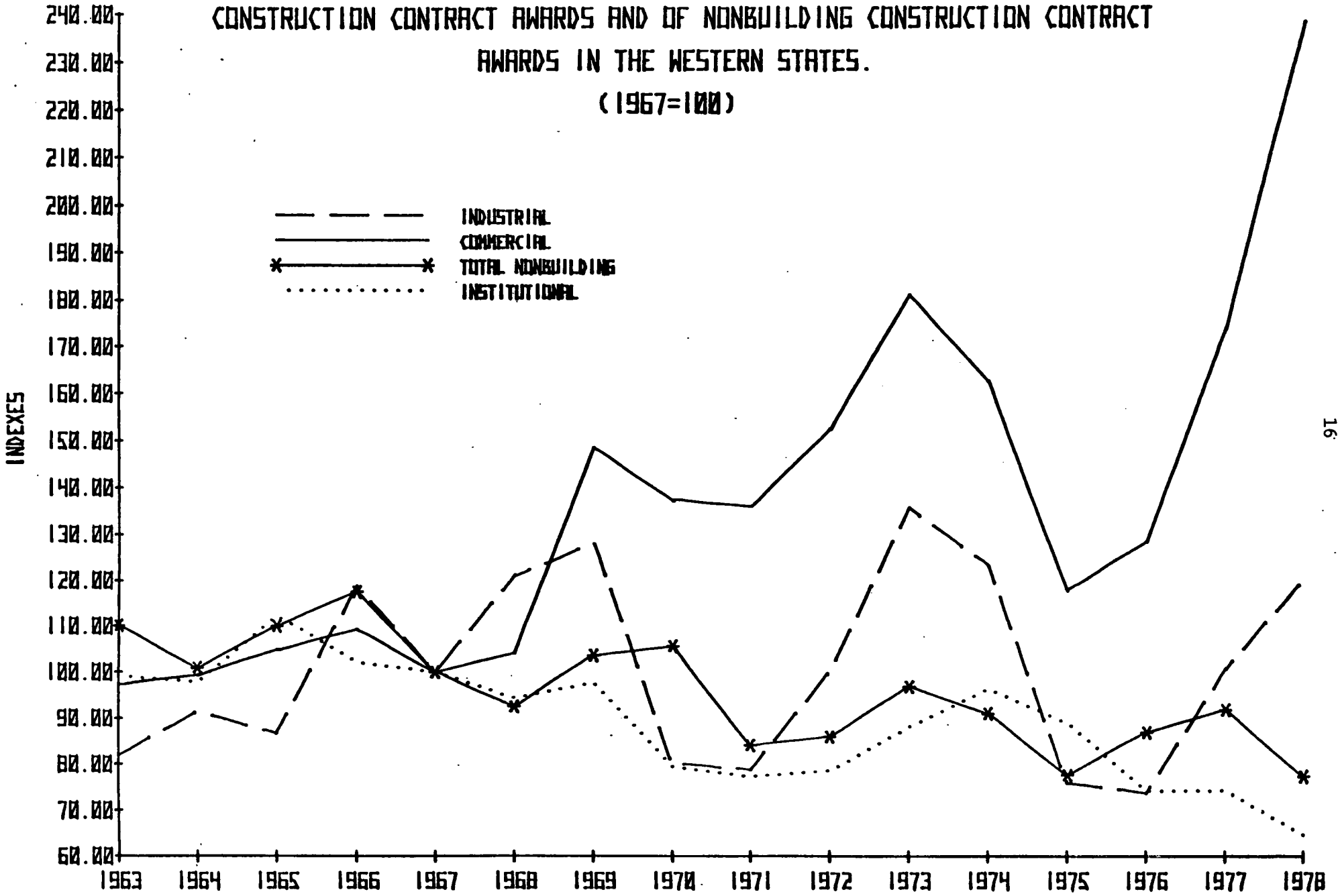
Source: Compiled from F. W. Dodge figures on construction contract awards in the Western States.

FIGURE 4.--INDEXES OF INDUSTRIAL, COMMERCIAL, INSTITUTIONAL, AND TOTAL NONRESIDENTIAL CONSTRUCTION CONTRACT AWARDS IN THE WESTERN STATES. (1967=100)



Source: Table on page 12.

FIGURE 5.--INDEXES OF INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL NONRESIDENTIAL CONSTRUCTION CONTRACT AWARDS AND OF NONBUILDING CONSTRUCTION CONTRACT AWARDS IN THE WESTERN STATES.
(1967=100)



Source: Table on page 12.

Annual and cyclical changes in steel demand and supply in the Western States market

Despite the fact that steel demand in the Western States generally parallels that region's business cycle, a close look reveals significant differences in the respective direction and rate of annual and cyclical changes in business cycle indicators and the level of steel demand. The following table presents data (1962-78) on annual and cyclical changes in Western States industrial production, durable goods production, and nonresidential construction as indicators of the business cycle impact on the derived demand for steel. Similar data are shown for changes in apparent steel consumption, domestic shipments, and imports. These data show the overall steel supply response and that of its domestic and import components to business cycle changes in demand. Comparisons of cyclical changes are shown for recession periods as well as for recovery and expansion periods.

Specifically, the data show that over almost the entire period the direction of change in the business cycle indicator(s) is paralleled by an equal or greater change in the Western States market for steel. With respect to the broader economic activity indicator--industrial production--only two exceptions appear, one in 1967 and another in 1969. In both these years, industrial production showed an upturn, yet the Western steel market figures showed a downturn. Industrial production expanded by 6 percent in 1967 and by 4 percent in 1969. In contrast, apparent consumption of steel declined by 5 percent in 1967 and by the same percentage in 1969. In both years, inventory reductions explain the apparent consumption downturns in the face of expanding demand.

The direction of change in imports' contribution to total supply matches that of apparent consumption in every year except two--1971 and 1973. In 1971, a recession year, apparent consumption fell by 2 percent, while imports increased 12 percent despite a long west coast dock strike. An opposite pattern appears in 1973; imports fell 15 percent as apparent consumption increased 11 percent. 1/ In 7 of the 16 years, the volatility of the Western steel market response to changes in the level of economic activity as measured

1/ Strong world demand shunted more foreign steel to other areas and less to the Western States market.

Western States steel market: Changes in indicators of demand, indicators of supply, 1963-78, during cyclical periods of expansion, 1962-69, 1971-74, 1975-78, and during recession, 1969-71 and 1974-75

Period	Change in indicators of cyclical demand from preceding year			Change in steel market indicators from preceding year					
	Durable goods production	Nonresidential construction	Industrial production	Apparent consumption		Domestic shipments in and to the region		Imports	
	Percent	Percent	Percent	1,000 short tons	Percent	1,000 short tons	Percent	1,000 short tons	Percent
1963	1/	1/	7.3	665	10.5	451	8.4	214	22.9
1964	7.1	2.1	3.2	525	7.0	352	6.1	173	13.1
1965	4.9	7.5	6.1	1,000	13.3	619	10.0	381	28.8
1966	9.4	3.5	11.1	359	4.2	173	2.6	186	10.9
1967	8.5	-4.6	5.8	-404	-4.6	-336	-4.8	-86	-3.6
1968	9.6	3.3	6.3	1,103	13.0	288	4.4	815	44.7
1969	2.5	21.9	4.1	-502	-5.3	-447	-6.5	-55	-2.1
1970	-8.5	-17.9	-6.0	-328	-3.6	-148	-2.3	-180	-7.0
1971	4.0	-1.8	-.1	-153	-1.8	-437	-6.9	284	11.8
1972	20.8	11.0	8.8	460	5.4	-159	-2.7	619	23.0
1973	7.9	19.6	10.2	950	10.5	1,444	25.2	-494	-14.9
1974	-5.5	-4.6	2.3	1,036	10.4	-248	-3.5	1,284	45.7
1975	.0	-23.3	-6.0	-3,609	-32.7	-1,840	-26.6	-1,769	-43.2
1976	24.7	-3.4	9.8	570	7.7	37	.7	533	22.9
1977	16.9	23.9	3.4	666	8.3	214	4.2	452	15.8
1978	7.5	20.9	E 7.0	1,258	14.5	249	4.7	1,009	30.5
Cyclical expansion:									
1962-69	2/ 49.5	2/ 56.4	56.4	2,746	43.5	1,100	20.5	1,646	175.9
1971-74	3/ 23.2	72.2	20.1	2,446	28.5	1,037	17.6	1,409	52.5
1975-78	4/ 56.8	49.8	22.6	2,494	33.6	500	9.8	1,994	85.7
Recession:									
1969-71	-4.8	-18.6	-6.8	-481	-5.3	-585	-9.0	5/ 104	5/ 4.0
1974-75	6/ .0	7/ -38.4	-8.9	-3,609	-32.7	-1,840	-26.6	-1,769	-43.2

1/ Not available. 2/ 1963 is the base year for this percentage change. 3/ 1970-73 was the expansion period for durable goods production and reflects a 36 percent increase. 4/ 1974 was the trough year of recession for durable goods production, at the same production level as 1975. 5/ The downturn for imports was 1968-70 and amounted to a drop of 235 thousand tons or 9 percent. 6/ 1973 was the turning point year for the decline in durable goods production which fell 5 percent. 7/ The cyclical downturn in nonresidential construction spanned the period 1973-76 and reflected a 29 percent decline.

Source: Durable goods production, Federal Reserve Bank of San Francisco; nonresidential construction, F. W. Dodge Contract Awards; industrial production, calculated from data provided by U.S. Steel Corp. based on Federal Reserve Index; apparent consumption and domestic shipments, calculated from figures provided by Kaiser Steel Corp. based on AISI data; imports, official statistics of the U.S. Department of Commerce.

by industrial production is evidenced by changes in the market for steel that range from half again as large a change (1963) to more than 5 times the rate of change in economic activity (1975), as shown in the table below.

Western steel market: The volatility of changes in the apparent consumption of steel compared to changes in the level of economic activity as measured by industrial production, specified years, 1963 to 1977

Year	Percentage change from preceding year	
	Industrial production	Apparent consumption
1963	7	11
1964	3	7
1965	6	13
1968	6	13
1974	2	10
1975	-6	-33
1977	3	8

Only in one year, 1973, was the percentage change in the level of economic activity in the Western States matched by the percentage change in the Western market for steel; in that year, both industrial production and apparent steel consumption increased by about 10 percent. In each of four years, 1966, (1970), 1972, and 1976, the growth (or decline) in the demand for steel was less than that of industrial production.

The relative strength of durable goods production and nonresidential construction.--The direction of change in Western States levels of durable goods production (1963-78) tracks that of industrial production. One exception appears in 1974; in that year, industrial production increased about 2 percent, but durable goods production fell almost 6 percent. Nonresidential construction, however, reflects growth level changes in the direction opposite to that of durable goods production in 4 separate years. 1/ In each instance, the stimulus to overall steel demand generated by growth in durable goods production was diluted or offset by a decline in nonresidential construction. 2/

The degrees of change in the level of nonresidential construction and durable goods production seldom matched in the 11 years in which parallel direction of change occurred. There is a wide divergence between their respective growth or negative growth rates. In 5 separate years, 3/ nonresidential construction provided a much stronger growth impetus to steel

1/ 1967, 1971, 1975, and 1976.

2/ This same growth offset is evident if the nonresidential construction effect is lagged by a year; a lag of 6 months is considered appropriate in quarterly time series measuring the impact of nonresidential construction awards on steel demand.

3/ 1965, 1969, 1973, 1977, and 1978.

demand than did durable goods production. The annual percentage increase in nonresidential construction in those years was, on average, more than twice that of durable goods production. In 1970, durable goods production showed a percentage drop of less than half that of nonresidential construction. The growth of durable goods production, however, far outpaced that of nonresidential construction in 4 years of the subject period, 1/ thus providing a much stronger boost for Western States steel demand. In those years, the average percentage increase in the level of durable goods production above that of nonresidential construction was 61 percent.

Expansion period growth pattern.--Cyclical growth in the Western steel market, 1962-69, amounted to 44 percent or about one-fifth less than the expansion of economic activity during that period as measured by industrial production, which increased 56 percent. During the 1971-74 cyclical uptrend, the growth in the Western steel market, spurred by a 72-percent increase in nonresidential construction, was 29 percent compared with 20 percent in industrial production.

In the 1975-78 cyclical recovery and expansion period, the Western States steel market increased by 34 percent (in tonnage terms), half again as much as the percentage increase in industrial production. Sharp increases in durable goods production and nonresidential construction created this surge in steel demand.

Analyzed in terms of tonnage increases, imports took most of the trough-to-peak growth in the Western steel market in each cyclical expansion period, as shown in the following tabulation (in million of short tons):

Period	Imports		Domestic shipments	
	Total	Annual average	Total	Annual average
1962-69	1.7	0.2	1.1	0.2
1971-74	1.4	.5	1.0	.4
1975-78	2.0	.7	.5	.2

Domestic shipments' growth in absolute terms declined from 1.1 million tons in the 1962-69 expansion period to only 0.5 million tons in the 1975-78 cyclical recovery period, or grew at the same annual average, 0.2 million tons. Import tonnage growth during the same two periods increased from 1.7 million tons to 2.0 million tons or from an annual average growth of 0.2 million tons to 0.7 million tons.

1/ 1964, 1966, 1968, and 1972.

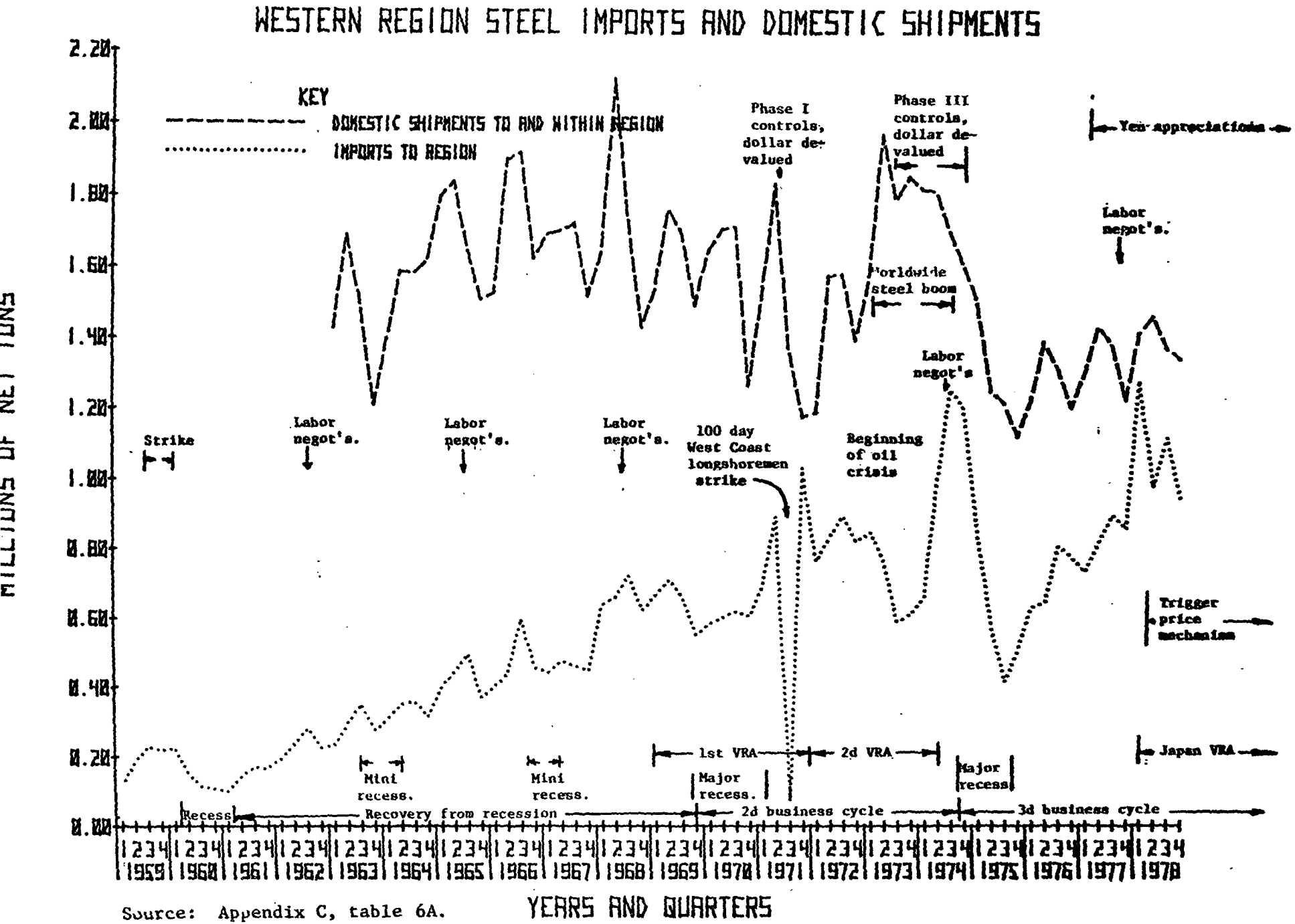
Recession period growth pattern.--During the 1969-71 recession, the level of economic activity in the Western States, declined by 7 percent and apparent consumption of steel fell by 5 percent. In contrast to domestic shipments of steel, which slumped 9 percent, imports grew by 4 percent in the Western market even in the face of the first voluntary restraint agreement (VRA) limiting the level of imports. Economic activity as measured by Western States industrial production decreased 9 percent in the 1974-75 recession, but the impact on the Western steel market was even more severe. Apparent steel consumption fell 33 percent or 3.6 million tons, a decline shared almost equally by imports and domestic shipments.

Factors affecting the market share of imports and domestic shipments.--Endogenous factors of cyclical domestic demand explain the overall patterns of steel consumption in the Western States. Although the business cycle in the United States and in the industrialized countries has affected the relative share of domestic shipments and imports in total supply, many other external events and policies (foreign and domestic) have affected the market shares of domestic and imported steel during the past two decades. These factors are largely nonmarket and disruptive in effect. They include dock and teamster strikes, labor contract negotiations, two devaluations of the U.S. dollar, price controls, an import surcharge, two voluntary restraint agreements limiting the level of imports, the Vietnam war, the world steel boom in the mid-1970's, the oil crisis, unilateral voluntary restraint by Japan in its 1978 steel exports to the United States, the TPM (implemented by third quarter 1978) and the appreciation of the yen against the dollar. These largely nonmarket forces operated within the cyclical framework of business recession, recovery, and expansion.

Figure 6 shows the quarterly import and domestic shipment components of steel supply (by quantity) to the Western States market (1959-78) and the chronology of events and policies that affected the steel market and the relative movements in imports and the domestic supply of steel. Recessions (and mini-recessions) are clearly paralleled by dips in imports and domestic shipments. Expansion periods appear more distinctly in the import pattern than in that of domestic shipments, as imports captured most of the longrun growth. In many instances the effect of a particular event is quite evident. For example, imports' response to the steelworkers' strike in 1959-60 appears as a clear gain. Their response to the 1971 dock strike is visible in the closeout of imports followed by an equally sharp rise to supply pent-up demand. The impact of upcoming labor negotiations in 1962, 1965, and 1968 spurred sharp mid-year surges in imports that are readily apparent.

Multiple events overlap in many other instances and cloud specific impact on domestic shipments or imports. Imports continued to gain ground during the first VRA; at the same time, the 1969-71 recession caused a sharp decline in domestic shipments not paralleled by a drop in imports. In 1973-74, domestic shipments climbed and held, but imports fell sharply in 1973 and increased steeply in 1974 as domestic shipments after mid-year plummeted. Yen appreciation against the dollar appears to have had little, if any, dampening effect on imports. In contrast, the introduction of the trigger price mechanism (TPM) is marked by a first quarter 1978 surge in imports in anticipation of the implementation of the new policy.

FIGURE 6



Source: Appendix C, table 6A.

Figure 7 combines domestic shipments and imports (in millions of tons) to present the longrun trend in apparent consumption during 1959-78. This graph provides a perspective of the lack of longrun growth in domestic shipments. The level of domestic shipments was 5.6 million tons in 1959, about 7 million tons during peak years of demand (1966, 1968, 1973, and 1974), but only 5.6 million tons in 1978, having increased from the two decade low of 5 million tons in 1975.

Figure 8 adds to the perspective of long-run growth trends in imports and domestic shipments. It presents trend lines based on indexes of (1) industrial production as a proxy for the longrun trend in economic activity, (2) domestic production, and (3) imports.

Domestic shipments clearly indicate a declining longrun trend; in contrast, imports of steel reflect a longrun trend of growth that exceeds that in the level of Western States economic activity as measured by the growth in industrial production.

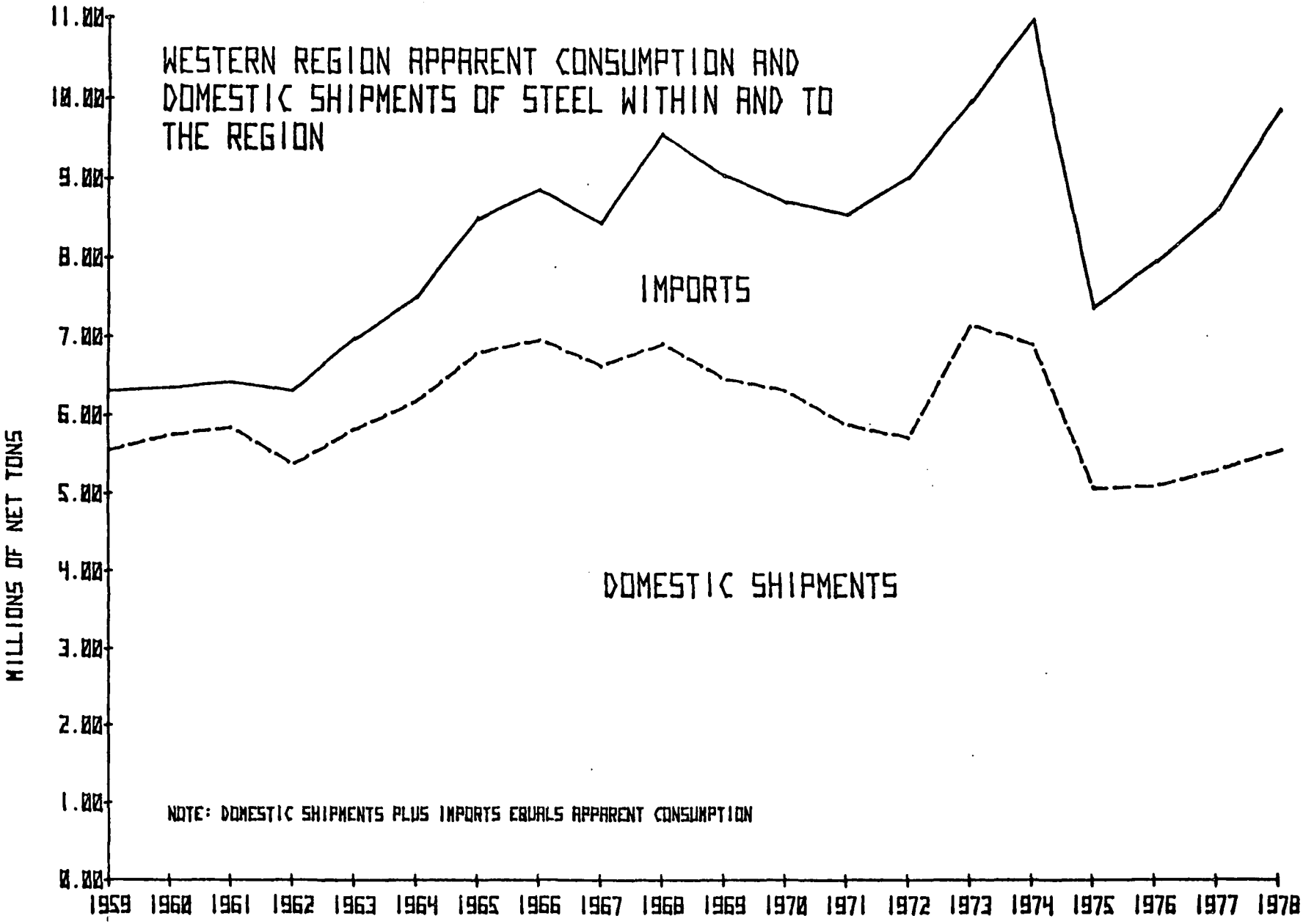
Western producers

Steel production in the Western States is highly concentrated geographically. The 23 producers of steel mill products located in the region operate 35 establishments (table 1, app. C). Of these, 18 of the firms and 27 of their establishments are located in California, the Western States' major steel-producing and steel-consuming State. The Northwest represents a lesser area of concentration, with producers located near Portland and Seattle. In addition, Pueblo, Colo., the home of CF&I Steel Corp., is the location of a significant portion of total production in the Western States. CF&I, however, because of its location in Colorado is not a significant competitor in the Western coastal markets.

Of the 23 Western producers, 4 accounted for 77 percent of shipments by Western producers of all steel mill products in 1978, which indicates the existence of a high degree of concentration by company, in addition to locality (table 2). These four are the three integrated producers located in the region--Kaiser Steel Corp., CF&I Steel Corp., and U.S. Steel Corp.--and a nonintegrated producer, Bethlehem Steel Corp. These companies not only operate mines supplying the necessary raw material ingredients, but also own blast furnaces, steelmaking furnaces, and rolling and finishing facilities. The operations of Bethlehem Steel Corp. in the Western States are not fully integrated, in that they do not include blast furnaces.

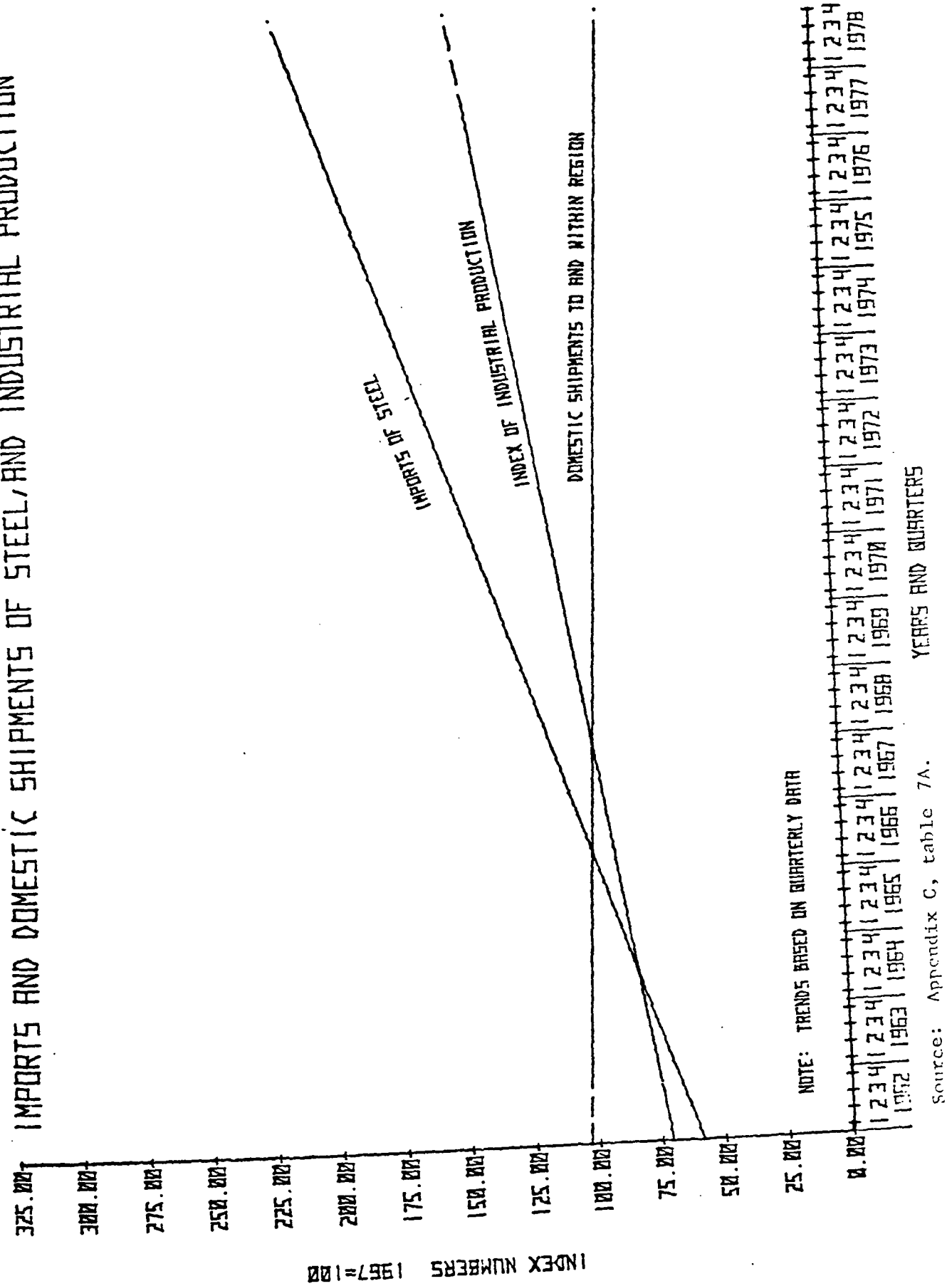
In addition to concentration of Western States steel production by firm, production in the region is also concentrated by product line. The four largest producers in each product category accounted for no less than 62 percent of Western producers' shipments in 1978. The four largest firms as used here are not necessarily the four largest producers of the carbon steel mill products previously discussed. For example, of the four largest producers of reinforcing bars, three are minimills. The four largest producers in each of the major product lines supplied virtually all of the

FIGURE 7



Source: Appendix C, table 5A.

FIGURE 8



Source: Appendix C, table 7A.

plates, sheets, and strip; 62 percent of deformed reinforcing bars; 99 percent of angles, shapes, and sections combined with rails; and 72 percent of pipes and tubes. The four largest producers of plates, sheets, and strip supplied 46 percent of apparent consumption. The lowest share of apparent consumption of the four largest producers of any product line was 20 percent (pipes and tubes). Concentration in other years was somewhat similar to that in 1978.

There are few Western producers competing in a large number of product lines (table 1). In 1978 only 3 producers were engaged in the production of 9 or more carbon steel mill products, while 16 producers limited output to only 1 or 2 such products. The products dominated by the integrated producers, such as flat-rolled products, show few competitors. Conversely, wire shows the largest number of competitors (10 in 1978). Deformed reinforcing bars, the mainstay of the minimills, have 9 producers while pipes and tubes, product lines in which many fabricators compete along with integrated producers, show 8 competitors.

Producer profiles

Kaiser Steel Corp. is the largest steel producer in the Western States. Carbon steel mill products account for about three-fourths of the firm's total sales. The company produces a diversified line of steel mill products at its single mill in Fontana, Calif. Kaiser obtains iron ore for use in its steelmaking facilities from its Eagle Mountain, Calif. mine, and coal from the company's holdings in Utah and New Mexico. Kaiser also imports iron ore from Hamersley Holdings Ltd., an Australian firm in which Kaiser has, but is in the process of selling, a 28-percent interest. This iron ore is blended with its domestic iron ore to obtain a higher quality furnace feed.

In addition to its steelmaking facilities, its domestic coal and iron ore operations, and its interest in Hamersley, Kaiser also operates fabricating facilities at Fontana and Napa, Calif.; construction and marine assembly yards at Oakland and Vallejo, Calif.; drum manufacturing and reconditioning facilities in California and Oregon; and steel tubing and metal stamping facilities in Southern California. The firm also has a 32.5-percent interest in Kaiser Resources Ltd., a Canadian company engaged in coal mining and exporting, oil and gas exploration and production, and asphalt paving and related construction activities; and engages in worldwide ocean transportation through its wholly owned subsidiary, Kaiser International Shipping Corporation.

In late 1975, Kaiser began a $233 million modernization program at its Fontana mill in an effort to reduce operating costs, increase efficiency, provide higher quality products to its customers, and avoid additional investment for emission controls at its open hearth furnaces. The modernization program, which provides $38 million for pollution control, includes a two-unit basic oxygen steelmaking shop and a continuous slab caster. The new steelmaking shop began operation in October 1978 and replaced the firm's existing open hearth furnaces. Two open hearth furnaces are to be maintained on a stand-by basis. The continuous caster began operation in March 1979.

In 1977 Kaiser announced other major actions to improve efficiency. These included changes in its top corporate management and the closing of its blooming mill, structural mill, and merchant mill. According to the firm, these mills ". . . were made unprofitable by rising costs and competition from low priced foreign steel." About 300 employees were affected by the shutdowns.

Kaiser's modernization program has been financed primarily through debt. At the end of 1978, Kaiser's long-term debt totaled $346 million, compared with $482 million in stockholders equity. The long-term debt-to-equity ratio for Kaiser is several times greater than that for Bethlehem, U.S. Steel, or CF&I.

At midyear 1979 Kaiser announced that it had tentatively agreed to sell its interest in Hamersley Holdings, Ltd., for about $207 million. Proceeds from the sale will reportedly be used, at least in part, for debt retirement.

U.S. Steel Corp., the second largest Western producer, operates facilities at Provo, Utah (Geneva Works), San Francisco, Calif. (Pittsburg Works), and Los Angeles, Calif. (Torrance Works). Although U.S. Steel produces almost all of the products covered in this investigation, its principal products include sheets and strip, tin mill products, wire rods, plates, pipes and tubes, and angles, shapes, and sections. In the Western States, U.S. Steel's entire steelmaking facilities consist of open hearth furnaces. U.S. Steel is the only known steel producer which has a continuous caster associated with open hearth furnaces. In 1978, raw steel production from U.S. Steel's Western States facilities accounted for 8 percent of the firm's total raw steel production.

At Provo, Utah, U.S. Steel, in addition to making ingots, principally manufactures flat-rolled products and structural shapes. The principal products produced at Torrance include reinforcing bars, hot-rolled bars, and structural shapes. Ingots produced at Torrance are supplemented by ingots from Provo, Utah.

U.S. Steel's Torrance Works consists of four open hearth furnaces, a continuous caster, and a bar and structural mill. According to a company official, costs at this facility are high and its future viability is in doubt. Substantial additional investments in this facility, such as installation of a basic oxygen furnace (BOF), is not contemplated because the return would not justify the expenditure, according to an industry source.

At U.S. Steel's Pittsburg, Calif., facility, tin mill products and pipe are the principal products. Its tin mill was the first such mill installed in the Western States, and its pipe mill is the largest pipe-producing facility for small-diameter pipe in the Western States. All of U.S. Steel's open hearth furnaces and primary rolling mills at its Pittsburg works were closed in 1964. Thus, semifinished products for this plant must be shipped from the Geneva works or from facilities located in the Midwestern or Eastern areas.

For its Western operations, U.S. Steel obtains iron ore from its mines in Utah and Wyoming as well as from outside sources. Coal, obtained from the corporation's mines in Utah and Colorado, is mixed with purchased coal to improve its coking quality. Limestone is obtained from U.S. Steel's operations in Utah.

CF&I, located in Pueblo, Colorado, is the third largest Western producer and the most specialized of the integrated producers. Its principal product is rails; it is the only Western producer of this article. It is also a large producer of pipes and tubes, bars, including reinforcing bars, and angles, shapes, and sections. It produces all of the products covered in this investigation, except sheets and strip and tin mill products.

The firm's $85 million rail mill expansion and modernization program is expected to be completed at midyear 1979. The new facility will increase rail production capacity by 50 percent, to 550,000 tons per year. Rails of up to 82 feet long, more than twice the standard length, are now being produced.

CF&I obtains iron ore from its mines in Wyoming and has become self-sufficient in high-volatile metallurgical coal with the opening of a new mine in Colorado. The company plans to become self-sufficient in low-volatile coal with the development of a mine in Oklahoma. Improved blast furnace operations were achieved in 1978 at Pueblo with the use of upgraded iron ore from Wyoming. Pueblo's molten iron requirements can now be produced by three blast furnaces rather than four, permitting one to be placed on standby.

Bethlehem Steel Corp., the fourth largest producer in the Western States, operates facilities at Los Angeles, Calif., and Seattle, Wash. Although Bethlehem has a capacity to melt raw steel in excess of 1 million tons in its Western facilities, its actual production has been far below this amount. A Pacific Coast Division was recently established in Los Angleles to direct steel operating and marketing activities in the Western States.

The Los Angeles facility operates three electric furnaces for steelmaking. Bars, including reinforcing bars, wire rods, strip, and structural shapes are the principal mill articles produced at this location. Prior to the closure of its Los Angeles wire mill in 1978, Bethlehem converted the bulk of its wire rod production to wire. Most of the wire rod being produced at this facility is now being shipped to other consumers. A substantial portion of reinforcing bar production is consumed in the plant's reinforcing bar fabrication shop. At Seattle, Bethlehem operates two electric furnaces. Although a variety of steel mill products are rolled, reinforcing bar is the largest single product.

In early 1974, Bethlehem closed its Pinole Point, Calif., plant consisting of sheet galvanizing and fabricating operations. This facility has recently been sold to a former Kaiser Steel official who, according to the trade, plans to reopen the galvanizing line using imported raw material. The Pinole Point plant was originally planned to be a fully integrated steelmaking complex. Bethlehem's decision to abandon construction of such a facility was ascribed directly to ". . . the effect of the explosive growth of imports in the Western States."

In 1976 Bethlehem's structural fabrication facility at Torrance, Calif., was closed and subsequently sold to a local fabricator. In late 1977, it discontinued production of merchant bars, reinforcing bars, and light structurals at South San Francisco, continuing only rebar fabrication. An estimated 300 employees were affected by the shutdown at San Francisco. In 1978 two facilities--the wire rope and wire mills--at the Los Angeles plant were closed. About 145 employees were affected. All of Bethlehem's discontinued operations were attributable ". . .to the effect of imports on the markets for the products of the facilities."

Shipments of the four largest producers supplied 36 percent of apparent consumption of steel mill products in the Western States in 1978. The 19 remaining producers, the majority of which are small, individually contribute a minor share to apparent consumption (table 1). Nonetheless, these producers are often of major importance in submarkets and in particular product lines. For example, although the largest share of total plate shipments within the Western States in 1978 was supplied by three producers located in California, Oregon Steel Mills, Division of Gilmore Steel Corp., dominates the plate market in the Northwest and is virtually without competition from the major Western producers.

Many of these smaller firms are minimills which lack basic steelmaking furnaces and which produce 500,000 tons or less of raw steel per year. Geographically, the seven minimills operating in the Western States are situated near the coast or adjacent to major metropolitan areas. Two are located in Los Angeles, one near San Francisco, two at Portland, and one each in Phoenix and Seattle. Many of the minimills are privately held, and ownership has been in the same family for generations. The minimills are dependent in large part upon the price and availability of scrap, which is used to feed the mills' electric furnaces, and the level of construction activity within the marketing area of the mill. All of the minimills produce reinforcing bars except Oregon Steel Mills, Inc.; two produce only reinforcing bars.

Oregon Steel Mills, Inc., Division of Gilmore Steel Corp., is the largest minimill located in the Western States. It is the only minimill specializing in the production and sale of carbon steel plate and the only facility that has a processing plant for the direct reduction of iron ore. This permits the firm to use iron pellets, as well as scrap, for its electric furnaces. In 1974 the firm closed its bar mill, which produced hot-rolled bars, reinforcing bars, and light structural shapes. According to the firm, the Division which produced steel bars was closed because of ". . . low productivity, pollution control, and low selling prices of the products produced compared to costs of production."

In 1976 Oregon Steel Mills began constructing a strip mill. Startup and testing of the facility began in late 1977 but was not completed when a labor strike shut down the firm's operations from September 1977 through May 1978. As a result, the facility is not expected to come on stream until midyear 1980.

Ameron, Inc., offers one of the widest ranges of carbon steel mill products of the minimills located in the Western States. In 1975 the firm entered into a joint venture with Tokyo Steel Manufacturing Co. and Mitsui & Co. for the construction and operation of a steel billet casting facility.

In February 1977 the joint venture company, Tamco, completed construction of the facility and a single 120-ton capacity furnace with continuous casting replaced several 15-ton furnaces contained in Ameron's adjacent older melt shop. Because of prolonged startup problems, however, the facility did not reach planned production levels until the fourth quarter of 1978. Ameron provides all operating personnel and administration services, for which it receives a management fee based upon Tamco's output. A 15-year Output Purchase Agreement between Tamco's shareholders (Ameron, 50 percent; Mitsui & Co. (USA) Inc., 25 percent; and Tokyo Steel Manufacturing Co., 25 percent) provides that each, according to its ownership percentage, will ". . . purchase a minimum aggregate of 300,000 tons of billets annually, if produced, at a price that will give the company a profit, before Federal and State income taxes, equal to 10 percent of all costs."

Cascade Steel Rolling Mills, Inc., McMinnville, Oreg., is a unique, specialized, and efficient Western minimill. Situated in a predominantly farming region, rich in labor resources, and possessing a plentiful supply of scrap, the company secured a multimillion-dollar agricultural loan to finance the rebuilding of much of the mill. Specializing in the production of 3/8- to 1-3/8 inch reinforcing bars, the company has achieved one of the lowest production costs in the U.S. steel industry. Although the firm has installed a shredder to reduce the costs of scrap processing, its most unique cost advantage relative to its California competitors is its cheap power source, the Bonneville Power Administration. In 1977 utilization of this power source provided cost savings to the firm of an estimted $15 or more per ton.

In 1977 Cascade began production of steel fence posts in order to stabilize utilization of plant facilities. In early 1979 the firm completed a remodeling of the rolling mill to improve rolling efficiency and to permit the firm to begin production of angles, channels, flats, and rounds. Substantial increases in mill capacity are planned during the next several years.

Pacific States Steel Corp., a minimill in the San Francisco area producing deformed rebars, bar-size shapes, other bars, and angles, shapes, and sections, discontinued operations in August 1978. Sources in the trade generally agreed that reasons for the closure related primarily to the firm's management, labor problems, and relatively inefficient production facilities (all furnaces were open hearth).

The primary beneficiary of the shutdown of Pacific States Steel Corp. appears to be Cascade Steel Rolling Mills. In February 1978, Klinger Steel Division of Cascade doubled its fabricating capability with the acquisition of the operating equipment and contract backlog of the Fabricating Division of Pacific States Steel. The purchased equipment, as well as new equipment, was made part of a new fabricating facility completed in March 1979 by Cascade in the San Francisco area.

The remaining minimill in the San Francisco area, Judson Steel Corp., is also having financial difficulties and is available for sale. In early 1979 a domestic subsidiary of a foreign firm (not a steel producer) had the option to buy the firm.

Johnson Steel & Wire Co., Inc., closed its Los Angeles, Calif., wire mill as of September 1, 1978. Subsequently, the Department of Labor certified its former employees as eligible to apply for adjustment assistance.

Tree Island Steel Co., a wholly owned subsidiary of a Canadian firm by the same name in which Marubeni Corp., a Japanese firm, has a 19.7-percent interest, completed construction of a wire products plant in Los Angeles and began production, on a limited basis, in the fourth quarter of 1978. The firm is producing nails, stucco netting, and welded mesh. Later the company expects to expand into spring wire, bright wire, barbed wire, and chain-link fence. The entry of Tree Island into the Western States wire products market marks the first time a foreign-owned firm has established such production facilities in the Western States. In mid-1979 it was announced that Tree Island planned to build a second U.S. plant in Ferndale, Wash. In addition, the firm is building a new rod mill in Vancouver, British Columbia, which will, when completed, supply wire rod to its U.S. facilities. Startup of the new rod mill is planned for early 1981 with full production scheduled for 1983.

Maruichi Steel Tube Ltd., a Japanese firm reported to be the world's largest industrial tube maker, has begun construction of a pipe mill in Santa Fe Springs, California. The $5 million facility is expected to be completed in early 1980 with a capacity of 3,000 tons per month. Products to be produced include water and gas pipe and square and rectangular tubing. Articles produced at this facility will displace a portion of those currently imported by Maruichi.

Nucor Corporation, a Western States supplier of certain carbon steel mill products from its minimills in Norfolk, Nebraska, and Jewett, Texas, is considering the construction of a minimill in Riverside, Utah (near Salt Lake City). This firm is considered by its competitors in the Western States to be a highly efficient steel producer which aggressively markets its products in the Western States. They anticipate increased competition in product lines produced by Nucor, such as bars and angles, shapes, and sections, when the Utah mill comes on stream.

There are numerous other firms producing carbon steel mill products in the Western States which have no melting facilities and which purchase steel coils (plate, sheets, or strip) for the manufacture of pipes and tubes or wire rod to be converted to either wire or wire products. Almost all of the Western pipe and tube manufacturers, with the exception of the large domestic mills, use Japanese steel coils for part or all of their raw material. The manufacturing process is common to all. Steel coils are slit and then run through an electric resistance weld tube mill. Although the Western tube manufacturers depend entirely upon purchased steel coils, they must compete in the finished product market with the same domestic and foreign suppliers from

which they purchase their raw material supplies. The wire-and-wire-products-producing firms in the Western States are in a parallel situation--i.e., they must purchase wire rods and in turn often compete with the same suppliers in wire and wire products. When domestic or foreign suppliers offer the finished products at or near the price of the coils or wire rods, domestic manufacturers of tubes, wire, and wire products are caught in a competitive squeeze.

California Steel and Tube and Davis Walker Corp. are examples of the type of firm which depends upon purchased raw materials. California Steel and Tube produces mechanical tubing ranging from 3/8 inch to 3-1/2 inches in diameter. Davis Walker is, by far, the largest wire and wire products-producing firm in the Western States, with four plants in California and one in Washington. Davis Walker also manufactures products at two locations in Canada.

The number of producers in the Western States manufacturing barbed wire, nails, and prestressed strand is limited. During 1972-78, 1/ CF&I produced all three products; U.S. Steel Corp. produced nails, and Davis Walker Corp. produced barbed wire. In early 1979 Tree Island began nail production and was planning production of barbed wire later in the year.

In addition to those firms previously mentioned which have closed or reduced operations since 1972, Whitaker Metals, Los Angeles, Calif., a processor of flat-rolled sheets, closed operations in December 1976, and, in late 1977, Witteman Steel Mills Corp., a Fontana, Calif., reinforcing bar producer, filed a petition under Chapter XI of the Bankruptcy Act. Two firms, Senco Products, Inc., and Spotnail Stapling Co., engaged in the production of nails and staples, also ceased operations during the period.

Armor Rolling Mill, San Bernadino, Calif., which reported minor shipments of rebars prior to 1978, is presumed to have also discontinued operations.

Capacity

The capacity of producers in the Western States to melt carbon steel and to produce carbon steel mill products is defined as maximum sustainable output which reflects the firms' normal product mix during a given year. Such data are more useful in establishing a trend for capacity changes than as a measure of specific quantities these firms are capable of producing in a given year (table 3).

Producers in the Western States do not have the capacity to satisfy the region's demand for many carbon steel mill products. Capacity to produce tin mill products and pipes and tubes was below consumption throughout the 1972-78 period while capacity to produce sheets and strip was below consumption in all years except 1975, a year of unusually low demand.

1/ The U.S. International Trade Commission selected 1972 to begin its analysis of the Western U.S. steel market because 1972 was considered a more representative year than either 1971 or 1973. The year 1971 was a recession year, while 1973 was a boom year.

In contrast, capacity to produce plates exceeded consumption in all years except 1974, a year of very high demand. Capacity to produce rebars exceeded consumption throughout the 1972-78 period while capacity to produce other bars (including bar-size shapes) exceeded consumption in all years but 1973 and 1974. In 1973, capacity and consumption were virtually identical, while in 1974 consumption was at a high level.

Although capacity to produce wire rod and wire appears to substantially exceed consumption, internal consumption by the producing firms for the manufacture of more advanced products distorts the quantities of wire rod available to independent wire-drawing firms and the quantity of wire available to users. Those firms in the Western States which have the capacity to produce wire rod also produce wire and wire products using their own production of wire rod as raw material. Based upon such internal consumption and upon confidential information supplied by one of the Western States' largest independent wire drawers, the supply of wire rod from Western States producers available to independent wire drawers falls far short of demand. Firms having the capacity to produce wire use a portion of their wire production to manufacture nails, fencing, and other products made from wire. The large difference between wire capacity and consumption would be substantially reduced, or eliminated entirely, if such captive consumption was subtracted from data on wire capacity.

The carbon steel mill products for which capacity to manufacture is below consumption are primarily products of the integrated producers--Kaiser and U.S. Steel for tin mill products and sheets and strip, and Kaiser, U.S. Steel, and CF&I for pipes and tubes.

Capacity to produce tin mill products and sheets and strip remained virtually unchanged during the 1972-78 period. Kaiser's facilities, located solely within the Western region's major consuming area, would appear to be in the most advantageous position to narrow the gap between capacity and consumption. However, Kaiser's recent expenditures for a major capital investment program used, in large part, to install a new basic oxygen furnace to replace its open hearth furnaces and a continuous caster, suggest that the emphasis of the firm is increased efficiency through modernization rather than increased capacity. According to industry sources these expenditures placed the firm under a heavy debt burden which may limit any substantial near-term capital expenditures for further expansion.

The lack of capacity expansion by U.S. Steel and the closing of Bethlehem's Pinole Point plant reflect managements' decision to concentrate scarce capital in those facilities which have the most potential for offering an acceptable return on the investment. Neither firm has plans to substantially increase investment in its Western States facilities.

With regard to pipes and tubes, Kaiser, CF&I, and U.S. Steel have the bulk of production capacity. Of these firms only CF&I reported an increase in capacity during the 1972-78 period. In addition, data on pipes and tubes obtained from the Commission's questionnaire include such diverse tubular products as oil country goods and mechanical tubing. These articles have separate and distinct uses and are generally manufactured by different firms. Thus, the comparison between capacity to produce and consumption of pipes and tubes is somewhat misleading.

The products for which Western producers' capacity exceeds consumption are generally the products of the minimills. The items produced by the minimills, such as rebars, are generally the least expensive of the carbon steel mill products and require relatively small amounts of capital to begin production.

The inclusion of CF&I's capacity overstates the ability of Western States producers to satisfy demand in the market west of the Rockies for bars, wire rod, wire, angles, shapes, and sections, and pipes and tubes. CF&I accounts for a substantial portion of the region's total capacity to produce these articles. However, because of its location, a substantial portion of its output is marketed in states adjacent to Colorado and in Southwestern oil-producing States, not in the coastal States which represents the major consuming area of carbon steel mill products in the Western States.

Raw steel.--Aggregate capacity of Westen States producers to melt carbon steel remained virtually unchanged during the 1972-78 period. 1/ The relatively low capacity levels for 1972 and 1974 were the result, in large part, of furnace relining at Kaiser's Fontana mill.

Among the four largest raw steel producers in the Western States--Kaiser, U.S. Steel, Bethlehem, and CF&I--capacity changes were mixed. Capacity to melt carbon steel at U.S. Steel's facilities and Kaiser's Fontana mill, except the changes resulting from furnace relining and a labor strike in 1972, remained virtually unchanged. Kaiser's new steelmaking shop that began operating late in 1978 did not significantly change the firm's steelmaking capacity because it replaced open hearth furnaces. The closing of Kaiser's open hearth furnaces leaves U.S. Steel as the only firm in the Western States whose capacity to melt carbon steel is exclusively open hearth.

The capacity of CF&I to melt carbon steel remained unchanged until late 1976, when a new electric furnace was put into operation. The new furnace increased CF&I's capacity by about 300,000 tons. CF&I's open hearth operation was replaced by its first electric furnace late in 1973. Bethlehem reported a downward trend in capacity during the period.

For the seven minimills remaining in operation in 1978, the capacity of two firms remained unchanged during the 1972-78 period; capacity for the remainder increased. Virtually all of the increase in minimill capacity resulted from Gilmore and Northwest adding new furnaces to their operations in 1974 and Ameron's new Tamco facility, which reached planned production levels in 1978. At least one of the minimills plans substantial capacity increases during the next 3 years.

1/ Western producers account for about 7 percent of total U.S. capacity to melt carbon steel.

Plates, sheets, and strip (including tin mill products).--There are five firms in the Western States with the capacity to produce plates--Oregon Steel Mills (Gilmore), Kaiser Steel, U.S. Steel, Bethlehem Steel, and CF&I; two firms with the capacity to produce tin mill products--Kaiser Steel and U.S. Steel; and two firms with capacity to produce sheets and strip--Kaiser Steel and U.S. Steel.

The capacity of these firms to produce plates, sheets, and strip (including tin mill products) remained virtually unchanged during the 1972-78 period. The reduction which occurred in 1974 resulted from the shutdown of Bethlehem's Pinole Point, Calif., plant.

Deformed reinforcing bars (rebars).--There are nine firms in the Western States with capacity to produce rebars. All of these firms operate minimills with the exception of CF&I and U.S. Steel.

The capacity to produce rebars was on an upward trend after 1974. However, in 1978 such capacity dropped to its lowest level of the 1972-78 period. This capacity reduction for rebars resulted from the shutdown of operations by Pacific States Steel Corp. (also a producer of bars other than rebars, and angles, shapes, and sections) in August 1978 and a reduction in operations by financially troubled Judson Steel Corp. The closing of Pacific States and reduction in operations by Judson, the only rebar producers in the vicinity of San Francisco, left a void in that major metropolitan area which is being filled in large part by Cascade Steel's McMinnville, Ore. mill, where major capacity expansion is planned.

Bars other than rebars, including bar-size shapes.--During 1972-77, the capacity to produce these articles remained relatively unchanged. In 1978, however, such capacity declined by 30 percent from the 1977 level and was at its lowest level of the 7-year period. This reduction in capacity occurred because of the shutdown of Pacific States Steel, the shutdown of Kaiser's bar mill in late 1977, and the shutdown of Bethlehem's facility in South San Francisco, also in late 1977.

Wire rods.--There are five firms with the capacity to produce wire rod in the Western States; three of these firms--Ameron, CF&I, and U.S. Steel--account for virtually all of such capacity. During the 1972-78 period, CF&I's capacity to produce wire rod remained unchanged, while U.S. Steel's capacity substantially increased in 1973 and remained unchanged thereafter. Ameron's capacity was on an upward trend during the period, while Bethlehem's capacity steadily declined.

Wire.--Bethlehem's closure of its wire mill in Los Angeles in 1978 left eight firms in the Western States with capacity to produce wire. Three of these firms--U.S. Steel, CF&I, and Ameron-- also produce wire rods. Davis Walker and CF&I have, by far, the bulk of wire-producing capacity in the Western States. Davis Walker, however, which purchases all of its wire rods form outside sources, is by far the largest producer of wire in the Western States.

Angles, shapes, and sections.--The capacity to produce angles, shapes, and sections has been steadily declining since 1973 and, in 1978, reached its lowest level of the 1972-78 period. Prior to 1978 the decline was due primarily to reduced capacity at Bethlehem Steel. In late 1977, Kaiser closed its structural mill and in August 1978, Pacific States Steel Corp. ceased its steel production, leaving four firms--CF&I, U.S. Steel, Bethlehem, and California Steel--with the capacity to produce angles, shapes, and sections. The bulk of total Western States capacity to produce these items is at CF&I.

Pipes and tubes.--There are eight firms which have the capacity to produce pipes and tubes in the Western States. Kaiser, CF&I, and U.S. Steel accounted for 71 percent of total Western States capacity to produce these articles in 1978. Small capacity increases have occurred in 6 out of the last 7 years. Capacity in 1978 was about 10 percent higher than in 1972. The capacity increases that occurred during 1973 through 1975 were accounted for by one of the smaller pipe and tube producers. In 1977, CF&I increased the capacity of its seamless tube mill for the production of oil country goods. In 1978, three of the five smaller firms producing these articles increased capacity.

Production of raw carbon steel

As shown in the following table, during the 1972-78 period production of carbon raw steel in the Western States peaked at 9.0 million tons in 1973, declined to 7.6 million tons in 1976, but rebounded to 8.1 million tons in 1978. The rate of capacity utilization was at a high, stable level from 1972 through 1974, dropped sharply in 1975, and continued to decline in 1976. Capacity utilization remained at the low 1976 level in 1977 before increasing in 1978. In 1978, capacity utilization was 80 percent, compared with 87 percent for the United States steel industry as a whole.

Carbon steel: Capacity to melt, production of raw steel, and capacity utilization in the Western States, 1972-78

Year	Capacity to melt	Production	Capacity utilization
	Million short tons	Million short tons	Percent
1972	9.5	8.3	87
1973	10.1	9.0	89
1974	10.0	8.8	88
1975	10.3	7.9	77
1976	10.4	7.6	73
1977	10.5	7.7	73
1978	10.1	8.1	80

The following table shows raw carbon steel production in the Western States during 1972-78 by type of furnace.

Western producers' production of raw carbon steel, by type of furnace, 1972-78

Type of furnace	1972		1973		1974	
	Quantity	Percent of total	Quantity	Percent of total	Quantity	Percent of total
	1,000 short tons		1,000 short tons		1,000 short tons	
Open hearth	4,062	49	4,608	51	4,073	46
Electric	1,255	15	1,701	19	2,107	24
BOF	2,962	36	2,717	30	2,659	30
Total	8,279	100	9,027	100	8,839	100

	1975		1976		1977		1978	
	Quantity	Percent of total	Quantity	Percent of total	Quantity	Percent of total	Quantity	Percent of total
	1,000 short tons		1,000 short tons		1,000 short tons			
Open hearth	3,287	41	3,581	47	3,467	45	3,405	42
Electric	1,575	20	1,470	19	1,777	23	2,076	26
BOF	3,080	39	2,589	34	2,478	32	2,594	32
Total	7,942	100	7,640	100	7,721	100	8,075	100

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

During 1972-78, the largest share of total carbon raw steel production in the Western States was in open hearth furnaces. In contrast, the largest share of raw carbon steel production for the United States as a whole was produced in more efficient BOF furnaces. In 1978, 42 percent of raw carbon steel production in the Western States was in open hearth furnaces compared with about 15 percent for the United States as a whole.

Western producers' shipments

Shipments of carbon steel mill products by Western producers showed no discernible trend from 1972 to 1978, amounting to 5.2 million tons in both 1972 and 1977 (table 4). Shipments increased to 5.5 million tons in 1978, the same as the 7-year average. Except for the years 1973 and 1974, shipments remained rather

stable, ranging from 4.9 million to 5.5 million tons. In 1973 and 1974, shipments were significantly higher, 6.8 million tons and 6.1 million tons, respectively. This sharp increase came in response to the strong steel demand which existed prior to the economic recession that began in 1974. The cancellation of orders which resulted from the recession contributed to the moderate decline of shipments in 1974. In addition, after operating at nearly full capacity for the entire year of 1973, it was necessary for the domestic industry to reduce the level of operations somewhat in 1974 in order to make required repairs. Shipments declined sharply in 1975, and increased only moderately in 1976, 1977, and 1978. While the quantity of shipments displayed a small upward trend from 1975 to 1978, the value of shipments showed a clear upward trend from 1975 to 1978, rising from $1.0 billion to $2.1 billion. The increase in value reflects higher costs of production, 1/ which rose about 150 percent, and inflation.

Western producers' shipments within the Western States climbed from 3.9 million tons in 1975 to 4.6 million tons in 1978, or by 18 percent. During the same period, apparent consumption in the region increased by 36 percent. However the relative importance of Western producers' shipments in supplying regional demand has declined since the 1975 recession, from 56 percent of apparent consumption in 1975 to 47 percent in 1978. Imports captured more than three-fourths of the 1975-78 growth in apparent consumption and Western producers less than one-fourth. Eastern producers' share of the western market fell from 13 percent in 1975 to 10 percent in each of the last 3 years.

Ingots and semifinished products.--Both integrated mills and minimills produce ingots and semifinished products which are usually further processed; however, limited quantities of both articles are sold. The amount shipped by Western producers ranged from 4,000 to 177,000 tons annually during 1972-78 (table 5), compared with total raw steel production in the Western States of 8.1 million tons in 1978.

Tin mill products, plates, sheets, and strip.--Shipments of tin mill products were combined with shipments of plates, sheets, and strip in order to avoid disclosure of confidential data. The combined grouping of products represented more than one half of total shipments of all carbon steel mill products within the Western States during 1972-78. During 1972-78, total shipments of the combined grouping followed the general trend of all steel mill products. Shipments increased from 2.5 million tons in 1972 to 3.3 million tons in 1973, decreased to 2.1 million tons in 1975, increased to 2.4 million tons in 1977, and remained at approximately that level, 2.5 million tons, in 1978 (table 6). Integrated producers are responsible for the major share of production.

Within the combined grouping, sheets and strip accounted for the largest proportion of shipments, tin mill products ranked second, and plates third. Shipments of sheets and strip followed the general trend of the combined grouping during the 7-year period. Shipments of tin mill products and galvanized products followed a somewhat different trend, increasing sharply

1/ Higher production costs are reflected in costs of raw materials, labor, energy, and pollution control.

from 1972 to 1973, and remaining at that level through 1977, except for a decline in 1975 to the 1972 level. Plates also differed from the trend of the combined grouping. Shipments of plates increased from 1972 to 1973, remained at approximately that level in 1974 and 1975, decreased to a level below the 1972 level in 1976 and 1977, but increased sharply in 1978 to the 1972 level.

Deformed reinforcing bars.--Shipments of deformed reinforcing bars represented about 12 percent of the total shipments of Western producers' steel mill products in 1978. Shipments were 685,000 tons in 1972, 844,000 tons in 1974, 679,000 tons in 1977, and 646,000 tons in 1978 (table 7).

Several unique characteristics of the deformed-reinforcing-bar market contributed to the variation in the shipment trend of this product from the shipment trend of all steel mill products. In contrast to the widespread decline of Western producers' shipments in 1974, shipments of deformed reinforcing bars exhibited an increase during that year. Although imports were large in most product groupings during 1974, in deformed reinforcing bars, an area of traditionally low import penetration, Western producers increased shipments to satisfy demand. In 1975 and 1976, shipments decreased, reflecting the dependence of demand upon the construction industry which was especially slow in recovering from the economic recession.

Deformed reinforcing bars are products that have proven to be well-suited to specialization. Minimills rather than integrated mills account for the bulk of the production of deformed reinforcing bars.

Bar-size shapes.--Annual shipments of bar-size shapes followed the general trend of total steel mill products. In 1972, shipments were 67,000 tons. An unusually sharp increase brought the total to 117,000 tons in 1973 (table 8). Thereafter, shipments declined annually to 43,000 tons in 1976, but recovered moderately to 58,000 tons in 1977 and to 73,000 tons in 1978.

In recent years, approximately two-thirds of bar-size shapes were produced by minimills. This is typical of the production pattern for 1972-78, except for the year 1973, when approximately two-thirds of the bar-size shapes were produced by integrated producers.

Bars other than deformed reinforcing bars and bar-size shapes.--Shipments of bars followed the general trend of total steel mill products. Shipments increased from 234,000 tons in 1972 to 359,000 tons in 1973 (table 9). After declining slightly to 349,000 tons in 1974, shipments plummeted to 204,000 tons in 1975. Shipments recovered slightly to 212,000 tons in 1976 and remained close to that level in both 1977 and 1978.

Shipments of bars were shared by integrated producers and minimills. Very little production was attributable to producers not operating steelmaking furnaces.

Wire rods.--Considerable amounts of wire rods are converted to wire or wire products by rod producers. These quantities are not reflected in table 10, which shows only wire rod shipped by the Western producers. Annual shipments of wire rod were fairly stable over the 7-year period. Except for a high of 327,000 tons in 1973, shipments ranged between 229,000 and 298,000 tons (table 10). The bulk of wire rod production is by integrated mills.

Wire.--Shipments of wire increased from 209,000 tons in 1972 to 291,000 tons in 1974. Decreasing to the 1972 level in 1975, shipments of wire repeated the same cycle, increasing from 200,000 tons in 1975 to 289,000 tons in 1978 (table 11). In 1978, more than one-half of the wire shipped by Western producers was produced by establishments which do not operate steelmaking furnaces. The next largest share of production was accounted for by minimills, leaving the smallest portion to the integrated producers.

Angles, shapes, sections, rails, tie plates, and joint bars.--Shipments of angles, shapes, and sections were combined with rails, tie plates, and joint bars in order to avoid disclosure of confidential data. Shipments of the total product grouping increased from 577,000 tons in 1972 to 710,000 tons in 1974, dropped sharply to 619,000 tons in 1975, and continued to decline annually, reaching 578,000 tons in 1978, or at about the same level as in 1972 (table 12).

Western producers' shipments of angles, shapes, and sections followed the general trend of the total grouping. Rails, tie plates, and joint bars, however, increased steadily from 1972 to 1976, then decreased in 1977 and 1978. Western producers' shipments within the Western States of rails, joint bars, and tie plates were rather stable over the 7-year period.

The bulk of this product grouping is made by integrated producers; CF&I, however, is the only producer of rails.

Pipes and tubes.--Pipes and tubes accounted for about 14 percent of the total shipments of all steel mill articles produced in the Western States in 1978. Shipments of pipes and tubes increased from 596,000 tons in 1972 to 827,000 tons in 1974, decreased to 555,000 tons in 1976, but increased to 658,000 tons in 1977 and to 785,000 tons in 1978 (table 13). Integrated producers account for the bulk of production. There is no pipe and tube production by minimills.

Nails, barbed wire, and prestressed strand.--Shipments of nails, barbed wire, and prestressed strand were combined in order to maintain confidentiality. There are only two domestic producers of nails and barbed wire, and one producer of prestressed strand. Shipments by Western producers declined from 88,000 tons in 1972 to 68,000 tons in 1975 (table 14). They increased slightly to 70,000 tons in 1976, to 75,000 tons in 1977, and to 78,000 tons in 1978. Shipments of nails, which account for the largest share of this combined product grouping, set the trend for the entire group. Shipments of barbed wire and of prestressed strand were approximately equal, although the total Western market for barbed wire is much smaller. Both products followed the general trend of the combined grouping.

Exports from the Western States

From 1972 through 1978, Western producers' exports were never more than 8 percent of their total shipments. Canada and Mexico have been by far the principal export markets. From 1972 to 1975, exports to Canada and Mexico together ranged from 23 percent of total Western exports in 1973 to 41 percent in 1974. Since 1975, exports of these two countries have increased annually from 53 percent of total exports in 1976 to 61 percent in 1978 (table 15).

During 1972-78, exports 1/ of carbon steel mill products from ports located in the Western States ranged from 134,000 tons in 1972 to a high of 478,000 tons in 1973 (table 15). After 1973, exports declined to 451,000 tons in 1974, 397,000 tons in 1975, 209,000 tons in 1976, and 157,000 tons in 1977, but rebounded to 297,000 in 1978. The level of exports in 1973 and 1974 reflected a surge in world steel demand based on expanding world economic conditions and a desire on the part of carbon steel producers to obtain higher prices in world export markets than in the price-controlled domestic market.

The following tabulation shows an index of total U.S. and Western States exports of steel mill products (in terms of quantity) during 1972-78 (1972=100):

	1972	1973	1974	1975	1976	1977	1978
United States	100	141	203	103	92	70	84
Western States	100	357	337	296	156	117	222

The quantities exported from the Western States fluctuated substantially more than total U.S. exports. The index as shown above changes significantly despite relatively small changes in actual quantities because of the small base involved.

The composition of exports from ports located in the Western States is similar to total U.S. exports in that tin mill products and pipes and tubes are significant export items. These items account for more than one-half of both total U.S. exports and western exports. Unlike total U.S. exports, however, sheets and strip are relatively less significant export items in the Western market than in the national market (table 16).

The relative share of exports handled through each port located in the Western States varies considerably from year to year (table 17). The port of Great Falls, Mont., relatively insignificant in each of the years 1972-77, was the principal port for exports in 1978, handling 26 percent of total Western exports. The surge of exports through the port of Great Falls reflects the large increase in exports to Canada in 1978. The ports of Los Angeles, San Francisco, Seattle, and San Diego accounted for the great bulk of the remaining exports throughout the 1972-78 period. The latter two ports, while significant in export trade, are relatively unimportant ports for imports.

1/ Exports of carbon steel mill products from ports located in the Western States ranged from 5 percent of total U.S. exports of such products in 1972 to 14 percent in 1975.

Inventories 1/

The inventory cost per ton for Western producers is higher than that of importers since, based on questionnaire returns, producers maintain about 2 months supply and importers 1 month's supply. Domestic steel producers' inventories are traditionally higher than those of importers since they usually attempt to invéntory in depth in order to rapidly respond to customers needs. On the basis of testimony by Western steel producers, the service factor is important when domestic prices are higher than those of imported articles. Importers on the other hand responded during field research that they do not inventory in depth but import to fill specific orders and the bulk of inventory represents cancelled orders.

During 1972-78, Western producers' inventories of carbon steel mill products fluctuated from a high of 1.4 million tons at the end of 1972 to a low of 800,000 tons at the end of 1977 (table 18). In 1978, inventories increased to 867,000 tons. Inventories of nails, barbed wire, and prestressed strand decreased from 10,000 tons at the end of 1971 to 2,000 tons in 1974, increased sharply to 8,200 tons in 1975, and then decreased annually to 3,400 tons in 1977. In 1978, inventories of nails, barbed wire, and nails increased to 8,700 tons.

The greatest change in the level of Western producers' inventories of carbon steel mill products occurred in 1973 when yearend inventories had been reduced by 38 percent from the level of the previous year. Inventory reductions occurred because of a combination of increased consumption and reduced supplies from foreign sources.

Short supply and inventory depletion continued through January-June 1974, resulting in yearend inventories being below those at yearend 1973. However, late in 1974, market conditions had changed and steel supply was tending toward surplus.

Steel demand continued to decline and remained depressed through the recession year 1975. As a result, inventories substantially increased. These increases occurred in all product categories except ingots and semifinished products, wire rods, and wire.

In 1976 inventories continued to increase in all product categories except bars, other than reinforcing bars, wire rods, nails, barbed wire, and prestressed strand. By the end of 1977, however, inventories had substantially declined as a result, in large part, of increased consumption.

1/ Importers' inventories are somewhat understated since the data cover only those companies reporting to the Commission. The staff of the Commission estimates that coverage represents about 85 percent of total imports in the Western States. Inventories held by service centers/distributors and end users were not reported to the Commission since neither class of customer could separate goods purchased from importers and producers with any degree of accuracy. In addition there are thousands of end users.

In 1978, inventories increased by about 67,000 tons or by 8 percent. Substantial increases occured in ingots and semifinished products and in deformed rebars. Producers inventories of pipes and tubes decreased sharply. Inventories of carbon steel mill products of importers fluctuated from 61,000 tons at yearend of 1971 to 324,000 tons at yearend 1978 (table 19). Importers inventories were about one-third larger at year end 1978 compared to year end 1977.

A striking difference between Western producers' inventories and importers' inventories of carbon steel mill products is apparent in terms of relative size. Whereas producers' inventories were never less than 800,000 tons at yearend during the 7-year period, importers' inventories never exceeded 324,000 tons. Importers' inventories sharply increased at yearend 1974, rising to 222,000 tons. After increasing to 277,100 tons in 1975, inventories declined to about 240,000 tons in both 1976 and 1977 before increasing sharply to 324,000 tons in 1978. Importers' inventories of tin mill products, plates, sheets, and strip increased from 18,000 tons at yearend 1971 to 138,000 tons at yearend 1978. Still, this did not approach the level of Western producers' inventories, which for those products was 310,000 tons in 1978. Importers' inventories of the two product groupings, angles, shapes, sections, rails, joint bars, and tie plates and that of pipes and tubes increased from almost 10,000 tons each at yearend 1971 to 67,000 and 83,000 tons, respectively, at yearend 1978. Producers' inventories of these products followed an opposite trend, declining to 23,000 and 63,000 tons, respectively, in 1978. In addition, whereas importers' inventories of nails, barbed wire, and prestressed strand increased from 1,000 tons at yearend 1971 to 8,700 tons at yearend 1978, producers' inventories fluctuated irregularly from 10,000 tons at yearend 1971 to 7,100 tons at yearend 1978.

The ratios of Western producers' inventories to their shipments and importers' inventories to imports of carbon steel mill products are shown in the following table.

Carbon steel mill products: Ratios of Western producers' inventories to their shipments and importers' inventories to imports, 1972-78 1/

(In percent)

Item	1972	1973	1974	1975	1976	1977	1978
Ratio of --							
Western producers' inventories to their shipments	27	13	13	20	21	15	16
Importers inventories to imports	3	3	5	12	9	8	8

1/ Data represent the ratios of inventories at the end of the period shown to shipments and imports during the same period, based on quantity.

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

Employment in the Western States

All employees.--The average number of all persons employed in establishments located in the Western States accounts for about 5 percent of all persons employed in the U.S. establishments in which carbon steel mill products are produced. During the 1972-78 period, such employment reached its peak in 1974 (26,000 persons) as additional employees were added to meet high levels of steel demand (table 20). The recession which began in the second half of 1974 reduced steel demand and caused employment to decline in 1975 and 1976, when the average number of all employees was about 10 percent below its 1974 high.

The manufacture of plates and sheets and strip (including tin mill products) accounts for the largest number of employees at establishments in the Western States. In 1978, about 30 percent of all such employees were engaged in the manufacture of these products. Within this product category, tin mill products required the largest number of employees, not only because it is one of the largest volume items shipped, but also because of the additional processing required in its manufacture.

About 20 percent of all employees at establishments in the Western States are engaged in the manufacture of ingots and semifinished products. The production of these items is more labor intensive than the highly automated processes used in the manufacture of most carbon steel mill products. It therefore accounts for a relatively larger share of total employment. Employees engaged in the manufacture of deformed reinforcing bars, wire, and pipes and tubes account for the bulk of the remaining workers.

Production and related workers.--The average number of production and related workers employed at establishments in the Western States is between 5 and 6 percent of the total number employed in the entire U.S. steel industry. During 1972-78, the average number of production and related workers at establishments in the Western States fluctuated from a low of 18,800 in 1972 to a high of 21,400 in 1974 (table 20). Kaiser, U.S. Steel, Bethlehem, and CF&I accounted for 85 percent of the total number of production and related workers in Western States establishments. In 1978, employment amounted to 19,000 production and related workers.

The trend in the total number of production and related workers and the number engaged in the manufacture of the individual carbon steel mill products at establishments located in the Western States was similar to that for all employees at these locations.

Man-hours worked by production and related workers.--The total number of man-hours worked in the manufacture of carbon steel mill products at establishments located in the Western States increased from 37.6 million in 1972 to 43.6 million in 1974, declined to slightly less than 39 million in 1975, and remained at about that level through 1978 (table 21). In 1978, man-hours worked were 13 percent less than they were in the peak year of 1974.

About one-quarter of the man-hours expended in the production of carbon steel mill products was required for the production of raw steel and its conversion into ingots and semifinished products. Man-hours utilized in the production of these products increased from 9.6 million in 1972 to 11.9 million in 1974 and decreased annually to 9.1 million in 1978. Of the steel mill products made from these semifinished forms, the production of tin mill products, plates, and sheets and strip required the largest number of man-hours, approximately another quarter of the total expended. Man-hours used in the production of these products were 13.8 million in 1972 and 13.4 million in 1978.

Payroll costs per worker.-- Employment data indicate that output of carbon steel mill products per worker is less in producing establishments in the Western States than in such establishments in the United States as a whole. This does not necessarily imply that the steel industry in the Western States is less efficient than the national steel industry--just that payroll costs per ton of steel are higher in the West.

Profit and loss experience of Western steel industry

The following tabulation shows the number of individual companies reporting profits or losses and aggregate profits or losses for all reporting firms during 1972-78:

Item	1972	1973	1974	1975	1976	1977	1978
Number of companies reporting--							
Profit	17	19	20	16	13	10	18
Loss	2	1	0	5	8	12	4
Total	19	20	20	21	21	22	22
Aggregate net profit or (loss) million dollars	39.8	86.9	205.3	71.1	(70.2)	(81.1)	(5.7)

These figures followed the overall cyclical trend in the economy increasing from $39.8 million in 1972 to $205.3 million in 1974. From 1975 through 1977 the financial health of the Western steel industry deteriorated. The industry operated at increasing losses in 1976 and 1977, with more than half the producing establishments reporting losses in the latter year. The number of firms earning a profit declined from 20 in 1974 to 10 in 1977, while the number of firms operating at a loss increased from zero in 1974 to 12 in 1977. Thus, 55 percent of the companies which submitted data to the Commission sustained losses in 1977. In 1978, the aggregate loss experienced by the Western steel industry lessened. The number of firms operating at a profitable rate rose from 10 to 18. This number represents 82 percent of all reporting companies in 1978. It should be noted that these aggregate figures are strongly influenced by the financial performances of a few large Western steel producers. Almost all non integrated producers operated at a profit in 1978 despite soaring costs for scrap.

Western producers compared with all U.S. producers

The profit and lost experience of producers located in the Western States on overall establishment operations is provided in table 22. From 1972 to 1978, the profit of Western producers, as reflected by the ratio of net profit or loss to sales, followed somewhat the general trend of all U.S. producers.

As shown in the following tabulation, Western producers' ratio increased from 3.9 percent in 1972 to 11.1 percent in 1974. The ratio then deteriorated over the next 3 years falling from a profit of 4.3 percent in 1975 to a loss of 4.7 percent in 1977. In 1978 the ratio improved but still remained at a loss.

	Total U.S. producers	Western producers
1972----------	3.3	3.9
1973----------	4.3	6.2
1974----------	6.5	11.1
1975----------	4.7	4.3
1976----------	3.5	(4.4)
1977----------	.1	(4.7)
1978----------	2.8	(.2)

Total U.S. producers ratio of net profit to sales was less volatile than the Western producers' ratio. During the period 1972-78, the ratio of total U.S. producers ranged from 0.1 percent to 6.5 percent while the ratio of Western producers ranged from a negative 4.7 percent to 11.1 percent.

The volatility of Western producers' earnings are influenced to a greater extent than the earnings for all U.S. producers owing to larger import penetration, higher production costs, limited product lines, and the smaller size and number of producers in the Western market.

Profit and loss by product lines

The Commission also compiled profit-and-loss data on a product line basis. Certain product lines such as tin mill, plates, sheets and strip, angles, shapes and sections, and rails, joint bars, and tie plates involved a limited number of producers and could not be aggregated in a meaningful and nonconfidential manner. However, with the exception of rails, joint bars, and tie plates, those product lines followed the same earning trends shown previously for Western steel firms' overall operations. Rails, joint bars, and tie plates were consistently profitable throughout 1972-78.

The net operating profit or loss and the ratio of net profit or loss to sales on reinforcing bars, other bars and bar-size shapes, wire, and pipes and tubes, 1972-78 are summarized in table 23. As shown in the table, the trends in net operating profits or losses and returns on sales experienced by reinforcing bar and other bar product lines were similar to those of all

Western producers. The profit experience of the wire and pipe and tube product lines was higher than any of the other product lines throughout 1972-78.

Relationship of volume, sales, prices, and costs of products

Gross operating profit is the result of the interactions of sales volume, sales prices, and costs of production. The following table shows each of these factors:

Financial data of Western steel-producing firms on all operations, 1972-78

Year	Sales volume	Average sales price	Average cost of production	Gross operating profit
	1,000 tons	Per ton	Per ton	Per ton
1972--	5,166	$198	$174	$24
1973--	6,853	204	179	25
1974--	6,149	301	252	49
1975--	4,862	336	300	36
1976--	4,923	324	316	8
1977--	5,223	331	322	9
1978--	5,472	468	443	25

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

As noted earlier, the Western steel industry operated at a small loss in 1978. The aggregated net loss resulted principally from subtracting selling and administrative expenses of $25.70 per ton from the gross operating profit of $25 per ton shown above.

Imports into the Western States

Since 1972, the share of the market held by imports ranged from 40 percent in 1974 to 29 percent in 1973, and was 38 percent in 1972 compared with 43 percent in 1978. Imports' market share in the Western States is more than twice what it is for the entire Nation.

During the period under study, imports of carbon steel mill products into the Western States hit a low of 2.2 million tons in 1975 and a high of 4.2 million tons in 1974 (table 24). 1/ Strong domestic demand during early 1974 and inventory buildup contributed to the high levels of imports in 1974, but the economic recession was the principal reason for the sharp decline in 1975. Imports increased to 2.7 million tons in 1976 and to 3.1 million tons in 1977. By 1977, demand both in the Western States and in the United States as a whole was relatively strong in relation to demand in other principal steel-consuming countries. In 1978, imports of carbon steel mill products into the Western States amounted to 4.1 million tons (table 25). In that year, the Western States accounted for 19 percent of total U.S. imports, but only 8 percent of total apparent U.S. consumption and 6 percent of total U.S. producers' shipments.

In 1978, sheets and strip accounted for 30 percent of total imports into the Western States; pipes and tubes, 18 percent; tin mill products, 18 percent; angles, shapes, and sections, 11 percent; plates, 11 percent; and wire rods, 5 percent.

The role of imports

Imports of carbon steel mill products are a major force in the Western market, having supplied 43 percent of that market in 1978 compared with 18 percent for the national market. In addition to imports of basic steel, a new import dimension of growing importance is in the area of fabricated carbon steel. Carbon steel imports are not restricted from entry into the United States other than by the applicable import duties averaging about 6 percent, by actions under import relief legislation, or by provisions of "Buy American" statutes. In spite of the relief granted in all trade-related actions under U.S. trade laws, the great bulk of imports (probably 98 percent or more) of steel mill products remain unaffected. Other administrative actions, designed, in part, to curb imports, were the voluntary restraint arrangements (1969-74) and the current trigger-price mechanism.

The composition of imports into the Western States is similar to that of total U.S. imports, in that flat-rolled products are the predominant import item. The percentage of sheets and strip imported into the Western States is, however, less than that for the total United States. The automotive and appliance industries, by far the largest consumers of sheets and strip, are

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1/ The quantities of carbon steel mill products imported into the Western States during 1972-78 exhibited a somewhat different pattern from that of overall U.S. imports, in that 1974 was the peak year in the Western States while 1978 was the peak year for total U.S. imports.

concentrated more heavily in areas outside of the Western States. Reflecting regional demand, about 75 percent of the total imports in the Western States enter through the ports of either Los Angeles or San Francisco (table 26); the Port of Los Angeles alone accounts for 60 percent. The Port of Portland accounts for about 15 percent of the imports, and the Port of Seattle for most of the remainder.

Fabricated steel in the Western market 1/

In addition to increased imports of steel mill products, many major construction contracts have recently been awarded to foreign firms or firms using fabricated foreign steel. Construction contracts requiring fabricated steel amount to significant tonnages, millions of dollars in revenue to the steel supplier, hundreds of thousands of man-hours, and often affect the market for structurals produced by mills in the Western States. Data collected from general contractors on nine significant construction projects in the Western States reveal that the subcontracts for the steel input of these projects were granted to Japanese firms with bids based upon the use of imported steel. 2/ These bids were significantly below those submitted by firms planning to use domestically produced steel.

On the basis of responses to the Commission's questionnaire, there appear to be at least seven reasons for such low bids by Japanese firms. They are, as follows:

1/ While fabricated steel products are not among the basic steel products provided for in part 2B of schedule 6 of the TSUS described in the Commission's notice of investigation, information was gathered with respect to several recent public works project contracts for fabricated steel awarded to firms planning to use foreign steel. This information was gathered in response to concerns raised by numerous persons testifying at the Commission's public hearings in this investigation (see transcript of the hearings, at, for example, pp. 212, 214, 220, 566, 569, 767-91, 1189, 1218, and 1234). Many of the projects, like bridges, covered by these contracts require large amounts of carbon steel. The discussion contained herein is limited to certain of the more important recent contracts and does not purport to cover the whole fabricated steel business in the Western States.

2/ The bid process on projects utilizing fabricated steel involves both direct and indirect bids to supply such steel. The selecting authorities, i.e., the State of California or the Port of Portland, solicit bids for the project and select a general contractor. The general contractor has solicited bids from firms for subcontracts to supply the various components, such as fabricated steel, to be used in the project. In order to determine the extent to which imported fabricated steel is being utilized in the Western steel market, Commission questionnaires were sent only to the winning general contractors on selected projects. Thus, information on direct bids submitted by competing general contractors was not obtained. Testimony by the domestic industry, however, indicates that in a number of cases Western firms submitted unsuccessful direct bids based upon the use of domestic fabricated steel.

a. Lower steel costs
b. Lower wage costs for fabrication
c. Lower number of man-hours required to complete fabrication
d. Lower profit margins
e. Lower overhead costs resulting, in part, from reimbursement of bidding costs associated with lost contracts
f. In some cases, less steel was required in the project, and
g. Japanese bids did not include the same items as domestic bids but concentrated on items which provided the most profitability.

During the hearings held in connection with this investigation, construction projects most often referred to as indicative of foreign penetration into this sector of the steel market were the San Joaquin River Bridge, Snake River Bridge, Napa River Bridge, and Portland Drydock #4.

San Joaquin River Bridge.--According to officials of the American Bridge Division, U.S. Steel Corp., the closing of its structural steel plant at Antioch, Calif. was the result of the use of foreign steel in the construction of the San Joaquin River Bridge at Antioch. An analysis of the bidding for this project revealed that the bid submitted by the American Bridge Division was the highest received by the general contractor and the only bid based upon the use of domestic steel exclusively. This bid exceeded that of Mitsubishi International Corp., Los Angeles, Calif., the firm selected to provide the steel, by 70 percent. Bidders using a mix of foreign and domestic steel fell between these two bids.

Peter Kiewit Sons' Co., the winning general contractor, advised the Commission in responding to the questionnaire that ". . . the bids or quotations were not uniform and comparable, and did not include sufficient uniform materials and quantities so as to make any comparison between the quoted prices meaningful." However, they further advised that ". . . Mitsubishi International was the only firm that included all of the other miscellaneous steel and metal components, and the only firm which quoted on the basis of delivered price."

Snake River Bridge.--Hansel Phelps Construction Co., the general contractor for this project, received seven bids relative to the structural steel for use in the bridge--four which specified delivery f.o.b. Portland, one for delivery f.o.b. jobsite, and two which included erection. Because the winning bid was based upon a different basis for delivery than bids submitted by firms who planned to utilize domestic steel, a valid comparison between the bids cannot be made.

Napa River Bridge.--Hansel Phelps, the selected general contractor, received two sub-contractor bids for fabricated steel to be used in the Napa River Bridge project. Neither of the bids submitted utilized domestically produced steel.

Portland Drydock #4.--According to an official of the Port of Portland, domestic, particularly Oregon-based, firms were encouraged to bid on the subject drydock. In an attempt to assist these firms the Port spent an

estimated $350,000 in designing the drydock in a manner that would permit them to participate in the bidding. Subsequently, the Port received seven bids on the project, all from foreign-based firms and all using imported fabricated steel. Ishikawajima-Harima Heavy Ind. Co., Ltd., (IHI) Tokyo, Japan was awarded the contract with a bid of $17.5 million, $9.1 million below the engineer's estimate. A Port official provided two reasons for the low bid by IHI. This Japanese firm is a large shipbuilding firm with ship repair facilities at several locations throughout the world. At the time the contract was awarded (1977) shipbuilding was at a very low level and the firm apparently needed this contract to keep its facilities operating. Additionally, the Port planned to provide another firm space to operate ship repair facilities. Presumably, IHI submitted a low bid in the belief that it could increase its prospects for being selected to operate this repair facility.

According to the same official, IHI was represented or assisted during negotiations by Mitsui (USA) and the Mitsui Engineering and Shipbuilding Co. was represented by Sumitomo Shoji.

It is apparent that firms utilizing imported fabricated steel have acquired major construction contracts in the Western States. The extent of future penetration in this market appears to depend upon two primary factors--the demand for fabricated steel in Japan and limitations placed upon Japanese imports of structural steel by the United States and other governments.

Imports by source and by product category

Imports of carbon steel mill products into the Western States averaged 3.2 million tons per year for the 7-year period 1972-1978, ranging from a low of 2.2 million tons in 1975 to a high of 4.2 million tons in 1974 (table 24). Imports amounted to 4.1 million tons in 1978.

Carbon steel mill products: Share of Western States' imports for consumption, by specified sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	69	71	61	77	79	72	53
EEC	14	13	17	11	7	13	23
Korea	7	6	16	6	8	7	11
Republic of South Africa	1/	1/	1/	1/	1/	2	4
Total	90	90	94	94	94	94	91

1/ Less than 0.5 percent.

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

The relative importance of suppliers of imports to the Western States can be seen in the table above. Imports from Japan averaged 69 percent of imports from all sources over the 7-year period 1972-78. The next largest source was the EEC, which averaged 14 percent of imports from all sources over the same period.

In 1978, there were striking shifts in import market shares from Japan to the EEC. Japan's share of the market decreased from 72 percent in 1977 to 53 percent in 1978, while the EEC's share increased from 13 percent to 23 percent. While the volume of imports from Japan remained at about the 1977 level, decreasing only 4 percent (90,000 tons) from 2,257,000 tons in 1977 to 2,167,000 tons in 1978, imports from the EEC increased from 393,000 tons in 1977 to 936,000 tons in 1978 (table 24). Factors which may have figured prominently in Japan's loss of market share in 1978 include its self-imposed restraint on exports to the United States and the institution of the TPM.

The effects of these changes were quite varied within major product lines. Imports of plates from Japan decreased 67 percent in 1978, and the EEC became by far the largest single supplier. Imports of sheets and strip from the EEC tripled to 395,000 tons in 1978, while imports from Japan, which amounted to 586,000 tons, remained at about the 1977 level. The 10-percent increase alone in imports of tin mill products and galvanized sheets from Japan equaled total imports from the EEC despite the EEC's large percentage increase.

Carbon steel mill products: Western States' imports for consumption from Japan and the EEC, by product groupings, 1977-78

(In short tons)

Product	Japan			EEC		
	1977	1978	Percentage increase or decrease (-)	1977	1978	Percentage increase
Plates	162,472	53,029	-67	71,839	264,580	193
Sheets and strips	587,923	585,680	1/	129,821	395,077	204
Tin mill 2/ products	464,257	511,487	10	19,931	54,802	175
Pipes and tubes	403,008	405,584	1	2,822	8,939	217
Other	639,481	611,072	-4	168,973	212, 268	26
Total	2,257,141	2,166,852	-4	393,386	935,666	138

1/ Less than 0.5 percent.
2/ Includes galvanized sheets.

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

About three quarters of steel mill products imported into the Western States were flat rolled products and pipes and tubes (table 25). From 1972 through 1978, sheets and strip accounted for an average of 26 percent of total imports, tin mill products (including galvanized sheets) accounted for 18 percent, plates accounted for 11 percent, and pipes and tubes for 18 percent.

Western States imports are entered through seven ports located in the Western States (see table below). Los Angeles was the primary port of entry, averaging 58 percent of all imports from 1972 through 1978. San Francisco, Portland, and Seattle account for most of the remaining imports, averaging 18 percent, 14 percent, and 9 percent, respectively. Only small quantities were imported through the ports of San Diego or Nogales. The bulk of steel mill products imported through the port of Great Falls were pipes and tubes produced in Canada, which represented an average of 5 percent of total pipes and tubes imports into the Western States during 1972-78.

Carbon steel mill products: Imports for consumption into the Western States, by U.S. Customs ports of entry, 1972-78

(In short tons)

Port	1972	1973	1974	1975	1976	1977	1978
San Diego	13,219	11,888	9,578	190	3,640	2,983	14,704
Nogales	1,422	2,138	2,706	108	2	407	1,511
Los Angeles	1,873,982	1,576,308	2,448,740	1,136,439	1,656,062	1,808,593	2,471,918
San Francisco	586,690	471,961	644,660	505,068	449,112	521,282	627,863
Portland	437,662	361,764	660,924	298,151	343,748	473,723	600,130
Seattle	252,345	255,344	391,454	262,785	243,622	285,984	369,672
Great Falls	12,565	24,724	42,543	26,496	28,983	30,678	36,620
Total	3,177,884	2,704,126	4,200,605	2,229,237	2,725,169	3,123,651	4,122,418

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

Tin mill products. 1/--Imports into the Western States of these products accounted for an average of 18 percent of all carbon steel mill products imported in the years 1972-78, averaging 554,000 tons per year (table 28). Principal products included within this grouping are galvanized sheets and tinplate, which account for approximately 80 percent and 15 percent, respectively, of total tin mill imports.

1/ Includes galvanized sheets. There were virtually no imports of ingots, blooms, slabs and sheet bars during 1972-78 (table 27).

Tin mill products: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	81	79	76	88	90	83	70
Australia	11	6	4	2	4	8	9
EEC	5	9	17	7	2	4	8
New Zealand	3	4	2	2	3	2	4
Republic of South Africa	-	-	-	-	-	2	5
Korea	1/	1/	1/	-	-	1/	3
Total	100	98	99	99	99	99	99

1/ Less than 0.5 percent.

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

Japan was the single major source of imports of tin mill products, averaging 81 percent during 1972-78, as shown in the table above. Although in 1978 Japan's market share decreased to 70 percent, actual tonnage increased by 10 percent, from 464,000 tons in 1977 to 511,000 tons in 1978. In contrast, imports of all carbon steel mill products imported from Japan into the Western States declined by 4 percent in 1978. The average unit value of these products imported from Japan was $407 per ton, significantly higher than the average unit value of imports from any other importing nation (table 28).

Australia, New Zealand, and the EEC, while never approaching the magnitude of Japan's share of this market, were consistent sources of supply throughout the 7-year period.

Korea's imports were negligible during 1972-77. In 1978, however, imports totaled 21,000 tons, compared with 203 tons in 1977, and accounted for 3 percent of total imports.

The Republic of South Africa entered the market in 1977 with shipments of 14,000 tons, which amounted to a 2-percent market share. In 1978, both its tonnage and import share substantially increased (to 33,000 tons and 5 percent, respectively).

As shown in the table below, Los Angeles handled the largest share of imports of these products into the Western States, receiving an average of 42 percent per year from 1972 through 1978. San Francisco followed with an average of 33 percent, Portland with 13 percent, and Seattle with 12 percent.

Tin mill products: Share of Western States' imports for consumption, by major U.S. Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	43	43	47	28	41	43	49
San Francisco	32	31	25	49	32	35	28
Portland	12	13	13	10	14	13	13
Seattle	12	12	14	12	13	9	9
Total	99	99	99	99	100	100	99

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

Sheets and strip.--Sheets and strip accounted for an average of 26 percent of steel mill products imported into the Western States from 1972 to 1978. Imports of sheets and strip averaged 839,000 tons per year during that period (table 29). As shown in the table below, Japan was the primary source for imported sheets and strip, averaging 72 percent of imports from all sources annually. The EEC and Korea averaged 14 percent and 12 percent, respectively, during the same period.

Sheets and strip: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	76	84	61	83	80	72	48
EEC	7	5	12	9	6	16	32
Korea	15	10	27	7	13	10	14
Republic of South Africa	-	-	-	-	-	1	2
Taiwan	-	-	-	-	-	1/	1/
Total	98	99	100	99	99	99	96

1/ Less than 0.5 percent.

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

In 1978, for the first time in the 7-year period, the EEC approached Japan's level of imports. While 1978 imports from Japan remained at the 1977 level (588,000 tons), imports from the EEC increased from 130,000 tons to 395,000 tons. The average unit value for sheets and strip from Japan increased from $255 per ton in 1977 to $290 per ton in 1978, while that of the EEC increased from $213 per ton in 1977 to $220 per ton in 1978.

Korea was a steady supplier of sheets and strip during the 1972-78 period. In the earlier years, Korea supplied more than the EEC. In 1977 and 1978, Korea relinquished its lead to the EEC, with its average unit value clearly higher in 1978 than that of the EEC. In 1974, the import pattern was similar to that for plates. Korea's share of the import market for sheets and strip increased from 10 percent in 1973 to 27 percent in 1974; tonnage increased from 70,000 tons to 291,000 tons. The average unit value of imports of sheets and strip from Korea, however, did not increase in 1974 by the dramatic amount seen from other sources but a large unit value increase occurred in 1975.

The Republic of South Africa entered the Western States sheets and strip market in 1977 and increased its imports in 1978, with the lowest average unit value of all the significant source countries. However, its share of the sheets and strip market represented only 2 percent in 1978.

Taiwan, a new force in the plate market in 1978, did not enter the sheets and strip market.

As shown in the table below, Los Angeles handled the majority of all sheets and strip imports into the Western States, receiving an average 76 percent per year from 1972 to 1978. San Francisco and Portland averaged 10 percent each, while Seattle with 4 percent accounted for the remainder.

Sheets and strip: Share of Western States' imports for consumption, by major U.S. Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	77	79	72	71	82	76	76
San Francisco	9	9	10	10	9	11	10
Portland	11	9	14	13	6	9	10
Seattle	3	3	4	6	3	4	4
Total	100	100	100	100	100	100	100

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

Plates.--Plates accounted for an average of 11 percent of all carbon steel mill products imported in the Western States from 1972 to 1978, averaging 355,000 tons per year during the period (table 30). As shown in the table below, Japan was the primary source for imported plates from 1972 to 1977, accounting for 50 to 83 percent of imports. In 1978, however, Japan's share dropped to 12 percent from 60 percent in 1977 and the EEC, traditionally the second largest supplier, became the primary source of imports, supplying 59 percent of imported plates compared with 26 percent in 1977. One of the factors affecting the level of imports from Japan in 1978 (decreasing from 162,472 tons in 1977 to 53,029 tons in 1978) was undoubtedly the initiation of an antidumping investigation.

Plates: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
EEC	8	6	17	14	11	26	59
Japan	78	83	50	78	80	60	12
Taiwan	1/	-	-	1/	1/	1/	11
Korea	8	9	30	7	8	7	9
Republic of South Africa	1	1/	-	1/	0	6	6
Total	95	98	97	99	99	99	97

1/ Less than 0.5 percent.

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

Imports of plates from the EEC ranged from 6 to 26 percent of total imports of plates from 1972 to 1977. In 1978, the combined effect of the decrease in imports from Japan and the marked increase in tonnage from the EEC sent the EEC's share to 59 percent, by far the highest level of the period. Imports from the EEC increased from 72,000 tons in 1977 to 265,000 tons in 1978. The average unit value for these imports was about $40 a ton lower than that of imports from Japan.

Korea accounted for 7 to 9 percent of plate imports over the 7-year period except in 1974, when its share reached 30 percent. This marked an increase from 21,000 tons in 1973 to 188,000 tons in 1974. This large tonnage increase occurred, perhaps, in part because the average unit value of Korean plates increased by only $1 per ton in contrast to the stunning price increase over 1973 prices that occurred in imported plates from all other countries of $100 or more per ton. In 1975, however, the average unit value of plates imported from Korea advanced by $80 per ton, while the increase in average unit value of imports from all countries averaged $16 per ton. Imports in 1975 declined to 21,000 tons from 188,000 tons the previous year.

Taiwan came strongly into the market for the first time in 1978. It was the third largest supplier in 1978 with 48,000 tons. The bulk of its imports entered the Western States in April, July, August, and November 1978. The pattern may have been affected by the antidumping investigation initiated in October 1978 by the Treasury Department. An investigation was also initiated on imported plates from Poland in April 1979. However, there were no imports of plates into the Western States from Poland in 1978.

The Republic of South Africa entered the west coast plate market in 1977 (16,000 tons) and supplied a substantially increased quantity in 1978 (28,000 tons). The average unit value of plates from the Republic of South Africa was the lowest of all the major sources in 1977 and 1978.

As shown in the table below, imports of plates into the Port of Los Angeles averaged 56 percent of total plate imports into the Western States over the 7-year period; Portland averaged 20 percent, Seattle 14 percent, and San Francisco, 10 percent.

Plates: Share of Western States' imports for consumption, by major U.S. Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	52	60	60	59	54	49	55
San Francisco	14	11	9	11	8	9	8
Portland	18	13	19	16	24	29	23
Seattle	14	16	12	14	14	13	14
Total	98	100	100	100	100	100	100

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

Deformed concrete reinforcing bars.--As shown in the table below, the market shares of the importing countries were erratic during 1972-78, although Japan has been clearly dominant since 1974.

Deformed concrete reinforcing bars: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	4	25	70	73	72	93	63
Korea	65	31	1	20	27	6	24
EEC	1	25	17	1	1/	1/	1/
Taiwan	28	3	-	5	-	-	6
Mexico	1/	12	2	-	-	-	6
Total	98	96	90	99	99	99	99

1/ Less than 0.5 percent.

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

Korea was the second leading importer of reinforcing bars into the Western States during the 7-year period and was the leader in 1972, when it imported 45,000 tons and held a 65-percent share of the market (table 31). Korea's tonnage fell drastically in 1973 to 4,900, 31 percent of the market. In 1974, with a sharp increase in imports from Japan and a further decline in imports from Korea, Korea's market share dropped to 1 percent. From 1975 to 1978, Korea's market share fluctuated irregularly from 6 to 27 percent.

Imports from the EEC, Taiwan, and Mexico were erratic individually, ranging from 0 to 28 percent of the market, but Taiwan and Mexico each accounted for 6 percent of the import market in 1978.

The Port of Los Angeles handled an average of 61 percent of all imports of reinforcing bars into the Western States from 1972 to 1978. San Francisco was the second leading port of entry with 20 percent followed by Portland with 8 percent, Seattle with 7 percent, and San Diego and Nogales with 1 percent each.

Deformed concrete reinforcing bars: Share of Western States' imports for consumption, by major Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	57	68	61	48	55	67	72
San Francisco	33	10	17	40	24	8	12
Portland	7	7	7	6	11	10	5
Seattle	2	2	13	5	9	15	5
San Diego	-	4	1/	-	-	-	6
Nogales	1/	8	2	-	-	-	1/
Total	99	99	100	99	99	100	100

1/ Less than 0.5 percent.

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

Other bars.--During 1972-78, imports of bars other than deformed reinforcing bars accounted for an average of 4 percent of all steel mill commodities imported into the Western States, averaging 127,000 tons over the period (table 32). Japan was the leading supplier of other bars, with an average share of 70 percent. In 1973, tonnage from Japan fell sharply from the previous year's total of 88,000 tons, and its import share fell from 61 percent to 49 percent. The average unit value of the imports from Japan was the highest of all major suppliers at $192 per ton. Tonnage more than doubled to 130,000 tons in 1974 while import market share increased to 65 percent. After a drop in tonnage in the slack year of 1975, tonnage increased steadily to 125,000 in 1978. Japan's import share increased significantly from 67 percent in 1975 to 83 percent in 1978.

Other bars: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	61	49	65	67	82	85	83
EEC	32	47	25	26	7	8	7
Korea	1/	1/	3	3	8	4	3
Argentina	1/	1/	4	-	-	-	2
Canada	2	1/	1/	1/	1/	1/	2
India	1	2	2	1	2	2	2
Total	96	98	99	97	99	99	99

1/ Less than 0.5 percent.

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

In contrast to the trend in imports of other carbon steel mill products, Japan's gain in import share from 1976 to 1978 came at the expense of the EEC, the second leading supplier of other bars to the Western States during the period. Tonnage from the EEC remained fairly stable in 1972-74, and in 1973 the EEC had 47 percent of the import market. After the general decline in tonnage in 1975, shipments from the EEC fell further in 1976 and market share declined from 26 percent in 1975 to 7 percent in 1976, where it remained through 1978.

Korea averaged 4 percent of the import market for other bars from 1974 through 1978. Its import share increased to 8 percent in 1976, when tonnage hit its peak of 7,000 tons.

India maintained a small but stable import share throughout the 1972-78 period at 1 or 2 percent.

As indicated in the table below, Los Angeles handled the majority of imports of other bars to the Western States from 1972 through 1978, receiving an average 66 percent per year. Portland handled 16 percent; San Francisco, 11 percent; and Seattle, 6 percent.

Other bars: Share of Western States' imports for consumption, by major Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	68	70	61	62	67	66	68
San Francisco	10	13	13	14	8	11	10
Portland	16	12	12	17	16	15	17
Seattle	6	5	5	7	8	8	5
Total	100	100	91	100	99	100	100

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

Bar-size shapes.--Imports of bar-size shapes into the Western States accounted for an average of 2 percent of total imports during 1972-78, averaging about 74,000 tons per year (table 33). Japan supplied about two-thirds of the imports and the EEC, about one-fifth.

Angles, shapes, and sections.--During 1972-78, imports of angles, shapes, and sections into the Western States accounted for an average of 11 percent of imports of all steel mill products, averaging 341,000 tons per year (table 34).

The only significant suppliers of imported angles, shapes, and sections to the Western States over the 7-year period were Japan, averaging 60 percent of import supply, and the EEC, 31 percent.

Angles, shapes, and sections: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	46	46	57	60	81	67	61
EEC	44	39	35	32	17	24	27
Total	90	85	92	92	98	91	88

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

An average of 44 percent of all imports of angles, shapes, and sections entered through Los Angeles, a lower percentage than for most other steel mill products. Portland accounted for an average of 26 percent, followed by San Francisco (19 percent), Seattle (8 percent), and San Diego (1 percent).

Angles, shapes, and sections: Share of Western States' imports for consumption, by major Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	49	45	47	37	48	41	41
San Francisco	19	16	15	30	20	18	18
Portland	23	27	28	24	23	32	28
Seattle	7	8	7	9	8	8	10
San Diego	1	3	2	0	1	1	2
Total	99	99	99	100	100	100	99

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

Wire rod.--During 1972-78, imports of wire rod into the Western States accounted for an average of 5 percent of all carbon steel mill products imported into the region. Imports of wire rod averaged 179,000 tons during that period (table 35).

The only significant suppliers of imported wire rod to the Western States over the 7-year period were Japan and the EEC, accounting for an average of 61 percent and 30 percent, respectively, of total wire rod imports. The Republic of South Africa entered the market in 1977, gaining a share of 9 percent; it increased its share to 22 percent in 1978.

A higher percentage of wire rods than of most other steel mill products was entered through Los Angeles. An average of 71 percent of Western States imports of wire rods were entered through Los Angeles; 18 percent, through San Francisco; and most of the remainder, through Seattle.

Wire rod: Share of Western States' imports for consumption, by major Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	72	68	70	73	73	72	70
San Francisco	18	18	18	19	17	19	19
Portland	-	1/	1/	1/	1/	-	2
Seattle	10	13	11	7	9	8	9
Total	100	99	99	99	99	99	100

1/ Less than 0.5 percent.

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

Pipes and tubes.--During 1972-78, imports of pipes and tubes into the Western States accounted for an average of 18 percent of all steel mill products imported into the region. Imports of pipes and tubes averaged 581,000 tons during that period (table 36).

The relative importance of import suppliers of pipes and tubes was different than that of those which supplied flat-rolled products and total steel mill products. The EEC, although a significant import supplier of flat-rolled products and of total steel mill products, was not a significant source of pipes and tubes. In addition, Korea was second only to Japan as a source of pipes and tubes, but was a relatively small supplier of flat-rolled products and total carbon steel mill products.

Pipes and tubes: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	72	66	59	67	71	67	55
Korea	3	12	19	12	16	18	25
Taiwan	7	7	9	2	4	5	7
Australia	8	4	1/	4	1/	2	3
EEC	4	2	3	3	1/	1/	1
Canada	4	7	9	10	7	7	6
Total	98	98	99	98	98	99	97

1/ Less than 0.5 percent.

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

Japan's share of imports of pipes and tubes averaged 65 percent over the 1972-78 period. Although its share dropped in 1978 (from 67 percent in 1977 to 55 percent in 1978), the decline was not as sharp as that which occurred in other major product lines. Actual tonnage of pipes and tubes from Japan increased slightly in 1978.

Korea has been a significant competitor in the Western States' pipe and tube market since 1973, when it accounted for 12 percent of total pipe and tube imports. In 1978, in the absence of any significant increase in imports from Japan, Korea's share increased to its highest level, 25 percent, with imports of 182,000 tons. In 1974, Korea's unit value for plates, sheets, and strip did not reflect the general sharp unit value increase for imports from other countries, allowing for sharp underselling; however, the average unit value of pipes and tubes from Korea sharply increased in 1974, in concert with unit values from other importing countries.

The share of imports of pipes and tubes from Taiwan and Canada from 1972 to 1978 averaged 6 and 7 percent, respectively.

During the 1972-78 period, an average of 51 percent of all pipes and tubes imported into the Western States entered through Los Angeles. San Francisco accounted for 16 percent; Portland, 15 percent; Seattle, 12 percent; and Great Falls, 5 percent. The port of Great Falls handled the bulk of all pipe and tube imports from Canada.

Pipes and tubes: Share of Western States' imports for consumption, by major Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	50	49	47	48	57	54	51
San Francisco	22	19	20	13	15	12	16
Portland	17	17	15	14	12	15	15
Seattle	8	10	13	19	10	14	13
Great Falls	2	4	5	6	6	5	5
Total	99	99	100	100	100	100	100

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

Rails, joint bars, and tie plates.--Imports of rails, joint bars and tie plates were insignificant throughout the 1972-78 period, averaging 13,000 tons per year (table 37). Japan supplied the bulk of the imports.

Wire.--During 1972-78, imports of wire averaged 2 percent of all steel mill products imported into the Western States. In actual tonnage, imports of wire averaged 70,000 tons per year (table 38).

Japan was the principal source of wire imports during the period providing an average of 66 percent per year. The EEC and Canada provided an average of 15 percent and 14 percent, respectively, over the same period. Korea and South Africa entered the market in 1975; by 1978 each accounted for 3 percent of total wire imports.

Wire: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	80	68	67	68	65	64	51
EEC	11	16	18	14	17	13	13
Canada	8	14	8	14	12	17	28
Korea	1/	1/	1/	1	1	2	3
Republic of South Africa	-	1/	1/	1	2	3	3
Total	99	98	93	98	97	99	98

1/ Less than 0.5 percent.

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

In 1978, imports of wire from Japan decreased to a larger extent (39 percent) than did most other product lines. The decrease in 1978 for all steel mill products from Japan was 4 percent. In 1978, imports from countries other than Japan also decreased, which was different from the pattern in other product lines. As a result, imports of wire from all sources declined by 20 percent when compared with imports in 1977.

The Port of Los Angeles handled an average of 47 percent of wire imports into the Western States from 1972 through 1978, San Francisco and Seattle handled about 22 percent each, and Portland, 8 percent.

Wire: Share of Western States' imports for consumption, by major Customs ports, 1972-78

(In percent)

Port	1972	1973	1974	1975	1976	1977	1978
Los Angeles	49	46	50	43	46	49	45
San Francisco	26	22	25	23	25	18	13
Portland	10	9	10	9	5	5	6
Seattle	14	22	15	24	24	28	35
Total	99	99	100	99	100	100	99

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

Products of wire.--Three types of wire products were selected for examination over the 7-year period as indicators of the changes that occurred in the wire products' market in relation to the market for wire rod and wire. Of the three products selected (barbed wire, prestressed strand, and nails 1/), the major product is nails.

Nails: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	76	75	66	67	61	48	27
Korea	-	1/	3	10	26	42	53
Canada	16	20	21	21	13	9	11
EEC	7	3	6	1/	1/	1/	2
Total	99	98	96	98	100	99	93

1/ Less than 0.5 percent.

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

Imports of nails increased from 47,000 tons in 1972 to 96,000 tons in 1978, averaging 59,000 tons per year. Japan's share of the market trended downward from 76 percent in 1972 to 27 percent in 1978. Actual tonnage fluctuated from a high of 43,000 tons in 1977 to a low of 24,000 tons in 1975. In 1978, imports from Japan totaled 26,000 tons (table 39).

Korea entered this market in 1973, gaining a share of less than 1 percent (137 tons) which increased steadily to 53 percent (51,000 tons) in 1978.

Imports of barbed wire averaged 6,000 tons per year over the 7-year period (table 40). As shown in the table below, there were three major suppliers, Japan, Korea, and the EEC. Japan was the principal foreign supplier of barbed wire prior to 1978. In 1978, its share dropped to 10 percent and Korea became the principal supplier. Many of the wire fabricators in Korea are Japanese owned. The EEC's share fluctuated over the 7-year period; in most years the EEC was a significant contributor, second only to Japan. However, actual tonnage of imports of barbed wire were small.

1/ Only nails of iron or steel, 1" or more in length and .065" or more in diameter are included.

Barbed wire: Share of Western States' imports for consumption, by principal sources, 1972-78

(In percent)

Source	1972	1973	1974	1975	1976	1977	1978
Japan	70	65	42	65	69	58	10
Korea	-	-	8	11	20	15	51
EEC	27	24	20	18	6	8	23
Republic of South Africa	-	-	-	-	2	6	4
Total	97	89	70	94	97	87	88

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

Imports of prestressed strand averaged 26,000 tons per year from 1972 through 1978. Japan was the only significant supplier of prestressed strand in that period (table 41).

Japanese importers

Virtually all of the steel imported from Japan is marketed through Japanese trading companies which form a link between the Japanese steel mills and the U.S. Western market. Although 15 Japanese trading companies serve the Western market, import supply is highly concentrated among a small number of firms. Fifty-nine percent of total tonnage of Japanese steel mill products imported to the Western market in 1977 was supplied by 4 trading companies (table 42). This tonnage represented 16 percent of apparent consumption. The two major product lines in which Japanese importers compete are flat-rolled products and pipes and tubes. The four largest importers of flat-rolled products supplied 58 percent of sheet and strip and 60 percent of plate imported from Japan in 1977. The four largest importers of pipes and tubes supplied 68 percent of imports from Japan. These tonnages accounted for 16 percent of apparent consumption of flat-rolled products and 21 percent of apparent consumption of pipes and tubes in the Western States.

Most of the Japanese importers competed in a wide range of products. Thirteen of the 15 supplied imports in seven or more product lines (table 43). This pattern might be expected since these are not direct mill sales. They reflect the selling pattern of the trading companies which may or may not be the same as the production patterns of the mills.

Mill sourcing patterns of Japanese trading companies exporting carbon steel to the Western States market are presented in table 44. During 1976 and 1977, 89 different steel mills (firms) supplied carbon steel products for the

15 Japanese trading companies serving the market in the Western States. Most of these foreign producers are located in Japan; only six non-Japanese mills located in Taiwan and Korea supplemented Japanese production sources.

The number of trading companies exporting to the Western States and the number of supplying mills vary widely according to product category. In 1977, 19 different mills supplied pipes and tubes to 14 trading companies. Seventeen mills were sources of wire exports to the Western market by 10 trading companies. A narrower sourcing pattern is apparent for tin mill products (8 mills), plates (6 mills), and wire rods (6 mills). The average number of sources for all other product categories (except rails, joint bars, and tie plates) is about 12. For most product categories no less than two nor more than four trading companies are dependent on the same primary mill source. 1/ Almost every trading company uses a single primary mill source. The data show that relatively few trading companies changed primary sources during 1976 and 1977. 2/

Japanese trading companies have recently developed alternative non-Japanese sources to supply certain products to the Western U.S. market. Japan has promoted investments, for example, in wire and nail facilities in Korea. These investments were made by Japanese steel producers (table 45). Korea has now gained a dominant import position in the Western nail market.

Six Japanese wire and wire products manufacturers have relocated their production to Korea. According to Japanese producer and exporter interests, the Mitsui trading company advised six manufacturers to move their equipment in Japan partly to Masan, Korea's Free Trade Zone. 3/ These firms established wire mills in Korea during February-April 1973; all firms listed are now in production. The five companies which produce nails are producing all different size nails for different uses.

The total investment in Korean wire mill and nail production facilities, amounted to almost $10 million and created an annual capacity of more than 80,000 metric tons, mostly nails. The combined operations employ more than 500 workers and have an annual export earnings potential (planned) of nearly $27 million. Four Japanese steel producers (Kobe, Nippon, Godo Steel, and Sumitomo Metal) supply the wire rod drawn by these six wire mills.

Importers other than Japanese

The sales of steel mill products by large European steel mills are often made by their American sales subsidiaries. British Steel Corp., for example, maintains a Houston office through which all of its U.S. sales are arranged.

1/ A single mill supplies as many as 13 different trading companies (e.g., sheets and strip) if secondary sources are included. A primary source is defined as supplying 60 percent or more of a trading company's export volume. A secondary source is defined as supplying less than 40 percent.

2/ Only two product categories, plates and angles, shapes, and sections show a significant change in primary sourcing.

3/ This statement by Japanese steel interests also notes that Mitsui, which distributes these Korean products, has neither invested any capital in the Korean operations nor participated in their management.

In fact, three of the four largest importers of steel into the Western market from countries other than Japan are foreign owned. In 1977, the four largest importers of steel mill products imported from countries other than Japan accounted for 53 percent of the total imports from countries other than Japan and 5 percent of apparent consumption (table 46).

In contrast to the Japanese importers, these importers appear quite specialized in product lines. Only 4 of the 24 importers competed in 7 or more product lines (table 47).

U.S. tariff treatment

Carbon steel imports are subject to U.S. import duties averaging about 6 percent ad valorem; 1/ several administrative actions under the Antidumping Act, 1921, and under import relief legislation, and provisions of so-called Buy Amerian statutes. 2/ Other U.S. actions affecting U.S. imports of carbon steel include the Voluntary Restraint Agreements (1969-74) and the trigger price mechanism initiated by the U.S. Treasury in January 1978.

Import relief actions under U.S. trade laws

Although in recent years there have been numerous import relief actions initiated under U.S. trade laws, the great bulk of imports of steel mill products remain unaffected by any of the following actions cited. Domestic steel producers, including west coast producers, have filed numerous petitions and complaints seeking relief from imports under several different statutory provisions in recent years. The bulk of the documents filed have been complaints submitted to the Secretary of the Treasury alleging sales at less than fair value under the Antidumping Act, 1921. Petitions and complaints have also been filed with the Secretary of the Treasury alleging the bestowal of a bounty or grant within the meaning of the countervailing duty law, with the Commission seeking import relief under section 201 of the Trade Act of 1974 or relief from unfair import practices under section 337 of the Tariff Act of 1930, and with the Special Representative for Trade Negotiations for an investigation under section 301 of the Trade Act of 1974. Some relief has been provided under the first three of the four listed relief provisions. Such relief directly affects less than 5 percent of all steel imports (including imports of basic noncarbon steel such as stainless and alloy tool steel). Each of these relief provisions and actions taken thereunder is briefly discussed below.

1/ Individual rates ranged from an ad valorem equivalent of less than 1 percent to a high of 11 percent. Although 5 of the steel mill items are eligible for duty-free treatment under the Generalized System of Preferences (GSP), imports of such items which received these benefits were very small, amounting to less than $15,000 in 1977.

See following page for footnote 2/.

Footnote 2 from previous page.

2/ The Buy-American Act, 41 U.S.C. 10a-10d (1978), is the primary Congressionally-mandated legislative preference for U.S. goods. Under this act U.S. Government agencies may purchase products of foreign origin for delivery in the United States only if the cost of the domestic product exceeds the cost of the foreign product, including duty, by 6 percent or more. This differential rises to 12 percent if the low domestic bidder is situated in a labor surplus area, and to 50 percent if the purchase is made by the Department of Defense. The preferences may be waived in the public interest, however.

There are other similar restrictions on U.S. Government procurement which may affect imports of carbon steel products in specific instances. For example, appropriations acts restrictions preclude purchases of foreign-made buses and vessels by the Department of Defense (Pub. L. No. 90-500, 82 Stat. 849, section 404, and Pub. L. No. 94-212, 90 Stat. 53, tit. IV). Still other statutes effect programs favoring certain disadvantaged domestic suppliers, to the competitive detriment of both other nonfavored domestic and foreign suppliers; these programs include preferences for small and minority business set-asides (15 U.S.C. 631.44, 41 U.S.C, 252(b), 42 U.S.C. 6705(f)(2), Pub. L. No. 95-507, and Executive Orders 11458, 11158, and 11625), and labor surplus area concerns (15 U.S.C. 644(d) and Executive Order 12073).

Certain federal grant programs also have buy-American restrictions on the use of funds by state and local governments. See, e.g., Public Works Employment Act of 1977, Pub. L. No. 95-28, and the Surface Transportation Assistance Act of 1978, Pub. L. No. 95-599, section 401. Like the federal agency restrictions, however, these preferences generally may be waived in the public interest.

Finally, a number of states have buy-American restrictions on their own procurements. A recent compilation may be found in GAO Report IP-79-1, pp. 2, 20-25 (Nov. 30, 1978). That report reveals that of the western states which are the subject of this report only Montana has such legislation currently in force.

It should be noted that the United States has recently initialed the Agreement on Government Procurement, negotiated as a part of the Tokyo Round of multilateral trade negotiations conducted under the auspices of the GATT. Title III of the Trade Agreements Act of 1979 (Pub. L. No. 96-39, section 301 et seq.) implements U.S. commitments arising from the Agreement. In general, under this legislation the President may waive application of the Buy-American Act and other domestic preference legislation to products and suppliers which originate in another signatory to the Agreement with which the United States has concluded a schedule of mutually reciprocal procurement concessions. This waiver authority will not be exercised with respect to federal grant programs and to state or local legislation or rules. Nevertheless, the nontariff barriers to carbon steel imports described above may become inoperative in many instances.

Antidumping Act.--The Antidumping Act, 1921, as amended (19 U.S.C. 160, et seq.) provides that where the purchase price or exporter's sales price of imported merchandise is less than the foreign market value there shall be levied, collected, and paid, in addition to any other duties imposed thereof by law, a special dumping duty in an amount equal to such difference (see especially 19 U.S.C. 161(a)). Such dumping duties are levied only after (1) the Secretary of the Treasury has made an appropriate determination that certain merchandise is being or is likely to be sold in the United States or elsewhere at less than its fair value and (2) the U.S. International Trade Commission has determined that an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation of such merchandise into the United States (19 U.S.C. 160(a)). 1/

Outstanding findings of dumping are currently in effect with respect to steel reinforcing bars from Canada; carbon steel bars and structural shapes from Canada; certain steel bars, reinforcing bars, and shapes from Australia; certain stainless steel plate 2/ from Sweden; certain stainless steel wire rods from France; certain steel wire rope 3/ from Japan; hot-rolled carbon steel plate from Japan and Taiwan; and steel wire strand for prestressed concrete from Japan. 4/

In 3 months, from early September to early December 1977, 24 complaints alleging the dumping of steel products were filed with the Treasury Department. As a result of those complaints, Treasury instituted 20 dumping investigations. The investigations covered a wide range of products, including carbon steel bars, pipe and tubing, plate, shapes, sheet, strand, strip, wire nails, wire rods, wire rope, and certain basic steel products. Twelve of the 20 investigations involved imports from the EEC (6 involved imports from the United Kingdom, a member of the EEC). Five of the 20 involved imports from Japan. Most of the investigations were eventually terminated at the request of the complainants as a result of the establishment of the trigger-price mechanism (discussed infra).

1/ The Trade Agreements Act of 1979, Public Law 96-39 approved July 26, 1979, repeals the Antidumping Act and establishes a new antidumping provision with similar standards but changed procedures. Under the new provisions, which become effective Jan. 1, 1980, the Commission will determine whether (a) an industry in the United States is materially injured or threatened with injury, or (b) the establishment of an industry in the United States is materially retarded.

2/ Stainless steel products were excluded from this investigation.

3/ Wire rope was not covered in this investigation.

4/ A complete list of the current outstanding dumping findings can be found in 19 CFR 153.46. Citations to the appropriate Treasury Digest can also be found there.

Countervailing duty law.--Section 303 of the Tariff Act of 1930, as amended (19 U.S.C. 1303), the countervailing duty law, provides that "Whenever any country, dependence . . . shall pay or bestow, directly or indirectly, any bounty or grant upon the manufacture or production or export of any article or merchandise manufactured or produced in such country . . . there shall be levied and paid, in all such cases, in addition to any duties otherwise imposed, a duty equal to the net amount of such bounty or grant . . . ." Complaints alleging a violation of the countervailing duty law are filed with the Secretary of the Treasury. Determinations are also made by the Secretary. In the case of an imported article which is free of duty, duties may be imposed under this section only if there is an affirmative determination by the Commission that an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation of such merchandise. 1/

Countervailing duties are presently in effect on galvanized fabricated steel units (transmission towers) from Italy, and steel welded wire mesh from Italy. 2/

Import relief under section 201 of the Trade Act.--Section 201 of the Trade Act of 1974 (19 U.S.C. 2251) provides that an entity, including a firm, trade association, group of workers, or certified or recognized union, representative of a domestic industry may file a petition for import relief with the U.S. International Trade Commission. The Commission, on receipt of such a petition, is required to investigate to determine whether an article is being imported into the United states in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article. 3/ If the Commission makes an affirmative determination, it must then find the amount of increase in or imposition of any duty or import restriction on such article which is necessary to prevent or remedy such injury or, if it determines that adjustment assistance can effectively remedy the injury, recommend the provision of such assistance.

1/ The Trade Agreements Act of 1979 amends the present law by requiring a finding that an industry is materially injured, or is threatened with material injury, or that the establishment of an industry in the United States is materially retarded.

2/ A complete list of the countervailing duty orders currently in effect is set forth at 19 CFR 159.47(f).

3/ The Commission is also required to investigate at the request of the President or the Special Representative for Trade Negotiations, or upon resolution of either the Committee on Ways and Means of the House of Representatives or the Committee on Finance of the Senate. The Commission may also investigate on its own motion.

Such findings and recommendations are transmitted to the President, who is required within 60 days, to determine what relief he will provide unless he determines that relief is not in the national economic interest (see 19 U.S.C. 2252). The President may conclude that adjustment assistance is the appropriate form of relief and direct the Secretaries of Labor and Commerce to give expeditious consideration to petitions for such assistance, or he may provide import relief under section 203 of the Trade Act (19 U.S.C. 2253) by (1) proclaiming an increase in, or imposition of, a duty on the article causing or threatening to cause serious injury to such industry; (2) proclaiming a tariff-rate quota on such article; (3) proclaiming a modification of, or imposition of, any quantitative restriction on the import into the United States of such article; (4) negotiating orderly marketing agreements with foreign countries limiting the export from foreign countries and the import into the United States of such articles; or (5) taking some combination of the above four actions.

The Commission has undertaken two investigations in recent years relating to basic steel products. As a result of investigation No. TA-201-5, Stainless Steel and Alloy Tool Steel, 1/ the Commission made an affirmative injury determination and recommended the provision of import relief in the form of quantitative restrictions on imports of stainless steel sheet and strip, plate, bar, and rod, and on alloy tool steel. 2/ As a result of that investigation, President Ford proclaimed relief in the form of quantitative restrictions on such steel for a 3-year period, beginning June 14, 1976, and President Carter in June 1979 extended such relief for an additional 8-month period, with relief to terminate at the close of February 13, 1980. 3/ In the second investigation, No. TA-201-13, Round Stainless Steel Wire, the Commission made a negative injury determination and the question of relief was therefore not reached. 4/

1/ Stainless and alloy tool steel products were exlcuded from this investigation.

2/ See Stainless Steel and Alloy Tool Steel: Report to the President on Investigation No. TA-201-5 . . ., USITC Publication 756, January 1976.

3/ See Proclamation 4445, issued June 11, 1976 (41 F.R. 24101), as modified by Proclamation 4477 of Nov. 16, 1976 (41 F.R. 50969), which provided a separate quota for certain alloy tool steel known in the trade as bearing steel. Proclamation 4509, issued on June 15, 1977 (42 F.R. 30829), terminated the quota on bearing steel; and Proclamation 4559, issued Apr. 5, 1978 (43 F.R. 14433), further modified the remaining quota on alloy tool steel to exclude from that quota so-called chipper knife steel and band saw steel. The present relief is provided for in items 923.20 through 923.26, inclusive, of the Appendix to the Tariff Schedules of the United States (19 U.S.C. 1202).

Such relief was further modified and extended for an 8-month period by Proclamation 4665, issued June 12, 1979 (44 F.R. 34089).

4/ See Round Stainless Steel Wire: Report to the President on Investigation No. TA-201-13 . . ., USITC Publication 779, June 1976.

Section 337 of the Tariff Act of 1930.--Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337), declares unlawful "unfair methods of competition and unfair acts in the importation of articles into the United States, or in their sale by the owner, importer, consignee, or agent of either, the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated, in the United States, or to prevent the establishment of such an industry, or to restrain or monopolize trade and commerce in the United States. . . ." Complaints are filed with the U.S. International Trade Commission and when the Commission determines a violation of section 337 to exist, it may issue an exclusion or a cease-and-desist order. 1/

In the one recent investigation involving a basic steel product, investigation No. 337-TA-29, Certain Welded Stainless Steel Pipe and Tube, the Commission found a violation of section 337 by reason of the importation or sale or both by certain Japanese producers or exporters of certain welded stainless steel pipe and tube at prices lower than the average variable cost of production of such products without commercial justification (i.e., predatory pricing), and issued an order directing such firms to cease and desist from such practices. 2/ The order did not take effect because it was disapproved for policy reasons by the President.

Section 301 of the Trade Act.--Under section 301 of the Trade Act of 1974 (19 U.S.C. 2411), the President may, in the case of a subsidized import which is substantially reducing sales of the competitive U.S. product, impose duties or other import restrictions on the products of the exporting country, after investigation by the Secretary of the Treasury and the U.S. International Trade Commission. Section 301 authority may be used only if the President finds that the antidumping and the countervailing statutes are inadequate to deter the practices. Complaints are filed with the Special Representative for Trade Negotiations.

In October 1976, the American Iron and Steel Institute (AISI) filed a complaint alleging that the European Coal and Steel Community (ECSC) and the Japanese Ministry of International Trade and Industry (MITI) had entered into a bilateral agreement limiting Japanese steel exports to the EEC and which unlawfully diverted Japanese exports of steel from the EEC to the United States. 3/ The investigation was terminated in January 1978.

1/ The proposed Trade Agreements Act of 1979 would, among other things, authorize the levying of civil penalties in the case of a violation of a Commission order.

2/ In the Matter of: Certain Welded Stainless Steel Pipe and Tube, Investigation No. 337-TA-29 . . ., USITC Publication 863, February 1978.

3/ Notice of the complaint was published in the Federal Register of Oct. 15, 1976 (41 F.R. 45628).

Voluntary restraint arrangements (VRA).--In 1968, the Executive sought to reduce steel imports by negotiating voluntary restraint arrangements with Japanese and European producers. Agreements were reached in December 1968 with Japanese and EEC producers and these producers sent "letters of intent" to the U.S. Secretary of State informing him of their intention to limit steel exports to the United States to specified quantities during 1969-71. 1/

The steel industries of Japan and the Common Market agreed to limit their exports to the United States to about 5.75 million tons each, providing that other countries exporting steel to the United States would limit their shipments in a similar manner so that total world steel exports to the United States would not exceed 14 million tons in 1969 (imports totaled 18 million tons in 1968). The VRA provided for an annual increase of 5 percent in exports to the United States in 1970 and 1971. Total imports slightly exceeded the goal set for 1969; they were considerably below the limit set for 1970, but far exceeded the 15.4 million tons permitted by the VRA for 1971. The increase in 1971 was largely attributable to hedge buying caused by an anticipated steelworkers' strike which never materialized. In addition, the Presidential proclamation imposing the 10-percent surcharge in August 1971 may have caused some increase in imports, since the European and Japanese steel producers were bound by the voluntary arrangements only so long as the United States did not impose any additional restrictions on their exports of steel to the United States. In December 1971, the President removed the 10-percent import surcharge.

Early in 1972, new arrangements were negotiated to cover the period 1972-74. United Kingdom producers joined with EEC and Japanese producers in furnishing "letters of intent." 2/ During the first 3-year phase, foreign participants in the VRA found it advantageous to increase their exports of high-priced products since the agreement was based on tonnage and not value. Thus, the first VRA in effect encouraged the shift of imports to stainless, alloy, and other high-priced steel mill products. During the second 3-year phase, the United States was successful in getting the participants to agree not only to a specific limit on their total exports of steel mill products, but also to specific limits on stainless and alloy steel mill products. In 1973 and 1974 demand for steel outside the United States was so strong that this second phase of the VRA had little effect on the level of U.S. imports.

1/ The text of the letters of intent can be found in Consumers Union of U.S., Inc. v. Kissinger, 506 F.2d 136, Appendix at 126a-37a (D.C. Cir 1974). In the Consumers Union case the Court of Appeals upheld the validity of the Voluntary Restraint Arrangements. The United Kindgom was not a member of the European Community in 1968 and did not participate in the first set of arrangements.

2/ Id.

The Trigger-Price Mechanism 1/

The President, on December 6, 1977, approved a "trigger price mechanism" for certain articles of steel, as formally recommended to him on the same date by the U.S. Treasury Department. 2/ The trigger-price mechanism (TPM) was announced and partially implemented 3/ in early 1978. By the end of the year, it apparently had been almost completely implemented. 4/ On October 17, 1978, the Treasury announced the publication of a TPM manual, which incorporated all trigger prices announced to that date and which was for use by Customs at ports of entry during the third and fourth quarters of 1978. 5/ On November 22, 1978, Treasury published revised trigger prices for the first quarter of 1979, and on January 23, 1979, revised certain trigger prices and added new products to the program. 6/ The trigger prices for each of the three calendar quarters after June 30, 1978, progressively and significantly increasd in amount over those for the immediately preceding calendar quarter. 7/ In any event, the TPM was for most of 1978 and will probably continue to be for the indefinite future the greatest single factor influencing conditions of competition in all steel markets of the United States, including the Western steel market. Thus, an understanding of the TPM and the effect it is having is critical.

Before attempting to analyze the available import data for 1978, it is important to examine the operation of the TPM as it is presently in force. 8/

1/ The "trigger-price mechanism" was generally referred to in the press and elsewhere as a "reference price" plan prior to its formal announcement in early 1978.

2/ See Report to the President: A Comprehensive Program for the Steel Industry (Dec. 6, 1977), often referred to as the Solomon Report.

3/ See 43 F.R. 9912 of Mar. 10, 1978, which states that the trigger prices which were published on Jan. 9, 1978 (43 F.R. 1463), were for a majority of the steel mill products imported during 1976 and 1977. Also, this partial list is described as relating to 17 steel mill products. (43 F.R. 6065 of Feb. 13, 1978.)

4/ The Treasury Department announced base prices applicable in October-December 1978 to all shipments exported on or after Oct. 1, 1978, for 84 types of steel products covered by the program. (43 F.R. 33993 of Aug. 2, 1978.)

5/ 43 F.R. 47809.

6/ 43 F.R. 54710 and 44 F.R. 4767.

7/ The implementation of TPM and its revision in 1978, including the adjustments therein for the first calendar quarter of 1979, were the subject of 24 public notices constituting more than 200 pages published in the Federal Register, as follows: 42 F.R. 65214 (Dec. 30, 1977); 43 F.R. 1464 (Jan. 9, 1978), 4703 (Feb. 3), 6065 (Feb. 13), 8657 (Mar. 2), 9912 (Mar. 10), 12783 (Mar. 27), 18383 (Apr. 28), 20070 (May 10), 22122 (May 23), 23669 (May 31), 32710 (July 27), 32713 (July 27), 32715 (July 27), 32730 (July 27), 33993 (Aug. 2), 38155 (Aug. 25), 47809 (Oct. 17), 49875 (Oct. 25), 54315 (Nov. 21), 54710 (Nov. 22), and 54717 (Nov. 22); and 44 F.R. 2053 (Jan. 9, 1979), and 44F.R. 4767 (Jan. 23).

8/ For example, the adjustments of trigger prices for the first calendar quarter of 1979 on the basis of changes in costs and in exchange rates are 7.0 percent for shipments from foreign integrated steel producers, and 9.8 percent for other foreign producers.

In the public announcements of the TPM, Treasury describes it as consisting of four parts, as follows:

> (1) The establishment of trigger prices for steel mill products imported into the United States. 1/
>
> (2) The adoption of a new Special Summary Steel Invoice ("SSSI"), Customs Form 5520, applicable to imports of all steel mill products.
>
> (3) The continuous collection and analysis of data concerning (a) the cost of production and prices of steel mill products in the countries that are the principal exporters of such products to the United States, and (b) the condition of the domestic steel industry.
>
> (4) Where appropriate the expedited initiation (triggering) and disposition of proceedings under the Antidumping Act, 1921, and section 153.25 of the Customs Regulations, with respect to imports below the trigger prices.

A final rule was published on February 13, 1978, which amended the Customs Regulations, effective on and after February 21, to require that SSSI (Customs Form 5520) be presented to Customs at the time entry is made of each shipment of steel covered by the program having an aggregate purchase price over $2,500. 2/ The additional information provided for on the special invoice is for use in the administration and enforcement of the Antidumping Act, 1921.

1/ The steel mill products covered are those identified by the American Iron and Steel Institute in 32 categories, as follows:

1 - Ingots, blooms, billets, slabs, etc.
2 - Wire rods.
3 - Structural shapes--plain 3 inches and over.
4 - Sheet piling.
5 - Plates.
6 - Rail and track accessories.
7 - Wheels and axles.
8 - Concrete reinforcing bars.
9 - Bar shapes under 3 inches.
10 - Bars--hot rolled--carbon.
11 - Bars--hot rolled--alloy.
12 - Bars--cold finished.
13 - Hollow drill steel.
14 - Welded pipe and tubing.
15 - Other pipe and tubing.
16 - Round and shaped wire.
17 - Flat wire.
18 - Bale ties.
19 - Galvanized wire fencing.
20 - Wire nails.
21 - Barbed wire.
22 - Black plate.
23 - Tin plate.
24 - Terne plate.
25 - Sheets--hot rolled.
26 - Sheets--cold rolled.
27 - Sheets--coated (including galvanized).
28 - Sheets--coated--alloy.
29 - Strip--hot rolled.
30 - Strip--cold rolled.
31 - Strip--hot and cold rolled--alloy.
32 - Sheets other--electric coated.

43 F.R. 6065, 6069 of Feb. 13, 1978.

2/ The $2,500 figure will be based on the purchase price as shown in the invoice filed in connection with the entry (43 F.R. 6065, 6066 of Feb 13, 1978).

The establishment of trigger prices

The Treasury has announced or will announce a trigger price per metric ton for each major steel mill product imported in significant quantities. The trigger price for each imported steel mill product is the total of a "base price" plus "extras," if any, plus "transportation charges" from Japan. The trigger prices apply to importations from all countries.

The base price for a steel product is derived from the estimated costs of production in Japan of all steel products. Base prices are constructed and revised (on a quarterly basis after June 30, 1978) from information available to Treasury, including evidence submitted by the MITI in regard to the current cost of producing steel in Japan--the country Treasury has determined is the most efficient producer. The data supplied by MITI were compiled by the six major integrated steel companies in Japan, and by a number of smaller, electric-furnace steelmakers.

The extras, if any, are charges to be added to the base prices of steel mill products, which are sold to specifications for width, thickness, chemistry, or surface preparation that differ from the base products. The extras were calculated by Treasury from data obtained from MITI and other sources.

The transportation charges which are to be added to the base price plus extras, if any, do not include U.S. import duty. Such transportation charges include inland freight, loading, ocean freight, insurance, interest, and wharfage charges. Importers' sales commissions are excluded since the trigger price is based upon the cost to the importer, assuming the importer is dealing on an arms'-length basis. To the extent the importer is related to the exporter of the steel mill product and the transfer price does not reflect an arms'-length transaction, the first resale price by the importer to an unrelated U.S. buyer will be compared with the trigger price.

The "importation charges" have been calculated for each broad product category on the basis of existing data on average freight rates and wharfage charges for each of four regions of the country served by ports of entry on the west coast, gulf coast, east coast, and Great Lakes, 1/ respectively. In general, the transportation charges and, hence, the trigger prices, are lowest on the west coast, and increase for each of the other regions in the above-mentioned order. Thus, a trigger price for a specific steel mill product varies depending upon the region into which it is imported and entered.

1/ Questions raised about the height of the Great Lakes transportation charges were published for comment (43 F.R. 23669 of May 31, 1978). Treasury's findings, conclusions, and adjustments of the freight component of trigger prices for steel mill products imported through Great Lakes ports of entry were published thereafter (43 F.R. 32730 of July 27, 1978).

The trigger prices initially established were applicable to all shipments loaded for export on or before June 30, 1978, i.e., the end of the second calendar quarter of 1978. 1/ All calculations used in estimating Japanese costs of production were based upon several stated assumptions including an exchange rate of 240 yen to the U.S. dollar. The trigger prices are revised on a quarterly basis to reflect changes in costs and in exchange rates. 2/ Revised trigger prices are established within 5 percent above or below any revised cost of production data, where necessary to minimize fluctuations. 3/

Use of the SSSI

As mentioned previously, the SSSI (Customs Form 5520) is to be filed, effective on and after February 21, 1978, at the time customs entry is made of a shipment of steel covered by the TPM having an aggregate purchase price of more than $2,500. Information supplied on this invoice, including the date and terms of the contract between buyer and seller, is necessary to "monitor" the TPM. Beginning with shipments entered on February 21, 1978, all imports of steel mill products loaded for export to the United States after the publication of the relevant trigger prices are examined by the Customs Service. If the SSSIs filed at the time of entry reflect "substantial" or "repeated" imports at prices below applicable trigger prices, the matter is investigated by the Special Customs Steel Task Force to determine whether an immediate investigation under the Antidumping Act should be "triggered" by Treasury on its own motion.

Grace periods.--When a triggered price is first published for a specific steel mill product, a grace period is provided during which no formal Antidumping Act investigations will be triggered by Treasury on its own motion with respect to shipments of such products, if the SSSI and other documentation satisfies Treasury that the prices for such shipments were fixed before the publication of the applicable trigger price and could not be varied in accordance with the terms of the parties' contract, and in the absence of other information indicating that such shipments are priced at less than fair value within the meaning of the Antidumpting Act, specific grace periods were established. 4/

1/ For "base prices," see 43 F.R. 1464, Jan. 9, 1978; for "extras," see 43 F.R. 4703, Feb. 3, 1978; and for "transportation charges," see 43 F.R. 8657, Mar. 2, 1978.

2/ See 43 F.R. 1464, Jan. 9, 1978.

3/ Ibid.

4/ See Treasury Press Release B-689 of Feb. 10, 1978; 43 F.R. 12783 (Mar. 27, 1978); 43 F.R. 18383 (Apr. 28, 1978); 43 F.R. 22122 (May 23, 1978); 43 F.R. 32715 (July 27, 1978); 43 F.R. 54717 (Nov. 22, 1978); and 44 F.R. 4767 (Jan. 23, 1979).

For contracts between the importer and an unrelated foreign exporter, the imports covered thereby had to be entered on or before the relevant date specified for the grace period; and for contracts between the importer and a related foreign exporter, the imports had to be delivered to an unrelated U.S. buyer before that date.

Triggered Antidumping Act investigations.--In all other instances in which the price of a shipment is found by Customs to be lower than the applicable trigger price, Customs may initiate immediate, informal inquiries of the importer to determine whether such sale is less than fair value within the meaning of the Antidumping Act. Unless the Treasury is satisfied, within the time to be allotted therefor, that no reasonable possibility of sales at less than fair value may be found, an antidumping proceeding notice will promptly be published with respect to that shipment and other shipments of such or similar merchandise from the same exporter or from the same country of exportation, as Treasury deems appropriate.

In accordance with this procedure, the Treasury initiated (triggered) a formal investigation under the Antidumping Act with respect to carbon steel plate from Taiwan and Poland. 1/ The Commission subsequently made an affirmative injury determination in the case of the relevant imports from Taiwan 2/ and a negative injury determination in the case of imports of plate from Poland. 3/ Imports of carbon steel plate from Belgium, France, the Federal Republic of Germany, Italy, and the United Kingdom were the subject of a dumping complaint filed with Treasury on December 26, 1978, by the Lukens Steel Company. 4/ Treasury instituted an investigation under the Antidumping Act on December 28, but terminated the investigation with respect to the United Kingdom in February 1979 and terminated the remainder, without prejudice in June 1979, with the concurrence of Lukens. 5/ The alacrity with which Treasury moved to institute its investigation suggests that this investigation is in the nature of a triggered self-initiated investigation under the Antidumping Act. These investigations of carbon steel plate are, in a way, complementary to the dumping finding issued by Treasury in the spring of 1978 against carbon steel plate from Japan, the subject of an affirmative Commission injury determination. 6/

1/ 43 F.R. 49875 (Oct. 25, 1978). Terminated as to Spain, 43 F.R. 54315 (Nov. 21, 1978).

2/ Carbon Steel Plate From Taiwan: Determination of Injury in Investigation No. AA1921-197 . . ., USITC Publication 970, May 1979.

3/ Carbon Steel Plate From Poland: Determination of No Injury or the Likelihood Thereof in Investigation No. AA1921-203 . . ., USITC Publication 984, June 1979.

4/ 44 F.R. 2053 (Jan. 9, 1979).

5/ 44 F.R. 11285 (Feb. 28, 1979), and 44 F.R. 37105 (June 25, 1979).

6/ Carbon Steel Plate From Japan: Determination of Injury in Investigation No. AA1921-179 . . ., USITC Publication 882, April 1978.

The Commission does not know the extent to which Treasury has given clearance to the importation of steel mill products at prices which are below applicable trigger prices owing to their being sold at prices above less than fair value within the meaning of the Antidumping Act.

It will be noted that Treasury removed welded stainless steel pipe and tube from the TPM. 1/ This action was taken as a result of a negative Commission determination with respect to imports from Japan under section 201(a) of the Antidumping Act. 2/

The problems of analyzing market conditions for steel since the advent of the TPM are many. The mechanism is itself very complex. Added to this inherent complexity is the gradual implementation of it throughout 1978; the large number of revisions, corrections, and adjustments made in the trigger prices; the existence of grace periods for U.S. importers geared to dates of entry or dates of delivery to U.S. buyers unrelated to the importer; and the dates of exportation from foreign countries rather than dates of entry at U.S. ports in the calendar quarter which determine the relevant trigger prices on shipments to the United States. The steel import statistics published by the Bureau of the Census (tables 25, 26, 49, and 50) are based upon quantities expressed in short tons rather than in metric tons as in the TPM, and upon values for regular duty assessment purposes as determined under Sections 402 and 402a of the Tariff Act of 1930.

Yen exchange-rate changes and the TPM

Treasury bases trigger prices on the estimated cost of steel production in Japan. These prices are updated quarterly to reflect changes in Japan's costs of production. In addition, the trigger prices are adjusted to reflect changes in the exchange rate. The following table provides the basic cost components used by Treasury to calculate the trigger price and also shows the yen/dollar exchange rate used in the calculations.

1/ 43 F.R. 32175 (July 27, 1978).

2/ Welded Stainless Steel Pipe and Tube From Japan: Determination of No Injury in Investigation No. AA1921-180 . . ., USITC Publication 899, July 1978.

Original and quarterly calculations of Japanese costs of production for integrated producers through 3d quarter 1979

(in dollars)

Item	Original	3d quarter 1978	4th quarter 1978	1st quarter 1979	2d quarter 1979	3d quarter 1979
Yen /dollar rate	240 Y/$	226 Y/$	215 Y/$	187 Y/$	197 Y/$	212 Y/S
Basic raw materials	$113.17	$116.20	$116.20	$116.20	$119.03	$124.68
Other raw materials	63.66	67.60	71.06	81.70	72.21	67.10
Labor	73.14	80.86	85.02	97.75	94.07	91.80
Other expenses	26.48	28.12	29.56	33.99	28.65	26.62
Depreciation	21.49	22.82	23.99	27.58	29.72	27.62
Interest	21.30	22.62	23.78	27.34	25.96	24.12
Profit 1/	22.11	23.42	24.14	26.37	25.12	24.82
Yield credit 2/	(9.81)	(10.31)	(10.57)	(11.34)	(10.82)	(10.79)
Total, dollars per metric ton	331.54	351.33	363.12	399.59	383.94	375.97
Total, dollars per net ton	300.76	318.73	329.42	362.51	348.41	341.08

1/ Profit = .08 (raw materials + labor + other expenses).

2/ Yield credit + $\frac{.865}{(.827 - 1)}$ (raw materials + $\frac{\text{labor}}{2}$)

Source: U.S. Department of the Treasury.

Japanese steel is sold in the United States in dollars, which are then converted to yen. During periods in which the yen is appreciating relative to the dollar, fewer yen will be received by the Japanese steel producer or exporter assuming no change in the dollar price of steel. As shown in the preceding table, such a period existed during the last half of 1978 and through the first quarter of 1979. Thus, during this period, the dollar price of steel imported under the trigger price mechanism increased.

As indicated above, the trigger-price mechanism has the effect of increasing the price of imported steel in line with appreciation of the yen. Prior to the implementation of the trigger-price mechanism, the dollar price of Japanese steel did not rise as fast as the yen appreciated. A partial explanation is the effect yen appreciation has on Japanese production costs.

Viewed from the perspective of the Japanese steel producer, the appreciating yen caused Japanese production costs to decline. The table below provides the various components of Japanese estimated production costs in yen.

Original and quarterly calculations of Japanese costs of production for integrated producers through 3d quarter 1979

(in yen)

Item	Original	3d quarter 1978	4th quarter 1978	1st quarter 1979	2d quarter 1979	3d quarter 1979
Basic raw materials	27,160.8	26,261.2	24,983.0	21,729.4	23,448.9	26,432.1
Other raw materials	15,278.4	15,277.6	15,277.9	15,277.9	14,225.3	14,225.2
Labor	17,553.6	18,274.4	18,279.3	18,279.2	18,531.7	19,461.6
Other expenses	6,355.2	6,355.1	6,355.4	6,356.1	5,841.0	5,643.4
Depreciation	5,157.6	5,157.3	5,157.8	5,157.4	5,854.8	5,855.4
Interest	5,112.0	5,112.1	5,112.7	5,112.5	5,114.1	5,113.4
Profit	5,306.4	5,292.9	5,190.1	4,931.1	4,948.6	5,261.8
Yield credit	(2,354.4)	(2,330.1)	(2,272.5)	(2,120.5)	(2,131.5)	(2,287.4)
Total, yen per metric ton	79,569.6	79,400.6	78,070.8	74,723.3	75,636.1	79,705.6
Total, yen per net ton	72,182.4	72,033.0	70,825.3	67,789.3	68,636.8	72,308.9

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

Virtually all of the cost savings that accrued to these producers during the period of yen appreciation (third quarter of 1978 through the first quarter of 1979) resulted from reduced costs for basic raw materials (mainly coal, oil, and iron ore), from 26,261 yen per metric ton during the third quarter of 1978 to 21,729 yen per metric ton during the first quarter of 1979. The costs of these raw materials account for about one-third of total costs of Japanese production. These items are principally internationally traded commodities which are priced in dollars. In securing dollars to obtain these basic raw materials, the Japanese exchanged 226 yen for one U.S. dollar during the third quarter of 1978 but only 187 during the first quarter of 1979. Thus, Japanese basic raw material costs, in yen, were reduced because of its appreciating currency.

Additional factors responsible for the slow dollar rise in the price of Japanese steel relative to an appreciating yen included the committment by Japanese commercial banks and the Bank of Japan to purchase dollars for the steel companies and the trading companies at a stated fixed rate regardless of the market rate and participation by Japanese firms in the financial future commodities market. Finally, the Japanese steel producers were willing to accept a lower profit on the steel sold in the U.S. market.

Changes in the Western States steel market since the advent of the TPM

Numerous comments in hearing testimony and in press reports have been made concerning the effect of the TPM on the Western States steel market. It has been stated that the TPM was a major factor in increasing the level of imports, increasing the price of steel, causing shifts in import shares of various supplying countries, and in diverting imported steel to the Western States. While it is not possible to quantify the effect of the TPM on the Western States steel market in view of the presence of such other significant influences as the unilateral voluntary limitation on export shipments of steel to the Western States by Japan, the change in demand, currency fluctuations, and increasing production costs, it is possible to make some general observations.

The effects of the TPM have to be measured within the framework of the evolution of the TPM program itself. Only through hindsight is it evident that the program was not fully operational until the third quarter of 1978. 1/ Expectations of its full implementation were raised with its announcement in December 1977 and continued throughout the first half of 1978. Marketing decisions were affected in differing degrees by the mere contemplation of the plan, its announcement in December 1977, and the published prices appearing periodically since January 1978. Importers, distributors, and end users were concerned with insuring adequate supply. Moreover, many saw an opportunity for windfall profits as quarterly trigger price changes were anticipated. Western producers also found opportunities to benefit from the TPM. For example, in the fourth quarter of 1978, some domestic producers, e.g., Kaiser and Gilmore, made the decision to discount selected flat-rolled products, depending upon the TPM to maintain a margin beneficial to producer sales.

In effect, the TPM was designed to prevent dumping, and thus should not be expected to have as great an impact when demand and prices are high as in times of low demand. Since demand in 1978 for steel mill products increased strongly and prices increased (table 4), the full potential of TPM was probably not yet realized in 1978. Without the TPM, however, producers could not have implemented price increases in response to rising production costs.

Most of the increased demand in 1978 was filled by imports; Western producers' shipments within the Western States remained at the 1977 levels. Prices, both domestic and foreign, of steel mill products increased in 1978 and it appeared that importers were generally able to undersell Western producers throughout the year.

1/ The gradual implementation of the TPM throughout 1978 was due to the large number of revisions, corrections, and adjustments made in the trigger prices and the existence of grace periods for U.S. importers geared to dates of entry or dates of delivery to U.S. buyers unrelated to the importer.

A surge of imports occurred in the first quarter of 1978, and, in fact, much of the year's increase in imports occurred during the first quarter. Although it is not possible to determine how much of this first-quarter increase can be attributed to the announcement of TPM in late December 1977, it is not likely that the announcement could have been entirely responsible since (1) a certain amount of lead time is required between date of purchase and the subsequent date of importation into the United States and (2) a comparable increase in imports did not occur in other regions of the United States, which would have seemed likely if the surge had been due solely to the initiation of the TPM. However, another contributing factor was probably demand in the Western States, which was strengthening in the first quarter of 1978.

A great shift in the source of steel imports into the Western market occurred in 1978, as shown in the table below. The major shift in market share was from Japanese steel to steel from other foreign suppliers. The level of Japanese steel remained at 1977 levels, while imports from the EEC increased by 543,000 tons and those from other foreign suppliers by 545,000 tons. Japan announced in late 1977 that it expected to restrict its exports to the United States. This decision was made in response to the U.S. concern over steel imports that prompted the initiation of the TPM. It appears that this Japanese decision (which left a vacuum), not the TPM, was responsible for the increased importation of steel from the EEC and other countries into the Western market. New foreign source countries, such as South Africa, gained entry to the market through low prices.

Carbon steel mill products: Imports for consumption into the Western States, by principal source, 1977 and 1978

Product	1977	1978	Tonnage increase or decrease (-)	Percentage increase or decrease (-)
	1,000 tons	1,000 tons	1,000 tons	
Japan	2,257	2,167	-90	-4
EEC	393	936	543	138
All other	474	1,019	545	115
Net total	3,124	4,122	998	32

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

The price of steel (both imported and domestic) increased in 1978. In pipes and tubes and in galvanized sheets, two of the products experiencing large import increases in 1978, the trigger price appeared to have little relation to those increases since prices of both producers and importers exceeded trigger prices throughout the year. 1/ However, in sheets, strip, and plates, import prices after the second quarter of 1978 were often at the trigger price level and could well have been influenced by it. However, such causation is difficult to judge, since prices, including trigger prices, were increasing and the increase may have been caused by the TPM or by the increased demand coupled with the factors that caused the trigger price itself to be increased (e.g., increased production costs, etc.).

Imports into all regions except the Great Lakes increased in 1978 compared with imports in 1977. The largest tonnage increase occurred in the gulf region, 1.3 million tons, followed by the Pacific region, 1.0 million tons. The largest percentage increase, however, occurred in the Pacific, 31 percent, followed by the gulf, 27 percent.

The following table provides the percentage share of imports into the United States, by regions, during 1972-78.

Carbon steel mill products: Percentage distribution of imports into the United States, by regions, 1972-78

Region	1972	1973	1974	1975	1976	1977	1978
Atlantic	22	23	21	23	20	19	19
Gulf	22	23	24	26	29	26	30
Pacific	19	19	26	20	20	17	21
Offshore	2	3	3	3	2	1	1
Great Lakes	34	32	26	27	29	37	28
Total	100	100	100	100	100	100	100

Source: Compiled from data contained in the Annual Statistical Report, American Iron and Steel Institute.

Note.--Totals may not add due to rounding.

These data indicate that the 21-percent share of total imports accounted for by the Pacific region is not unusual. For the period as a whole, the Pacific region averaged 20.3 percent per year of total imports entering the United States. Its 21-percent share in 1978 is within 0.7 percent of the 1972-78 average. Thus, although the TPM may have had some effect upon increasing the quantity of imports entering the Pacific region, it does not appear that it caused a significant diversion of imports to the Western States from other regions of the nation.

1/ The trigger price on the selected pipe and tube product was not initiated until the third quarter of 1978.

While the above observations reflect the changes in the Western States steel market since the advent of the TPM on an overall basis, changes within product groupings do not necessarily correspond to the overall trend. Since 89 percent of the increase in imports into the Western States steel market was accounted for by tin mill products, plates, sheets and strip, and pipes and tubes, as shown in the table below, the following analysis of the 1978 Western States steel market will examine these four major product groupings by level of imports, source of imports, and level of prices.

Carbon steel mill products: Imports into the Western States, by products, 1977 and 1978

Product	1977	1978	Tonnage increase or decrease (-)	Percentage increase or decrease (-)
	1,000 tons	1,000 tons	1,000 tons	
Tin mill products	557	729	172	31
Plates	272	449	177	65
Sheets and strip	818	1,218	400	49
Re-bars	31	34	3	10
Bar-size shapes	73	86	13	25
Other bars	144	151	7	5
Wire rod	163	212	49	30
Wire	69	54	-15	-22
Angles, shapes, and sections	363	434	71	20
Rails, joint bars, and tie plates	36	23	-13	-36
Pipes and tubes	596	731	135	23
Total	3,124	4,122	998	32

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

Note.--Totals may not add due to rounding.

Sheets and strip. 1/--The greatest prcblem in analyzing the 1978 sheet and strip market relates to the effect on that market of Japan's voluntary limitation of exports to the United States. This action by the largest import participant in the market markedly affects and distorts all elements of the market. Evidence supporting Japan's voluntary limitation lies in the fact that 1978 imports from Japan remained at the 1977 level (in the face of rising demand) subsequent to Japan's 1977 announcement (made in response to the U.S. concern over imports that prompted the initiation of the TPM) that Japan would restrict steel exports to the United States in 1978.

1/ These products are not coated or plated with metal; such products are grouped under the category of tin mill products, a grouping which also includes black plates.

Level of imports.--Imports supplied all of the percentage increase in apparent consumption in 1978. Shipments of Western producers were slightly below 1977 levels, while shipments of Eastern producers declined and remained extremely small.

Source of imports.--As a result of increased demand in 1978 and Japan's decision to limit its exports to the United States to 1977 levels or below, imports from the EEC increased substantially, making up two-thirds of the total increase in imports, as shown in the following tabulation (in thousands of short tons):

Source	1977	1978
Japan	588	586
EEC	130	395
Korea	84	176
South Africa	10	30
All other	6	31
Total	818	1,218

In the first quarter of 1978, imports increased sharply from all sources, including Japan, as shown in the table below. Although it is not possible to know how much of this first quarter 1978 increase can be attributed to the announcement of TPM in late December, 1977, it is not likely that the announcement could have been entirely responsible since a certain amount of lead time is required between date of purchase and the subsequent date of importation into the United States.

Sheets and strip: Imports into the Western States, by principal sources, and by quarters, 1977 and 1978

(In thousands of short tons)

Source	1977				1978			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Japan	164	138	151	135	217	79	168	121
EEC	11	25	49	45	143	71	82	99
Korea	6	17	38	23	70	30	60	16
South Africa	-	-	5	5	11	12	1	6
All other	2	1/	3	1	4	16	6	6
Total	183	180	246	209	445	208	317	248

1/ Less than 500 tons.

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

A comparable increase in the first quarter, 1978, did not occur in the rest of the United States in sheets and strip as seen in the following table. Typically, imports decrease in the first quarter in the other regions of the United States because of the closing of the St. Lawrence Seaway in the winter months. The first quarter decreases for the period 1975-78 were 35 percent, 42 percent, 37 percent, and 35 percent, respectively, displaying a constant pattern and exhibiting no discernible difference which could be attributed to the TPM.

Sheets and strip: Imports for consumption into the Western States and Eastern States, by quarter, January 1975 through March 1979

(In thousands of short tons)

Area	1975				1976			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
W. States	154	103	75	142	157	160	202	199
E. States	939	584	597	1,042	673	779	779	1,109

Area	1977				1978				1979
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.
W. States	183	180	246	209	445	208	317	248	216
E. States	533	1,337	1,552	1,853	1,151	928	1,270	1,263	609

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

Prices.--Three products were selected for collection of price data; one hot-rolled sheet product and two cold-rolled sheet products of different thicknesses. 1/ Reported prices of Western producers increased during the year, as did the trigger price, and displayed a wide range in prices within quarters. Although producers' prices were at the trigger price level at times, more often they were well above it. Reported prices for imports were sparse; they show a general increase and were below, at, and above the trigger price level. It is difficult to judge whether these price increases were made in response to the trigger price or in response to the same factors that caused trigger prices to be raised, coupled with increasing demand.

1/ Hot-rolled sheet, commercial quality, 14 ga. (.075") x 36" x coil, pickled and oiled; cold-rolled sheet, Class 1, commercial quality, .0299" x 36" x coil; cold-rolled sheet, Class 1, commercial quality, .0359" x 36" x coil.

Conclusions.--Japan's decision to limit exports to 1977 levels or below in the face of rising demand, increases in production costs, currency fluctuations, inflation, and the TPM were significant influences on the sheet and strip market in the Western States in 1978. In response to these combined factors, apparent consumption and the price of sheets and strip in the Western States increased in 1978, with all of the increase in apparent consumption being supplied by increased imports from the EEC and Korea.

Plates.--The antidumping investigation on Japanese plates initiated by the Treasury Department 1/ in 1977 reshaped the Western States plate market in 1978. Japan, the dominant supplier of imported plate (accounting for 50 to 83 percent from 1972 to 1977), began withdrawing from the market in 1977 and by 1978 supplied only 12 percent of imported plates. A market disruption of this magnitude makes the task of assessing the effects of the initiation of the TPM in 1978 difficult.

Level of imports.--Imports supplied about 60 percent of the 38-percent increase in apparent consumption in 1978, while the remainder of the increase was supplied by Western producers. Shipments from Eastern producers remained small and constant both in 1977 and 1978.

Source of imports.--With increased demand in 1978 and the absence of Japan's market strength, imports from the EEC increased substantially, more than offsetting the decline of imports from Japan. Imports from Korea also increased. South Africa and Taiwan, countries with relatively new production capacity, became significant participants in the Western market in 1978, as shown in the following tabulation (in thousands of short tons):

Source	1977	1978
Japan	162	53
EEC	72	265
Korea	18	39
South Africa	16	28
Taiwan	1	48
All other	3	16
Total	272	449

1/ The Treasury Department initiated its antidumping investigation on Japanese plate in March 1977. In October 1977, Treasury withheld appraisement and tentatively determined that sales at LTFV had occurred. In January 1978, Treasury made a determination of sales at LTFV and referred the case to the Commission at that time. The Commission initiated investigation No. AA 1921-179 in January 1978, and a finding of injury was made in April 1978.

The decrease in imports from Japan in response to the antidumping action began in the third quarter of 1977, the same quarter in which imports from the EEC began to increase and in which South Africa entered the plate market. As in the case of sheets and strip, plate imports surged in the first quarter of 1978; however, in contrast to imports of sheets and strip, plate imports from Japan did not increase. Again this surge was probably due in part to the anticipation of the full implementation of the TPM, but at the same time no corresponding surge occurred in plate imports into the Eastern States, as is shown in the following table.

Plates: Imports for consumption into the Western States and Eastern States, by sources and by quarters, 1977 and 1978

(In thousands of shorts tons)

Source	Western States							
	1977				1978			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Japan	59	50	34	20	19	11	12	11
EEC	7	4	25	36	76	54	60	74
Korea	6	3	4	5	11	3	13	12
South Africa	-	-	10	6	4	15	6	2
Taiwan	-	-	-	1	9	14	14	8
All other	1	-	1	-	1	11	2	3
Total	73	57	74	68	120	112	107	110
	Eastern States							
	1977				1978			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Japan	106	91	85	63	51	23	35	18
EEC	38	148	206	340	299	212	246	239
Korea	12	22	15	17	4	27	20	4
South Africa	-	-	9	15	13	24	14	19
Taiwan	-	-	-	-	-	12	29	3
All other	79	167	174	220	264	265	283	322
Total	235	428	489	655	631	563	627	605

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

Prices.--Price data on a selected plate product 1/ collected by the Commission by questionnaire indicate that Western producers' plate prices for that product increased in 1978, remaining significantly above the increasing trigger prices throughout the year. Reported prices for plate from Belgium and West Germany (the two largest single sources of imported plate in 1978) increased during the year. Prices for imports from Belgium were at the trigger-price level in the second and third quarters, but did not show an increase in the fourth quarter corresponding to the increase that occurred in the trigger price.

Conclusions.--Japan's withdrawal from the plate market, increases in demand, increases in production costs, currency fluctuations, inflation, and the TPM were all significant influences on the plate market in the Western States in 1978. In response to these combined factors, apparent consumption and the price of plate in the Western States increased in 1978, with 60 percent of the increase in apparent consumption being supplied by imports, particularly from the EEC, and the remainder being supplied by Western producers.

Tin mill products (including galvanized sheet). 2/--Approximately 80 percent of imports of this grouping of coated or plated sheet consists of galvanized sheet. Imports dominate the galvanized sheet market in the Western States; it is estimated that they accounted for 60 percent of apparent consumption in 1978.

Level and source of imports.--Imports in this product category increased by 172,000 tons in 1978, as shown in the following table.

Tin mill products (including galvanized sheet): Imports for consumption into the Western States, by principal sources, 1977 and 1978

(In thousands of short tons)

Source	1977	1978
Japan	464	511
EEC	20	55
Korea	1/	21
South Africa	14	33
All other	59	109
Total	557	729

1/ Less than 500 tons.

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

1/ Plate, structural grade, ASTM A-36, 3/8" x 72"-90" x 240".
2/ This category includes all sheets and strip plated or coated with metal.

Japan has been the dominant supplier of galvanized sheet since 1972; its import share ranged from 76 percent to 90 percent during the 1972-77 period. In 1978, its market share decreased to 70 percent, although tonnage increased to its highest level (511,000 tons), representing a 10-percent increase over imports in 1977.

Imports from countries other than Japan were responsible for the bulk of the increase in imports of these products, amounting to about 130,000 tons. However, this increase was distributed among many sources and does not represent a dramatic increase from any particular country. South Africa entered this market in 1977 and increased its tonnage in 1978; Korea entered the market in 1978.

Prices.--Price data collected on a selected galvanized sheet product 1/ show an increase in prices during the year for producers and importers and in the trigger price applicable to this product. Producers' prices and Japanese prices were well above the trigger price throughout the year.

Conclusions.--While producers' and importers' prices increased for this galvanized sheet product in 1978 and a number of new supplying countries entered the market, it is not likely that these phenomena were caused by the TPM. Since both producers' and Japanese prices were well above the trigger price throughout the year, it is not likely that the TPM had a great effect on price. Further, the entry of a number of developing countries into the Western market merely represents the further expansion of exportation by those countries and was not precipitated by the TPM.

Pipes and tubes.--As in the case of sheets and strip, Japan's decision to voluntarily limit its exports of pipes and tubes to 1977 levels or below in the face of very strong demand worldwide was the most important factor affecting this market.

Level of imports.--Demand was strong in 1978 for pipes and tubes. Imports into the Western States increased by 135,000 tons, as shown in the following table. Although shipments of Western producers within the Western States remained at the 1977 level, their total shipments increased by 127,000 tons (resulting from increased exports and shipments to the Eastern States). Shipments from Eastern producers remained at the same high level as in 1977, accounting for 22 percent of apparent consumption (table 13).

1/ Galvanized sheet, commercial quality, G90, .0187" x 36" x coil.

Pipes and tubes: U.S. producers' shipments, imports, and apparent consumption in the Western States, 1977-78

(In thousands of short tons)

Item	1977	1978
Domestic shipments	716	721
Eastern	299	319
Western	417	402
Imports	596	731
Japan	403	406
Korea	106	182
Taiwan	31	50
Canada	41	45
Australia	10	24
EEC	3	9
All other	2	15
Apparent consumption	1,312	1,452

Source: Producers' shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; imports compiled from official statistics of the U.S. Department of Commerce.

Source of imports.--Despite the increase in demand, imports from Japan remained at the 1977 level. Imports were evenly distributed among the four quarters of 1978 as shown in the following table. Imports from other countries, principally Korea, increased by 132,000 tons in 1978 from the previous year.

Pipes and tubes: Imports for consumption into the Western States, by principal sources and by quarters, 1977 and 1978

(In thousands of short tons)

Source	1977				1978			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Japan	90	101	109	103	114	88	103	101
Korea	15	28	36	27	35	48	48	51
Taiwan	6	7	8	10	13	15	10	13
Canada	6	11	10	13	13	9	13	10
Australia	2	3	4	1	3	2	11	7
All other	3	0	1	2	4	9	3	9
Total	122	150	168	156	182	171	188	191

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

Prices.--Price data received on a selected pipe product 1/ indicate that importer prices increased steadily and sharply throughout the year; by the third quarter they were well above the trigger price and increased again sharply in the fourth quarter to rise even higher above the increased trigger price. The trigger price for this selected pipe and tube product was not established until the third quarter of 1978.

Conclusions.--Japan's voluntary limitation of exports of pipes and tubes at or below 1977 levels and the strong increase in demand were the major factors affecting the Western pipe and tube market. Since producers' and importers' prices were well above the trigger price throughout the year, it appears that the TPM had little effect on the market.

1/ Welded standard pipe, ASTM A-120, 3/4" nominal diameter.

Eastern Producers 1/

Eastern producers are the least important of the three sources of aggregate supply of steel mill products to the Western market. The share of apparent consumption of carbon steel mill products in the Western States accounted for by Eastern producers ranged from 13 percent in 1973 through 1975 to 10 percent in 1976, 1977, and 1978, fluctuating from a high of 1.4 million tons in 1974 to a low of 743,000 tons in 1976. Eastern producers' shipments to the Western States during 1972-78 are shown in the following tabulation:

	Quantity (short tons)
1972	990,000
1973	1,189,000
1974	1,380,000
1975	904,000
1976	743,000
1977	872,000
1978	929,000

However, within some product lines, such as bar-size shapes; angles, shapes, sections, rails, joint bars, and tie plates; and pipes and tubes, Eastern producers were significant competitors (tables 5-14).

Shipments supplied to the Western States from the East were provided by 20 Eastern producers in 1978. The four largest Eastern suppliers of steel mill products to the Western market accounted for 62 percent of Eastern producers' shipments but only 6 percent of apparent consumption in the Western States. Of these four firms, two are also major Western producers.

The four largest Eastern suppliers within each product line dominated Eastern producers' shipments to the Western States (table 48). In 1978, their share of shipments in each of the product lines was 80 percent or more. They did not dominate either in terms of their share of shipments of Eastern and Western producers combined or in their share of apparent consumption in the Western market. However, in both cases they were significant competitors in several product lines. Their share of Eastern and Western producers' shipments combined accounted for 39 percent of bar-size shapes; 25 percent of angles, shapes, sections, rails, joint bars, and tie plates; and 36 percent of pipes and tubes. Their share of apparent consumption in the above product lines was 22 percent, 14 percent, and 18 percent, respectively.

Similar to the pattern of Western producers, the majority of Eastern producers which shipped to the Western States competed in three or fewer product lines (table 49). The relatively few Eastern producers which shipped a broad range of product lines were Armco, Bethlehem Steel, Jones & Laughlin, Republic Steel, and U.S. Steel. Fifteen Eastern producers competed in 1 to 4 product lines, 3 producers competed in 6 product lines, and 2 producers competed in 10 or more product lines.

1/ Eastern producers include all producers other than those located in the 10 Western States.

Apparent Consumption

Apparent consumption in the Western States followed the business cycle, increasing in 1973 and 1974, declining precipitously in 1975, and increasing in each of the years 1976, 1977, and 1978. Apparent consumption in 1978, which amounted to 9.6 million tons, was 1.0 million tons short of that in the peak year of 1974. The spiraling costs of production and inflation are reflected in the value of apparent consumption, which increased from $1.5 billion in 1972 to $3.4 billion in 1978 (table 4). The high level of consumption in 1974 and 1978 was supplied, in part, by imports, which amounted to 4.2 million tons in 1974 and 4.1 million tons in 1978. Imports in both 1974 and 1978 were a million tons higher than any other year during the 1972-78 period. The high level of consumption was reached in 1974 despite the fact that Western producers' shipments within the Western States decreased by 360,000 tons when compared with 1973 shipments. At the same time, there is little doubt that actual consumption in 1974 was much less than the apparent consumption figures indicate as a result of heavy inventories at the end of the year. Recovery after the economic recession of 1975 began in 1976 and continued through 1978; however, almost 90 percent of the increase in apparent consumption in 1978 was accounted for by imports.

During the recovery and expansion period of the first business cycle of this decade, 1972-74, imports supplied 36 percent of apparent consumption in the Western States; thus far into the upturn of the second business cycle, which began in 1976, imports have supplied 39 percent of apparent consumption. During 1972-78, imports as a share of apparent consumption ranged from 29 percent in 1973 to 43 percent in 1978.

From 1972 to 1978, Eastern producers supplied from 10 to 13 percent of the total consumption in the Western States. During the first half of the 1972-78 period, which corresponds roughly to the first business cycle, Eastern producers supplied 13 percent of the total consumption in the Western States; they supplied only 10 percent during the 1976-78 period. Eastern producers' shipments to the Western States were consistently above Western producers' shipments to the Eastern States throughout the period. Costs related to distance preclude strong participation by Eastern producers in the Western market.

Western producers supplied slightly in excess of 50 percent of the total consumption in both 1972-74 and 1976-78. Western producers supplied the largest percentage (58 percent) in 1973 and the lowest (47 percent) in 1974 and 1978.

Distribution channels

Western States producers, Eastern producers, and importers utilize service centers/distributors to make their products available to consumers and also sell directly to end users. Importers sell a far larger share of steel mill products to service centers/distributors than the domestic producers. Importers channel about 60 percent of their shipments to service center/distributors; in contrast, U.S. producers utilize service center distribution channels for only about one-fifth of their shipments (tables 50-63).

The bulk of shipments directly to end users is accounted for by a diverse array of customers. About 25 percent are channeled to the construction industry and about 10 percent, to the transportation industry.

The relative importance of individual categories of carbon steel products in the Western market is reflected in their share of apparent consumption. In 1978, plates and sheets and strip (including tin mill products) accounted for 53 percent of apparent consumption; pipes and tubes, 15 percent; angles, shapes, sections, rails, tie plates, and joint bars, 11 percent; and deformed re-bars, 7 percent. The pattern was somewhat similar for the other years covered in this investigation.

Ingots and semifinished products.--The bulk of ingots and semifinished products are consumed by the mill where they are produced, and are not reflected in table 5, which shows apparent consumption of ingots and semifinished products that were actually shipped to or within the Western market. Apparent consumption (not including those items consumed by the producer) averaged about 58,000 tons annually from 1972-78. Imports into the Western States were negligible. This product category is the only one in which exports exceeded imports. Exports fluctuated greatly; in some years they were virtually nonexistent while in 1 year they exceeded apparent consumption.

Tin mill products, plates, sheets and strip.--This grouping of products accounts for more than one-half of all carbon steel mill products consumed in the Western States. Apparent consumption closely followed the general trend of total steel mill products, rising annually from 1972 (4.3 million tons) to peak in 1974 (5.4 million tons), declining sharply in 1975 (3.6 million tons) to fall below the 1972 level, and then increasing annually to (5.1 million tons) in 1978, almost reaching the 1974 level (table 6).

Although data were collected separately on various products within this grouping, it was necessary to combine the products in order to preserve confidentiality. The apparent consumption of plate did not follow the general trend of the total group. After apparent consumption increased during 1972 to 1974, it decreased during each succeeding year, declining to its lowest point in 1977. In 1978, however, consumption of plates increased dramatically to the highest level of the period except for 1974. Much of the increase in 1978 was supplied by imports. The ratio of imports to apparent consumption for these products changed little from 1972 to 1977. However, the ratio of imports to consumption for plate showed greater variance than those of other items in the group. Data on plate consumption are not presented because they would reveal the operations of individual firms. The share of consumption of the Eastern producers was less than their share for the total group.

Deformed reinforcing bars.--Because deformed reinforcing bars are used by the construction industry, their level of consumption is dependent upon the demand generated by that industry. Apparent consumption of deformed reinforcing bars in the Western States followed the general trend of total steel mill products except in 1976 and 1978. In 1976, while other industries

began to recover from the economic recession that occurred in 1975, the construction industry remained depressed and apparent consumption continued near the 1975 level (596,000 tons). By 1977, consumption had increased to 739,000 tons, approximately the 1972 level of 749,000 tons (table 7). In 1978, apparent consumption declined to 716,000 tons; virtually all of the decline was at the expense of Western producers' shipments.

Deformed reinforcing bars, compared with other categories of carbon steel mill products, are one of the least import-sensitive items. Their value, compared with other steel mill products, is low, and thus shipping costs are relatively high. Moreover, domestic minimills which produce this item are highly efficient. Consequently, domestic producers of deformed reinforcing bars are able to compete with imports, in spite of rapidly increasing cost of scrap, the raw material used in electric furnaces.

Bar-size shapes.--Bar-size shapes represent a relatively small product grouping, accounting for less than 2 percent of all carbon steel mill products in the Western States. Apparent consumption followed the general trend of the business cycles, increasing in 1973 and 1974, declining precipitously in 1975, recovering in 1976, and increasing strongly in 1977 and 1978. Import penetration in this category ranged from 32 percent in 1973 to 57 percent in 1972 and 1974. The ratio was 43 percent in 1978. During 1972-74, Eastern producers supplied only 10 percent of the Western market for bar-size shapes; however, since 1974, Eastern producers have supplied 25 percent of the Western market while Western producers have supplied only one-third of the total Western market.

Other bars.--Other bars (other than reinforcing bars and bar-size shapes) account for about 4 percent of apparent consumption of all carbon steel mill products in the Western States. Apparent consumption of this product also followed a trend similar to that of the total for all the steel mill products in 1972-78.

Apparent consumption increased annually after the recession of 1975 and amounted to 328,000 tons in 1978, considerably below the amounts consumed in 1972, 1973, or 1974 (table 9). The ratio of imports to apparent consumption trended upward from 25 percent in 1973 to 46 percent in 1978. Eastern producers' share of the market ranged from 4 to 7 percent except in 1975, when it reached 10 percent.

Wire rods.--Since considerable quantities of wire rods are converted to wire or wire products by rod producers, these quantities are not reflected in table 10, which only shows consumption of wire rod that was actually shipped to or within the Western States. Apparent consumption of wire rods showed no discernible trend from 1972 to 1978. Apparent consumption was 380,000 tons in 1972, 483,000 tons in 1974, 386,000 tons in 1976, 358,000 tons in 1977, and 439,000 tons in 1978. During 1972-78, the import-to-consumption ratio ranged from 36 percent of the Western market in 1975 to 52 percent in 1972 and 1974. Imports supplied 46 percent in 1977 and 48 percent in 1978. Eastern producers' shipments into the Western States were negligible.

Wire.--From 1972 to 1978, apparent consumption of wire followed the trend of consumption of total steel mill products in the Western States. Apparent consumption increased from 285,000 tons in 1972 to 389,000 tons in 1974, decreased to 238,000 tons in 1975, but increased annually thereafter to 314,000 tons in 1978 (table 11). During the period under study the ratio of imports to apparent consumption fluctuated from a low of 17 percent in 1978 to a high of 31 percent in 1972. Wire is the only product category showing a downward trend in that ratio. Eastern producers' share of the Western market was small, ranging from 2 to 5 percent annually.

Angles, shapes, and sections; rails, joint bars, and tie plates.--Angles, shapes, and sections were combined with rails, tie plates, and joint bars in order to avoid disclosure of confidential data. From 1972 to 1978 the general trend of apparent consumption for the grouping was somewhat different from that of total steel mill products. Apparent consumption increased moderately from 1972 to 1974, then decreased in both 1975 and 1976, but increased in both 1977 and 1978. It was 940,000 tons in 1972, 1.1 million tons in 1974, 744,000 tons in 1976, and 1,032,000 tons in 1978 (table 12). During 1972-78, the ratio of imports to consumption of the combined grouping ranged from 30 percent in 1975 to 45 percent in 1977. It was 44 percent in 1978.

The trend of apparent consumption for angles, shapes, and sections followed that of total steel mill products except for a decrease in 1976, which corresponds to the relatively late recovery of the construction industry. Apparent consumption for rails, tie plates, and joint bars remained at about the same level throughout the 7-year period.

The ratio of imports to apparent consumption is considerably higher for angles, shapes, and sections than it is for rails. In the most recent years, imports of angles, shapes, and sections have supplied more than one-half of the Western market. Eastern producers also sell considerable tonnages of angles, shapes, and sections in the Western market, leaving Western producers less than one-fourth of the Western market.

While the ratio of imports to consumption for rails, tie plates, and joint bars has been small, the ratio in 1977 and 1978 was considerably larger than in any of the previous 5 years.

Pipes and tubes.--During 1972-78, apparent consumption of pipes and tubes increased from 1.2 million tons in 1972 to 1.6 million tons in 1974, decreased to 1.0 million tons in 1976, and then increased to 1.5 million tons in 1978 (table 13). This increase in consumption occurred in 1978 despite a decline in Western producers' shipments. Imports were relatively high throughout the 1972-78 period, accounting for a low of 37 percent of the market in 1975 and a high of 50 percent in 1978. Eastern producers' shipments into the Western States were also large, averaging slightly below 25 percent over the 7-year period, leaving the Western producers less than one-third of the market.

Nails, barbed wire, and prestressed strand.--Domestic production of nails, barbed wire, and prestressed strand in the Western States is quite limited. Because of the limited number of domestic producers (two of barbed wire, two of nails, and one of prestressed strand), the categories of nails, barbed wire, and prestressed strand were combined in order to meet the

requirements of confidentiality. During 1972-78, total consumption ranged from 111,000 tons in 1975 to 186,000 tons in 1978. Imports supplied virtually all of the increase in consumption (table 14). The ratio of imports to apparent consumption steadily increased from 53 percent in 1972 to 67 percent in 1977 and 1978, while shipments of Western producers decreased during the same period. Nails are the largest product category in this combined grouping and determine the general trend.

Apparent consumption of prestressed strand decreased during this period. Prestressed strand also had the largest ratio of imports to consumption within this grouping. CF&I, the only Western producer of prestressed strand, is not competitive in the Western coastal area, leaving virtually all of that regional market to imports, principally from Japan.

Apparent consumption of barbed wire was not large in 1972, and by 1978 it had decreased to less than one-half of the 1972 total. This was the result of combined decreases in imports, Western producers' shipments, and Eastern producers' shipments into the Western States. The ratios of imports to consumption were fairly stable over the entire period; the percentages of the Western market supplied by Eastern producers dropped sharply.

Prices

Prices of carbon steel mill products imported into the Western States were generally below those of the domestically produced articles throughout 1973-78, except for the boom years of 1973 and 1974. 1/ During the latter period, import prices of almost every representative carbon steel product moved from below U.S. producers' prices to levels sharply above U.S. producers' prices. In 1978, import prices rose from levels well below domestic prices (January-August) to fourth quarter levels near or above those of competing domestic products.

The price spread pattern reflects volatile import prices that move with the business cycle. In contrast, domestic prices have not shown such marked swings. In time of strong demand, such as in 1973 and 1974, the strength of imports in the Western market, coupled with capacity constraints on domestic supply, have enabled importers to raise prices above domestic prices. When weak demand and excess capacity occurred in the Western market, such as in 1974-77, import prices generally were at a greater discount below the prices of the domestic product than was necessary to gain sales in competition with Western producers. The strengthening of demand in 1978 coupled with the introduction of the trigger price mechanism caused a sharp upswing in import prices. Domestic prices also increased, but only moderately by comparison. By yearend, many import prices were above competing producer prices.

Price data for selected carbon steel mill categories were collected by the Commission from importers and U.S. producers located in the Western States. Within each of the carbon steel mill categories, the selected representative product(s) accounted for significant sales volume by the importers and domestic producers. The price data gathered by the Commission covered (a) each importer's lowest net purchase price and lowest net selling price, (b) each importer's net purchase price and selling price at which the greatest volume was purchased and sold, (c) each producer's lowest net selling price and selling price at which the greatest volume was purchased and sold, and (d) data on quantities sold at each price. The carbon steel mill categories and the representative products selected within each category are listed on the following page. The analysis of price trends and price relationships which follows is derived from the quarterly data collected for the period 1973-78. The assembled data base permitted comparisons of (a) price to all customers, (b) differences between importers' and producers' prices to all customers, (c) the spread between importers' and producers' prices to all customers, (d) the spread between importers' and U.S. producers' prices to steel service centers/ distributors and to fabricators/end users, and (e) a comparison of purchase prices of imported carbon steel by country of origin.

Pricing patterns

The following section summarizes the price levels and trends of the carbon steel categories surveyed by the Commission. The summary data in the

1/ Price data were collected quarterly beginning in 1973 because such data were not available for 1972 from all respondents.

tables on the following two pages were taken from tables 64 through 82. The raw data is also displayed figuratively in appendix E. The lowest net producers' and importers' prices were used for comparison in the analysis because of the close correspondence of this price to the average price and its greater availability in terms of number of responses.

Carbon steel product categories and selected representative products 1/

Product category	Representative product
Tin mill products	Galvanized sheet, commercial quality, G90, .0187" x 36" x coil.
Plates	Plate, structural grade, ASTM-A-36, 3/8" x 72"-90" x 240".
Sheets and strip	Hot-rolled sheet, commercial quality, 14 ga. (.075") x 36" x coil, pickled and oiled.
	Cold-rolled sheet, Class 1, commercial quality, .0299" x 36" x coil.
	Cold-rolled sheet, Class 1, commercial quality, .0359" x 36" x coil.
Bars	Deformed reinforcing bars, ASTM 615, grade 40, No. 4.
	Hot-rolled bars (flats), 1/4" x 3" x 20', A-36.
Bar-size shapes	Angles, 2"x 2" x 1/4", A-36.
Wire rods	Hot-rolled rods, 7/32", low carbon grade C-1008, industrial quality in coils.
Wire	Manufacturers' coarse steel wire, 12 gauge.
	Galvanized wire, 12 qauge, soft industrial quality.
	Baling wire, 14-1/2 gauge, ASAE No. 6500.
Angles, shapes, and sections	Angle L, 6" x 4" x 3/8".
Rails	Rails, 136 pounds per yard.
Pipes and tubes	Welded standard pipe, ASTM A-120, 3/4" nominal diameter.
	Hot-rolled square tubing, 14 gauge (0.075"), 1-1/4" x 1-1/4" x 20', pickled and oiled.
Manufactured wire products	Nails, 16d common bright.
	Barbed wire, 12-1/2 gauge, 2 pt., 4", 2 ply, 80 rod reels.
	Prestressed strand, 1/2", 7 wire, 270 K.

1/ The selection of the above products and their specifications was made in consultation with both U.S. producers and U.S. importers.

Selected carbon steel mill products: An index of selected U.S. importers' prices, 1973-78

(1st quarter 1973 = 100)

Item	1973 1/	1974 1/	1975 1/	1976 1/	1977 1/	1978 1/
Galvanized sheet, commercial quality 2/	133	166	171	179	178	235
Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"	117	255	134	160	160	219
Hot-rolled sheet, commercial quality, 14 gauge (0.075")	120	148	153	161	161	212
Cold-rolled sheet, class 1, commercial quality, 0.0299"	115	202	141	173	150	255
Cold-rolled sheet, class 1, commerical quality, 0.0359"	124	201	142	171	185	217
Deformed reinforcing bars, ASTM 615, grade 40, No. 4	186	274	142	144	164	288
Hot-rolled bars (flats), 1/4" x 3"	195	216	129	123	124	161
Angles, 2" x 2" x 1/4", A-36	141	258	158	194	144	204
Hot-rolled rods, 7/32" low carbon grade C-1008	113	246	164	184	174	187
Baling wire, 14-1/2 guage, ASAE No. 6500	160	170	153	163	171	231
Welded standard pipe, ASTM A-120, 3/4" nominal diameter	123	225	136	162	156	247
Hot-rolled square tubing, 14 guage, 0.075" 3/	107	121	133	131	147	290
Barbed wire, 12-1/2 guage, 2 pt., 4", 2 ply, 80 rod reels	100	100	113	84	84	107
Prestressed strand, 1/2", 7 wire, 270 K	102	179	192	149	146	205
Nails, 16d common bright	116	234	154	158	158	178
Average change (in percent)	31	56	(21)	6	2	41

1/ Represents average 4th quarter price.

2/ For galvanized sheet, the index was constructed using the 2d quarter 1973 as the base period.

3/ For hot-rolled square tubing, the index was constructed using the 3d quarter 1973 as the base period.

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

Selected carbon steel mill products: An index of selected U.S. producers' prices, 1973-78

(1st quarter 1973 = 100)

Item	1973 1/	1974 1/	1975 1/	1976 1/	1977 1/	1978 1/
Galvanized sheet, commercial quality	92	164	165	161	156	193
Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"	102	134	157	170	173	193
Hot-rolled sheet, commercial quality, 14 gauge (0.075")	102	126	168	177	200	204
Cold-rolled sheet, class 1, commercial quality, 0.0299"	100	152	158	168	174	223
Cold-rolled sheet, class 1, commerical quality, 0.0359"	102	142	151	160	179	199
Deformed reinforcing bars, ASTM 615, grade 40, No. 4	79	166	116	110	120	148
Hot-rolled bars (flats), 1/4" x 3"	106	172	154	171	159	174
Angles, 2" x 2" x 1/4", A-36	97	167	131	141	149	158
Hot-rolled rods, 7/32" low carbon grade C-1008	100	143	156	169	100	186
Baling wire, 14-1/2 guage, ASAE No. 6500	115	206	145	165	175	195
Welded standard pipe, ASTM A-120, 3/4" nominal diameter	100	167	182	144	188	201
Hot-rolled square tubing, 14 guage, 0.075"	129	156	114	114	115	122
Barbed wire, 12-1/2 guage, 2 pt., 4", 2 ply, 80 rod reels	118	208	163	186	179	191
Prestressed strand, 1/2", 7 wire, 270 K	105	209	197	157	149	195
Nails, 16d common bright	102	186	180	185	169	212
Average change (in percent)	4	62	(6)	5	6	19

1/ Represents average 4th quarter price.

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

The analysis begins in 1973, a year of strong economic expansion and the last full year of U.S. Government wage and price controls. Phase III price controls permitted only small increases in U.S. producers' selling prices. In 1973, producers' prices of carbon steel mill products surveyed by the Commission increased an average of only 4 percent. In contrast, importers' prices during that year, which were not subject to price controls, increased an average of 31 percent. Price controls on domestic steel were removed in 1974; at the same time, domestic and imported prices for steel soared in response to a surge in U.S. demand. In that year, U.S. producers' prices increased an average of 62 percent, while importers' prices increased an average of 56 percent. As shown in the table below, during 1973-74, the variation of the percentage increase in the individual categories ranged, for the domestic producers, from a low of 21 percent (hot-rolled square tubing) to a high of 110 percent (deformed reinforcing bars) and, in the case of importers, from a low of 6 percent (baling wire) to a high of 118 percent (hot-rolled square tubing). Import prices of almost one-half the products surveyed increased by more than 75 percent; an almost equal number of domestic products reflected price increases greater than 70 percent.

Cyclical movement of steel prices in the Western States market

Cyclical period	Percentage change in import prices		Percentage change in producers' prices	
	Range	Average	Range	Average
1973-74:				
Expansion	6-118	56	21-110	62
1974-75:				
Recession	(10)-(48)	(21)	(3)-(48)	(6)
1975-78:				
Recovery and expansion	7-118	51	7-41	20

With the onset of the recession in 1974-75, the demand for steel declined and prices moderated for both domestic and imported steel. In fact, in two-thirds of the sample products there were declines in importers' prices large enough to cause the average of all imported products surveyed to decline 21 percent; producers' prices fell only 6 percent. There were sharp declines (20 percent or more) in five U.S. producers' prices; eight importers' prices fell more than 30 percent. However, sharp declines for both importers and producers occurred in only the reinforcing bars and angles categories. Import prices of plates, bars, cold-rolled sheets, pipes, and nails declined by one-third or more.

The data for 1976 and 1977 revealed that (1) the average price increases for U.S. producers (5 percent in 1976 and 6 percent in 1977) and for

U.S. importers (6 percent in 1976 and 2 percent in 1977) were small, and (2) movements in U.S. producers' prices mirrored the movements in the importers' prices. Such tandem pricing actions occurred 60 percent of the time in 1976 and 80 percent of the time in 1977.

In 1978, prices of the products surveyed increased sharply. Rising costs were squeezing slim profits early in the year. Demand was strengthening, but, with inflation, production input costs were climbing. Treasury had introduced the TPM. Japan had agreed to voluntarily cut back its steel exports to the United States. Capacity utilization was on the upturn. All these factors exerted upward pressure on prices. Domestic producers' prices increased an average of 19 percent. Importers' prices increased an average of 41 percent. The appreciation of the yen against the dollar boosted import prices through the trigger-price mechanism itself, which took into account changes in the yen/dollar relationship in calculating quarterly increases in the trigger prices.

Over the entire recovery and expansion period 1975-78, the average increase in import prices of the products surveyed totaled 51 percent compared with an average producers' price increase of 20 percent. The range of percentage increases in the specific categories was broader for imports, from 7 percent (prestressed strand) to 118 percent (hot-rolled square tubing) than for domestic producers' price increases, which ranged from a low of 7 percent (hot-rolled square tubing) to a high of 41 percent (cold-rolled sheet). Of the products surveyed, import prices increased more than 50 percent for cold-rolled sheet, re-bar, welded standard pipe, and hot-rolled square tubing. Sharp increases in producers' prices appeared in cold-rolled sheet, re-bar, barbed wire and, bar-size shapes.

The price spread between the imported carbon steel products and the competing U.S.-made products generally followed a common trend over the 6-year time span. The table on pages 107 and 108 presents these price differences in percentages. These data are shown figuratively in appendix F. During January-June 1973, a period of strengthening demand for steel, 12 of the 19 imported products sold at prices less than those of the competing products made in Western U.S. mills. From July 1973 to March 1975, more than three-fourths of the imported products sold at prices sharply higher than those of the competing U.S.-produced carbon steel products. This time span marked the peak period of economic growth in the 1969-74 business cycle and was also a period of strong world steel demand. As the steel boom faded in 1975, the pattern again reversed, with the price spread between the imported and domestic products favoring imports by percentages ranging from a low of 3 to a high of 42 percent. The price difference remained constantly in favor of imports during most quarters of 1976 and 1977 for 10 of the 14 products for which data were available. The price advantage ranged from 1 to 36 percent for the imported product.

A similar pattern of import price advantage is evident in the first two quarters of 1978. The spread widened for some products but narrowed for others, especially in the second quarter as the TPM impact was felt. By the

Carbon steel: The discount of importers' lowest selling price 1/ below (-) U.S. producers' selling price, or, the percent premium of importers' lowest selling price, by quarters, 1973-78.

(In percent)

Products	1973				1974				1975				1976				1977				1978			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Galvanized sheet commercial quality	-	-8	-6	29	-	13	21	-10	-11	-	-	-	-	-1	-1	-	-12	-3	3	1	-17	-19	-11	8
Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"	-8	-8	2	6	42	47	52	76	34	-6	-12	-21	-20	-16	-7	-13	-16	-14	-21	-15	-10	-14	-10	4
Hot-rolled sheet, commercial quality, 14 gauge (0.075")	-11	-8	7	5	10	7	-	-	26	-	-13	-19	-	-20	-25	-19	-	-	-	-	-31	-27	-6	-7
Cold-rolled sheet, class 1, commercial quality 0.029"	-2	-1	16	13	19	37	4	31	29	23	-3	-12	-9	-	-2	1	10	25	-	-15	12	8	18	12
Cold-rolled sheet, class 1, commercial quality 0.035"	-11	-11	4	8	14	30	-1	26	27	-11	-11	-16	-	-15	-11	-5	-3	-7	-9	-8	-9	-13	-4	-3
Deformed reinforcing bars, ASTM 615, grade 40, No. 4	-25	-1	-	77	-11	11	24	-	3	-4	-12	-7	-6	-1	8	-2	8	-1	-	3	10	24	58	46
Hot-rolled bars (flats), 1/4" x 3"	5	-13	93	94	39	44	23	33	-	-11	-22	-12	-11	-23	-6	-24	-17	-14	-13	-18	-8	-4	8	-3
Angles, 2" x 2" x 1/4", A-36	-25	-17	-16	10	37	6	1	16	28	9	-23	-9	-22	3	-15	3	-15	-29	-28	-27	-13	-3	-4	-3
Hot-rolled rods, 7/32" low carbon grade C-1008	3	6	15	16	47	77	111	77	101	-8	25	8	3	1	8	12	6	5	7	6	-10	-3	3	3

Carbon steel: The discount of importers' lowest selling price 1/ below (-) U.S. producers' selling price, or, the percent premium of importers' lowest selling price, by quarters, 1973-78. (Continued)

(In percent)

Products	1973				1974				1975				1976				1977				1978			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Galvanized wire, 12 gauge, soft industrial quality	-	-	-	-	-	-	-	18	-	-	-	-13	-	-15	-	-	-	-	-	12	-	35		
Baling wire, 14-1/2 gauge, ASAE No. 6500	-	-2	-2	39	1	-15	-12	-18	1	-6	-10	5	-12	-11	-7	-1	-	-7	-2	-4	-	12	19	-
Rails, 136 pounds, per yard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	27	1	54	-	-	-
Angle L, 6" x 4" x 3/8"	-	-	-	-	-	-	-	-	-	-10	-1	-17	-24	-22	-16	-7	-21	-27	-13	-13	-7	-3	-2	-6
Welded standard pipe, ASTM A-120, 3/4 nominal diameter	-23	-20	-8	-6	6	5	5	4	-7	-21	-40	-42	-41	-35	-21	-13	-23	-29	-20	-36	-29	-28	-25	-5
Hot-rolled square tubing, 14 gauge 0.075	-	-	-	-42	-38	-	-18	-	-	-18	-	-	-	-	-	-	-	-	-9	-	-	35	25	-	-
Barbed wire, 12-1/2 gauge, 2 pt., 4", 2 ply., 80 rod reel	110	74	77	78	64	38	27	1	37	7	41	45	-9	2	12	-5	1	8	-	-1	15	-10	-5	18
Prestressed strand, 1/2", 7 wire, 20 K	-5	-4	-4	-8	-8	-4	-26	-19	.13	12	-	-	12	-11	-6	-10	-3	-2	-7	-7	-21	-10	-2	-
Nails, 16 d common bright	25	23	40	42	71	78	45	57	-5	22	9	4	-3	-9	-5	4	20	4	4	17	-4	-11	4	5

1/ Weighted averge lowest selling price are the data base for this comparison.

Source: Compiled from tables 64-82.

third quarter, import price advantages for five products had slimmed to about 5 percent or less and for three products had become price differences favoring the competing domestic product. The TPM had reached full implementation by the fourth quarter of 1978 and 8 of the 14 products for which price data exist reflected a domestic price advantage that ranged from 3 to 46 percent. For those imported products which retained a price advantage, the spread was narrow, from a low of 3 to a high of 7 percent.

The quarterly pattern of carbon steel prices and trigger prices

Quarterly data on the relative import price movements of selected representative carbon steel products and of their respective trigger prices are shown in tables 83 to 95 and are summarized in the following tables.

These price indexes present the 1978 quarterly price trend for each product compared with than in the fourth quarter of 1977. Import prices used in the tables which are the basis for this series of indexes are for import transactions between related parties (exporter and importer are related by corporate ownership structure) and between unrelated parties. Under the trigger-price system, import transactions between related parties are monitored at the point of resale to the first unrelated party. Unrelated-party import transactions are monitored at point of import purchase. Transactions price data collected by ITC questionnaire include both import purchase price and resale price to unrelated customers. As a basis for price analysis, these questionnaire responses were matched to the relevant transaction level according to the related or unrelated status of the respondents and parties involved in the transaction. For the purpose of providing comparability with market transaction price, the trigger price for each representative product was adjusted to include duty. Data in tables 83 to 95 show that transactions between related parties account for the bulk of Western States imports of the selected products. The related-party transactions share of the total number of responses for each representative product ranges from a high of 70 to 100 percent for every product except three: welded standard pipe, galvanized sheet, and plate; in these products, related-party transactions amounted to 30 to 50 percent of the total number of responses.

The price indexes compare the weighted average price for each product with the relevant adjusted trigger price for the same quarter. They also present another benchmark of trigger-price impact by showing the weighted price index of those transactions above trigger price. No products in the sample were covered by trigger prices in the first quarter of 1978. Of the 11 products for which first quarter data exist, only 8 had applicable trigger prices.

The weighted average import transaction price for six of the products covered by trigger prices was below the relevant same quarter trigger price in the first quarter of 1978. On a product-variance basis, the spread between import and trigger price ranged from as little as 2 percent (for hot-rolled bar) to as much as 27 percent (for hot-rolled sheet). Only two products (both

Selected carbon steel mill products: Indexes of U.S. importers' average transaction prices above trigger prices and trigger prices by quarters, 1978

(October-December 1977 = 100)

Item	Jan.-Mar. 1978	April-June 1978	July-Sept. 1978	Oct.-Dec. 1978
Galvanized sheet, commercial quality	115	112	118	121
Index of trigger price	104	104	110	117
Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"	128	116	121	127
Index of trigger price	114	114	121	126
Hot-rolled sheet, commercial quality, 14 gauge (0.075") 1/	-	116	119	-
Index of trigger price	109	109	116	123
Cold-rolled sheet, class 1, commercial quality, 0.0299" 2/	131	124	134	139
Index of trigger price	104	104	110	114
Cold-rolled sheet, class 1, commerical quality, 0.0359"	-	-	116	-
Index of trigger price	107	107	113	118
Hot-rolled bars (flats), 1/4" x 3"	105	114	126	141
Index of trigger price	104	104	119	124
Angles, 2" x 2" x 1/4", A-36	111	126	132	141
Index of trigger price	105	105	119	141
Hot-rolled rods, 7/32" low carbon grade C-1008	-	117	126	-
Index of trigger price	114	114	121	126
Baling wire, 14-1/2 guage, 2 pt., W", 2 ply, 80 rod reels 1/	-	125	135	-
Index of trigger price	3/	121	128	133
Angle L 6" X 4" x 3/8"	101	109	124	126
Index of trigger price	93	93	106	111

Selected carbon steel mill products: Indexes of U.S. importers' average transaction prices above trigger prices and trigger prices by quarters, 1978 - Continued

(October-December 1977 = 100)

Item	Jan.-Mar. 1978	April-June 1978	July-Sept. 1978	Oct.-Dec. 1978
Welded standard pipe, ASTM A-120, 3/4" nominal diameter	110	105	133	150
Index of trigger price	3/	3/	128	133
Nails, 16d common bright	78	98	104	110
Index of trigger price	3/	96	102	106
Averae increase				
Jan.-June--				
Product price---percent--	-	15	-	-
Trigger price--------do--	-	6	-	-
July-Dec.--				
Product price----do--	-	-	-	15
Trigger price----do--	-	-	-	16

1/ For hot-rolled sheet and baling wire the index was constructed using July-September 1977 as the base period.

2/ For cold-rolled sheet the index was constructed using April-June 1977 as the base period.

3/ Not available.

Note.--The index of trigger price for Jan.-Mar. 1978 was based upon the average transaction price in Oct.-Dec. 1977.

Selected carbon steel mill products: Indexes of U.S. importers' average transaction prices and trigger prices, by quarters, 1978

(October-December 1977 = 100)

Item	Jan.-Mar. 1978	April-June 1978	July-Sept. 1978	Oct.-Dec. 1978
Galvanized sheet, commercial quality	84	96	106	121
Index of trigger price	104	104	110	117
Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"	98	108	108	125
Index of trigger price	114	114	121	126
Hot-rolled sheet, commercial quality, 14 gauge (0.075") 1/	80	89	119	120
Index of trigger price	109	109	116	123
Cold-rolled sheet, class 1, commercial quality, 0.0299" 2/	99	122	127	133
Index of trigger price	104	104	110	114
Cold-rolled sheet, class 1, commerical quality, 0.0359"	95	100	113	117
Index of trigger price	107	107	113	118
Hot-rolled bars (flats), 1/4" x 3"	101	111	126	130
Index of trigger price	104	104	119	124
Angles, 2" x 2" x 1/4", A-36	106	126	132	141
Index of trigger price	105	105	119	141
Hot-rolled rods, 7/32" low carbon grade C-1008	83	94	113	104
Index of trigger price	114	114	121	126
Baling wire, 14-1/2 guage, 2 pt., W", 2 ply, 80 rod reels 1/	-	123	135	-
Index of trigger price	3/	121	128	133
Angle L 6" X 4" x 3/8"	101	109	124	126
Index of trigger price	93	93	106	111

Selected carbon steel mill products: Indexes of U.S. importers' average transaction prices and trigger prices, by quarters, 1978 - Continued

(October-December 1977 = 100)

Item	Jan.-Mar. 1978	April-June 1978	July-Sept. 1978	Oct.-Dec. 1978
Welded standard pipe, ASTM A-120, 3/4" nominal diameter	110	105	120	147
Index of trigger price	3/	3/	128	133
Nails, 16d common bright	78	78	104	106
Index of trigger price	3/	96	102	106
Averae increase				
Jan.-June--				
Product price---percent--	-	5	-	-
Trigger price--------do--	-	6	-	-
July-Dec.--				
Product price----do--	-	-	-	20
Trigger price----do--	-	-	-	16

1/ For hot-rolled sheet and baling wire the index was constructed using July-September 1977 as the base period.

2/ For cold-rolled sheet the index was constructed using April-June 1977 as the base period.

3/ Not available.

Note.--The index of trigger price for Jan.-Mar. 1978 was based upon the average transaction price in Oct.-Dec. 1977.

in the angles category) reveal weighted average transaction prices above their respective first quarter trigger prices. It is evident, however, from the level of weighted average prices above trigger price and from the fact that each product is represented in that price index coverage that the TPM had an impact on import price levels even at that early stage of implementation. Weighted average prices above trigger price ranged from a low of 1 percent (for hot-rolled bar) to a high of 26 percent (for cold-rolled sheet).

By the second quarter of 1978, trigger prices had been announced for all of the products surveyed except welded standard pipe. In the third quarter, all products in the survey were covered by trigger prices. For most of the products, trigger prices announced in the first or second quarters were subject to grace periods that extended well into or to the end of the second quarter. For those products, the trigger-price mechanism did not exert its overall influence until the third quarter of 1978. Imports en route and imports covered by prior contract were among the problems that caused the need for grace periods to be announced, especially during the first 4 or 5 months of the TPM. Early in the program import prices were monitored on the basis of the trigger price at time of arrival; later, the date of shipment determined the applicable trigger price.

These factors indicate that price comparisons that show weighted average prices below the same month trigger price in most cases probably do not reflect a conflict with or violation of trigger price. 1/ In addition, the lag of several months between date of shipment of imported steel and the date of entry and resale, given the high percentage of related-party transactions in the Western market, creates a considerable overlap of applicable trigger price. This overlap could amount to at least one quarter and perhaps several months more.

In order to take this applicable trigger price overlap factor into account, the data analysis in tables 83 to 95 also compares the number and percentage of responses above the trigger price in the same quarter or in the prior quarter. When this comparison is made on an individual product basis, most transaction prices (responses) fall above the applicable trigger prices. Except in the case of plates (second quarter of 1978), with 5 responses below the applicable trigger prices, the number of responses below the trigger price is between zero and two.

Although trigger-price coverage increased in the second and third quarters, less than half of the products surveyed reflect weighted average prices below the same quarter trigger price. Moreover, the spread narrows. For those products with weighted average prices below the same quarter trigger price, the spread ranged from 5 percent (plate) to 18 percent (hot-rolled sheet) in the second quarter, and from 1 percent (cold-rolled sheet) to 11 percent (plate) in the third quarter.

1/ Treasury officials state that transaction prices that appear to be in conflict with trigger prices are satisfactorily explained in the vast majority of cases investigated.

The increasing effect of the TPM is clearly apparent in the fourth quarter of 1978. Trigger prices were implemented for all products in the sample. Grace periods had terminated and monitoring procedure had evolved and improved. Weighted average transaction prices of imports were above the respective trigger price for the same quarter for all products surveyed except two, hot-rolled sheet and hot-rolled rod. Only the latter product reflects a weighted average price sharply (21 percent) below the same quarter adjusted trigger price.

In summary, the impact of the TPM as indicated in the indexes of the weighted average import prices of the representative carbon steel products surveyed reflects a slow first-quarter start, a growing pattern of weighted average transaction prices paralleling trigger prices in the second and third quarters, and by the fourth quarter, a close parallel between the two price indexes in almost every product in the sample. Fourth quarter data also reveal that the strength of demand or constraints on supply, or both, had pushed the weighted average import price of three products (angles, welded standard pipe, and cold-rolled sheet) to levels 11 percent, 14 percent, and 17 percent above the applicable trigger prices for that period.

Importers' and producers' prices to end users/fabricators and to service centers/distributors.--Tables 96 to 113 present weighted average lowest prices of importers and U.S. producers to the various market segments served by each. They also provide the ratio of importers' and producers' prices to each market and to each other. These data reveal that importers serve the distributor market for most of these representative products; domestic producers supply both the distributor and the end-user markets. During 1973-78, for those products which importers supply to both markets, importers' prices to end users were at times above and at other times below the importers' prices to distributors. In constrast, Western producers' prices to end users for some products, e.g., plates and galvanized sheets, were usually above prices to distributors; for other products such as hot-rolled bars, angles, and nails, producers' prices to end users were usually below their prices to distributors. Importers' prices to the market segments served were below competing producers' prices in most instances. However, prices of imported barbed wire, hot-rolled rods, rails, and nails were generally above the domestic producers' prices of these steel-mill products.

Importers' purchase prices by sources.--A comparison of lowest importers' purchase prices by sources for each product for which quarterly data were received is presented in the following table. Over the 6-year period, there were a total of 172 observations, slightly more than one-half of which were below the Japanese sales price. Three countries exhibited strikingly different patterns. The prices of Australia (18 of 21) and Canada (7 of 9) were usually above the corresponding Japanese prices. However, prices of imports from Korea (28 out of 44) and the United Kingdom (8 out of 14) were frequently below the Japanese prices. EEC pricing was below the Japanese pricing in 72 percent of the observations during 1978 compared with 60 percent of the observations over the 6-year period 1973-78.

Carbon steel products: Number of times importers' purchase prices were above or below Japanese price for same product, by sources, 1973-78

Source	1973		1974		1975		1976		1977		1978		Total	
	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below
EEC	4	8	12	15	5	3	2	1	2	6	5	13	30	46
Korea	2	3	6	3	0	4	1	7	3	5	4	6	16	28
Australia	4	0	0	1	5	1	2	0	3	1	4	0	18	3
United Kingdom	0	2	2	1	0	0	1	2	2	2	1	1	6	8
Canada	0	1	0	1	2	0	0	0	0	0	5	0	7	2
Other	1	0	1	0	0	0	1	0	1	0	4	0	8	0
Total	11	14	21	21	12	8	7	10	11	14	23	20	85	87

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

Marketing and Sales Practices

The marketing and sales practices used in the Western States by domestic producers, distributors/service centers, and by importers are in some respects similar. All sellers of steel attempt to maintain competitive prices, to offer quality steel with reliable delivery and to provide quality services. They also generally offer some form of credit extension. However, importers customarily offer terms which are superiod to those offered by domestic mills and at prices based upon date of contract rather than date of shipments which is the practice of domestic mills. In addition, importers, as well as some domestic producers, sell steel at less than the cost of production. 1/ Domestic producers argue that the foreign sales at less than cost of production violate the Antidumping Act.

There are however, other techniques and practices allegedly employed by importers to maintain and/or strengthen their sales in the Western United States which are not used by domestic producers. These practices include:

(1) Maintaining prices at a fixed percentage or dollar differential relative to the price of other suppliers; and
(2) Allocation of customers and products by and among trading companies and foreign mills.

Finally, both importers and domestic producers engage in dual distribution, which involves selling to both a distributor and the end use customers of that distributor. Whether or not any alleged practice or practices engaged in by importers or others selling or distributing carbon steel in the Western market are violative of U.S. antitrust or unfair competition statutes can be determined only in appropriate proceedings before U.S. agencies and/or courts of competent jurisdiction. The present investigation of the Western steel market is not such a proceeding.

Price indexing

Western steel producers maintain that foreign steel suppliers have increased their penetration of the Western market partly by employing the practice of price indexing. Price indexing, as referred to in this report, is a system designed to maintain prices at a fixed percentage or dollar differential relative to the price of another producer. This practice essentially occurs during the precontract negotiating phase with the customer, where offers are based on a particular competitive price. Price indexing is also manifested in "price adjustment clauses", which are written into the purchase contract itself. These clauses provide for escalation and/or de-escalation on the basis of an established differential from the competitor's price adjustments. An example of such a clause from an actual contract obtained by the Commission follows:

1/ In the U.S. market, the profit motive and the lack of government assistance prevent U.S. steel producers from selling below the cost of production for prolonged periods. However, U.S. producers may sell below cost of production to meet either domestic or foreign competition on a spot transaction basis.

- The above base price is based on FOB _____plant, duty, wharfage, and handling paid per package.

- Base Price: During the term of the contract our price will remain at 5.1 percent below US Steel's base price. If the Kaiser price increases or decreases, adjustments will be made so that the differential remains at same percentage. *

- 1-1/2 percent performance allowance: This allowance is presently in effect by US Steel. If this allowance is increased, decreased, or eliminated by US Steel, the same action will apply to our price.

- 1-1/2 percent percent cash discount: The cash discount is presently 1/2 of 1 percent. The 1/2 percent discount will not be allowed if payment has not been made within 10 days after _____ invoice date which is delivery date of our tinplate. If US Steel increases, decreases or eliminates this discount, the same will apply to our price.

* (5.1 percent for tin plate and 7.9 percent for tin free steel).

The Commission further obtained information from a Western States' customer that the Japanese mills preset price increases or decreases as follows:

Re: Hot Rolled Steel Sheet in Coil

Dear Customer:

We are very pleased to submit our quotation regarding the captioned subject for July, August, and September shipments as below.

According to the agreement among all Japanese integrated mills, the price shall be subject to escalation clause equal to U.S. Steel price increase or decrease. For example, if U.S. Steel increases 5¢ as of July 1st, our July shipment will be increased by 5¢.

Western producers generally maintain that the practice of indexing is used by importers, particularly Japanese suppliers, as a means of undercutting prevailing U.S. producers' prices. According to these industry sources, the practice has resulted in a loss of customers. Many Western producers claim that their efforts to meet import competition by reducing prices have been

frustrated, because importers respond by indexing to the new, lower domestic price. According to these sources, the results of their attempts to compete has been to suffer reduced revenues without regaining market share. Thus, Western producers maintain that price indexing by importer frustrates their efforts to compete on the basis of price.

Representatives for various foreign suppliers contend that price indexing, as employed in the Western market, is merely a means of assuring vigorous price competition. They argue that "price adjustment clauses" are infrequently used, or if used, are pegged to domestic list prices. Hence, they maintain that domestic producers may compete effectively by offering discounts during the contract negotiating phase. They also maintain that the majority of price adjustment clauses are escalator clauses, which act as a disincentive to purchasing imports.

During the period of this investigation, the Commission was not able to measure fully the degree or frequency with which importers maintained price differentials below specific domestic articles in the Western market. However, contracts supplied to the Commission, field research, and testimony all indicate that price differentials have been maintained through the use of price indexing. Price adjustment clauses were also used in a number of contractual transactions during 1972-77.

There are some indications that price indexing lessened somewhat in 1978. On the basis of questionnaire returns it appears that only about 2 percent of the total number of purchase contracts made since January 1, 1978, for imported carbon steel mill products covered in this investigation contained automatic price adjustment clauses. Most of these clauses were of the escalator type.

The implementation of the TPM is believed to affect the frequency and effectiveness of price indexing. The TPM has narrowed the price spread between many domestic imported steel mill products, making it less likely that domestic discounts will be undercut through the use of price indexing. In fact, Kaiser Steel Co. recently initiated a price discount program on selected products in selected areas to meet import competition. This discount program resulted in Kaiser's regaining some market share.

In conclusion, price indexing could be a useful tool in increasing market penetration. In the contract negotiating phase, price indexing appears to afford importers a method of offering lower prices than domestic competitors, but may not necessarily prohibit the domestic firm from offering additional discounts. Once a contract is entered into, price adjustment clauses serve two purposes. De-escalation clauses enable the purchaser to benefit from reductions by other domestic steel producers without breaking the contract. These clauses are therefore favored by purchasers, and could provide a competitive advantage to any seller who offers them. On the other hand, price escalation clauses benefit the seller if his competitor's price increases. Moreover, the common knowledge that Japanese firms are willing to index their prices may discourage domestic price competition, because price reductions will not necessarily succeed in gaining new customers.

Allocation of Western steel purchasers among trading companies or foreign mills

Western steel producers also allege that Japanese steel interests in the Western steel market tie or allocate U.S. customers to a particular trading company or foreign mill. This alleged practice is commonly characterized as "channeling" and may also involve splitting an account between two trading companies or between two mills. Where chanelling exists, it would enable Japanese mills and trading companies to limit competition among themselves, tie U.S. customers to particular Japanese trading companies and mills, and, as a result, permit cost savings to the trading firms. According to domestic buyers of Japanese steel, channeling is honored among trading companies either by refusing to grant additional quotes when requested or by making quotes which are not competitive with those of the trading company or companies already servicing the account.

In interviews, Japanese officials indicated that trading companies compete vigorously with producers and other foreign suppliers for customers and sales in the Western market. These officials indicated further that once an account has been established by a Japanese trading company, other trading companies respect that relationship. The practice of respecting each other's established accounts is done in the interest of efficiency. Increased efficiencies arise from better mill predictability of tonnage requirements, better production planning, longer production runs, and lower unit costs. Japanese mills are, therefore, able to maximize profits during periods of high capacity utilization and minimize losses during periods of low capacity utilization.

According to Japanese Iron and Steel Exporters Association, however, the practice of tying U.S. customers to a specific foreign source or sources is not sufficiently rigid or widespread to have a substantial effect on competition in the Western steel market. The Association claimed it was advised by importers that customers are commonly supplied from more than one mill source and are supplied similar Japanese products within relatively short periods of time from more than one Japanese trading company. The JISEA does not deny that channeling exists. Instead, they explain in some length that their examination was not comprehensive and involved "only a small sampling".

However, on the basis of documentation obtained by the Commission and discussions with Japanese companies and Western U.S. customers for Japanese steel, the Commission's staff found that the practice of tying a U.S. customer to a particular supply source or sources exists among trading companies and integrated mills. No facts were developed indicating that Japanese electirc furnace mills or minimills are involved in channeling or that any other foreing suppliers or importers are engaged in this practice. Furthermore, it appears that once an account has been established by a Japanese trading company, other trading companies respect that relationship.

Dual distribution

Both U.S. producers and importers engage in the practice of selling a product to a distributor and also selling the same product to end-use customers of that distributor. The Western States steel industry, however, generally agrees that the practice involves selling two or more vertically related products. It occurs when a vertically integrated producer or importer of a raw material sells that product to a U.S. consumer and in turn competes with that consumer in the sale of the finished product. Among the products in the Western steel market affected by the practice are wire rod sold to wire drawers for conversion to wire and wire products and plates, sheets, or strip, principally sheet, sold to firms engaged in the manufacture of pipes and tubes.

The practice is a natural outgrowth of the desire to market those products which provide the greatest economic benefit. Generally, producers, both domestic and foreign, receive the greatest return by selling steel in its most advanced form. The distribution practice has also been fostered to some extent by Government policy to restrict entry of certain steel articles while leaving other articles free to enter the domestic market at will or by placing restrictions upon quantity without consideration for value. Restrictions placed on the quantity of imports marketed in the United States by the VRA, for example, induced foreign producers to change their product mix by increasing exports of higher value end products such as wire and wire products and pipes and tubes. Dual distribution may also result to some extent from inventory imbalances of supplying firms.

Most domestic manufacturers of wire and wire products and of pipes and tubes obtain their wire rod and their plates, sheets, and strip requirements from domestic producers, distributors, and importers. However, in order to be competitive in the sale of their manufactured products they must be able to buy their raw materials at a price differential that will permit recovery of conversion costs and allow for a reasonable profit. There have been instances in which the domestic supply of wire rods and sheets has been less than adequate to meet demand. This was the result, in part, of vertically integrated U.S. producers ensuring that their own requirements for primary products were met before making these products available to other consumers. Customers who normally received their supplies from these firms were unable to obtain them from other domestic sources because, for the most part, only vertically integrated firms produce these products.

Most nonintegrated wire and wire products manufacturers and pipe fabricators in the Western States source the bulk of their needs from foreign sources, principally Japan. Such domestic firms are, therefore, highly dependent upon the Japanese trading companies to maintain supply of their raw materials and to maintain a price differential between the products that would permit recovery of conversion costs. The integrated structure of the Japanese steel producers and their strong cooperation with the Japanese trading companies results in the potential to control supply and price in exports to the Western States. The extent to which these factors have affected competition in the Western steel market cannot be readily determined. The trend in the volume of imports and their pricing patterns, however, may be indicative of whether or not these factors have been employed in recent years.

An analysis of import data during 1972-78 suggests that Japanese sources have not always been willing to supply their Western States customers' requirements for wire rod and sheet despite changing economic conditions. Imports of wire rod, by countries, into the Western States during 1972-78 are provided in table 35.

In 1974, apparent consumption of wire rod in the Western States was at a record high level. At the same time, Japan's share of total imports substantially declined from 67 percent in 1973 to 48 percent in 1974, although its exports to the United States slightly increased. The resulting deficit in the supply of imported wire rod was made up by the EEC, whose share of total imports increased from 32 to 43 percent, and by other countries, whose share increased from 1 to 9 percent. The surge of exports by these nations in 1974 prevented an even greater shortage of wire rod than that which actually occurred. Japan's share of wire rod imports rebounded to 85 percent in 1975 but thereafter steadily declined to 40 percent in 1978. During the same period imports of wire from Japan declined from 68 percent of total imports to 51 percent. Japan's declining share of wire rod and wire imports weakens its potential ability to implement the practice. In contrast, Japan appears to have increased its supply of more advanced wire products to the Western States. For example, combined imports of nails from Japan and Japanese controlled companies in Korea have increased sharply in recent years.

On the basis of import supply patterns, and the fact that Japanese trading companies are worldwide organizations which can divert Japanese produced steel to those parts of the world where the best prices can be obtained, the indication is that at times adequate quantities of Japanese steel were not made available to supply customer needs. Similarly domestic producers have placed their customers from time to time on allocation and were unable to supply the demand for the articles.

A similar analysis of sheet imports used to manufacture pipes and tubes cannot be made because of a lack of detailed statistical information relating to these items.

Price data collected by the Commission to determine price differentials between the product categories are provided in tables 72 through 74 and 78 through 81. In addition, Western States producers of wire and wire products and pipes and tubes were contacted in an effort to determine the costs of converting wire rod and sheet, respectively, into their more advanced forms. An analysis of these data indicates that in 1975 the price of imported wire and pipes and tubes was not sufficient to cover the cost to domestic producers of converting imported wire rod and sheet to these advanced forms. Price increases for wire and pipes and tubes relative to wire rod and sheets subsequent to 1975, however, increased the differential to levels which appeared to be sufficient to cover the domestic producers' conversion costs.

A further indication that price differentials associated with the practice have not had a significant impact upon conditions of competition in the Western States is the profitability of the wire and wire products and pipes and tubes product lines. During much of the 1972-78 period, these product lines were the most profitable of any of the carbon steel mill products manufactured in the Western States.

Foreign Investment in Western States 1/

Foreign investment in steel-related producing, fabricating, importing, distributing, and consuming firms in the Western States is small but growing. A total of 200 firms, accounting for about $28 billion in sales, responded to the Commission's investment questionnaire. As of January 1, 1978, 28 of these firms were owned by foreign firms or affiliates of foreign firms, while another 3, although U.S.-owned, can be considered to be controlled by foreign interests owing to their financial obligations to such foreign firms. 2/

Investment by Japanese-affiliated firms in the Western marketing region is, by far, the most prevalent. The Japanese control 15 of 31 steel-related firms, as provided in the following tabulation:

Country	Producing	Fabricating	Importing and distributing	Consuming	Total
Japan	3	2	7	3	15
Canada	1	1	2	2	6
All other countries	1	2	3	4	10
Total	5	5	12	9	31

1/ "Ownership" or "control" for purposes of this discussion means ownership of 50 percent of more of the outstanding voting stock. However, it must be noted that in many cases the owner of substantially less than 50 percent of the shares of a corportation may have effective control of the corporation. As a general rule, the more widely held a stock is the lower the percentage of shares required for control. In this regard, it should also be noted that the U.S. Department of Commerce considers a business enterprise to be foreign controlled where 25 percent or more of the voting shares are beneficially foreign held. Only one of the firms responding affirmatively to the question of foreign investment indicated that the level of foreign investment in the firm was less than 50 percent.

2/ This control by lenders encompassed formal agreements restricting management activity in such areas as payment of dividends, maintenance of minimum net worth, disposition and assignment of proceeds from accounts receivable, limitation on new debt obligations, and acquisition of additional steel for inventory.

In 1976 these firms had sales of 2 percent of total sales of firms responding to the questionnaire.

Canada is the only other country having substantial investments in Western States steel-related firms. In 1976, six firms with Canadian interests had sales of 2 percent of total sales of firms reporting to the Commission. Countries other than Japan and Canada having investments in the Western States are primarily the United Kingdom, Taiwan, Italy, and Korea.

The time frame in which foreign investments in Western States steel-related firms have occurred is shown in the following tabulation:

Country	1972 and before	1973-75	1976-77	Total
Japan	5	5	5	15
Canada	3	1	2	6
Other	5	2	3	10
Total	13	8	10	31

These data indicate that foreign investment is occurring at an accelerated rate--two-thirds of the firms in which Japan has interests were acquired in the past 5 years, and one-half of the firms in which Canada and other countries have interests were acquired during this same period.

On the basis of field research and trade sources, it appears that the reasons foreign investment has occurred in the Western States depend upon the steel sector involved and the time frame in which the foreign investment was made. In the distribution sector of the market, the acquired firms were generally importers dependent primarily upon Japanese sources for steel supplies. Foreign investments were directly linked to excess inventories of high-priced foreign steel purchased during the steel shortage of 1973 and early 1974. The weakness of demand and depressed prices in 1975 caused cash flow problems among domestic firms, which led to difficulties in their meeting accounts-payable obligations to foreign suppliers. In all cases, foreign investment in the distribution sector during 1975 was made by the foreign supplier of a financially weak debtor.

In contrast to that in the distribution sector, foreign investment in the producing and consuming markets has resulted from the desire of U.S. firms to secure a broader capital base from which to expand an already successful business. Generally, these investments were in response to initiatives made by U.S. firms after their attempts to obtain participation by other U.S. firms had failed.

The steel fabrication sector appears to be the only area, based on field research, in which foreign firms actively sought investments. Foreign participation in this sector is relatively new.

Executives of the foreign-owned or joint-venture firms visited by the Commission's staff indicated that their foreign partners do not exercise control over the firm's operations and that management determines its own marketing policy and buys from the best available source.

Foreign investment in wire and wire products and pipes and tubes

In general, the extent of foreign investment does not appear to have significantly affected conditions of competition in the Western States, with the exception of wire and wire products and pipes and tubes. In these sectors several key firms with foreign participation have sharply increased their shipments subsequent to foreign involvement.

In late 1978, Tree Island Steel Co., a wholly owned subsidiary of a Canadian firm partially owned by Marubeni Corp., a Japanese firm, began production of wire and wire products. In mid-1979, this same firm announced that in addition to the newly built Los Angeles plant, a second facility in Ferndale, Washington would be constructed. Another major foreign investment which occurred in 1978 was the start of the construction of a pipe mill in Santa Fe Springs, California, by Maruichi Steel Tube Ltd., a Japanese firm.

Available data indicate that these new firms and those that have increased their shipments subsequent to foreign involvement have done or will do so largely by replacing direct imports. In these market sectors, direct imports supply a substantial share of Western States' consumption (17 percent for wire; 67 percent for nails, barbed wire, and prestressed strand; and 50 percent for pipe and tubes).

Financing of Western States steel firms

Firms in the steel industry, as in all others, must acquire funds in order to finance their operations. The various methods used to obtain these funds are outlined below.

Short-term loans.--Short-term loans, as defined in the Commission's investment questionnaire, are used to cover the financial obligations of a firm for a period of 1 year or less. These loans are generally arranged to provide working capital for the interim between delivery of goods to the customer and receipt of payment.

Total short-term loan obligations of Western States steel-related firms declined from $153.2 million in 1972 to $70.5 million in 1973, and sharply increased to $245.1 million in 1974, before reaching a high of $305.3 million in 1976. The rapid rise in loans which began in 1974 and ended in 1976 reflects the financing of substantially increased inventories and accounts receivable and further reflects the inability of firms to arrange long-term loans during this period, thus requiring the refinancing of short-term obligations. In 1977, short-term loans declined by 61 percent to $118 million.

The trend of short-term loans by foreign firms to Western States steel-related firms was similar to that of total short-term loans to these firms, with the exception of 1975. In that year foreign suppliers, in an attempt to assist their financially pressed customers, converted short-term loans into long-term loans and, in some cases, converted these loans into equity participation. In 1977, foreign short-term debt more than doubled, when compared with that of the previous year.

Long-term loans.--Long-term loans, as defined in the Commission's questionnaire, are used to cover the financial obligations of a firm for a period of more than 1 year and include such instruments as bonds and commercial paper. These loans are generally made to finance equipment outlays, pollution-control additions, and other projects involving capital investment.

Total long-term loans rose from $559 million in 1972 to $702 million in 1973, declined to $605 million in 1976, then increased to $907 million in 1977. During 1972-77, long-term debt maintained an almost constant ratio to equity of slightly less than 0.50, except for 1976 when the ratio fell to 0.35. The maintenance of such a constant ratio indicates that there is an upward limit on the long-term borrowing capacity of Western States steel firms and that the limit may have been reached. Long-term loans to Western States steel-related firms by foreign firms rose from $11.8 million in 1972 to $21.0 million in 1975, before declining to $13.3 million in 1977.

Firms with foreign participation operating in the Western States have a decided advantage over their competitors in obtaining long-term loans. In contrast to the traditional debt-to-equity ratio of 1 to 4 for domestically owned firms, firms with foreign participation have ratios as high as 4 to 1. It is highly unlikely that long-term financing could be arranged through domestic financial institutions with such a high debt-to- equity ratio.

Consignments.--Consignment refers to the act of sending carbon steel mill products to an agent for sale, storage, or shipment. The title is held by the consignor until the sale is made. Consignments, which reached a peak of $5.5 million in 1974, are not significant in the Western States steel industry. Consignments by foreign firms averaged about 60 percent of total consignments during the past 5 years.

Inventory financing

During 1972-77, inventory financing increased in each year except 1975, a recession year. The higher level of inventory financing reflects growth in sales volume of Western States firms, which requires more inventory to adequately service accounts, and inflation, which has increased the unit price of all carbon steel mill products. The percentage of total inventory financing supplied by foreign firms is small and reached its highest level, 4.3 percent, in 1975. This type of inventory financing is confined primarily to firms owned, in whole or in part, by foreign firms.

Accounts receivable

During 1972-77, accounts receivable increased in each year except 1975 and, as with inventories, reflected growing sales volume and inflation. Foreign financing of accounts receivable was small, reaching its highest level, 2.7 percent, in 1975.

Paid-in capital and retained earnings

Paid-in capital refers to equity capital obtained by a firm through such methods as the sale of common stock. Retained earnings refer to that portion of a company's earnings which are not distributed to stockholders or otherwise disbursed, but are retained in the company's equity accounts. The total paid-in capital account remained essentially unchanged from 1972 to 1974, increased 4 percent and 9 percent during 1975 and 1976, respectively, and declined slightly in 1977.

The share of total paid-in capital accounted for by foreign firms was less than 1 percent throughout the 1972-77 period. Paid-in capital by these firms remained unchanged at $326,000 from 1972 to 1974, substantially increased during 1975 and 1976, and continued at the 1976 level in 1977. The increases which occurred in 1975 and 1976 represent the influx of foreign capital required to maintain operations of domestic firms acquired during those years.

The level of aggregate retained earnings is a measure of the industry's profitability over time. In 1973, total retained earnings rose 10 percent over the 1972 level, but returned to the 1972 level in 1974 and 1975. During 1976 and 1977, retained earnings substantially increased, and at the end of 1977 were 53 percent higher than at the end of 1975. This growth was primarily the result of increased profitability of steel end users 1/ which were paying less for their steel supplies than in prior years.

Retained earnings in foreign-owned Western States firms showed negative balances during 1972 and 1973, indicating that the firms were unprofitable in their operations up to that period. In 1974, retained earnings returned to a positive balance and substantially improved in 1975. In 1976, retained earnings decreased, but rebounded in 1977 to reach their highest level of the 1972-77 period.

1/ End users as defined in this context are manufacturing companies which consume steel mill products in the production of finished products. Such end users do not include fabricators.

Appendix A

Scope

Scope

The scope of this investigation includes the basic shapes and forms of carbon steel and, in addition, selected fabricated products of carbon steel made from wire. The definitions in the Tariff Schedules of the United States (TSUS) were used for defining the steel mill products and the grade of steel specified.

The TSUS defines steel as--

> an alloy of iron and carbon which is malleable as first cast. Steel may contain other elements intended to enhance one or more properties and may contain elements unavoidably retained from raw materials, but iron must predominate, by weight, over each of the other elements.

The TSUS defines alloy steel as--

> steel which contains one or more of the following elements in the quantity, by weight, respectively indicated:
>
> over 1.65 percent of manganese, or
> over 0.25 percent of phosphorous, or
> over 0.35 percent of sulphur, or
> over 0.60 percent of silicon, or
> over 0.60 percent of copper, or
> over 0.30 percent of aluminum, or
> over 0.20 percent of chromium, or
> over 0.30 percent of cobalt, or
> over 0.35 percent of lead, or
> over 0.50 percent of nickel, or
> over 0.30 percent of tungsten, or
> over 0.10 percent of any other metallic element.

The body of the TSUS then distinguishes between alloy steel and "other than alloy steel." The steel termed "other than alloy" is that which is dealt with in this study. This steel is essentially equivalent to what in general usage is termed "carbon steel" and will be referred to in this study as "carbon steel."

The various steel mill products included in this study were grouped in the following general categories: Ingots and semifinished products (billets, blooms, slabs, and sheet bars); tin mill products (plates, sheets, and strip coated or plated with metal, blackplate); plates; sheets and strip; bars (including deformed concrete reinforcing bar and bar-size shapes under 3 inches); wire rods; wire; angles, shapes, and sections; rails; joint bars and tie plates; pipes and tubes; nails; barbed wire; and prestressed strand. Although the terminology of the product groupings is not that of the TSUS in

every case, the products included in the groupings conform to TSUS definitions. These definitions will be found in the following section of this report.

Descriptions and Uses

Steelmaking process

The principal raw materials used in the production of steel are iron ore, limestone, and coal. These are smelted in a blast furnace to produce pig iron, which is then converted to steel in a steelmaking furnace. The molten metal is cast into ingots or continuous cast into billets, slabs, blooms, or sheet bars. These basic forms are reheated and rolled into the shapes of the various steel mill products which are generally identifiable by their cross-sectional configurations, i.e., bars, plates, sheets, strip, angles, shapes, sections, and wire rod.

The fuel used in the blast furnace to smelt the iron ore is coke. Coke is converted from coal in coke ovens, one of the many auxiliary facilities of a steel mill. The properties of coke which, unlike coal, make it suitable foruse in blast furnaces include its abilities to burn inside and outside, to retain its strength under the weight of iron ore and limestone, and to burn without fusing.

Limestone is used primarily to remove impurities from iron ore used to charge the blast furnaces. Limestone is also processed in kilns to make quicklime, a flux used to help remove impurities from the molten metal in steelmaking furnaces. Limestone and lime fuse the impurities associated with the molten metal and combine with them, permitting them to be carried off as slag.

In the production of pig iron, iron ore, coke, and limestone are charged continuously and alternately through the top of a blast furnace. Hot air (approximately 1-1/2 to 2-1/2 tons for each ton of pig iron) is injected into the bottom of the furnace and rises through the charge of iron ore, coke, and limestone. The air induces the coke to burn, releasing gases which reduce the ore to metallic iron (pig iron) which in molten form accumulates at the bottom of the furnace. Limestone in the charge combines with impurities to form slag, which floats to the top of the molten pig iron. The pig iron and slag are periodically drawn off from the bottom of the furnace as the remainder of the smelting process continues.

The significant difference between pig iron and steel is their differing degrees of malleability and carbon content. Pig iron contains over 2 percent of carbon and is not malleable. Steel, on the other hand, contains a maximum of 2 percent carbon in most cases and can be rolled and thus formed into a variety of mill products. The advantage of rolling over forging or casting lies in the extraordinary speed of the process. Sheet, for example, can be rolled and coiled at a rate of 3,200 feet or more per minute, while wire rod, one-quarter inch in diameter, can be rolled and coiled at speeds in excess of 8,500 feet per minute.

Pig iron is converted to steel in steelmaking furnaces by the addition of some elements and the removal of others, including the removal of excess carbon. Pig iron, scrap, and limestone are heated to high temperatures, forming molten steel and slag. The slag is removed, desired alloying elements are added, and the molten steel is then cast.

In contrast to the continuous pig iron process steel is produced by the "batch" in one of the three major types of steelmaking furnaces--open-hearth, basic oxygen, and electric. In addition to pig iron, iron or steel scrap may be used in the steelmaking furnaces, although the three types of furnaces differ regarding the amount of scrap which they can accomodate. In 1976, an average of 44 percent scrap was used in domestically operated open-hearth furnaces, 28 percent in basic oxygen furnaces (BOF), and nearly 100 percent in electric furnaces. Aside from purchased scrap, a great deal of scrap is generated within the steelmaking process. Steel ingots yield only about 75 percent of finished or semifinished product. The 25 percent resulting from discards from ingots and products being processed is remelted and kept in constant circulation.

The oldest and least efficient type of furnace is the open hearth, so named because the limestone, scrap, and molten (or cold) iron are charged into a shallow steelmaking area (the hearth). The charge is then melted by burning fuel oil, tar, or gases. In recent years this process has been modified by the introduction of oxygen which has significantly accelerated an otherwise slow process. Alloy additions are made to the steel after the steel has been poured from the furnace into the ladle.

In the basic oxygen furnace steelmaking process, oxygen is used as a component of chemical reactions which result in heat and the chemical changes required to make steel. The only other source of fuel that is used is the heat of the molten pig iron. The furnace is first charged through the mouth of the vessel with scrap and molten pig iron; oxygen is blown on the top of the metal at supersonic speed. The oxygen combines with carbon and other unwanted elements, separating these impurities from the molten charge and converting the remainder to steel. The furnace is tilted and the molten steel poured into a ladle; alloying additions are made in the ladle. Most BOF's are built near blast furnaces, facilitating the transfer of the molten metal. Oxygen-producing facilities are usually located nearby. The BOF produces steel very quickly, compared with the other major methods now in use. For example, a BOF may produce up to 300 tons in 45 minutes or less, compared with 5 to 8 hours for the older open-hearth furnace.

The electric furnace is normally charged with scrap, which is subjected to an electrical current. Heat, generated as the current arcs from one electrode to the metallic charge and from the charge to the next electrode, melts the charge. When the charge is molten, limestone and flux are charged on top. The slag is raked off, alloying elements are added, and when the reactions are complete, the furnace is tilted and the molten metal is poured out.

Of the 128 million tons of raw steel produced in the United States in 1976, about three-fifths was produced in BOF's and one-fifth, each, in open-hearth and electric furnaces.

Molten steel must be solidified in a manageable shape prior to rolling. Consequently, it is cast into ingots, a columnar form suitable for working by rolling. The molten metal, upon being poured into the ingot mold, solidifies first near the sides and ends, forming a solid exterior. When the ingot has partially or completely solidified, the mold is removed and the ingot is placed in a temperature-controlled pit, where it remains until it reaches a uniform temperature throughout (required rolling temperatures range from 2000°F to 2500°F).

Forms comparable in size and shape with the semifinished products may be achieved directly from the molten metal through a process known as continuous casting. The advantage of this process is that the ingot and reheating stages can be by-passed. This results in great energy savings because one heating process, that of heating the ingot for hot-rolling into semifinished forms, is eliminated.

Although pig iron or steel may be cast directly into the form of the finished article, and steel may be forged, the primary forming process used in steel mills is rolling.

The purpose of the first rolling process is to reshape the ingots roughly into shapes more suitable for further manufacture into finished products. These rough shapes are called "blooms, billets, slabs, and sheet bars" and are generally referred to as "semifinished." Blooms, billets, slabs, and sheet bars differ from each other primarily in size; all are substantially smaller than ingots. These products are heated to a uniform rolling temperature and then passed through a series of rolls that form the steel into the desired shapes and sizes of the various steel mill products.

Products formed by the hot-rolling process are termed "hot-rolled." They may be used or shipped in this condition; however, a substantial quantity of hot-rolled products are subsequently cold-finished. This term applies to hot-rolled products that have been subjected to processes such as rolling, drawing, turning, grinding, or polishing while cold. Once a product has been cold-worked, it is referred to as "cold-rolled," "cold-formed," or "cold-finished;" it is no longer termed "hot-rolled."

Product descriptions

Each of the following products is discussed in terms of TSUS definitions, general description, and use. The TSUS definitions, where available, were used as the basis for defining what was included within each category.

Ingots.--The TSUS defines ingots as--

> castings resulting from the solidification of molten steel and having a columnar form suitable for working by rolling or forging.

Ingots vary widely in size and may have smooth, corrugated, or fluted sides. They are usually tapered from one end to the other, a shape that facilitates removal of the mold when the exterior of the ingot has solidified. Ingots, the basic form in the steelmaking process, may be forged or rolled into more advanced shapes and forms.

Semifinished products.--The TSUS defines blooms and billets as--

> semifinished products generally of rectangular or circular cross section, having a length several times greater than the maximum cross-sectional dimension, and, if rectangular, a width less than 4 times the thickness. A bloom is at least 36 square inches in cross-sectional area; a billet is less than 36 square inches but not less than 3 square inches in cross-sectional area.

The TSUS defines slabs and sheet bars as--

> semifinished products of rectangular cross section, having a width of at least 4 times the thickness. A slab is not less than 2 inches and not over 6 inches in thickness; a sheet bar is less than 2 inches in thickness.

Blooms, billets, slabs, and sheet bar are intermediate products of the steel-rolling process which are usually rolled into more advanced steel mill shapes and forms.

Blooms and billets are generally of rectangular or circular cross section, but may be square. Slabs and sheet bar are flatter than blooms or billets and are rectangular in cross section. Billets of circular cross section, intended to be used in the production of seamless tubes, are often referred to as tube rounds. In general, slabs and short bars are used to produce flat-rolled products such as plates, sheets, and strip, while billets are used in the production of structural shapes, bars, rods, and narrow strip.

Bars.--The TSUS defines bars as--

> products of solid section not conforming completely to the respective specifications set forth herein for blooms, billets, slabs, sheet bars, wire rods, plates, sheets, strip, wire, rails, joint bars, or tie plates, and which have cross sections in the shape of circles, segments of circles, ovals, triangles, rectangles, hexagons, or octagons.

Although steel bars may be made from old rails, axles, or similar products that have outlived their original usefulness, they are generally hot-rolled from billets. The most common shapes of bars are flats (rectangular cross section), squares, and rounds, but they may be formed in any cross-sectional configuration, such as octagons or hexagons.

Hot-rolled carbon steel bars are produced in two major qualities--merchant quality and special quality. Special quality bars have more exacting chemical and physical requirements than merchant quality.

Cold-finished carbon steel bars are commonly produced from hot-rolled steel by several cold-finishing processes. Cold-finishing may be used to improve the surface finish, to increase the dimensional accuracy, and to improve the machinability of the bar. Yield strength and tensile strength are increased by cold-drawing and cold-rolling.

After being rolled, the bars are generally cut to standard straight lengths; however, depending on their size and cross-sectional configuration, they may be shipped in coiled form.

Bars are used in a wide range of applications in the production of noncritical parts of bridges, buildings, ships, agricultural implements, roadbuilding equipment, railway equipment, and general machinery.

Bars may require mild cold-bending, mild hot-forming, punching, welding, ordinary forging, heat treating, cold-drawing, or machining in the fabrication process to adapt them for their intended use. The type of bar selected is dependent upon the special requirements of the fabrication process required to prepare the bar for its final use.

Deformed concrete reinforcing bars.--The TSUS defines deformed concrete reinforcing bars as--

> hot-rolled steel bars, of solid cross section, having deformations of various patterns on their surfaces.

Deformed reinforcing bars are made by pressing deformations into hot-rolled bars during the final stage of rolling. Deformations are protrusions extending outward from the surface of the bar in a uniform pattern. Reinforcing bars are used in the construction of concrete structures; the deformations around the circumferences prevent longitudinal movement when the bars are embedded in concrete. For the purposes of the investigation, reinforcing bars include only hot-rolled bars with deformations. Plain reinforcing bars are grouped with "other bars."

The standard sizes of reinforcing bars, which correspond to standard bar sizes 2 (2/8-inch diameter) through 11 (1-3/8 inch diameter), range with 1/8-inch intervals between sizes. Large reinforcing bars are also made in diameter sizes of approximately 1-3/4 inches and 2-1/4 inches. Reinforcing bar may be shipped cut to standard lengths of 20, 40, 60, 80, or 100 feet, or it may be shipped in coils. Often, reinforcing bars are recut for fabrication (shaping) as required by the detailed design of a particular construction project.

Reinforcing bars are made in three grades--structural, intermediate, and hard. The three grades differ only in their mechanical properties, principally tensile strength.

Angles, shapes, and sections.--The TSUS defines angles, shapes, and sections as--

> products which do not conform completely to the respective specifications set forth herein for blooms, billets, slabs, sheet bars, bars, wire rods, plates, sheets, strip, wire, rails, joint bars, or tie plates, and do not include any tubular products.

Angles, shapes, and sections are terms which describe a group of products that have identifiable cross-sectional characteristics, usually consisting of flat surfaces joined together at angles. Examples of these cross-sectional configurations are patterns similar to the capital letters C, H, I, L, T, or Z. Some of the fundamental shapes are known as angles, channels, beams, tees, and special sections.

The terms "shapes" and "sections" are synonymous; angles are a specific form of a shape or section. Angles and shapes having a maximum cross-sectional dimension of less than 3 inches are referred to as bar-size shapes; those of 3 inches or more are referred to as structural shapes. A great variety of products fall within the latter grouping, with the products ranging from 1-inch by 3-inch angles to 36-inch or larger I beams. In this study, the bar-size shapes are grouped with bars because they are usually produced in a bar mill. Included in this category are those products that have been drilled, punched, or otherwise advanced; however, those which have been fabricated are excluded.

Angles, shapes, and sections are used in the construction of bridges, buildings, dams, cars, ships, cranes, machinery, appliances, and a host of other common articles.

Plates.--The TSUS defines plates as--

> flat rolled products whether or not corrugated or crimped, in coils or cut to length, 0.1875 inch or more in thickness and, if not cold rolled, over 8 inches in width, or, if cold rolled, over 12 inches in width.

Although plates may be of any grade of steel and may be cold-rolled, virtually all are hot-rolled from carbon steel. They may be rolled up to 206 inches in width. Plates are used principally for structural purposes, in boilers, tanks, pipe, steel railway cars, ships, safes, and bridges.

Sheets.--The TSUS defines sheets as--

> flat rolled products whether or not corrugated or crimped, in coils or cut to length, under 0.1875 inch in thickness and over 12 inches in width.

Sheets may range up to 72 inches or more in width. Most sheets are made of carbon steel. After hot-rolling, substantial quantities are cold-rolled. The automotive industry is the largest single consumer of sheets, primarily for bodies of motor vehicles. Sheets are also used in the manufacture of pipe, water heaters, refrigerators, metal furniture, and fabricated structural sections.

Strip.--Strip is defined in the TSUS as--

> a flat rolled product whether or not corrugated or crimped, in coils or cut to length, under 0.1875 inch in thickness, and, if cold rolled, over 0.50 inch but not over 12 inches in width, or, if not cold rolled, not over 12 inches in width.

Strip may be rolled, or it may be made by slitting sheet. Strip is adapted to the manufacture of a multitude of articles by mass-production methods in the automotive and other industries.

Tin mill products.--The TSUS defines black plate as "cold-rolled steel sheets, not coated, under 0.0142 inch in thickness." It defines "tin plate and tin coated sheets" as "tin coated steel sheets and "terne plate and terne coated sheets" as "steel sheets coated with terne metal (a lead-tin alloy)." Black plate, tin plate, tin-coated sheet, terne plate, and terne-coated sheet are the only products included in this grouping which are defined in the TSUS. For the purposes of this investigation all plate, sheet, and strip coated, plated, or clad with metal were grouped within this category. In addition, black plate was included because of its close association with the tin mill process.

Black plate is a thin cold-rolled sheet of carbon steel that is used principally in the manufacture of tin plate. Tin plate and tin-coated sheets are steel sheets coated with tin, and terne plate and terne-coated sheets, production of which is small, are steel sheets coated with terne metal, a lead-tin alloy. The tin coating may be applied by hot-dipping (immersion in molten tin) or by electrolysis. Tin plate is used principally in the manufacture of containers, chiefly food cans; it is also used in the production of bottle closures, toys, kitchen utensils, and dairy equipment. Plates, sheets, and strip that are galvanized (zinc coated) or coated or plated with other metals are included in this product grouping.

Clad plates and sheets generally consist of steel with a thin outer layer of nickel, nickel alloy, copper, monel stainless steel, or other base metal or alloy permanently bonded thereto by mechanical or thermal means. The cladding generally represents 10 to 20 percent of the total thickness and may be on one or both sides of the steel plate or sheet. Clad steel offers a variety of unique characteristics, some of which are corrosion resistance, abrasion resistance, high strength, and electrical conductivity. Clad steel has important uses in refinery applications, in shipbuilding, and in the chemical industry.

Wire rod.--The TSUS defines wire rods as--

> a coiled, semifinished, hot-rolled product of solid cross section, approximately round in cross section, not under 0.20 inch nor over 0.74 inch in diameter.

Because most wire rod is cold-drawn into wire, it is considered a semifinished product--an intermediate product that will be converted into another steel mill product. Wire rod is not rolled to exact dimensions and is described as approximately round. Each rod is rolled to a cross section only slightly larger than the aperture in the first die that it will be drawn through to make wire. The wire rod is coiled rather than cut to length, so it may simply be unwound when drawn through the dies used in the wiremaking process.

Wire rods are prepared for drawing in various ways. In one process, the surface is cleaned with acid, rinsed with water, and a lime coating is baked on which serves as a carrier for the lubricant used in the wire-drawing process. Products treated in such ways are still wire rods and are not termed wire until they have been drawn through a die.

Wire.--The TSUS defines wire as--

> a finished, drawn, non-tubular product, of any cross-sectional configuration, in coils or cut to length, and not over 0.703 inch in maximum cross-sectional dimension. The term also includes a product of solid rectangular cross section, in coils or cut to length, with a cold-rolled finish, and not over 0.25 inch thick and not over 0.50 inch wide.

The most common method of producing wire is by cold-drawing wire rod. Most flat wire is cold-rolled from wire rod or from drawn wire; some flat wire is produced by slitting cold-rolled plate, sheet, or strip, a method often used to produce flat wire which measures significantly more in width than in thickness.

This category covers very basic wire in the state as drawn from wire rod or as described above, though it may be tempered or treated or may be coated or plated with metal. Not included are wire covered with textiles, plastics, or other material not wholly of metal. Barbed wire, twisted wire, wire strands (prestressed strand), ropes, cables, and cordage, or woven wire products are not included here.

Pipes and tubes.--The TSUS defines pipes and tubes and blanks therefor as--

> tubular products, including hollow bars and hollow billets but not including hollow drill steel, of any cross-sectional configuration, by whatever process made, whether seamless, brazed, or welded and whether with an open lock seam or joint.

The terms "pipes" and "tubes" are generally synonymous. Welded pipe is made by two principal methods--butt-welding and electric-welding. Skelp 1/ is uncoiled, heated, and formed into a tube. The hot edges are either squeezed together, resulting in a solid butt-weld, or the edges are electric-welded. Large-diameter pipe is made from plate in a process similar to the electric-weld method. Seamless pipe is made from solid tube rounds, a semifinished mill product which is heated, pierced by a cylindrical mandrel bar, and rolled with a bar inside to obtain the desired wall thickness, diameter, and length.

Welded pipe is generally less than 0.25 inch in wall thickness. Butt-weld pipe generally ranges from 1/8 inch to 4 inches in size of inside diameter; electric-weld pipes range up to 96 inches (or even larger) in outside diameter. Seamless pipes are commonly made in sizes ranging in outside diameter from 1-1/2 to 26 inches and are usually produced in a wider range of wall thicknesses than welded pipes.

1/ Skelp is a term used in the industry to identify plates, sheets, or strip intended for use in the production of welded pipes and tubes.

Many of the important tubular products covered here are known in the trade according to the uses for which they are intended by terms such as standard pipe, line pipe, pressure tubing, oil country goods, structural tubing, conduits, and mechanical tubing.

Standard pipe is used for conveying liquids under low pressure. It is produced in three classes of wall thicknesses (designated as standard weight, extra-strong weight, and double extra-strong weight) and in outside diameters of about 1/2 inch to about 4-1/2 inches.

Line pipe is used to convey crude oil, oil products, gas, or water under high pressure. It is produced in lengths up to a maximum of 80 feet and in outside diameters up to 48 inches or more.

Pressure tubing is used for conveying fluids at high temperatures or pressures within industrial apparatus, such as boilers, heat exchangers, condensers, and evaporators.

Oil country goods are tubular products used in extracting petroleum. Well casing, the ends of which are usually threaded and fitted with couplings, is used primarily to retain the walls of a well and to exclude undesirable fluids; such pipes have outside diameters from 4-1/2 to about 20 inches. Tubing is used within the casing of wells to conduct crude oil and natural gases from producing strata to ground level; it ranges in outside diameter from slightly more than 1 inch to about 4-1/2 inches.

Structural tubing is used primarily in building construction.

Conduits are used to enclose and protect electrical wiring systems. Such pipes are generally produced in diameter sizes from about 1/4 inch to about 6 inches and in lengths from 10 to 20 feet.

Mechanical tubing is used in the manufacture of automobiles, gravity conveyor rolls, bushings, separators, hydraulic cylinders and hoists, oil well pumps, bicycle frames, metal furniture, and other products.

Rails.--The TSUS defines rails as--

> hot-rolled steel products, weighing not less than 8 pounds per yard, with cross-sectional shapes intended for carrying wheel loads in railroad, railway, and crane runway applications. Rails may be punched or not punched.

Shapes of the rail type which weigh under 8 pounds per yard are included in the categories of "bar-size shapes" or "angles, shapes, and sections," depending on size.

Rails are classified as either "heavy" or "light," depending on whether they weigh more or less than 60 pounds per yard. Heavy rails, representing the bulk of U.S. production of rails, are used in rail systems in which the strength of the rails is essential, such as mainline railways and subways. Light rails are generally used in mines, for crane trackways and other industrial uses, and for streetcars.

Although rails may be manufactured in lengths up to a quarter of a mile, standard heavy rails are 39 feet in length, and standard light rails are generally 30 feet long.

Joint bars.--The TSUS defines joint bars as--

> hot-rolled steel products designed to connect the ends of adjacent rails in track. Joint bars are usually punched or slotted.

Joint bars are hot-rolled in a special shape designed to fit between the head and flange of a rail. They range from 24 to 36 inches in length, with a series of 4 to 6 punched holes evenly distributed throughout their length and usually weigh from 33 to 49 pounds each. They are used to connect the ends of adjacent rails in track.

Tie plates.--Tie plates are defined in the TSUS as--

> hot-rolled steel products used to support rails in track, to maintain track gauge and protect the ties. Tie plates are punched to provide holes for spikes and have one or two shoulder sections as rail guides.

Tie plates, weighing about 19 pounds each, are used to connect the rails in track to the railway ties. They are inserted between the rails and the ties to support the rails and to hold them securely. A standard 39-foot length of rail usually passes over about 24 ties and subsequently requires about 48 tie plates.

Barbed wire.--Although there is a specific provision for barbed wire in the TSUS, a definition is not provided. For purposes of this investigation, however, barbed wire is considered to be wire which usually consists of two galvanized strands, twisted together, containing two to four barbs at frequent intervals. The barbs are pointed and extend at right angles to the twisted wire. Barbed wire is used chiefly in fencing.

Nails.--The TSUS does not define nails. Nails made from steel wire in automatic machines vary greatly in size and design. After each nail is formed, the wire is advanced through the machine and grasped by a die formed in the mirror image of the desired nailhead. The length of wire that extends in front of the die is flattened by a hammer blow against the die to form the nailhead. The wire is again advanced, the amount depending upon the desired length of the nail, and a die closed to pinch the wire, acting as a vice. Two specially shaped knives are moved together, cutting the wire and at the same time pressing the wire into the point required.

The uniform finish of common nails is obtained by rotating them with sawdust in a tumbler with projections on the inside. This process polishes the nails and removes any adhering bits of metal while absorbing any grease and oil collected during the manufacturing process. Nails may then be galvanized, zinc coated, tinned, coppered, or cement coated.

Prestressed strand.--Prestressed strand is a term that refers to steel strand that will be used in the process of prestressing concrete. The strand is not actually put under tension until it is incorporated in the concrete, but the mechanical properties necessary to allow deformation under tension must be present in the strand when it is ready for use or shipment in the form of prestressed strand. These mechanical properties are achieved through the various treatments of the steel at each stage of its production.

The wire used for making prestressed strand is drawn from heat-treated wire rods of high-carbon steel (approximately 0.70 to 0.85 percent carbon content). The wire is then stranded, a process by which outer wires are wrapped around a central wire in a uniform spiral. The most commonly used prestressed strand is seven-wire strand--one central wire wrapped with six outer wires. After further heat treatment, the strand must meet specified tension requirements for breaking strength, yield strength, and elongation.

The TSUS does not define prestressed strand, although it provides a statistical breakout under strand.

Appendix B

The U.S. Steel Industry

The U.S. Steel Industry

The U.S. steel industry's position in world steel production has steadily declined since the 1950's. In 1956, the United States accounted for 37 percent of total world steel production; in 1978, the United States accounted for only 18 percent. Raw steel production for all countries currently producing in excess of 10 million tons annually is shown separately in the following table.

Raw steel production by selected countries, 1973-78

(million tons)

Country	1973	1974	1975	1976	1977	1978
U.S.S.R	145	150	156	160	162	166
United States	151	146	117	128	125	137
Japan	132	129	113	118	113	113
Federal Republic of Germany	55	59	45	47	43	45
China	29	29	29	23	26	34
Italy	23	26	24	26	26	27
France	28	30	24	26	24	25
United Kingdom	29	25	22	25	22	22
Poland	16	16	17	17	20	21
Belgium-Luxembourg	24	25	17	18	17	19
Czechoslovakia	15	15	16	16	16	17
Canada	15	15	14	15	15	16
Romania	9	10	10	12	13	13
Brazil	8	8	9	10	12	13
Spain	12	13	12	12	12	12
India	8	8	9	10	11	10
All other	70	79	78	90	88	95
Total	769	783	712	753	743	785

Source: Compiled from data published by the American Iron and Steel Institute.

The United States is second only to the U.S.S.R. in world steel production. Japan ranks a close third, and the Federal Republic of Germany is a distant fourth. An additional 12 countries, including such developing countries as Brazil, India, and Spain, produced in excess of 10 million tons of raw steel in 1978. Developing countries have significantly increased steel production in recent years. Collectively, the developing countries represent a growing market force inasmuch as most of these countries are unable to consume internally the increased tonnages produced.

In a more historical analysis of steel production from 1956 through 1978, the following table shows the rapid development of the Japanese steel industry from 13 million tons produced in 1958 to 132 million tons in the peak year of 1973. In much the same way, the steel industries in EEC countries expanded from 86 million tons in 1958 to 172 million in 1974.

Raw steel: Production, total world, EEC countries, Japan, and the United States, 1956-78

Year	Total world	EEC	Japan	United States	U.S. share of total world production
	Million tons	Million tons	Million tons	Million tons	Percent
1956	312.9	85.9	13.2	115.2	36.8
1957	321.7	90.4	13.8	112.7	35.0
1958	298.9	86.0	13.3	85.3	28.5
1959	337.2	92.6	18.3	93.4	27.7
1960	381.6	107.9	24.4	99.3	26.0
1961	390.1	105.9	31.2	98.0	25.1
1962	394.1	103.6	30.4	98.3	24.9
1963	422.2	106.4	34.7	109.3	25.9
1964	479.0	121.2	43.9	127.1	26.5
1965	503.1	125.5	45.4	131.5	26.1
1966	519.1	121.5	52.7	134.1	25.8
1967	547.6	126.3	68.5	127.2	23.2
1968	582.5	138.2	73.7	131.5	22.6
1969	632.0	148.5	90.5	141.3	22.4
1970	654.2	151.7	102.9	131.5	20.1
1971	639.9	141.3	97.6	120.4	18.8
1972	694.5	153.4	106.8	133.2	19.2
1973	768.6	165.5	131.5	150.8	19.6
1974	782.8	171.5	129.1	145.7	18.6
1975	712.0	138.1	112.8	116.6	16.4
1976	753.1	148.1	118.4	128.0	17.0
1977	743.0	138.1	112.9	124.7	16.7
1978	784.7	146.7	112.6	137.0	17.5

Source: Compiled from data published by the American Iron and Steel Institute.

The following table shows the market-economy countries' 10 largest steel producers and their output in 1977 compared with 1976.

Raw steel: Output by companies in market-economy countries, 1976 and 1977

(In millions of tons)

Company	Country	1976	1977
Nippon Steel	Japan	35.8	35.7
U.S. Steel	United States	28.3	28.8
British Steel	United Kingdom	21.4	19.0
Bethlehem	United States	15.5	15.2
Nippon Kokan	Japan	16.2	15.2
Finsider	Finland	14.8	14.2
Sumitomo	Japan	14.7	13.8
Kawasaki	Japan	14.7	13.8
A. Thyssen Hutte AG	West Germany	14.1	12.7
National Steel	United States	10.8	9.4

Source: Compiled from data published by the International Iron and Steel Institute.

The dominance of the United States and Japan in market-economy countries' steel output is readily apparent--of the 10 leading steel-producing firms, 4 are located in Japan and 3 in the United States. Kaiser Steel, the largest producer in the Western States, ranked 43d in 1977, down from 40th in 1976.

World steel capacity far exceeds actual production. In 1978, Japanese and European mills operated at about 65 to 70 percent of capacity utilization. With unused capacity of about 125 million tons in Europe and Japan, along with rapidly increasing production in developing countries and a projected annual world growth rate of less than 3 percent for steel mill products, the potential exists for these nations to substantially increase their penetration of the U.S. steel market. It is also likely that Japan and the industrialized steel-producing countries of Europe will increasingly emphasize the exportation of products containing significant amounts of steel in order to keep mills operating at acceptable levels of utilization.

From 1950 to 1960, U.S. raw-steel-making capacity increased from about 102 million tons to about 149 million tons, or by about 45 percent. However, since 1960, very little net capacity has been added. U.S. steelmaking capacity is currently estimated at slightly under 160 million tons. Virtually all of the capital invested has been to replace obsolete facilities, to build rolling and finishing facilities, and to install environmental protection equipment. The industry has little or no major expansion plans for the immediate future, and no greenfield plants are under construction.

U.S. production of raw steel and U.S. producers' shipments of steel mill products during 1968-78, except for the years 1973-75, have remained rather stagnant, as shown in the following tabulation (in millions of tons).

Year	Production	Shipments
1968	131.5	91.9
1969	141.3	93.9
1970	131.5	96.8
1971	120.4	87.0
1972	133.2	91.8
1973	150.8	1/ 111.4
1974	145.7	1/ 109.5
1975	116.6	1/ 80.0
1976	128.0	89.4
1977	124.7	91.1
1978	137.0	97.9

1/ Production and shipments in 1973 and 1974 were abnormally high both in the United States and throughout the world because of the steel shortage; they were abnormally low in 1975 because of the recession.

Carbon steel mill products account for almost 90 percent of the total quantity of U.S. producers' shipments; stainless steel accounts for about 1 percent; and other alloy, for about 9 percent.

Shipments of sheets and strip alone account for almost 50 percent of total domestic shipments, reflecting in large part the importance of the automotive industry (about two-fifths of total sheet and strip shipments) to the domestic steel industry. Bars account for about 15 percent of total shipments, and plates and pipes and tubes each account for slightly less than 10 percent.

The automotive industry consumes about one-fourth of annual domestic shipments of all steel mill products; about 17 percent goes to steel service centers and distributors; about 13 percent to the construction industry; about 7 percent to the container industry; about 6 percent to the machinery and industrial equipment industry; and about 4 percent to the oil and gas industry.

In the United States, the basic-oxygen furnace (BOF) process in 1978 accounted for 61 percent of total raw steel production, the electric-furnace process for 24 percent, and open hearth for the remainder. About 15 percent of U.S. production was by the continuous-casting method. In contrast, about 82 percent of Japan's production was by the BOF process and about one-half was continuously cast. EEC countries in the aggregate had a higher percentage of steel production by the BOF method, and a higher percentage by the continuous-casting method, than the United States.

In 1978, U.S. mills operated at almost 87 percent of capacity utilization, a rate somewhat higher than that recorded by Japan or EEC countries. In 1977, the rate of capacity utilization was 78 percent. The efficiency and the competitiveness of the major steel industries of the world are dependent upon a large number of factors--most importantly, the cost of raw materials, energy, and labor. The rate of capacity utilization and the technology provided by the BOF and continuous-casting processes over conventional processes are also important factors in the cost of producing steel.

In recent years, producers located outside the Western States accounted for about 94 percent of both the total carbon raw steel production and of the shipments of carbon steel mill products. Pennsylvania, Indiana, and Ohio together have accounted for about 55 percent of total U.S. raw steel production. In addition, facilities located in Illinois and Michigan have produced annually more than 10 million tons each.

Steel production in the United States is heavily concentrated in large integrated firms. These firms not only operate blast furnaces and rolling and finishing facilities, but also own and operate mines which provide the raw materials for the production of pig iron. In some cases they own or have interests in service centers and outlets through which their products are distributed.

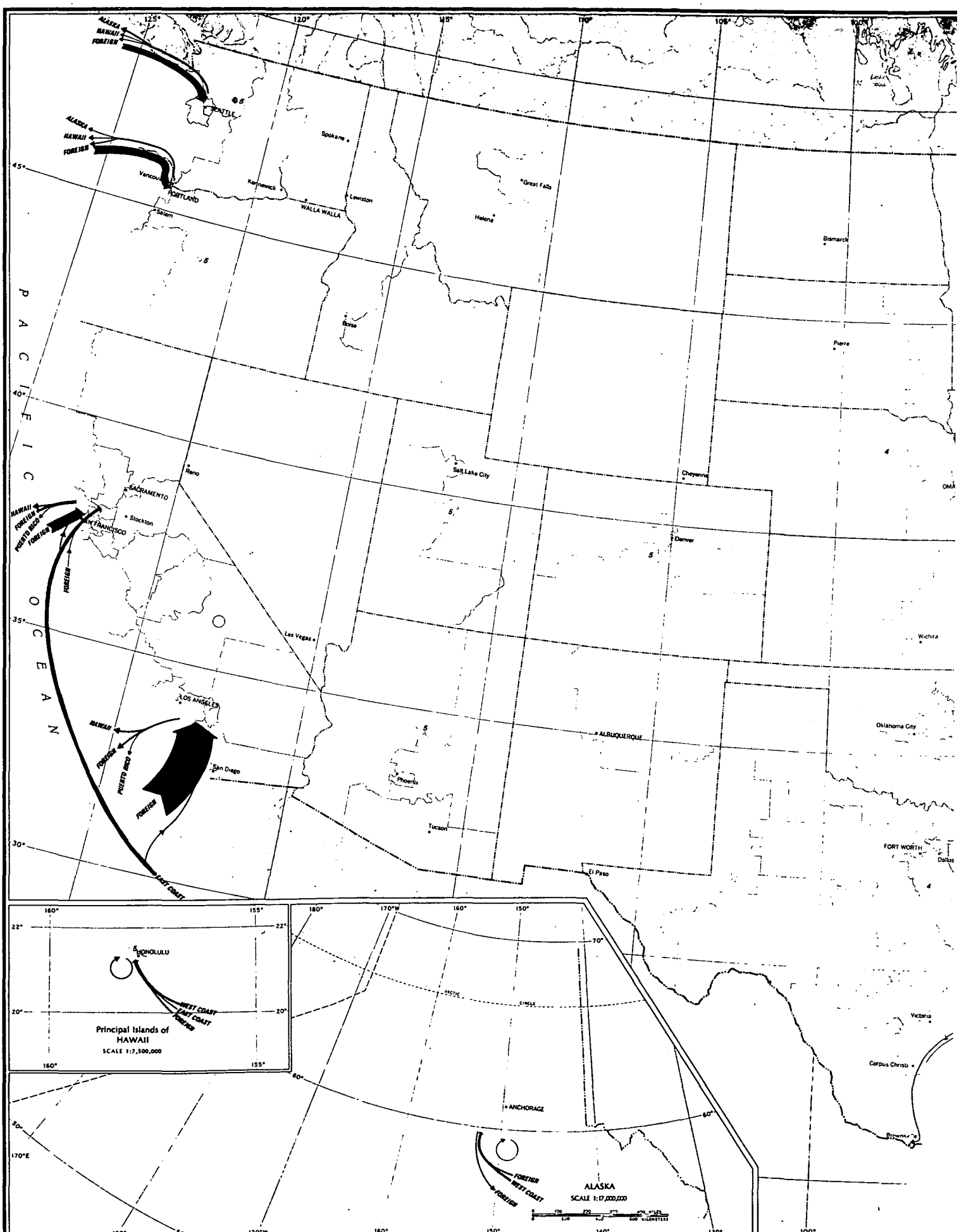
The following table shows the 15 largest U.S. producers of raw steel in 1977:

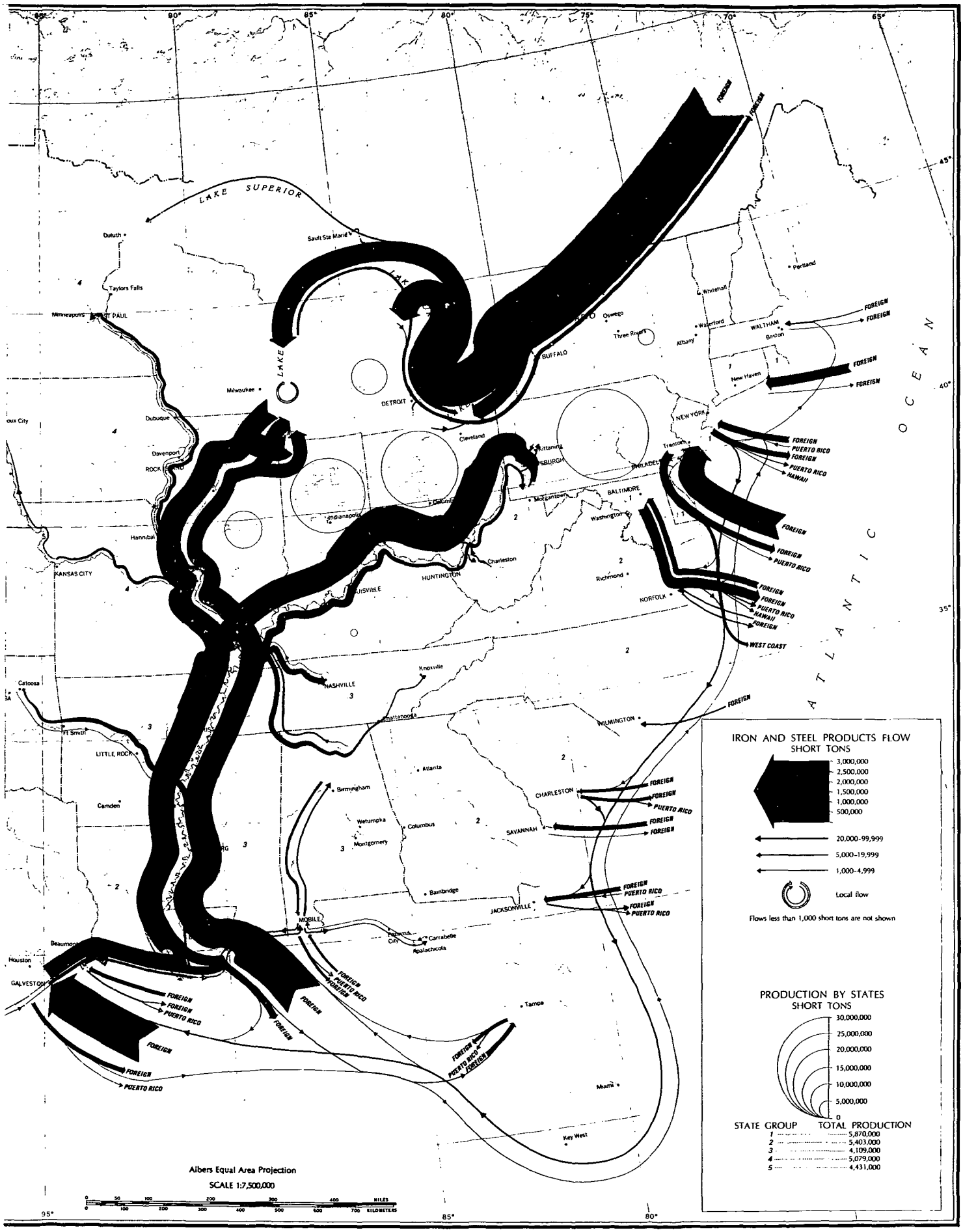
Raw steel: Production by the 15 largest U.S. producers, 1977

Firm	Production	Share of total U.S. production
	1,000 tons	Percent
U.S. Steel Corp	28,800	23.1
Bethlehem Steel Corp	16,609	13.3
National Steel Corp	9,378	7.5
Republic Steel Corp	9,220	7.4
Armco Steel Corp	7,918	6.3
Inland Steel Corp	7,760	6.2
Jones & Laughlin Steel Corp	7,039	5.6
Lykes-Youngstown Corp	4,530	3.6
Wheeling-Pittsburgh Steel Corp	3,730	3.0
Kaiser Steel Corp	2,281	1.8
McLouth Steel Corp	1,904	1.5
CF & I Steel Corp	1,544	1.2
Sharon Steel Corp	1,215	1.0
Interlake, Inc	1,080	0.9
Northwestern Steel & Wire Co	988	0.8
All other	20,750	16.6
Total	124,746	100.0

Source: Metal Statistics, 1978, a publication of American Metal Market.

The 5 largest firms account for almost 60 percent of the total U.S. production of raw steel; the 10 largest firms account for about 80 percent of such production. Of the 10 largest firms, Kaiser is the only firm located in the Western States.


ALASKA
HAWAII
FOREIGN
SEATTLE
Spokane
Vancouver
PORTLAND
Salem
Kennewick
WALLA WALLA
Lewiston
Great Falls
Helena
Bismarck
Boise
Pierre
Reno
SACRAMENTO
Stockton
SAN FRANCISCO
Salt Lake City
Cheyenne
Denver
PUERTO RICO
Las Vegas
Wichita
LOS ANGELES
San Diego
ALBUQUERQUE
Oklahoma City
Phoenix
Tucson
FORT WORTH
Dallas
El Paso
EAST COAST
Victoria
Corpus Christi
Principal Islands of HAWAII
SCALE 1:7,500,000
HONOLULU
WEST COAST
ANCHORAGE
ARCTIC CIRCLE
ALASKA
SCALE 1:17,000,000
PACIFIC OCEAN


LAKE SUPERIOR
LAKE MICHIGAN
LAKE ERIE
ATLANTIC OCEAN
Duluth
Sault Ste Marie
Taylors Falls
Minneapolis
ST PAUL
Milwaukee
DETROIT
BUFFALO
Oswego
Three Rivers
Albany
Waterford
WALTHAM
Boston
Portland
Whitehall
New Haven
NEW YORK
Trenton
PHILADELPHIA
BALTIMORE
Washington
Dubuque
Davenport
ROCK ISLAND
Cleveland
Pittsburgh
Morgantown
Columbus
Indianapolis
Hannibal
KANSAS CITY
HUNTINGTON
Charleston
Richmond
NORFOLK
Louisville
Knoxville
NASHVILLE
Chattanooga
Catoosa
Ft Smith
LITTLE ROCK
WILMINGTON
Atlanta
Birmingham
Camden
Wetumpka
Columbus
Montgomery
CHARLESTON
SAVANNAH
Bainbridge
JACKSONVILLE
MOBILE
Panama City
Carrabelle
Apalachicola
Beaumont
Houston
GALVESTON
Tampa
Miami
Key West
FOREIGN
PUERTO RICO
HAWAII
WEST COAST
Albers Equal Area Projection
SCALE 1:7,500,000
MILES
KILOMETERS
IRON AND STEEL PRODUCTS FLOW
SHORT TONS
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
20,000-99,999
5,000-19,999
1,000-4,999
Local flow
Flows less than 1,000 short tons are not shown
PRODUCTION BY STATES
SHORT TONS
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
STATE GROUP TOTAL PRODUCTION
1 5,870,000
2 5,403,000
3 4,109,000
4 5,079,000
5 4,431,000

Minimills, although representing only a small portion of total U.S. steel output, have become increasingly important in recent years. These companies generally operate electric furnaces and are therefore dependent upon scrap. They usually specialize in a narrow product range; often they produce only reinforcing bars. Since they are inflexible in terms of their dependence on scrap, changes in the price and availability of scrap has almost an immediate effect on the profit margins of these firms.

During 1968-78, employment in the U.S. steel industry, except for the boom years of 1973 and 1974, has generally declined from 421,000 production workers in 1968 to 337,000 in 1977. In 1978 employment edged upward to 339,000 employees. Similarly, the number of all employees engaged in the production and sale of iron and steel products declined from 552,000 in 1968 to 449,200 in 1978. During the same 11-year period, average wage costs (including fringe benefits) more than doubled from slightly more than $5.00 per hour in 1968 to more than $11.00 per hour in 1978.

Number of persons employed in U.S. steel mills:
Production workers and all employees, 1968-78

Year	Production workers	All employees
1968	421,000	552,000
1969	415,000	544,000
1970	403,000	531,000
1971	367,000	487,000
1972	364,000	478,000
1973	393,000	509,000
1974	393,000	512,000
1975	340,000	457,000
1976	339,000	454,000
1977	337,400	452,400
1978	339,200	449,200

Source: Annual Statistical Report, American Iron and Steel Institute.

The profit experience of the U.S. steel industry has been less than that for all manufacturing during the past decade. Net income as a percentage of sales for the U.S. steel industry has ranged from 0.1 percent in 1977 to 6.5 percent in 1974. It was 4.7 percent in 1975 and 3.6 percent in 1976. Industry's profits in 1978 increased to 2.8 percent. As a result of poor earnings, the steel industry has been unable to attract the necessary capital to build greenfield plants and to modernize existing facilities on the scale which seems necessary for the decade ahead.

Profits of the European and Japanese steel producers have been traditionally lower than U.S. producers. In 1977, 10 of the 14 major European steel producers sustained losses while Japanese producers showed extremely small profits, ranging from 0.4 to 0.8 percent (table 106). Government owned steel producers in the United Kingdom and Italy suffered staggering losses.

Increased costs, lower prices, and low levels of capacity utilization explain, in part, the poor profit performance of the European and Japanese steel producers. These factors have caused foreign producers to increasingly turn to the U.S. market to sustain an acceptable level of capacity utilization and to keep workers employed even at the cost of maintaining profitability.

World trade in steel mill products has grown from about 13 percent of world steel production in the late 1950's to about 25 percent of current world output. Japan has been by far the world's largest steel exporter. In 1976, Japan exported almost 40 million tons of steel mill products, considerably more than twice the amount of its closest rival, West Germany. During 1960-77, Japan and EEC countries supplied 75 to 88 percent of annual U.S. imports. Japan alone supplied more than half of total U.S. imports in 1975-77. The United States is by far the world's largest importer; in 1978, imports totaled 21.1 million tons, the highest tonnage ever recorded. In 1978, imports supplied more than 18 percent of total apparent U.S. consumption. Until 1959, the United States was a net exporter of steel mill products; however, fueled by the 116-day steel strike of that year, imports more than doubled and outpaced exports by about 2.7 million tons. The following table shows the tonnages exported and imported since 1955.

Steel mill products: U.S. imports for consumption and exports of domestic merchandise, 1956-1978

Year	Imports	Exports	Ratio of imports to apparent consumption
	Million tons	Million tons	Percent
1956	1.3	4.3	1.7
1957	1.2	5.3	1.5
1958	1.7	2.8	2.9
1959	4.4	1.7	6.1
1960	3.4	3.0	4.7
1961	3.2	2.0	4.7
1962	4.1	2.0	5.6
1963	5.4	2.2	6.9
1964	6.4	3.4	7.3
1965	10.4	2.5	10.3
1966	10.8	1.7	10.9
1967	11.5	1.7	12.2
1968	18.0	2.2	16.7
1969	14.0	5.2	13.7
1970	13.4	7.1	13.8
1971	18.3	2.8	17.9
1972	17.7	2.9	16.6
1973	15.2	4.1	12.4
1974	16.0	5.8	13.4
1975	12.0	3.0	13.5
1976	14.3	2.7	14.1
1977	19.3	2.0	17.8
1978	21.1	2.4	18.1

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

From 1959 to 1968, the imbalance of imports over exports grew at a rapid pace amounting to 15.8 million tons in 1968. After 1968, the imbalance declined somewhat in 1969 and 1970 but has remained at rather high levels throughout the 1970's. In 1977, U.S. imports exceeded exports by 17.3 million tons; in 1978 imports exceeds exports by 18.7 million tons, the largest ammount ever.

Since 1968, the quantity imported has ranged from a low of 12.0 million tons during the recession year of 1975 to a high of 21.1 million tons in 1978; on the other hand, exports during the same 11-year period were highest in 1970 (7.1 million tons) and lowest in 1977 (2.0 million tons). In 1978, exports amounted to 2.4 million tons.

In recent years, flat-rolled products (plates, sheets and strip, and tin mill products) have accounted for about 55 percent of the total quantity of imports, pipe and tubes about 14 percent, angles, shapes, and sections about 9 percent, wire rods about 6 percent, and bars about 6 percent .

From 1974 to 1977, the quantities of steel mill articles exported decreased annually, reaching an alltime low of only 2.0 million tons in 1977. Exports rebounded to 2.4 million tons in 1978. Canada has been the largest single market for domestically produced steel mill products. Countries of Latin America have also been important markets. Canada and Latin American countries together have accounted for more than one-half of all U.S. exports of steel mill products. Only negligible tonnages of steel mill products have been exported to Japan.

Appendix C

Statistical Tables

Table 1.--Western producers and carbon steel mill products produced in their establishments in 1978.

Type of mill and producer	Ingots and semifinished products	Tin mill products sheets & strip	Plates	Deformed re-bar	Bar-size shapes	Other bars	Wire rod	Wire	Angles, shapes and sections	Pipes and Tubes	Rails, joint-bars and tie plates	Nails	Barbed wire	Pre-stressed strand	Total number of products
Integrated:															
CF&I Steel Corp., Pueblo, Co	X		X	X	X	X	X	X	X	X	X	X	X	X	13
Kaiser Steel Corp., Fontana, Ca	X	X	X			X			X	X					6
United States Steel Corp., Geneva, Utah; Torrance, Ca; Pittsburg, Ca	X	X	X		X	X	X	X	X	X	1/	X			11
Other:															
Bethlehem Steel Corp., Los Angeles, Ca Seattle, Wash 2/	X		X	X	X	X	X	X	X		1/				9
Minimills:															
Ameron-Steel & Wire Div., Etiwanda, Ca 3/	X			X			X	X							4
Cascade Steel Rolling Mills, McMinnville, Or	X			X	X	X									4
Gilmore Steel Corp., Portland, Or	X		X												2
Judson Steel Corp., Emeryville, Ca	X			X		X									3
Marathon Steel Co., Tempe, Ariz	X			X											2
Northwest Steel Rolling Mills, Kent, Wash	X			X	X										3
Pacific States Steel Corp., Union City, Ca 4/	X			X	X	X			X						5
Soule' Steel Corp., Carson, Ca	X			X											2
Fabricators:															
Armor Rolling Mill, San Bernadino, Ca 5/				X											1
Bliss & Laughlin Steel, Los Angeles, Ca						X		X							2
California Steel & Tube Co., City of Industry, Ca									X	X					2

Table 1.--Western producers and carbon steel mill products produced in their establishments in 1978--(Continued)

Type of mill and producer	Ingots and semifinished products	Tin mill products sheets & strip	Plates	Deformed re-bar	Bar-size shapes	Other bars	Wire rod	Wire	Angles, shapes and sections	Pipes and Tubes	Rails, joint-bars and tie plates	Nails	Barbed wire	Pre-stressed strand	Total number of products
Torrance Tubing & Conduit Co., (formerly Cyprus Tubing & Conduit Co.) Torrance Ca								X							1
Davis Walker Corp., Los Angeles, Ca; Hayward, Ca; City of Industry, Ca; Riverside, Ca; Kent, Wash								X					X		2
Bernard Epps & Co., Los Angeles, Ca										X					1
Harris Tube Division, Los Angeles, Ca										X					1
Industrial Wire Products Corp., Los Angeles, Ca						X		X							2
Johnson Steel & Wire Co., Los Angeles, Ca 6/								X							1
Kimberley Steel, Pomona, Ca 7/				X											1
National Standard Co., Los Angeles, Ca								X							1
Republic Steel Corp., Los Angeles, Ca					X										1
Southwest Wire Corp., Los Angeles, Ca								X							1
Western Tube & Conduit Corp., Oakland, Ca										X					1
Total number of producers 8/	12	2	5	11	7	9	4	10	6	8	3	2	2	1	

1/ U.S. Steel Corp and Bethlehem Steel Corp. do not produce rails.
2/ While Bethlehem is integrated nationally, its western operations are not integrated.
3/ Billets produced by joint venture company.
4/ Discontinued operations in August 1978.
5/ Believed to have discontinued operations in 1978.
6/ Discontinued operations on September 1, 1978.
7/ Did not operate continuously during the year.
8/ In addition to the producers indicated, Tree Island Steel began limited production of certain wire products at its new Los Angeles, Calif. facility in late 1978.

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

Note.--Mills identified as producers of ingots and semifinished products operate steelmaking furnaces.

Table 2.--Shipments of the 4 largest western producers of each category of carbon steel mill products and their shares of total shipments of western producers within the Western States, of shipments of both eastern and western producers in the Western States, and of apparent consumption in the Western States, and shipments and apparent consumption in the Western States, 1978

Item	Total of reporting firms	Shipments of the 4 largest producers	Share of shipments of western producers within the Western States	Share of both eastern and western shipments in the Western States	Share of apparent consumption in the Western States	Shipments of western producers within the Western States	Shipments of both eastern and western producers in the Western States	Apparent consumption in the Western States
		Short tons	Percent	Percent	Percent	Short tons	Short tons	Short tons
Basic steel mill products 1/	23	3,486,521	77	63	36	4,563,000	5,492,000	9,614,000
Ingots and semifinished products	5	68,909	100	100	100	69,000	69,000	69,000
Tin mill products, plates, sheets, and strip	5	2,339,754	100	88	46	2,340,865	2,664,000	5,060,000
Deformed reinforcing bars	9	388,325	62	57	54	625,000	682,000	716,000
Bar-size shapes	6	65,081	97	56	32	67,000	116,000	202,000
Other bars	8	149,725	94	85	46	159,000	177,000	328,000
Wire rod	4	225,553	100	99	51	226,000	227,000	439,000
Wire	10	216,081	85	83	69	254,000	260,000	314,000
Angles, shapes, and sections; rails, joint bars, and tie plates	5	416,719	99	72	40	420,000	575,000	1,032,000
Pipes and tubes	8	288,890	72	40	20	402,000	721,000	1,452,000
Nails, barbed wire, and prestressed strand	2/ 3	52,000	100	84	28	52,000	62,000	186,000

1/ The term "basic steel mill products" covers the products listed below, except nails, barbed wire, and prestressed strand.
2/ Where there were less than 4 reporting firms, the total number of reporting firms was used.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; import data used to calculate apparent consumption was compiled from official statistics of the Department of Commerce.

Table 3.--Carbon steel: Capacity 1/ of steel-producing establishments located in the 10 Western States to melt carbon steel and to produce carbon steel mill products, 1972-78

(In thousands of short tons)

Item	1972	1973	1974	1975	1976	1977	1978
Capacity to melt carbon steel	9,476	10,115	9,957	10,263	10,447	10,510	10,147
Capacity to produce--							
Plates, sheets, and strips, (including tin mill products)	3,582	3,587	3,470	3,516	3,515	3,546	3,525
Bars:							
Deformed rebars	1,557	1,467	1,448	1,515	1,579	1,659	1,439
Other bars (including bar-size shapes)	543	571	564	548	568	534	373
Wire rods	587	718	716	719	716	716	739
Wire	639	721	778	797	797	800	753
Angles, shapes, and sections; rails, joint bars, and tie plates	1,561	1,592	1,578	1,568	1,556	1,502	1,515
Pipes and tubes	808	814	820	827	827	858	883
Total	9,277	9,470	9,374	9,492	9,558	9,615	9,227

1/ Maximum sustainable output reflecting a firm's product mix during each of the years indicated.

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

Table 4.--Steel mill products of carbon steel: 1/ Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	5,166	139	814	4,213	990	3,178	8,381	12	38
1973	6,784	478	953	5,353	1,189	2,707	9,249	13	29
1974	6,149	451	705	4,993	1,380	4,201	10,574	13	40
1975	4,862	397	533	3,932	904	2,229	7,065	13	32
1976	4,923	209	524	4,190	743	2,725	7,658	10	36
1977	5,223	157	613	4,453	872	3,124	8,449	10	37
1978	5,472	297	612	4,563	929	4,122	9,614	10	43
	Value								
1972	1,000,889	27,913	134,784	838,192	209,653	466,547	1,514,392	14	31
1973	1,376,171	86,063	173,811	1,116,297	284,447	466,201	1,866,945	15	25
1974	1,825,166	134,963	203,231	1,486,972	429,008	1,164,760	3,080,740	14	38
1975	1,691,004	180,838	196,166	1,314,000	346,076	715,948	2,376,024	15	30
1976	1,628,817	71,875	179,719	1,377,223	295,533	678,497	2,351,253	13	29
1977	1,809,001	63,062	236,290	1,509,649	379,143	830,026	2,718,818	14	31
1978	2,094,221	89,675	260,980	1,743,565	436,806	1,216,541	3,396,912	13	36

1/ Excluding nails, barbed wire, and prestressed strand.

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 5.--Ingots and semifinished products 1/ of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	46	11	1	34	14	2	50	28	4
1973	177	131	2	44	9	2/	53	17	0
1974	121	43	4	74	12	1	87	14	1
1975	106	55	2	49	13	1	63	21	2
1976	38	6	2/	32	6	2	40	15	5
1977	50	9	1	40	4	0	44	9	0
1978	124	53	2	69	2/	2/	69	3/	3/
	Value								
1972	5,284	825	83	4,376	2,360	207	6,943	34	3
1973	22,048	15,148	305	6,595	1,475	35	8,105	18	0
1974	21,477	6,636	756	14,085	2,910	173	17,168	17	1
1975	20,335	9,311	474	10,550	3,753	442	14,745	25	3
1976	8,848	950	106	7,792	1,814	184	9,790	19	2
1977	11,257	1,816	306	9,135	856	0	9,991	9	0
1978	28,554	10,918	471	17,165	177	37	17,379	1	3/ 0

1/ The bulk of ingots and semifinished products are consumed by the mills where they are produced. This table is restricted to actual shipments and therefore does not reflect apparent consumption in terms of total production.

2/ Less than 500 tons.

3/ Less than 0.5 percent.

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 6.--Tin mill products, plates, sheets and strip whether or not coated with metal, of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	2,492	71	302	2,119	478	1,675	4,272	11	39
1973	3,287	192	356	2,739	581	1,446	4,766	12	30
1974	2,635	131	107	2,397	705	2,294	5,396	13	43
1975	2,147	127	36	1,984	334	1,237	3,555	9	35
1976	2,431	69	25	2,337	306	1,543	4,186	7	37
1977	2,446	59	46	2,341	325	1,647	4,313	8	38
1978	2,474	84	49	2,341	323	2,396	5,060	6	47
	Value								
1972	489,453	13,682	35,234	440,537	98,946	254,281	793,764	12	32
1973	669,440	35,914	46,443	587,083	136,423	249,871	973,377	14	26
1974	751,823	37,006	18,409	696,408	218,783	583,703	1,498,894	15	39
1975	705,919	48,814	13,604	643,501	121,186	364,735	1,129,422	11	32
1976	798,088	20,610	7,587	769,891	121,154	383,104	1,274,149	10	30
1977	845,373	19,792	16,559	809,022	137,381	447,034	1,393,437	10	32
1978	965,287	27,031	17,388	920,868	157,290	702,193	1,780,351	9	39

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 7.--Deformed reinforcing bars of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	685	5	27	653	28	68	749	4	9
1973	807	50	26	731	19	16	766	2	2
1974	844	100	30	714	25	77	816	3	9
1975	550	8	31	511	32	53	596	5	9
1976	494	14	13	467	61	64	592	10	11
1977	679	12	24	643	65	31	739	9	4
1978	646	7	14	625	57	34	716	8	5
	Value								
1972	107,033	647	3,673	102,713	3,873	6,415	113,001	3	6
1973	135,774	9,083	3,852	122,839	5,072	2,682	130,593	4	2
1974	235,926	25,232	8,758	201,936	6,105	22,745	230,786	3	10
1975	160,999	1,867	8,544	150,588	8,219	9,688	168,495	5	6
1976	122,003	2,763	2,937	116,303	14,701	9,346	140,350	10	7
1977	160,658	2,861	5,469	152,328	15,863	4,955	173,146	9	3
1978	178,350	1,760	3,995	172,595	13,113	6,423	192,131	7	3

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 8.—Bar-size shapes of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	67	4	9	54	16	92	162	10	57
1973	117	2	17	98	17	55	170	10	32
1974	93	1	11	81	25	139	245	10	57
1975	46	2	6	38	25	33	96	26	34
1976	43	1	7	35	35	39	109	32	36
1977	58	1	5	52	34	73	159	21	46
1978	73	1	5	67	49	86	202	24	43
	Value								
1972	13,912	702	1,596	11,614	3,693	10,740	26,047	14	41
1973	21,101	524	3,124	17,453	4,216	7,346	29,015	15	25
1974	29,663	342	3,283	26,038	8,132	42,341	76,511	11	55
1975	15,344	674	1,431	13,239	8,467	10,280	31,986	26	32
1976	14,039	284	1,663	12,092	10,523	7,719	30,334	35	25
1977	18,710	210	1,037	17,463	10,731	13,271	41,465	26	32
1978	25,242	332	1,418	23,492	15,438	18,878	57,808	27	33

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.—The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 9.--Bars other than deformed reinforcing bars of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	234	5	43	186	25	144	355	7	41
1973	359	21	62	276	25	101	402	6	25
1974	349	22	50	277	25	197	499	5	39
1975	204	8	46	150	23	63	236	10	27
1976	212	8	41	163	15	91	269	6	34
1977	214	8	43	163	14	144	321	4	45
1978	206	9	38	159	18	151	328	5	46
	Value								
1972	46,582	944	7,926	37,712	4,431	19,892	62,035	7	32
1973	74,800	5,113	12,407	57,280	4,917	17,294	79,491	6	22
1974	103,254	6,278	15,885	81,091	6,533	61,953	149,577	4	41
1975	66,699	3,259	13,286	50,154	6,507	20,892	77,553	8	27
1976	65,903	2,560	11,299	52,044	4,379	21,763	78,186	6	28
1977	69,412	2,708	12,291	54,413	4,420	34,435	93,268	5	37
1978	76,117	3,122	11,962	61,033	6,593	42,231	109,857	6	38

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 10.--Wire rod of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	259	6	73	180	4	196	380	1	52
1973	327	12	84	231	9	168	408	2	41
1974	283	3	64	216	18	249	483	4	52
1975	229	2	33	194	3	113	310	1	36
1976	292	2	56	234	1	151	386	1/	39
1977	244	2	49	193	2	163	358	1	46
1978	298	3	69	226	1	212	439	1/	48
	Value								
1972	36,670	780	10,218	25,672	433	21,874	47,979	1	46
1973	49,978	2,086	14,002	33,890	1,397	21,673	56,960	2	38
1974	60,278	693	15,849	43,736	3,838	62,157	109,731	4	57
1975	55,790	463	8,664	46,663	867	29,648	77,178	1	38
1976	70,699	423	14,370	55,906	418	31,444	87,768	1/	36
1977	60,890	454	13,203	47,233	603	34,056	81,892	1	42
1977	79,780	762	19,322	59,696	172	49,121	108,989	1/	45

1/ Less than 0.5 percent.

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 11.--Wire of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	209	3	15	191	7	87	285	2	31
1973	254	5	12	237	10	68	315	3	22
1974	291	5	15	271	16	102	389	4	26
1975	200	6	18	176	12	50	238	5	21
1976	255	11	26	218	9	59	286	3	21
1977	271	13	30	228	7	69	304	2	23
1978	289	10	25	254	6	54	314	2	17
	Value								
1972	50,914	656	3,334	46,924	2,981	17,843	67,748	4	26
1973	65,019	1,337	3,081	60,601	4,773	17,197	82,571	6	21
1974	118,753	2,000	6,339	110,414	8,704	45,048	164,166	5	27
1975	87,882	2,459	7,014	78,409	8,849	23,317	110,575	8	21
1976	104,589	3,542	10,006	91,041	8,341	24,599	123,981	7	20
1977	115,081	4,390	13,245	97,446	7,328	30,772	135,546	5	23
1978	130,775	4,218	11,607	114,950	7,029	26,965	148,944	5	18

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 12.--Angles, shapes and sections, rails, tie plates and joint bars, of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	577	8	152	417	138	385	940	15	41
1973	671	27	141	503	202	310	1,015	20	31
1974	710	63	177	470	208	413	1,091	19	38
1975	619	50	158	411	151	244	806	19	30
1976	606	59	180	367	102	275	744	14	37
1977	602	24	203	375	122	399	896	14	45
1978	578	22	136	420	155	457	1,032	15	44
	Value								
1972	98,552	1,475	24,653	72,424	23,935	51,997	148,356	16	35
1973	120,931	4,994	25,239	90,698	38,344	47,739	176,781	22	27
1974	169,929	15,560	42,171	112,198	45,610	112,773	270,581	17	42
1975	175,212	15,764	41,358	118,090	39,716	68,936	226,742	18	30
1976	178,914	17,428	53,252	108,234	28,524	61,109	197,867	14	31
1977	182,080	4,408	63,240	114,432	35,110	86,088	235,630	15	37
1977	199,245	6,863	47,397	144,985	51,229	115,907	312,121	16	37

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 13.--Pipes and tubes of carbon steel: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	596	26	192	378	280	532	1,190	24	45
1973	784	37	253	494	319	543	1,356	24	40
1974	827	83	247	497	346	729	1,572	22	46
1975	765	139	207	419	311	436	1,166	27	37
1976	555	42	176	337	208	502	1,047	20	48
1977	658	30	211	417	299	596	1,312	23	45
1978	785	109	274	402	319	731	1,452	22	50
	Value								
1972	152,489	8,202	48,067	96,220	69,001	83,298	248,519	28	34
1973	217,080	11,864	65,358	139,858	87,830	102,365	330,053	27	31
1974	334,098	41,217	91,815	201,066	128,393	233,872	563,331	23	42
1975	402,824	98,227	101,791	202,806	148,512	188,009	539,327	28	35
1976	265,734	23,315	78,499	163,920	105,679	139,229	408,828	26	34
1977	345,540	26,423	110,940	208,177	166,851	179,415	554,443	30	32
1978	410,871	34,670	147,420	228,781	185,765	254,787	669,333	28	38

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 14.--Nails, barbed wire, prestressed strand: Producers' shipments, exports, imports, and apparent consumption, 1972-78

(Quantity in thousands of short tons; value in thousands of dollars)

Year	Western producers' shipments				Eastern producers' shipments to Western States	Imports into the Western States	Apparent consumption	Share (percent) of apparent consumption accounted for by eastern producers' shipments	Share (percent) of apparent consumption accounted for by imports
	Total	Exports	To Eastern States	Within Western States					
	Quantity								
1972	88	2	22	64	11	83	158	7	53
1973	87	5	20	62	9	82	153	6	54
1974	81	7	19	55	8	95	158	5	60
1975	68	7	21	40	4	67	111	4	60
1976	70	6	19	45	5	78	128	4	61
1977	75	6	19	50	6	114	170	4	67
1978	78	5	21	52	10	124	186	5	67
	Value								
1972	26,563	1,745	6,189	18,629	2,914	19,138	40,681	7	47
1973	29,805	4,291	6,451	19,063	2,967	21,234	43,264	7	49
1974	40,351	6,375	9,164	24,812	4,025	42,548	71,385	6	60
1975	38,517	6,963	11,922	19,632	2,616	34,405	56,653	5	61
1976	39,326	7,160	9,718	22,448	2,249	28,825	53,522	4	54
1977	42,392	6,512	10,136	25,744	2,953	44,424	73,121	4	61
1978	44,723	3,596	11,783	29,344	5,881	54,849	90,074	7	61

Source: Shipments compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Note.--The import and export statistics in this table are restricted to importations and exportations through customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 15.--Carbon steel mill products: U.S. exports through Western ports, by principal markets, 1972-78

Market	1972	1973	1974	1975	1976	1977	1978
	Quantity (short tons)						
Canada	15,621	65,426	133,587	92,778	46,670	48,791	126,971
Mexico	35,091	45,267	51,775	54,136	64,142	41,775	55,756
Philippines	1,000	6,519	3,684	1,000	2,481	20,083	3,825
Italy	3,336	8,673	13,371	2,004	2,477	10,214	9,302
Taiwan	4,404	14,140	63,458	26,860	45,609	6,219	10,018
Indonesia	1,090	16,240	6,075	17,638	13,966	3,280	4,034
Korea	1/	1,255	11,520	1/	1/	2,268	278
Brazil	3,384	20,083	35,095	14,737	1,141	1,504	2,088
Iran	12,245	1/	1/	45,250	1,278	1,000	324
Singapore	1,764	32,375	29,824	4,301	1,000	1,000	3,837
Argentina	1/	141,294	11,285	28,378	1/	1/	69
Venezuela	1/	22,581	7,071	24,837	2,263	1/	149
South Africa	1/	13,618	1/	1/	1/	1/	0
Pakistan	14,475	18,713	2,240	1,000	1,000	1/	122
South Vietnam	22,660	14,177	5,033	1,000	0	0	0
Spain	0	0	1/	27,540	1/	0	55
Oman	0	0	18,572	29,027	0	0	0
All other	18,982	57,402	58,388	26,192	27,320	21,192	80,580
Total	134,052	477,763	450,978	396,678	209,347	157,326	297,408
	Value (1,000 dollars)						
Canada	4,909	15,371	40,702	39,042	16,405	19,575	28,699
Mexico	6,720	10,405	15,267	17,621	23,099	15,439	24,990
Philippines	2/	1,416	1,697	2/	1,000	4,422	1,520
Italy	461	1,604	3,068	1,000	703	2,955	3,058
Taiwan	1,000	2,610	13,785	8,573	14,853	2,181	3,982
Indonesia	2/	3,416	1,865	10,016	3,785	1,000	1,126
Korea	2/	2/	1,787	1,000	1,000	1,000	231
Brazil	2/	4,749	8,959	6,306	2/	2/	373
Iran	2,095	2/	2/	29,956	1,000	2/	251
Singapore	2/	6,444	9,674	1,687	2/	1,000	2,556
Argentina	2/	15,580	1,626	5,646	2/	2/	64
Venezuela	2/	4,897	3,700	16,125	1,000	2/	391
South Africa	2/	2,182	2/	2/	2/	2/	-
Pakistan	2,174	2,731	2/	2/	2/	2/	19
South Vietnam	4,323	2,447	1,325	2/	-	-	-
Spain	-	-	2/	4,247	2/	-	26
Oman	-	-	8,818	24,622	-	-	-
All other	6,231	12,261	22,690	14,997	9,030	15,490	22,389
Total	27,913	86,063	134,963	180,838	71,875	63,062	89,675
	Unit value (per ton)						
Canada	$314	$235	$305	$421	$352	$401	226
Mexico	192	230	295	325	360	370	448
Philippines	244	217	461	519	314	220	397
Italy	138	185	229	379	284	289	329
Taiwan	169	185	217	319	326	351	397
Indonesia	253	210	307	568	271	271	279
Korea	385	249	155	2,140	1,179	396	833
Brazil	183	236	255	428	339	241	179
Iran	171	136	490	662	530	509	773
Singapore	195	199	324	392	329	779	666
Argentina	160	110	144	199	519	382	920
Venezuela	2,580	215	523	649	292	1,374	2,624
South Africa	1,806	160	238	753	995	778	-
Pakistan	150	146	275	176	141	260	158
South Vietnam	191	173	263	443	-	-	-
Spain	-	-	445	154	742	-	472
Oman	-	-	475	848	-	-	-
All other	328	214	389	573	330	731	278
Average	208	180	299	456	343	401	302

1/ Less than 500 tons.
2/ Less than $500.

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

Table 16.--Steel mill products: Percentage distribution of exports from the United States and the Western States, by products, 1972-78

	1972		1973		1974	
	Total U.S. exports	Total Western States exports	Total U.S. exports	Total Western States exports	Total U.S. exports	Total Western States exports
Ingots and semifinished products	15	8	14	27	14	10
Tin mill products	17	44	19	14	14	13
Plates	3	1	8	8	8	8
Sheets and strip	31	7	23	18	26	8
Bars:						
Deformed re-bars	1	3	4	11	6	21
Other bars	4	3	4	4	5	5
Bar-size shapes	1	3	1/	1/	1	1/
Wire rods	4	4	2	3	1	1
Wire	1	2	1	1	1	1
Angles, shapes, and sections	4	4	7	4	6	9
Rails, joint bars, and tie plates	4	2	3	2	2	5
Pipes and tubes	15	19	15	8	16	19
Total	100	100	100	100	100	100

	1975		1976		1977		1978	
	Total U.S. exports	Total Western States exports	Total U.S. exports	Total Western States exports	Total U.S. exports	Total Western States exports	Total U.S. exports	Total Western States exports
Ingots and semifinished products	12	13	11	3	14	6	7	18
Tin mill products	12	11	22	24	25	32	29	19
Plates	8	14	3	3	3	1	6	2
Sheets and strip	9	8	18	5	12	3	10	8
Bars:								
Deformed re-bars	3	2	4	7	4	8	6	2
Other bars	4	2	4	4	5	5	3	3
Bar-size shapes	1	1/	1	1	1/	1	1	1/
Wire rods	2	1	4	1	4	2	1	1
Wire	1	2	2	5	2	8	1	3
Angles, shapes, and sections	6	2	4	3	5	4	5	5
Rails, joint bars, and tie plates	7	11	7	24	4	11	6	2
Pipes and tubes	35	34	20	20	22	19	25	37
Total	100	100	100	100	100	100	100	100

1/ Less than 0.5 percent.

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

Table 17.--Carbon steel mill products: U.S. exports from Western States, by ports, 1972-78

Port	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Seattle, Wash	14	64	133	77	34	46	51
San Diego, Calif	34	44	46	51	58	40	54
San Francisco, Calif	43	84	107	147	74	37	45
Los Angeles, Calif	36	271	100	76	16	14	67
Great Falls, Mont	5	8	16	23	14	14	77
Portland, Oreg	1/	4	44	20	7	5	3
Nogales, Ariz	1	1	4	3	6	1	2
Total	134	478	451	397	209	157	299
	Percent of total						
Seattle, Wash	10	13	29	20	16	29	17
San Diego, Calif	25	9	10	13	28	26	18
San Francisco, Calif	32	18	24	36	35	24	15
Los Angeles, Calif	27	57	22	19	8	9	23
Great Falls, Mont	4	2	4	6	7	9	26
Portland, Oreg	2/	1	10	5	3	3	1
Nogales, Ariz	1	2/	1	1	3	1	1
Total	100	100	100	100	100	100	100

1/ Less than 500 tons.
2/ Less than 0.5 percent.

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

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

Table 18.--Carbon steel mill products: Inventories held by producers in the Western States, by products, Dec. 31 of 1971-78

(In short tons)

Product	As of Dec. 31--							
	1971	1972	1973	1974	1975	1976	1977	1978
Ingots and semifinished products	308,819	341,829	322,610	319,070	279,920	280,485	195,289	275,429
Tin mill products; plates; and sheets and strip	519,951,	588,786	296,727	222,713	338,413	374,483	365,441	310,360
Bars:								
Deformed reinforcing bars	140,114	129,189	84,638	118,159	120,160	127,917	56,438	97,477
Bar size shapes	67,204	72,743	39,473	39,566	61,793	68,707	24,504	27,025
Other bars	1/	7,919	1/	2,857	7,818	7,637	1/	16,486
Wire rods	1/	19,190	1/	21,452	16,447	13,870	1/	28,473
Wire	12,744	19,320	12,947	22,250	21,473	23,036	20,749	25,512
Angles, shapes, and sections; rails; and joint bars and tie plates	89,067	57,770	26,548	20,137	46,260	55,104	25,386	23,186
Pipes and tubes	128,199	142,591	54,979	50,040	57,217	63,669	84,476	63,343
Total	1,282,260	1,379,337	857,787	816,244	949,501	1,014,908	800,113	867,291
Carbon steel manufactured products:								
Nails, barbed wire, and prestressed strand	9,971	6,724	2,913	2,037	8,171	6,716	3,449	7,072

1/ Withheld to avoid the disclosure of individual company confidential data.

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

Table 19.--Carbon steel mill products: Inventories held by importers in the Western States, by products, Dec. 31 of 1971-78

(In short tons)

Product	As of Dec. 31--							
	1971	1972	1973	1974	1975	1976	1977	1978
Ingots and semifinished products	0	0	0	0	0	0	0	690
Tin mill products; plates; and sheets and strip	18,038	38,078	26,226	111,722	85,452	80,758	98,746	137,806
Bars:								
Deformed reinforcing bars	7,655	8,428	2,174	13,193	4,103	2,916	2,203	2,155
Bar size shapes	4,745	5,620	1,900	8,288	4,606	3,404	2,462	4,166
Other bars	1/	1/	1/	1/	1/	1/	1/	18,453
Wire rods	1/	1/	1/	1/	1/	1/	1/	1/
Wire	8,198	2,428	1,066	3,170	16,330	5,874	4,263	1/
Angles, shapes, and sections; rails; and joint bars and tie plates	9,827	24,064	18,077	28,067	82,620	69,015	67,310	67,422
Pipes and tubes	9,901	17,940	19,972	43,695	59,746	59,447	52,488	83,002
Total	61,017	100,318	71,165	220,061	277,112	238,452	243,024	323,574
Carbon steel manufactured products:								
Nails, barbed wire, and prestressed strand	965	734	3,010	4,081	5,626	4,774	5,091	8,695

1/ Withheld to avoid the disclosure of individual company confidential data.

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

Table 20.--Average number of persons employed in U.S. and western establishments in which carbon steel mill products 1/ were produced, all employees and production and related workers, 1972-78

Year	All employees		Production and related workers	
	Total	Western States	Total	Western States
1972	478,400	22,600	364,100	18,800
1973	508,600	25,200	392,900	21,000
1974	512,400	26,000	393,200	21,400
1975	457,200	23,900	339,900	19,500
1976	454,100	23,200	339,000	18,900
1977	452,400	23,200	337,400	19,000
1978	449,200	23,300	339,200	19,000

1/ Does not include nails, barbed wire, and prestressed strand.

Source: Totals compiled from American Iron and Steel Institute, Annual Statistical Report, 1978; data for Western States compiled from responses to questionnaires of the U.S. International Trade Commission.

Table 21.--Man-hours expended by production and related workers in establishments located in the Western States in which carbon steel mill products were produced, 1972-78

(In thousands of man-hours)

Item	1972	1973	1974	1975	1976	1977	1978
Production and related workers employed on--							
Carbon steel mill products 1/	37,595	42,415	43,633	38,998	38,370	38,813	37,880
Ingots and semifinished products	9,649	11,763	11,897	10,762	10,447	9,693	9,071
Plates, sheets, and strip (including tin mill products)	13,772	13,826	14,145	13,904	14,485	14,329	13,375
Deformed reinforcing bars	3,449	3,883	4,307	3,444	3,251	3,522	3,275
Other bars (including bar-size shapes)	1,377	2,158	2,137	1,246	1,248	1,279	1,601
Wire rods	1,381	1,695	1,377	1,526	1,812	1,320	1,632
Wire	2,214	2,379	2,443	2,129	2,170	2,328	2,739
Angles, shapes, sections, rails, joint bars, and tie plates	2,772	3,597	4,344	3,461	2,692	3,067	3,028
Pipes and tubes	2,981	3,164	2,983	2,526	2,265	3,265	3,159

1/ The term "carbon steel mill products" includes all the following products.

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

Table 22.--Profit-and-loss experience of U.S. carbon steel producers in the Western States on overall establishment operations, 1972-1978

Item and year	Net sales	Cost of goods sold	Gross profit or (loss)	General selling and administrative expenses	Net operating profit or (loss)	Other income and (other expense)	Net profit or (loss)	Ratio of net profit or (loss) to net sales
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	Percent
1972	1,023,683	901,042	122,641	79,211	43,430	(3,676)	39,754	3.9
1973	1,401,072	1,227,757	173,315	84,011	89,304	(2,359)	86,945	6.2
1974	1,851,194	1,552,613	298,581	91,482	207,099	(1,774)	205,325	11.1
1975	1,637,042	1,456,504	180,538	103,680	76,858	(5,804)	71,054	4.3
1976	1,594,706	1,554,804	39,902	103,978	(64,076)	(6,161)	(70,237)	(4.4)
1977	1,726,606	1,678,111	48,495	119,938	(71,443)	(9,638)	(81,081)	(4.7)
1978	2,560,079	2,425,986	134,093	140,762	(6,669)	1,019	(5,650)	(0.2)

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

Table 23.--Profit-and-loss experience of western steel producers, by selected steel mill products, 1972-78

Year	Reinforcing bars		Other bars and bar-size shapes		Wire		Pipes and tubes		Total, all products	
	Net profit or (loss)	Ratio of net profit or (loss) to sales	Net profit or (loss)	Ratio of net profit or (loss) to sales	Net profit	Ratio of net profit to sales	Net profit	Ratio of net profit to sales	Net profit or (loss)	Ratio of net profit or (loss) to sales
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 Dollars	Percent
1972--	3,771	4.4	$2,980	6.1	$4,425	11.3	$8,891	7.7	40	3.9
1973--	5,379	4.8	3,423	4.6	2,987	5.9	20,833	11.7	87	6.2
1974--	42,300	22.8	10,693	9.8	17,033	17.8	63,811	21.8	205	11.1
1975--	10,243	7.7	225	.3	8,378	11.3	76,354	24.6	71	4.3
1976--	(4,300)	(3.9)	(6,001)	(8.9)	5,666	6.8	17,522	8.2	(70)	(4.4)
1977--	(5,431)	(4.3)	(3,742)	(5.4)	4,090	4.5	25,591	11.2	(81)	(4.7)
1978--	542	0.3	2,781	3.2	2,434	2.3	35,439	10.7	(6)	(0.2)

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

Table 24.--Steel mill products: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	2,196	1,927	2,550	1,709	2,163	2,257	2,167
EEC	457	360	714	254	199	393	936
Korea	221	168	655	133	230	222	440
Canada	55	60	95	62	46	63	71
South Africa	12	9	1	2	2	65	166
Australia	104	56	25	33	23	60	92
Taiwan	69	54	72	16	24	33	110
All others	64	70	89	20	38	31	140
Total	3,178	2,704	4,201	2,229	2,725	3,124	4,122
	Value (1,000 dollars)						
Japan	334,129	338,949	722,992	544,743	543,302	618,874	710,748
EEC	60,644	55,933	217,836	81,299	45,362	88,337	223,369
Korea	27,101	25,912	131,269	36,666	50,131	54,116	123,666
Canada	9,257	12,417	31,802	27,969	16,047	22,999	27,886
South Africa	1,130	978	192	636	395	12,783	35,282
Australia	16,369	10,445	7,871	12,058	6,868	16,336	29,937
Taiwan	8,709	9,121	25,724	5,103	5,915	8,316	27,771
All others	9,028	12,446	27,074	7,024	10,476	8,265	37,882
Total	466,547	466,201	1,164,160	715,498	678,496	830,026	1,216,541
	Unit price (per ton) 1/						
Japan	$152	$176	$283	$319	$251	$274	$328
EEC	133	155	305	320	227	225	239
Korea	123	154	200	275	218	243	281
Canada	170	208	335	448	348	365	390
South Africa	107	104	330	396	257	197	213
Australia	157	186	313	374	299	272	324
Taiwan	126	168	360	316	244	254	253
All others	141	178	304	351	276	267	271
Total	147	172	277	321	249	266	295

1/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 25.--Carbon steel mill products: Imports into the Western States, by product groupings, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Ingots and semifinished products	1	2/	1	1	2	-	2/
Tin mill products	538	518	582	450	503	557	729
Plates	272	240	620	313	322	272	449
Sheets and strip	864	687	1,092	474	718	818	1,218
Deformed concrete reinforcing bar	69	16	77	53	63	31	34
Bar size shapes	91	55	139	33	39	73	86
Bars	144	101	197	63	91	144	151
Wire rod	196	168	249	113	151	163	212
Wire	87	68	102	50	59	69	54
Angles, shapes and sections	380	305	404	239	265	363	434
Rails, joint bars, and tie plates	4	4	9	5	10	36	23
Pipes and tubes	532	543	729	436	502	596	731
Total	3,178	2,705	4,201	2,230	2,725	3,122	4,121
Nails	46,917	43,638	49,598	36,002	54,535	88,777	96,035
Barbed wire	7,419	7,580	10,114	3,815	4,623	4,272	3,712
Prestressed strand	28,965	29,672	34,417	26,785	14,498	2,105	24,434
	Value (1,000 dollars)						
Ingots and semifinished products	207	35	173	442	184	-	37
Tin mill products	101,857	109,748	185,353	168,146	158,966	187,167	279,895
Plates	36,855	36,606	154,360	82,944	66,159	60,341	106,986
Sheets and strip	115,569	103,787	243,985	113,645	157,979	199,526	315,312
Deformed concrete reinforcing bar	6,415	2,682	22,745	9,689	9,345	4,955	6,423
Bar size shapes	10,740	7,346	42,341	10,280	7,719	13,271	18,878
Bars	19,892	17,294	61,953	20,892	21,763	34,435	42,231
Wire rod	21,874	21,673	62,157	29,648	31,444	34,056	49,121
Wire	17,843	17,197	45,048	23,317	24,599	30,772	26,965
Angles, shapes and sections	51,473	47,177	110,922	66,930	58,533	76,209	108,881
Rails, joint bars, and tie plates	524	562	1,851	2,006	2,576	9,879	7,026
Pipes and tubes	83,298	102,365	233,872	188,009	139,229	179,415	254,787
Total	466,547	466,202	1,164,766	715,948	678,496	830,026	1,216,542
Nails	10,160	11,218	22,494	15,256	19,826	34,382	41,217
Barbed wire	1,516	1,714	4,748	1,782	1,494	1,391	1,486
Prestressed strand	7,542	8,302	15,187	17,369	7,504	8,616	12,146

1/ The import statistics in this table are restricted to importation through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.
2/ Less than 500 tons.

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

Table 26.--Carbon steel mill products: Imports into Western States, by port, 1972-78

Port	1972		1973		1974	
	1,000 tons	Percent	1,000 tons	Percent	1,000 tons	Percent
Los Angeles, Calif.	1,875	59	1,576	58	2,449	58
San Francisco, Calif.	587	18	472	18	645	15
Portland, Oregon	438	14	362	13	661	16
Seattle, Wash.	252	8	255	10	391	10
Other	27	1	39	1	55	1
Total	3,179	100	2,704	100	4,201	100

Port	1975		1976		1977	
	1,000 tons	Percent	1,000 tons	Percent	1,000 tons	Percent
Los Angeles, Calif.	1,136	51	1,656	61	1,809	58
San Francisco, Calif.	505	23	449	16	521	17
Portland, Oregon	298	13	344	13	474	15
Seattle, Wash.	263	12	244	9	286	9
Other	27	1	32	1	34	1
Total	2,229	100	2,725	100	3,124	100

Port	1978	
	1,000 tons	Percent
Los Angeles, Calif.	2,472	60
San Francisco, Calif.	628	15
Portland, Oregon	600	15
Seattle, Wash.	370	9
Other	52	1
Total	4,122	100

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

Table 27.--Ingots, blooms, billets, slabs, and sheet bars: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	0	0	0	0	2	0	1/
EEC	1	1/	1/	1	0	0	1/
Canada	1/	0	1/	0	0	0	0
Total	1	1/	1	1	2	-	1/
	Value (1,000 dollars)						
Japan	-	-	-	-	184	-	3
EEC	197	35	148	442	-	-	28
Canada	10	-	25	-	-	-	-
Total	207	35	173	442	184	-	37
	Unit price (per ton) 2/						
Japan	-	-	-	-	$113	-	102
EEC	$132	$145	$352	$412	-	-	227
Canada	-	-	153	-	-	-	-
Average	138	145	295	412	113	-	221

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 28.--Tin mill products: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	434	407	441	398	454	464	511
EEC	24	45	98	31	12	20	55
Korea	1/	6	0	0	1/	1/	21
Canada	1/	0	1	1/	1	1	1/
South Africa	0	0	0	0	0	14	33
Australia	62	32	22	11	19	47	67
Taiwan	1/	3	2	0	1	1/	1
All others	18	25	18	10	16	11	41
Total	538	518	582	450	503	557	729
	Value (1,000 dollars)						
Japan	85,025	89,084	139,302	149,221	143,867	160,063	208,880
EEC	3,932	7,791	32,934	11,436	3,341	6,163	18,465
Korea	38	1,152	-	-	21	68	7,130
Canada	17	-	1	110	153	305	121
South Africa	-	-	-	-	-	3,534	9,341
Australia	9,989	6,539	6,488	3,841	5,812	13,271	22,378
Taiwan	60	768	510	-	205	39	443
All others	2,796	4,144	6,118	3,538	5,567	3,724	13,637
Total	101,857	109,478	185,353	168,146	158,966	187,167	279,895
	Unit price (per ton) 2/						
Japan	$196	$219	$316	$375	$317	$345	$407
EEC	161	172	337	374	278	309	337
Korea	167	180	-	-	413	334	334
Canada	288	-	389	333	281	269	381
South Africa	-	-	-	-	-	260	280
Australia	161	201	302	352	308	283	334
Taiwan	178	223	316	-	318	347	369
All others	155	166	340	354	348	338	333
Average	189	211	318	373	316	366	384

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 29.--Sheets and strip: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	660	577	668	395	577	588	586
EEC	62	35	128	45	40	130	395
Korea	133	70	291	32	92	85	176
Canada	3	2	3	1	1/	1/	1
South Africa	1/	1/	0	0	0	10	30
Australia	1/	0	1/	1/	1/	1	1
Taiwan	0	0	0	0	1	1/	1/
All others	6	3	2	1	8	4	29
Total	864	687	1,092	474	718	818	1,218
	Value (1,000 dollars)						
Japan	89,617	87,927	159,151	94,411	128,688	149,847	170,044
EEC	7,565	5,324	35,645	10,277	8,362	27,633	87,116
Korea	17,136	9,412	47,541	8,189	18,772	18,647	45,373
Canada	467	480	731	413	119	157	370
South Africa	14	32	-	-	-	1,866	5,481
Australia	35	-	8	4	1	273	289
Taiwan	-	-	-	-	243	2	4
All others	735	612	909	351	1,794	1,101	6,635
Total	115,569	103,787	243,985	113,645	157,979	199,526	315,312
	Unit price (per ton) 2/						
Japan	$136	$152	$238	$239	$223	$255	$290
EEC	122	153	279	228	210	213	220
Korea	128	134	164	252	204	220	258
Canada	168	298	274	329	281	336	297
South Africa	116	131	-	-	-	193	185
Australia	131	-	383	718	414	181	292
Taiwan	-	-	-	-	223	285	250
All others	122	204	454	351	224	275	229
Average	134	151	223	240	220	244	259

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 30.--Plates: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	213	199	311	244	259	162	53
EEC	21	15	106	43	36	72	265
Korea	21	21	188	21	25	18	39
Canada	4	1	9	3	1	1	1
South Africa	2	2	0	1	0	16	28
Australia	1/	0	1/	1/	0	0	0
Taiwan	1/	0	0	1/	1/	1	48
All others	11	2	6	1	1	2	15
Total	272	240	620	313	322	272	449
	Value (1,000 dollars)						
Japan	29,213	30,968	88,076	66,386	55,961	38,112	14,688
EEC	2,714	2,037	35,934	10,529	4,848	14,875	62,190
Korea	2,554	2,793	25,403	4,493	4,728	3,463	9,697
Canada	613	201	2,771	950	508	373	479
South Africa	235	270	-	248	-	2,933	5,524
Australia	24	-	8	1	-	-	-
Taiwan	50	-	-	56	24	218	11,457
All others	1,452	337	2,168	281	90	367	2,951
Total	36,855	36,606	154,360	82,944	66,159	60,341	106,986
	Unit price (per ton) 2/						
Japan	$137	$156	$283	$271	$216	$235	$277
EEC	130	138	339	246	135	207	235
Korea	123	134	135	215	189	197	250
Canada	165	203	313	313	275	260	329
South Africa	113	144	-	365	-	181	199
Australia	126	-	379	288	-	-	-
Taiwan	114	-	-	320	235	205	236
All others	132	168	361	281	90	184	197
Average	135	152	249	265	205	221	238

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 31.--Deformed concrete reinforcing bars: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	3	4	54	39	46	29	22
EEC	1	4	13	1/	1/	1/	1/
Korea	45	5	1	11	17	2	8
Canada	1/	1/	1	0	0	1/	1/
Australia	0	0	1/	0	0	0	0
Taiwan	19	1/	0	3	0	0	2
All others	1	3	8	0	0	0	2
Total	69	16	77	53	63	31	34
	Value (1,000 dollars)						
Japan	358	789	16,390	7,206	6,686	4,606	4,109
EEC	83	847	3,842	179	25	22	23
Korea	4,189	474	294	1,752	2,634	324	1,395
Canada	41	28	264	-	-	3	2
Australia	-	-	18	-	-	-	-
Taiwan	1,707	41	-	552	-	-	317
All others	37	503	1,937	-	-	-	577
Total	6,415	2,682	22,745	9,689	9,345	4,955	6,423
	Unit price (per ton) 2/						
Japan	$100	$202	$303	$187	$145	$158	$188
EEC	133	242	286	361	312	517	558
Korea	94	97	287	161	151	164	166
Canada	103	106	213	-	-	313	365
Australia	-	-	292	-	-	-	-
Taiwan	89	94	-	206	-	-	164
All others	37	168	242	-	-	-	289
Average	93	173	295	184	147	159	186

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 32.--Bars: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	88	50	130	42	76	123	125
EEC	46	47	49	16	6	11	11
Korea	1	1	6	12	7	5	5
Canada	2	1/	1/	1/	1/	1/	3
South Africa	0	1/	1/	1/	1/	1/	1/
Australia	1/	1/	1/	1/	0	0	1/
Taiwan	1	1/	1/	1	1/	0	1/
All others	6	3	12	2	2	5	7
Total	144	101	197	63	91	144	151
	Value (1,000 dollars)						
Japan	13,010	9,551	41,095	14,756	18,166	29,359	35,432
EEC	5,754	7,114	15,280	4,696	1,598	2,868	2,972
Korea	80	80	2,048	584	1,317	1,065	1,127
Canada	262	56	208	322	20	99	812
South Africa	-	4	37	14	27	6	115
Australia	27	41	14	4	-	-	19
Taiwan	143	2	23	218	26	-	36
All others	616	446	3,248	298	609	1,038	1,718
Total	19,892	17,294	61,953	20,892	21,763	34,435	42,231
	Unit price (per ton) 2/						
Japan	$147	$192	$317	$349	$240	$239	$283
EEC	124	151	314	289	249	253	281
Korea	120	125	328	284	192	195	219
Canada	128	134	350	649	290	256	285
South Africa	-	197	306	333	278	291	298
Australia	224	218	271	336	-	-	268
Taiwan	101	160	451	315	198	-	230
All others	103	149	271	149	304	208	245
Average	138	172	315	333	238	239	280

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 33.--Bar-size shapes: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	47	30	100	21	30	60	64
EEC	33	19	26	5	3	7	8
Korea	2	1/	9	3	4	4	6
Canada	4	2	2	3	1	1	2
Australia	1/	0	1/	1	1/	0	0
Taiwan	4	3	1	1/	1/	1/	3
All others	1	1	1	0	1	1	3
Total	91	55	139	33	39	73	86
	Value (1,000 dollars)						
Japan	5,337	3,991	30,634	6,652	5,564	10,315	13,654
EEC	4,082	2,719	7,991	2,077	937	1,552	1,820
Korea	235	21	2,872	821	878	1,051	1,464
Canada	537	253	372	560	259	292	609
Australia	33	-	2	164	15	-	-
Taiwan	413	300	263	6	44	58	498
All others	103	62	207	-	22	3	833
Total	10,740	7,346	42,341	10,280	7,719	13,271	18,878
	Unit price (per ton) 2/						
Japan	$114	$129	$304	$311	$186	$171	$213
EEC	124	143	310	388	270	218	238
Korea	114	122	320	298	211	227	256
Canada	129	143	172	209	255	257	280
Australia	162	-	227	318	371	-	-
Taiwan	106	118	336	204	166	159	196
All others	103	62	207	-	22	3	278
Average	118	134	304	314	198	181	219

1/ Less than 500 tons.

2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 34.--Angles, shapes, and sections: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	176	141	229	144	215	256	266
EEC	168	120	143	77	45	92	118
Korea	1/	0	14	10	1	1	1
Canada	12	5	4	3	1	1	3
South Africa	10	7	1/	0	0	8	25
Australia	0	0	0	1	1/	1	1/
Taiwan	8	12	2	3	1/	1/	2
All others	6	20	12	1	3	4	19
Total	380	305	404	239	265	363	434
	Value (1,000 dollars)						
Japan	24,391	23,338	63,856	39,620	48,377	54,771	70,204
EEC	22,626	17,329	36,894	21,357	8,878	18,496	27,641
Korea	22	-	4,685	3,013	129	207	192
Canada	1,677	747	1,395	1,025	301	350	1,204
South Africa	1,061	671	1	-	-	1,406	4,715
Australia	-	-	-	417	50	413	162
Taiwan	805	1,365	545	853	7	37	464
All others	891	3,727	3,546	645	791	529	4,299
Total	51,473	47,177	110,922	66,930	58,533	76,209	108,881
	Unit price (per ton) 2/						
Japan	$139	$165	$279	$276	$225	$214	$263
EEC	135	144	258	276	199	201	235
Korea	105	-	325	299	195	228	256
Canada	138	159	356	392	309	372	353
South Africa	106	93	78	-	-	174	190
Australia	-	-	-	307	300	306	334
Taiwan	107	113	350	332	166	187	207
All others	148	186	296	645	264	132	226
Total	135	154	275	280	221	210	251

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 35.--Wire rod: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	122	113	120	96	101	97	86
EEC	68	54	106	11	43	48	66
Korea	0	0	1	1	2	1/	0
Canada	1/	1/	1/	0	1/	1/	1/
South Africa	0	0	0	0	0	15	47
Australia	0	0	2	1	0	0	0
All others	6	1	20	4	5	3	13
Total	196	168	249	113	151	163	212
	Value (1,000 dollars)						
Japan	14,363	14,958	24,690	24,830	21,634	22,147	22,816
EEC	6,892	6,529	30,466	3,637	8,577	8,896	14,139
Korea	-	-	359	81	316	2	-
Canada	2	2/	115	-	2	30	14
South Africa	-	-	-	-	-	2,439	9,208
Australia	-	-	573	481	-	-	-
All others	619	186	5,954	1,069	915	542	2,944
Total	21,874	21,673	62,157	29,648	31,444	34,056	49,121
	Unit price (per ton) 3/						
Japan	$118	$132	$205	$253	$214	$228	$266
EEC	101	122	286	330	201	187	214
Korea	-	-	291	134	142	255	-
Canada	73	430	400	-	727	229	222
South Africa	-	-	-	-	-	160	196
Australia	-	-	340	342	-	-	-
All others	103	186	298	267	183	181	226
Average	111	129	250	263	208	208	232

1/ Less than 500 tons.
2/ Less than $500.
3/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 36.--Pipes and tubes: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	383	357	428	294	356	403	406
EEC	20	8	21	13	4	3	9
Korea	19	65	141	53	80	106	182
Canada	22	40	62	45	34	41	45
South Africa	0	0	1/	1/	1/	1/	1
Australia	41	23	1	19	4	10	24
Taiwan	36	35	68	10	22	31	50
All others	11	15	8	2	2	2	14
Total	532	543	729	436	502	596	731
	Value (1,000 dollars)						
Japan	59,204	67,388	130,388	126,911	97,533	123,229	152,164
EEC	4,063	2,372	8,531	10,860	3,110	2,349	4,005
Korea	2,840	11,942	46,736	17,522	20,945	28,750	56,490
Canada	3,900	8,138	21,258	21,174	10,924	14,013	16,545
South Africa	-	-	90	122	5	6	281
Australia	6,263	3,863	517	7,582	990	2,337	7,088
Taiwan	5,531	6,644	24,375	3,335	5,365	7,962	13,780
All others	1,497	2,018	1,977	503	357	769	4,434
Total	83,298	102,365	233,872	188,009	139,229	179,415	254,787
	Unit price (per ton) 2/						
Japan	$155	$189	$305	$432	$274	$306	$375
EEC	205	289	399	819	867	832	448
Korea	150	184	331	331	260	272	310
Canada	177	201	338	482	322	345	370
South Africa	-	-	365	515	418	502	332
Australia	151	165	428	396	256	233	299
Taiwan	153	186	361	338	244	257	276
All others	136	134	247	252	178	384	317
Average	157	189	321	431	278	301	349

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 37.--Rails, joint bars, and tie plates: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (short tons)						
Japan	1	1/	0	1	9	29	20
EEC	2	3	5	3	1/	1	3
Canada	1/	1/	3	1/	1/	5	1/
All others	0	1	0	0	0	0	0
Total 2/	4	4	9	5	10	36	23
	Value (1,000 dollars)						
Japan	155	8	-	383	2,383	7,749	6,001
EEC	362	430	1,557	1,542	179	472	960
Canada	5	13	293	42	9	1,650	9
All others	-	111	-	-	-	-	-
Total 2/	524	562	1,851	2,006	2,576	9,879	7,026
	Unit price (per ton) 3/						
Japan	$132	$140	-	$305	$269	$269	$294
EEC	140	163	$274	436	294	285	343
Canada	99	91	96	121	193	315	190
All others	-	111	-	-	-	-	-
Average	138	161	212	379	270	276	300

1/ Less than 500 tons.
2/ Because of rounding figures may not add to the total shown
3/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 38.--Wire: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (1,000 short tons)						
Japan	69	46	68	34	39	44	27
EEC	9	11	18	7	10	9	7
Korea	1/	1/	3	1	1	1	2
Canada	7	9	9	6	7	12	15
South Africa	0	1/	1/	1	1	2	2
Australia	0	1/	1	1/	0	0	0
Taiwan	0	0	1/	1/	0	0	1/
All others	2	2	3	1	1	1	1
Total	87	68	102	50	59	69	54
	Value (1,000 dollars)						
Japan	13,455	10,947	29,410	14,817	14,260	18,677	13,252
EEC	2,374	3,408	8,615	4,265	5,506	5,011	4,010
Korea	8	37	1,330	212	392	539	797
Canada	1,725	2,501	4,156	3,373	3,751	5,728	7,772
South Africa	-	1	63	251	363	593	617
Australia	-	2	245	15	-	-	-
Taiwan	-	-	9	82	-	-	13
All others	281	301	1,220	302	327	224	554
Total	17,843	17,197	45,048	23,317	24,599	30,772	26,965
	Unit price (per ton) 2/						
Japan	$195	$236	$430	$436	$370	$419	$485
EEC	252	308	472	595	538	552	566
Korea	221	261	394	362	406	360	448
Canada	245	266	482	499	510	495	507
South Africa	-	167	321	389	254	295	344
Australia	-	436	390	278	-	-	-
Taiwan	-	-	594	523	-	-	327
All others	140	150	407	302	327	224	554
Average	206	254	442	469	417	446	497

1/ Less than 500 tons.
2/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 39.--Nails: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (short tons)						
Japan	35,857	32,774	32,967	24,194	33,130	42,745	25,975
Korea	0	137	1,637	3,465	14,032	37,261	51,347
Canada	7,635	8,558	10,600	7,500	6,998	7,940	10,734
EEC	3,397	1,312	2,878	67	342	802	1,441
All others	28	857	1,516	776	33	22	6,538
Total	46,917	43,638	49,598	36,002	54,535	88,777	96,035
	Value (1,000 dollars)						
Japan	7,574	8,348	14,721	9,656	11,452	16,415	11,400
Korea	0	27	794	1,555	4,671	13,356	20,301
Canada	1,895	2,292	5,085	3,797	3,528	4,187	6,401
EEC	686	344	1,333	36	160	405	715
All others	5	207	561	212	15	17	2,400
Total	10,160	11,218	22,494	15,256	19,826	34,382	41,217
	Unit price (per ton) 1/						
Japan	211	255	446	399	346	384	439
EEC	202	262	463	537	468	505	395
Korea	0	197	485	449	333	358	596
Canada	248	268	480	506	504	527	497
All others	179	242	370	273	455	773	367
Average	217	257	454	424	364	387	429

1/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 40.--Barbed wire: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (short tons)						
Japan	5,183	4,912	4,222	2,461	3,201	2,459	360
Korea	0	0	815	429	910	627	1,877
EEC	1,997	1,808	1,978	671	280	323	862
South Africa	0	0	0	0	114	263	142
All others	239	860	3,099	254	118	600	471
Total	7,419	7,580	10,114	3,815	4,623	4,272	3,712
	Value (1,000 dollars)						
Japan	952	1,060	1,887	1,095	998	798	124
Korea	0	0	434	147	276	197	681
EEC	521	488	976	428	154	152	481
South Africa	0	0	0	0	30	75	45
All others	43	166	1,451	112	36	169	155
Total	1,516	1,714	4,748	1,782	1,494	1,391	1,486
	Unit price (per ton) 1/						
Japan	184	216	447	445	312	324	345
Korea	0	0	532	343	303	314	363
EEC	261	270	493	638	550	470	558
South Africa	0	0	0	0	263	285	319
All others	180	186	468	441	305	282	329
Average	204	226	469	467	323	326	400

1/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 41.--Prestressed strand: Imports into the Western States, by sources, 1972-78

Source	1972	1973	1974	1975	1976	1977	1978
	Quantity (short tons)						
Japan	28,927	29,662	33,311	25,026	16,638	20,409	23,494
EEC	38	10	303	98	26	34	130
Australia	0	0	578	1,411	0	0	0
All others	0	0	225	250	834	582	810
Total	28,965	29,672	34,417	26,785	17,498	21,025	24,434
	Value (1,000 dollars)						
Japan	7,443	8,300	14,528	16,212	7,226	8,405	11,792
EEC	9	2	132	54	24	16	61
Australia	0	0	422	983	0	0	-
All others	0	0	105	120	254	195	293
Total	7,452	8,302	15,187	17,369	7,504	8,616	12,146
	Unit price (per ton) 1/						
Japan	257	280	436	648	434	412	502
EEC	237	200	436	551	923	471	470
Australia	-	-	730	697	-	-	-
All others	-	-	467	480	305	335	367
Average	257	280	441	648	429	410	497

1/ Based on actual quantities and values of imports.

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

Note.--The import statistics in this table are restricted to importations through U.S. Customs ports located in Montana, Washington, Oregon, California, and Arizona.

Table 42.--Imports of the four largest Japanese importers of each category within the Western States of carbon steel mill products and their shares of Japanese imports into the Western States, of total imports into the Western States, and of apparent consumption within the Western States; imports and apparent consumption in the Western States, 1977

Item	Japanese importers					Imports and apparent consumption		
	Total of reporting firms	Imports of the 4 largest	Share of Japanese imports	Share of total imports	Share of apparent consumption	Japanese imports	Total imports	Apparent consumption
		Short tons	Percent	Percent	Percent	Short tons	Short tons	Short tons
Basic steel mill products 1/	15	1,357,327	59	43	16	2,257,000	3,124,000	8,449,000
Ingots and semifinished products	2/ 1	1,503	3/ -	-	-	-	-	44,000
Tin mill products, sheets, and strip	15	612,405	58	45	16	1,052,000	1,375,000	4,313,000
Plates	15	97,423	60	36		162,000	272,000	
Deformed reinforcing bars	10	13,923	3/ -	-	-	29,000	31,000	739,000
Bar-size shapes	10	18,966	32	26	12	60,000	73,000	159,000
Other bars	12	78,347	64	54	24	123,000	144,000	321,000
Wire rod	10	81,379	84	50	23	97,000	163,000	358,000
Wire	11	51,650	3/ -	-	-	44,000	69,000	304,000
Angles, shapes, and sections	13	213,577	83	56	27	256,000	363,000	896,000
Rails	2/ 3	3,206	100	95		29,000	36,000	
Joint bars and tie plates	2/ 3	24,408	100					
Pipes and tubes	13	272,591	68	46	21	403,000	596,000	1,312,000
Nails	7	23,228	54	26		43,000	89,000	
Barbed wire	2/ 1	2,000	100	50	24	2,000	4,000	170,000
Prestressed strand	7	15,179	76	72		20,000	21,000	

1/ The term "basic steel mill products" covers the products listed below, except nails, barbed wire, and prestressed strand.
2/ Where there were less than 4 reporting firms, the total number of reporting firms was used.
3/ Official statistics indicate fewer imports than reported by questionnaire respondents.

Note.--Imports of the 4 largest importers were compiled from data submitted in response to questionnaires. The total of this import data equals 93 percent of official import statistics for total steel mill products.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; import data used to calculate apparent consumption was compiled from official statistics of the Department of Commerce.

Table 43.--Japanese trading companies and carbon steel mill prouducts imported by those companies into the Western States, 1977

Japanese trading company	Ingots and semifinished products	Tin mill products sheets & strip	Plates	Deformed re-bar	Bar-size shapes	Other bar	Wire rod	Wire	Angles, shapes and sections	Pipes & tubes	Rails Joint-bars and tie plates	Nails	Barbed wire	Pre-stressed strand	Total number of products
A		X	X				X	X	X	X		X			7
B		X	X	X	X	X		X	X	X				X	9
C			X		X		X	X							4
D		X	X	X		X			X	X				X	7
E		X	X	X	X	X	X		X	X					8
F		X	X	X	X	X	X	X	X	X		X		X	11
G	X	X	X			X	X	X	X	X		X		X	10
H		X	X	X	X	X	X	X	X	X	X	X		X	12
I		X	X	X	X	X			X	X					7
J		X	X	X		X		X	X	X		X	X	X	10
K		X	X	X	X	X	X	X	X	X					9
L		X	X	X		X		X	X	X		X		X	9
M			X			X		X	X	X					5
N		X	X	X	X	X	X	X	X	X	X	X			11
O		X	X		X	X			X	X	X				7
Total number of producers	1	13	15	10	9	13	8	11	14	14	3	7	1	7	

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

Table 44.--Carbon steel: Mill sourcing patterns of Japanese trading companies exporting to the Western States market, by product category, 1976, 1977

Product category	Number of supplying Japanese mills		Number of Japanese trading companies--										
			Exporting to the Western States market		Dependent on same primary mill source		Using a single primary mill source		Using balanced sourcing from 2 or more mills		Using an exclusive primary or secondary source		Changing primary sources
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976 to 1977
Ingots & semi-finished products	-	1	-	1	-	1	-	1	-	0	-	1	0
Tin mill products	6	8	8	8	5	5	7	7	1	1	1	3	0
Plates	6	6	15	13	6	6	12	11	2	2	1	1	7
Sheets & strip	12	12	16	15	7	6	11	11	5	4	5	4	3
Bars:													
Deformed rebars	11	9	9	9	2	2	8	9	1	0	8	5	5
Bar size shapes	12	9	8	8	2	2	6	8	2	0	7	4	3
Other bars	13	12	12	11	3	2	11	9	1	2	5	4	4
Wire rods	6	6	9	9	4	4	9	9	0	0	1	1	1
Wire	16	17	10	10	3	2	8	7	2	3	9	12	3
Angles, shapes, & sections	11	13	16	14	4	3	13	14	3	0	5	5	6
Rails	4	5	3	3	1	1	2	2	1	1	3	4	0
Joint bars & tie plates	1	4	1	3	1	1	1	3	0	0	1	4	0
Pipes and tubes	16	19	15	14	3	4	12	14	3	0	5	10	5

Source: Compiled from Appendix Tables D-1 through D-12.

Table 45.--Japanese wire and wire products manufacturers located in Korea's Masan Free Trade Zone 1/

Manufacturer	Products	Capacity	Total investment	Foreign cash	Capital material and equipment	Japanese investment ratio	Employment	Rod supplier
		Metric tons per month	Dollars	Dollars	Dollars	Percent		
Korea Sugimoto Steel Wire Drawing Co	Stitching wire	1,500	$2,650,000	$1,017,500	$1,633,500	100	98	Kobe Steel Corp.
Kankoku Murata Nail Co	Wire and nails	1,500	1,900,000	595,900	1,304,100	100	109	Kobe Steel Corp.
Kankoku Nitto Co	Wire and nails	1,000	920,000	288,500	631,500	100	55	Godo Steel Ltd.
Masan Murakomi Steel Ind. Co	Wire and nails	1,000	1,400,000	749,800	652,200	100	150	Nippon Steel Corp.
Korea Nihon Seisen Wire Mfg. Co	Wire and nails	300	440,000	159,100	280,900	100	40	Nippon Steel Corp.
Korea Nittei Co	Wire and nails	1,500	2,610,000	1,305,600	1,304,400	100	100	Sumitomo Metal

1/ As of July, 1978.

Source: Provided by U.S. producer and importer interests.

Table 46.--Imports of the four largest importers, other than Japanese, of each category of carbon steel mill products and their shares of imports of other than Japanese origin into the Western States, of total imports into the Western States, and of apparent consumption within the Western States; imports and apparent consumption in the Western States, 1977

Item	Other than Japanese importers					Imports and apparent consumption		
	Total of reporting firms	Imports of the 4 largest	Share of imports other than Japanese	Share of total imports	Share of apparent consumption	Imports other than Japanese	Total imports	Apparent consumption
		Short tons	Percent	Percent	Percent	Short tons	Short tons	Short tons
Basic steel mill products 1/	24	460,809	53	15	5	867,000	3,124,000	8,449,000
Ingots and semifinished products	2/ 1	125	3/ -	-	-	-	-	44,000
Tin mill products, sheets, and strip	13	262,733	76	19	8	347,000	1,375,000	4,313,000
Plates	9	102,133	93	38		110,000	272,000	
Deformed reinforcing bars	6	14,546	50	47	2	2,000	31,000	739,000
Bar-size shapes	8	18,049	3/ -	-	-	13,000	73,000	159,000
Other bars	8	7,169	34	5	2	21,000	144,000	321,000
Wire rod	6	58,997	89	36	16	66,000	163,000	358,000
Wire	10	10,159	41	15	3	25,000	69,000	304,000
Angles, shapes, and sections	11	84,028	79	23	9	107,000	363,000	896,000
Rails	2/ 2	76	100	-		7,000	36,000	
Joint bars and tie plates	-	-	-	-				
Pipes and tubes	13	94,799	49	16	7	193,000	596,000	1,312,000
Nails	7	33,128	72	37	20	46,000	89,000	170,000
Barbed wire	5	660	33	16		2,000	4,000	
Prestressed strand	2/ 2	978	98	5		1,000	21,000	

1/ The term "basic steel mill products" covers the products listed below, except nails, barbed wire, and prestressed strand.
2/ Where there were less than 4 reporting firms, the total number of reporting firms was used.
3/ Official statistics indicate fewer imports than reported by questionnaire respondents.

Note.--Imports of the 4 largest importers were compiled from data submitted in response to questionnaires. The total of this import data equals 93 percent of official import statistics for total steel mill products.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; import data used to calculate apparent consumption was compiled from official statistics of the Department of Commerce.

Table 47.--Importers other than Japanese and carbon steel mill products imported by those companies into the Western States in 1977

Importers other than Japanese	Ingots and semifinished products	Tin mill products sheets & strip	Plates	Deformed re-bar	Bar-size shapes	Other bars	Wire rod	Wire	Angles, shapes and sections	Pipes and Tubes	Rails, joint-bars and tie plates	Nails	Barbed wire	Pre-stressed strand	Total number of products
A		X	X	X	X		X	X	X	X		X	X		10
B		X	X					X							3
C									X	X		X			3
D	X	X	X			X	X		X	X	X	X			7
E		X							X	X		X			4
F								X				X			2
G		X					X		X						3
H		X	X		X		X		X						5
I		X	X		X	X									6
J						X									1
K				X				X		X		X	X		5
L		X	X	X					X						4
M		X	X					X		X		X			5
N												X			1
O		X	X	X	X	X			X	X	X	X			9
P		X		X	X				X	X					5
Q										X					1
R		X	X	X	X	X	X	X	X	X		X	X		11
S		X				X		X		X					4
T								X	X	X			X	X	5
U								X				X	X		3
V						X									1
W										X					1
X						X									1
Total number of importers other than Japanese	1	13	8	13	6	8	6	9	12	16		10	5	1	

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

Table 48.--Shipments of the 4 largest eastern producers of each category of carbon steel mill products and their shares of total shipments of eastern producers to the Western States, of shipments both of eastern producers and western producers to the Western States, and of apparent consumption in the Western States, and shipments and apparent consumption in the Western States, 1978

Item	Total of reporting firms	Shipments of the 4 largest producers	Share of eastern producers' shipments to the Western States	Share of both eastern and western shipments in the Western States	Share of apparent consumption in the Western States	Shipments of eastern producers to the Western States	Shipments of both eastern and western producers in the Western States	Apparent consumption in the Western States
		Short tons	Percent	Percent	Percent	Short tons	Short tons	Short tons
Basic steel mill products 1/	20	577,292	62	11	6	929,000	5,492,000	9,614,000
Ingots and semifinished products	2	492	100	1	1	492	69,000	69,000
Tin mill products, sheets, and strip	11	264,400	91	11		290,191	2,664,000	5,060,000
Plates	9	31,800	98			32,511		
Deformed reinforcing bars	4	57,115	100	8	8	57,115	682,000	716,000
Bar-size shapes	12	45,051	91	39	22	49,475	116,000	202,000
Other bars	6	17,775	97	10	5	18,324	177,000	328,000
Wire rod	2	693	100	1/	1/	693	227,000	439,000
Wire	5	5,979	100	2/	2/	5,982	260,000	314,000
Angles, shapes, and sections	10	141,289	93	25	14	152,055	575,000	1,032,000
Rails, joint bars, and tie plates	2	2,899	100			2,899		
Pipes and tubes	10	256,588	80	36	18	319,121	721,000	1,452,000
Nails, barbed wire, and prestressed strand	2	9,695	100	16	5	9,695	62,000	186,000

1/ The term "basic steel mill products" covers the products listed below, except nails, barbed wire, and prestressed strand.
2/ Less then 0.5 percent.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; import data used to calculate apparent consumption was compiled from official statistics of the Department of Commerce.

Table 49.--Eastern producers and carbon steel mill prouducts shipped by those firms to the Western States, 1978

Company	Ingots, semifinished products and wire rods	Tin mill products, sheets, & strip	Plates	Deformed re-bar	Bar-size shapes	Other bar	Wire	Angles, shapes, and sections	Pipes & tubes	Nails	Barbed wire	Strand	Total number of products
ARMCO Steel Corp	X	X	X	X	X	X	X	X	X	X	X	X	12
Bethlehem Steel Corp		X	X			X	X	X	X				6
Border Steel Rolling Mills, Inc					X								1
Catumet Steel Co.					X								1
Chaparral Steel Co				X	X			X					3
Crucible, Inc					X			X					2
Cyclops Corp		X							X				2
H. K. Porter Co., Inc					X			X					2
Inland Steel Co		X	X			X		X					4
Jones & Laughlin Steel Corp		X	X		X		X	X	X				6
Lone Star Steel Co									X				1
National Steel Corp		X	X						X				3
North Star Steel Corp				X	X			X					3
NUCOR Corp					X			X					2
Quanex Corp									X				1
Republic Steel Corp	X	X	X		X		X		X				6
Sharon Steel Corp	X	X											2
U.S. Steel Corp	X	X	X		X	X	X	X	X	X	X		10
Wheeling-Pittsburg Steel Corp		X	X						X				3
Youngstown Sheet & Tube Co		X	X		X	X			X				5
Total number of producers	4	11	9	3	12	5	5	10	11	2	2	1	

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

Table 50.--Carbon steel mill products: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	20	2	10	2	26	1/	40	100
U.S. importers' shipments	57	1/	1/	1/	8	0	34	100
All shipments	30	1	7	2	21	1/	38	100
1973:								
U.S. producers' shipments	22	1	11	2	23	1/	41	100
U.S. importers' shipments	56	1/	1/	1/	6	0	38	100
All shipments	30	1	8	2	19	1/	40	100
1974:								
U.S. producers' shipments	16	1	10	1	24	1/	47	100
U.S. importers' shipments	61	1/	1/	1/	5	1/	34	100
All shipments	29	1	7	1	18	1/	43	100
1975:								
U.S. producers' shipments	17	1	13	2	23	1/	44	100
U.S. importers' shipments	55	1/	1/	1	7	1	37	100
All shipments	28	1	9	2	19	1	42	100
1976:								
U.S. producers' shipments	20	2	11	2	21	1/	44	100
U.S. importers' shipments	61	1/	1	1/	5	1/	32	100
All shipments	33	2	7	1/	16	1/	41	100
1977:								
U.S. producers' shipments	21	2	10	3	26	1/	38	100
U.S. importers' shipments	58	1	1	1	4	1/	35	100
All shipments	34	1	7	3	18	1/	37	100

1/ Less than 0.05 percent.

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

Table 51.--Tin mill products, plates, sheets, and strip: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	14	2	8	1	17	1/	58	100
U.S. importers' shipments	49	0	0	0	9	0	41	100
All shipments	25	1	6	1	15	1/	52	100
1973:								
U.S. producers' shipments	14	1	8	1	19	1/	56	100
U.S. importers' shipments	49	0	1/	0	6	0	45	100
All shipments	24	1	6	1	16	1/	53	100
1974:								
U.S. producers' shipments	11	1	9	1	15	1	63	100
U.S. importers' shipments	51	1/	0	0	6	1/	42	100
All shipments	23	1	6	1/	13	1/	57	100
1975:								
U.S. producers' shipments	10	1	12	1	15	1/	61	100
U.S. importers' shipments	46	0	1	0	5	2	46	100
All shipments	21	1	8	1	12	1	56	100
1976:								
U.S. producers' shipments	15	1	9	1/	15	1	59	100
U.S. importers' shipments	52	1/	1/	0	5	1/	42	100
All shipments	27	1	7	1/	12	1	54	100
1977:								
U.S. producers' shipments	17	1	9	1/	18	1	54	100
U.S. importers' shipments	46	1	1/	0	4	1/	48	100
All shipments	27	1	6	1/	13	1	53	100

1/ Less than 0.05 percent.

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

Table 52.--Bars and bar-size shapes: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	16	1	3	1/	67	1/	11	100
U.S. importers' shipments	74	0	0	0	5	0	22	100
All shipments	25	1	3	1/	57	1/	13	100
1973:								
U.S. producers' shipments	18	2	3	1/	63	1/	14	100
U.S. importers' shipments	69	0	0	0	2	0	28	100
All shipments	23	1	3	1/	57	1/	16	100
1974:								
U.S. producers' shipments	16	2	3	1/	64	1/	14	100
U.S. importers' shipments	83	1/	0	0	1	0	16	100
All shipments	29	2	2	1/	53	1/	15	100
1975:								
U.S. producers' shipments	14	2	3	1/	71	1/	10	100
U.S. importers' shipments	71	1/	0	0	5	0	24	100
All shipments	24	2	2	1/	59	1/	13	100
1976:								
U.S. producers' shipments	19	2	3	1/	64	1/	12	100
U.S. importers' shipments	84	1/	1/	0	3	0	13	100
All shipments	32	2	2	1/	52	1/	12	100
1977:								
U.S. producers' shipments	17	2	2	1/	70	1/	9	100
U.S. importers' shipments	83	1/	1/	0	2	0	15	100
All shipments	28	1	1	1/	58	1/	10	100

1/ Less than 0.05 percent.

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

Table 53.--Angles, shapes, and sections: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	35	2	10	1	28	1/	24	100
U.S. importers' shipments	68	0	0	0	13	0	20	100
All shipments	51	1	5	1	21	1/	23	100
1973:								
U.S. producers' shipments	40	1	7	1	28	1	22	100
U.S. importers' shipments	63	0	0	0	12	0	26	100
All shipments	49	1	5	1/	22	1/	23	100
1974:								
U.S. producers' shipments	21	1	10	1/	27	1/	41	100
U.S. importers' shipments	71	0	1/	0	7	0	22	100
All shipments	45	1	5	1/	18	1/	32	100
1975:								
U.S. producers' shipments	25	1	10	1/	39	1/	24	100
U.S. importers' shipments	56	0	1/	0	22	0	22	100
All shipments	40	1	6	1/	31	1/	23	100
1976:								
U.S. producers' shipments	31	1	11	1/	43	1	15	100
U.S. importers' shipments	77	0	1/	0	8	0	15	100
All shipments	57	1/	5	1/	23	1/	15	100
1977:								
U.S. producers' shipments	31	1	12	1/	53	1/	3	100
U.S. importers' shipments	79	0	1/	0	7	0	14	100
All shipments	59	1/	5	1/	26	1/	10	100

1/ Less than 0.05 percent.

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

Table 54.--Wire rods: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	3	1/	3	1/	1	0	93	100
U.S. importers' shipments	4	0	0	0	10	0	86	100
All shipments	3	1/	2	1/	4	0	91	100
1973:								
U.S. producers' shipments	10	1/	2	0	1/	0	87	100
U.S. importers' shipments	1	0	0	1/	14	0	85	100
All shipments	7	1/	1	1/	5	0	87	100
1974:								
U.S. producers' shipments	1	1/	2	0	1/	0	97	100
U.S. importers' shipments	5	0	0	1	9	0	86	100
All shipments	3	1/	1	1/	4	0	92	100
1975:								
U.S. producers' shipments	1	1	1/	0	1/	0	98	100
U.S. importers' shipments	1	0	0	0	2	0	97	100
All shipments	1	1/	1/	0	1	0	97	100
1976:								
U.S. producers' shipments	3	1/	1/	0	1/	0	97	100
U.S. importers' shipments	2	0	0	0	4	0	94	100
All shipments	3	1/	1/	0	1	0	96	100
1977:								
U.S. producers' shipments	3	1/	1	0	1/	0	97	100
U.S. importers' shipments	11	0	0	0	8	0	82	100
All shipments	6	1/	1/	0	3	0	90	100

1/ Less than 0.05 percent.

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

Table 55.--Wire: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	7	8	3	1/	10	1	72	100
U.S. importers' shipments	50	10	0	0	7	0	33	100
All shipments	16	8	3	1/	9	1	64	100
1973:								
U.S. producers' shipments	4	8	3	1/	9	1	75	100
U.S. importers' shipments	28	14	0	0	4	0	54	100
All shipments	8	9	3	1/	8	1	72	100
1974:								
U.S. producers' shipments	2	12	3	1/	8	1	74	100
U.S. importers' shipments	54	2	0	0	5	0	39	100
All shipments	10	11	2	1/	8	1	69	100
1975:								
U.S. producers' shipments	3	9	4	0	9	1	75	100
U.S. importers' shipments	40	13	0	0	2	0	45	100
All shipments	8	10	3	0	8	1	71	100
1976:								
U.S. producers' shipments	4	9	3	1/	9	1	75	100
U.S. importers' shipments	36	8	0	0	5	0	51	100
All shipments	7	9	3	1/	9	1	72	100
1977:								
U.S. producers' shipments	4	11	3	1/	9	1	73	100
U.S. importers' shipments	46	5	0	0	3	0	46	100
All shipments	8	10	3	1/	8	1	70	100

1/ Less than 0.05 percent.

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

Table 56.--Pipes and tubes: Percentage distribution of U.S. producers' shipments in, and importers' shipments into, the Western States, by markets, 1972-77

Year and item	Service centers/ distributors	Agriculture	Transportation	Oil and gas	Construction	Mining	Other	Total
1972:								
U.S. producers' shipments	56	1/	1/	16	18	1/	10	100
U.S. importers' shipments	84	0	1	1	1	0	14	100
All shipments	65	1/	1/	11	13	1/	11	100
1973:								
U.S. producers' shipments	62	1/	1	14	16	1/	8	100
U.S. importers' shipments	88	0	1	1	1	0	10	100
All shipments	70	1/	1	10	11	1/	8	100
1974:								
U.S. producers' shipments	49	1/	1	7	18	1/	26	100
U.S. importers' shipments	93	0	1	1	1	0	5	100
All shipments	64	1/	1	5	12	1/	18	100
1975:								
U.S. producers' shipments	57	1/	4	10	10	1/	19	100
U.S. importers' shipments	84	1/	1	3	1	0	10	100
All shipments	66	1/	3	8	7	1/	16	100
1976:								
U.S. producers' shipments	63	1	1/	13	10	1/	13	100
U.S. importers' shipments	85	1/	1	3	1	0	11	100
All shipments	72	1	1/	9	6	1/	13	100
1977:								
U.S. producers' shipments	60	1/	1/	27	6	1/	7	100
U.S. importers' shipments	82	1/	1	5	1	0	11	100
All shipments	70	1/	1/	18	4	1/	8	100

1/ Less than 0.05 percent.

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

Table 57.--Steel mill products: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	46	55	39	44	41	42	54	45	61	56	59	58
End users: 1/												
Transportation	99	99	99	99	97	94	1	1	1	1	3	6
Construction	89	92	92	90	90	93	11	8	8	10	10	7
Other: 2/	54	52	58	54	58	52	46	48	42	46	42	48
Total	71	75	71	72	68	66	29	25	29	28	32	34

1/ Shipments of steel mill products were negligible to the following types of end users: agriculture, oil and gas, and mining.

2/ Metal working is the primary market included in this grouping.

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

Table 58.--Tin mill products, plates, sheets, and strip: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	39	45	33	34	37	41	61	55	67	66	63	59
End users: 1/												
Transportation	100	99	100	98	98	99	0	1	0	2	2	1
Construction	81	90	85	87	85	89	19	10	15	13	15	11
Other: 2/	69	56	60	57	57	53	41	44	40	43	43	47
Total	69	74	70	70	68	65	31	26	30	30	32	35

1/ Shipments of tin mill products, plates, sheets, and strip were negligible to the following types of end users: agriculture, oil and gas, and mining.

2/ Metal working is the primary market included in this grouping.

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

Table 59.--Bars and bar-size shapes: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	54	70	47	47	49	50	46	30	53	53	51	50
End users: 1/												
Construction	99	99	99	99	99	99	1	1	1	1	1	1
Other: 2/	33	33	47	29	48	38	67	67	53	71	52	62
Total	84	90	82	82	81	83	16	10	18	18	19	17

1/ Shipments of bars and bar-size shapes were negligible to the following types of end users: agriculture, transportation, oil and gas, and mining.

2/ Metal working is the primary market included in this grouping.

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

Table60½--Angles, shapes, and sections: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	36	51	24	34	23	21	64	49	76	66	77	79
End users: 1/												
Transportation	100	100	98	97	96	95	0	0	2	3	4	5
Construction	71	79	81	67	80	84	29	21	19	33	20	16
Other: 2/	55	46	65	52	50	21	45	54	35	48	50	79
Total	52	62	53	53	43	41	48	38	47	47	57	59

1/ Shipments of angles, shapes, and sections were negligible to the following types of end users: agriculture, oil and gas, and mining.

2/ Metal working is the primary market included in this grouping.

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

Table 61.--Wire rods: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	47	94	10	65	94	33	53	6	90	35	6	67
End users: 1/												
Construction	12	1	1	37	4	2	88	99	99	63	96	98
Other: 2/	52	51	53	50	51	54	48	49	47	50	49	46
Total	63	62	48	63	67	56	37	38	52	37	33	44

1/ Shipments of wire rods were negligible to the following types of end users: agriculture, transportation, oil and gas, and mining.

2/ Metal working is the primary market included in this grouping.

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

Table 62.--Wire: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	33	47	18	27	45	38	67	53	82	73	55	62
End users: 1/												
Agriculture	76	78	97	81	91	95	24	22	3	19	9	5
Construction	83	89	83	95	91	95	17	11	17	5	9	5
Other: 2/	69	58	65	63	60	61	31	42	35	37	40	39
Total	76	83	82	83	88	88	24	17	18	17	12	12

1/ Shipments of wire were negligible to the following types of end users: transportation, oil and gas, and mining.
2/ Metal working is the primary market included in this grouping.

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

Table 63.--Pipes and tubes: U.S. producers' shipments (both western and eastern producers) and importers' shipments into the Western States, as a share of total, by types of markets, 1972-77

(In percent)

Item	Producers' shipments						Importers' shipments					
	1972	1973	1974	1975	1976	1977	1972	1973	1974	1975	1976	1977
Service centers/distributors	58	60	50	69	50	49	42	40	50	41	50	51
End users: 1/												
Oil and gas	98	98	91	86	87	87	2	2	9	14	13	13
Construction	98	98	97	94	93	91	2	2	3	6	7	9
Other: 2/	45	44	84	66	54	39	55	56	16	34	46	61
Total	68	69	66	68	67	67	32	31	34	32	43	43

1/ Shipments of pipes and tubes were negligible to the following types of end users: agriculture, transportation, and mining.

2/ Metal working is the primary market included in this grouping.

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

Table 64 .--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Galvanized Sheet, commercial quality									
1973:										
January-March	-			-			99-	101	100	
April-June	80-	89	84	88-	89	89	92-	101	97	-8
July-September	90-	90	90	90-	90	90	93-	101	96	-6
October-December	116-	116	116	118-	118	118	89-	104	92	29
1974:										
January-March	-			-			98-	117	111	
April-June	145-	145	145	145-	145	145	127-	129	128	13
July-September	143-	177	163	155-	177	168	124-	163	140	21
October-December	133-	133	133	148-	148	148	156-	184	164	-10
1975:										
January-March	149-	149	149	152-	152	152	146-	171	170	-11
April-June	-			-			141-	161	157	
July-September	-			-			146-	158	151	
October-December	-			-			152-	168	165	
1976:										
January-March	-			-			134-	168	166	
April-June	-			-			132-	166	161	
July-September	152-	152	152	155-	155	155	136-	173	157	-1
October-December	159-	159	159	159-	159	159	136-	175	161	-1
1977:										
January-March	151-	151	151	151-	151	151	143-	181	172	-12
April-June	150-	158	151	150-	150	150	146-	180	155	-3
July-September	164-	164	164	161-	164	163	147-	188	157	3
October-December	157-	157	157	157-	159	158	147-	188	156	1
1978:										
January-March	102-	175	131	125-	181	153	152-	186	185	-17
April-June	139-	186	160	148-	189	156	187-	192	192	-19
July-September	139-	189	158	148-	196	170	184-	194	192	-11
October-December	190-	190	190	209-	209	209	176-	201	193	8

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 65.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices				U.S. producers' lowest selling price		Importers' price discount or premium (percent)
	Lowest purchase price		Lowest selling price				
	Range (A)	Weighted average (B)	Range (C)	Weighted average (D)	Range (E)	Weighted average (F)	(D-F)/F
	Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"						
1973:							
January-March	150-160	157	156-225	168	165-195	182	-8
April-June	158-200	169	161-164	162	165-186	176	-8
July-September	175-225	189	183-193	188	164-186	185	2
October-December	178-211	192	186-214	196	164-186	185	6
1974:							
January-March	196-416	286	208-423	271	185-205	191	42
April-June	237-428	371	257-500	304	187-245	207	47
July-September	279-492	363	290-493	385	186-288	254	52
October-December	367-444	391	375-503	429	184-280	244	76
1975:							
January-March	221-456	353	304-456	369	270-288	275	34
April-June	161-350	287	221-304	262	274-285	279	-6
July-September	216-265	238	216-294	241	270-284	274	-12
October-December	210-235	225	212-240	225	285-290	285	-21
1976:							
January-March	206-270	230	206-266	224	246-290	279	-20
April-June	209-250	231	229-255	239	285-290	286	-16
July-September	227-263	235	242-296	268	285-313	287	-7
October-December	235-270	249	255-283	269	309-331	310	-13
1977:							
January-March	236-261	248	245-309	260	309-313	309	-16
April-June	230-255	234	244-311	266	260-313	307	-14
July-September	223-336	245	242-341	251	294-329	320	-21
October-December	222-283	255	260-288	268	294-329	314	-15
1978:							
January-March	220-285	252	230-349	272	291-336	302	-10
April-June	220-313	280	237-357	294	336-354	343	-14
July-September	220-324	284	241-365	314	341-365	350	-10
October-December	304-335	329	318-395	367	345-362	352	4

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

Table 66.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Hot rolled sheet, commercial quality, 14 ga. (.075 in.)									
1973:										
January-March	88-	88	88	89-	89	89	100-	100	100	-11
April-June	92-	92	92	89-	94	92	100-	100	100	-8
July-September	88-	88	88	107-	107	107	100-	100	100	7
October-December	104-	104	104	107-	107	107	102-	102	102	5
1974:										
January-March	104-	104	104	107-	130	115	105-	105	105	10
April-June	129-	129	129	130-	137	135	126-	126	126	7
July-September	129-	129	129	132-	132	132	-			
October-December	-			-			-			
1975:										
January-March	203-	203	203	207-	207	207	157-	167	164	26
April-June	-			-			157-	167	163	
July-September	138-	138	138	140-	140	140	157-	167	162	-13
October-December	133-	133	133	136-	136	136	160-	169	168	-19
1976:										
January-March	127-	127	127	-			160-	169	169	
April-June	131-	131	131	133-	133	133	160-	169	167	-20
July-September	131-	131	131	133-	133	133	168-	178	177	-25
October-December	141-	141	141	143-	143	143	168-	178	177	-19
1977:										
January-March	-			-			177-	187	186	
April-June	148-	148	148	-			177-	187	184	
July-September	158-	158	158	-			192-	201	200	
October-December	-			-			192-	201	200	
1978:										
January-March	126-	126	126	133-	135	134	195-	195	195	-31
April-June	126-	177	139	133-	183	148	202-	202	202	-27
July-September	182-	182	182	188-	188	188	188-	204	200	-6
October-December	179-	179	179	189-	189	189	188-	208	204	-7

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 67 .--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Cold rolled sheet, Class 1, commercial quality, .0299"									
1973:										
January-March	92-	96	93	94-	104	98	98-	113	100	-2
April-June	95-	95	95	97-	100	99	98-	113	100	-1
July-September	88-	123	106	100-	123	115	98-	113	99	16
October-December	110-	110	110	113-	113	113	98-	116	100	13
1974:										
January-March	110-	138	126	113-	149	133	111-	116	112	19
April-June	136-	182	161	138-	188	175	116-	128	127	37
July-September	145-	166	150	148-	186	158	152-	159	152	4
October-December	171-	197	185	195-	201	198	151-	165	152	31
1975:										
January-March	192-	192	192	196-	196	196	152-	165	152	29
April-June	183-	183	183	187-	187	187	151-	159	152	23
July-September	138-	138	138	141-	141	141	143-	159	145	-3
October-December	136-	136	136	138-	138	138	152-	168	158	-12
1976:										
January-March	139-	139	139	142-	142	142	154-	168	156	-9
April-June	-			-			154-	168	157	
July-September	165-	165	165	169-	169	169	163-	178	172	-2
October-December	165-	169	166	169-	172	170	166-	178	168	1
1977:										
January-March	151-	169	166	157-	172	169	146-	189	153	10
April-June	178-	186	185	182-	189	188	146-	189	150	25
July-September	-			-			164-	202	175	
October-December	-			147-	147	147	163-	202	174	-15
1978:										
January-March	149-	243	184	172-	247	227	202-	206	204	12
April-June	180-	243	225	186-	247	230	197-	216	214	8
July-September	149-	251	234	211-	255	251	203-	218	213	18
October-December	199-	263	244	210-	267	250	210-	224	223	12

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 68 .--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Cold rolled sheet, Class 1, commercial quality, .0359"									
1973:										
January-March	84-	87	86	86-	94	89	86-	102	100	-11
April-June	90-	90	90	90-	90	90	85-	102	100	-11
July-September	88-	112	100	90-	111	104	85-	102	99	4
October-December	94-	116	107	102-	119	110	85-	105	102	8
1974:										
January-March	100-	125	114	102-	134	120	105-	105	105	14
April-June	123-	163	135	125-	168	138	105-	113	106	30
July-September	131-	133	132	134-	142	138	130-	143	140	-1
October-December	155-	178	168	176-	182	179	131-	150	142	26
1975:										
January-March	174-	174	174	177-	177	177	130-	150	140	27
April-June	125-	125	125	127-	127	127	137-	143	142	-11
July-September	125-	125	125	127-	127	127	137-	143	143	-11
October-December	123-	128	125	125-	128	126	147-	152	151	-16
1976:										
January-March	-			-			140-	152	150	
April-June	125-	125	125	127-	127	127	139-	152	150	-15
July-September	125-	147	142	127-	147	143	156-	161	160	-11
October-December	147-	151	150	113-	155	152	151-	161	160	-5
1977:										
January-March	150-	151	150	153-	155	154	132-	171	160	-3
April-June	148-	153	152	111-	158	151	132-	171	163	-7
July-September	148-	148	148	151-	151	151	133-	183	165	-9
October-December	162-	162	162	165-	165	165	149-	183	179	-8
1978:										
January-March	135-	146	139	119-	173	165	170-	183	181	-9
April-June	155-	166	156	165-	178	167	179-	196	191	-13
July-September	170-	185	179	179-	191	186	179-	196	194	-4
October-December	183-	189	184	190-	194	193	192-	202	199	-3

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 69 .--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Deformed reinforcing bars, ASTM 615, grade 40, No. 4									
1973:										
January-March	245-	245	245	137-	137	137	128-	284	182	-25
April-June	-			142-	142	142	130-	185	143	-1
July-September	-			-			144-	205	153	
October-December	228-	353	273	233-	320	255	144-	162	144	77
1974:										
January-March	225-	313	232	231-	320	233	165-	299	262	-11
April-June	274-	370	344	347-	370	352	208-	370	317	11
July-September	330-	368	346	353-	390	376	295-	335	304	24
October-December	295-	385	305	-			294-	355	302	
1975:										
January-March	193-	243	211	229-	229	229	217-	236	222	3
April-June	205-	295	240	222-	278	242	205-	308	253	-4
July-September	185-	228	204	195-	215	201	203-	263	230	-12
October-December	174-	228	190	195-	310	195	185-	255	211	-7
1976:										
January-March	170-	196	190	173-	250	192	184-	245	204	-6
April-June	174-	216	197	174-	265	194	185-	245	196	-1
July-September	211-	219	212	211-	230	214	187-	248	197	8
October-December	212-	212	212	197-	197	197	180-	245	200	-2
1977:										
January-March	185-	200	190	198-	218	201	180-	243	186	8
April-June	185-	206	192	196-	216	198	180-	245	201	-1
July-September	199-	220	203	201-	226	207	185-	245	208	
October-December	213-	221	215	219-	228	224	185-	248	218	3
1978:										
January-March	202-	247	238	219-	270	234	190-	245	213	10
April-June	203-	350	328	222-	300	270	190-	245	218	24
July-September	350-	350	350	375-	375	375	210-	253	237	58
October-December	360-	360	360	365-	395	394	240-	299	269	46

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

Table 70.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices				U.S. producers' lowest selling price		Importers' price discount or premium (percent)
	Lowest purchase price		Lowest selling price				
	Range (A)	Weighted average (B)	Range (C)	Weighted average (D)	Range (E)	Weighted average (F)	(D-F)/F
	Hot rolled bars (flats), 1/4" x 3"						
1973:							
January-March	149- 360	174	156- 360	190	175- 190	180	5
April-June	145- 360	156	149- 360	163	182- 195	187	-13
July-September	370- 370	370	370- 370	370	187- 195	191	93
October-December	222- 370	309	370- 370	370	186- 195	190	94
1974:							
January-March	169- 382	291	228- 382	286	206- 206	206	39
April-June	213- 386	347	300- 500	378	255- 351	263	44
July-September	342- 392	360	362- 435	372	300- 360	303	23
October-December	344- 448	384	370- 487	410	307- 313	309	33
1975:							
January-March	324- 450	360	-		307- 307	307	
April-June	265- 367	302	265- 265	265	239- 333	296	-11
July-September	225- 387	246	232- 238	236	304- 304	304	-22
October-December	203- 245	226	245- 282	246	253- 294	278	-12
1976:							
January-March	177- 252	218	193- 250	221	198- 281	248	-11
April-June	200- 263	220	204- 219	209	215- 306	273	-23
July-September	227- 264	239	228- 270	244	259- 259	259	-6
October-December	224- 276	236	225- 253	234	283- 444	308	-24
1977:							
January-March	203- 269	223	216- 260	231	224- 302	277	-17
April-June	206- 228	216	210- 262	220	228- 273	256	-14
July-September	213- 233	218	215- 239	229	249- 310	264	-13
October-December	224- 237	230	232- 241	236	266- 310	287	-18
1978:							
January-March	221- 250	239	230- 268	244	265- 290	266	-8
April-June	224- 283	259	235- 308	264	264- 290	275	-4
July-September	269- 303	292	283- 365	314	275- 321	290	8
October-December	228- 342	309	289- 388	306	293- 350	314	-3

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

Table 71.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Angles, 2" x 2" x 1/4", A-36									
1973:										
January-March	134-	143	139	139-	141	140	164-	215	186	-25
April-June	145-	301	170	143-	175	155	184-	215	187	-17
July-September	151-	320	223	148-	183	169	188-	215	201	-16
October-December	180-	402	188	182-	210	198	174-	194	180	10
1974:										
January-March	207-	348	287	212-	304	280	204-	206	205	37
April-June	265-	348	319	275-	400	332	240-	339	314	6
July-September	293-	363	332	331-	363	346	291-	366	342	1
October-December	325-	471	368	334-	433	361	305-	317	310	16
1975:										
January-March	214-	474	333	214-	474	345	261-	317	269	28
April-June	221-	343	330	240-	400	341	314-	314	314	9
July-September	207-	254	221	210-	240	237	278-	341	308	-23
October-December	196-	235	215	200-	240	221	243-	278	244	-9
1976:										
January-March	176-	207	199	181-	202	189	201-	278	243	-22
April-June	177-	229	187	198-	346	237	213-	267	230	3
July-September	181-	230	214	214-	230	220	239-	370	258	-15
October-December	181-	229	207	202-	360	271	256-	370	262	3
1977:										
January-March	181-	239	190	176-	224	196	218-	299	231	-15
April-June	182-	207	190	186-	210	193	219-	289	272	-29
July-September	183-	211	188	187-	224	190	239-	298	265	-28
October-December	195-	221	205	199-	213	202	274-	289	277	-27
1978:										
January-March	195-	262	206	204-	330	220	230-	295	254	-13
April-June	216-	280	241	226-	350	245	240-	299	253	-3
July-September	252-	304	261	265-	370	272	240-	309	283	-4
October-December	263-	309	275	272-	390	286	255-	330	294	-3

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

Table 72.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	7/32" hot rolled rods, low carbon grade C-1008									
1973:										
January-March	130-	142	136	134-	155	141	137-	156	137	3
April-June	134-	281	213	138-	156	148	137-	161	139	6
July-September	136-	175	153	145-	176	160	137-	161	138	15
October-December	132-	189	152	135-	189	159	137-	161	137	16
1974:										
January-March	178-	258	199	186-	258	212	142-	269	144	47
April-June	116-	345	204	186-	348	256	141-	253	145	77
July-September	258-	394	297	258-	399	319	141-	273	151	111
October-December	277-	417	336	289-	420	347	190-	274	196	77
1975:										
January-March	324-	411	372	324-	454	400	190-	274	199	101
April-June	207-	252	217	216-	252	223	241-	275	241	-8
July-September	207-	255	232	216-	336	269	212-	274	214	25
October-December	210-	240	229	219-	270	231	213-	257	214	8
1976:										
January-March	205-	230	218	210-	230	220	213-	287	214	3
April-June	220-	230	222	220-	230	224	217-	280	222	1
July-September	222-	251	239	229-	270	249	227-	280	230	8
October-December	212-	266	237	232-	290	259	230-	280	232	12
1977:										
January-March	223-	274	239	234-	250	241	227-	349	227	6
April-June	207-	240	221	214-	252	232	215-	342	222	5
July-September	203-	240	231	208-	263	239	215-	260	224	7
October-December	206-	232	222	230-	298	245	225-	257	232	6
1978:										
January-March	197-	243	204	203-	246	209	229-	433	231	-10
April-June	197-	289	214	208-	299	237	242-	476	245	-3
July-September	263-	320	274	269-	309	277	269-	370	269	3
October-December	223-	312	266	240-	301	263	253-	477	255	3

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

Table 73.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price		Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price					
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)	Weighted average (F)	(D-F)/F
	Manufacturers coarse 12 Steel Wire Gauge,								
1973:									
January-March	-			-			257- 461	419	
April-June	221-	221	221	228-	228	228	281- 422	412	-45
July-September	-			-			286- 422	416	
October-December	-			-			283- 422	413	
1974:									
January-March	-			-			232- 533	509	
April-June	388-	388	388	400-	400	400	415- 709	693	-42
July-September	388-	388	388	400-	400	400	356- 709	692	-42
October-December	-			-			355- 769	722	
1975:									
January-March	-			-			356- 769	689	
April-June	-			-			378- 702	678	
July-September	-			-			339- 702	652	
October-December	-			-			347- 702	638	
1976:									
January-March	-			-			328- 732	627	
April-June	-			-			346- 732	623	
July-September	-			-			365- 732	670	
October-December	-			-			366- 732	698	
1977:									
January-March	-			-			375- 732	687	
April-June	339-	339	339	350-	350	350	307- 732	608	-42
July-September	-			-			317- 762	709	
October-December	-			-			291- 762	689	
1978:									
January-March	-			-			313- 373	316	
April-June	-			-			318- 323	321	
July-September	-			-			-		
October-December	-			-			333- 333	333	

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

Table 74.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price		Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price					
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)	Weighted average (F)	(D-F)/F
	Galvanized wire 12 gauge, soft industrial quality								
1973:									
January-March	-			-			239- 259	243	
April-June	-			-			239- 285	276	
July-September	-			-			285- 286	285	
October-December	271-	271	271	-			285- 295	290	
1974:									
January-March	-			-			310- 358	345	
April-June	-			-			330- 500	407	
July-September	540-	540	540	540-	540	540	414- 500	457	18
October-December	-			-			325- 545	380	
1975:									
January-March	-			-			667- 667	667	
April-June	345-	345	345	356-	356	356	410- 410	410	-13
July-September	365-	365	365	-			410- 410	410	
October-December	374-	374	374	-			406- 600	476	
1976:									
January-March	-			-			382- 476	416	
April-June	366-	366	366	-			382- 499	413	
July-September	390-	390	390	-			382- 600	463	
October-December	-			-			406- 408	407	
1977:									
January-March	369-	369	369	-			406- 496	432	
April-June	362-	362	362	366-	366	366	406- 521	430	-15
July-September	397-	397	397	-			406- 481	421	
October-December	393-	393	393	-			406- 525	413	
1978:									
January-March	-			-			405- 549	449	
April-June	-			-			406- 406	406	
July-September	453-	453	453	480-	491	480	407- 473	429	12
October-December	490-	612	581	664-	664	664	458- 602	490	35

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

Table 75.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Baling wire, 14-1/2 gauge ASAE No. 6500									
1973:										
January-March	95-	96	96	100-	101	100	88-	102	100	
April-June	96-	96	96	100-	101	100	97-	103	102	-2
July-September	96-	96	96	100-	100	100	96-	114	102	-2
October-December	146-	146	146	160-	160	160	98-	156	115	39
1974:										
January-March	144-	255	212	151-	178	156	122-	168	154	1
April-June	155-	271	191	164-	211	175	127-	225	206	-15
July-September	165-	271	184	174-	211	178	188-	225	202	-12
October-December	155-	259	227	158-	174	170	188-	225	206	-18
1975:										
January-March	145-	297	206	175-	288	193	188-	225	191	1
April-June	150-	182	164	175-	186	176	181-	206	187	-6
July-September	178-	300	296	157-	157	157	172-	181	174	-10
October-December	135-	149	145	153-	153	153	144-	172	145	5
1976:										
January-March	135-	145	139	140-	148	144	144-	172	164	-12
April-June	145-	145	145	142-	153	147	151-	172	165	-11
July-September	148-	148	148	157-	166	159	160-	172	171	-7
October-December	175-	175	175	163-	163	163	164-	171	165	-1
1977:										
January-March	165-	165	165	148-	175	155	162-	171	166	-7
April-June	158-	172	166	166-	177	173	164-	180	176	-2
July-September	160-	172	167	159-	179	171	173-	179	177	-4
October-December	-			-			171-	184	175	
1978:										
January-March	-			-			160-	177	174	
April-June	192-	213	203	198-	224	210	175-	189	188	12
July-September	220-	220	220	231-	231	231	182-	201	194	19
October-December	-			-			187-	214	195	

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 76.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Rails, 136 lbs. per yard									
1973:										
January-March	-			-			100-	100	100	
April-June	-			-			110-	110	110	
July-September	-			-			113-	114	114	
October-December	-			-			114-	114	114	
1974:										
January-March	-			-			118-	123	119	
April-June	-			-			126-	126	126	
July-September	-			-			164-	164	164	
October-December	-			-			164-	164	164	
1975:										
January-March	-			-			171-	171	171	
April-June	-			-			171-	171	171	
July-September	-			-			171-	171	171	
October-December	-			-			185-	185	185	
1976:										
January-March	-			-			185-	185	185	
April-June	-			-			185-	187	185	
July-September	-			-			199-	199	199	
October-December	215-	215	215	219-	219	219	199-	199	199	10
1977:										
January-March	-			-			199-	199	199	
April-June	-			-			199-	199	199	
July-September	269-	269	269	271-	271	271	214-	214	214	27
October-December	211-	211	211	212-	262	217	214-	214	214	1
1978:										
January-March	320-	320	320	331-	331	331	214-	214	214	54
April-June	-			-			231-	231	231	
July-September	-			-			238-	238	238	
October-December	-			-			238-	243	242	

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 77.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Angle L 6" x 4" x 3/8"									
1973:										
January-March	-			-			96-	101	100	
April-June	-			-			97-	100	99	
July-September	129-	129	129	-			100-	106	102	
October-December	150-	150	150	-			100-	103	102	
1974:										
January-March	-			-			100-	116	109	
April-June	246-	246	246	-			136-	137	137	
July-September	236-	245	240	-			160-	163	161	
October-December	246-	246	246	-			166-	168	167	
1975:										
January-March	216-	216	216	-			168-	177	171	
April-June	147-	150	147	148-	148	148	160-	168	165	-10
July-September	131-	247	182	124-	270	165	154-	168	166	-1
October-December	129-	135	131	124-	141	139	160-	168	166	-17
1976:										
January-March	121-	137	125	123-	136	127	160-	168	166	-24
April-June	116-	130	125	118-	173	130	161-	168	167	-22
July-September	124-	142	140	141-	141	141	164-	168	168	-16
October-December	124-	141	136	135-	149	141	152-	152	152	-7
1977:										
January-March	123-	137	130	134-	144	135	171-	171	171	-21
April-June	114-	132	117	116-	137	118	124-	171	163	-27
July-September	122-	141	132	124-	140	126	129-	171	145	-13
October-December	137-	140	138	140-	140	140	140-	177	160	-13
1978:										
January-March	138-	155	140	141-	205	142	145-	193	153	-7
April-June	142-	150	149	151-	208	152	145-	195	157	-3
July-September	161-	175	173	170-	219	190	157-	203	193	-2
October-December	169-	179	173	174-	230	180	179-	201	192	-6

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 78.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Welded Standard Pipe - ASTM A-120, 3/4" nom. dia.									
1973:										
January-March	67-	98	78	69-	82	77	100-	100	100	-23
April-June	71-	98	84	73-	99	81	101-	102	101	-20
July-September	71-	111	91	73-	111	92	101-	101	101	-8
October-December	70-	126	94	70-	126	95	100-	100	100	-6
1974:										
January-March	80-	163	112	100-	153	115	108-	108	108	6
April-June	80-	250	119	106-	201	145	138-	138	138	5
July-September	78-	210	146	99-	231	174	166-	166	166	5
October-December	92-	225	180	96-	261	173	167-	167	167	4
1975:										
January-March	82-	212	155	112-	225	169	182-	182	182	-7
April-June	82-	196	135	109-	195	144	184-	184	184	-21
July-September	107-	125	108	93-	134	110	182-	182	182	-40
October-December	82-	144	97	87-	151	105	182-	187	182	-42
1976:										
January-March	86-	113	108	110-	134	112	191-	191	191	-41
April-June	86-	143	108	108-	139	121	186-	186	186	-35
July-September	86-	143	111	105-	150	126	159-	159	159	-21
October-December	86-	144	125	106-	145	125	139-	147	144	-13
1977:										
January-March	92-	144	120	99-	148	125	162-	162	162	-23
April-June	96-	145	123	98-	149	124	172-	176	174	-29
July-September	117-	175	130	97-	164	141	176-	176	176	-20
October-December	105-	133	112	118-	133	120	188-	188	188	-36
1978:										
January-March	117-	143	126	118-	213	133	187-	187	187	-29
April-June	70-	156	122	124-	220	143	198-	198	198	-28
July-September	75-	171	143	125-	226	151	198-	215	203	-25
October-December	151-	198	171	162-	233	190	198-	216	201	-5

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 79.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Hot rolled square tubing, 14 ga. (.075 in.)									
1973:										
January-March	62-	72	69	-			100-	100	100	
April-June	85-	85	85	-			100-	100	100	
July-September	68-	72	69	69-	72	70	-			
October-December	74-	75	74	74-	77	75	129-	129	129	-42
1974:										
January-March	61-	109	71	80-	80	80	129-	129	129	-38
April-June	82-	103	96	85-	85	85	-			
July-September	128-	128	128	128-	128	128	156-	156	156	-18
October-December	81-	116	109	85-	85	85	-			
1975:										
January-March	-			-			-			
April-June	109-	109	109	-			-			
July-September	91-	91	91	93-	93	93	114-	114	114	-18
October-December	86-	86	86	-			-			
1976:										
January-March	87-	87	87	-			-			
April-June	73-	110	85	-			-			
July-September	89-	108	99	98-	98	98	-			
October-December	100-	100	100	-			-			
1977:										
January-March	-			-			-			
April-June	101-	104	103	104-	104	104	115-	115	115	-9
July-September	100-	100	100	103-	103	103	-			
October-December	102-	109	107	-			-			
1978:										
January-March	109-	109	109	113-	158	135	99-	99	99	35
April-June	109-	129	127	111-	175	152	122-	122	122	25
July-September	114-	129	117	126-	190	144	-			
October-December	142-	142	142	201-	204	203	-			

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 80.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price			Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price						
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Barbed wire, 12-1/2 ga., 2 pt., 4", 2 ply, 80 Rodreels									
1973:										
January-March-----	-			210-	210	210	95-	116	100	110
April-June--------	168-	168	168	202-	210	206	118-	118	118	74
July-September----	-			202-	210	207	117-	122	117	77
October-December--	-			210-	210	210	117-	122	118	78
1974:										
January-March-----	-			210-	210	210	124-	130	128	64
April-June--------	-			210-	235	229	143-	172	166	38
July-September----	196-	196	196	210-	235	219	170-	172	172	27
October-December--	-			210-	210	210	173-	208	208	1
1975:										
January-March-----	247-	247	247	237-	237	237	163-	184	172	37
April-June--------	144-	152	145	144-	237	180	168-	176	169	7
July-September----	198-	198	198	237-	237	237	163-	176	168	41
October-December--	146-	146	146	237-	237	237	163-	163	163	45
1976:										
January-March-----	128-	144	143	144-	176	157	172-	172	172	-9
April-June--------	125-	125	125	176-	176	176	169-	175	172	2
July-September----	129-	168	164	176-	202	195	173-	193	175	12
October-December--	-			176-	176	176	180-	193	186	-5
1977:										
January-March-----	141-	141	141	176-	176	176	168-	193	174	1
April-June--------	141-	141	141	176-	201	196	171-	205	181	8
July-September----	168-	168	168	176-	176	176	172-	205	176	
October-December--	138-	138	138	176-	176	176	169-	179	179	-1
1978:										
January-March-----	130-	130	130	202-	203	202	168-	181	176	15
April-June--------	124-	124	124	163-	211	170	178-	208	189	-10
July-September----	141-	141	141	177-	218	187	180-	218	197	-5
October-December--	168-	168	168	224-	226	225	177-	208	191	18

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 81.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price		Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price					
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Prestressed strand, 1/2 in., 7 wire, 270K									
1973:										
January-March	87-	92	91	90-	95	95	100-	105	100	-5
April-June	73-	91	90	94-	98	96	100-	101	100	-4
July-September	91-	93	92	96-	103	96	100-	101	100	-4
October-December	76-	91	90	96-	104	97	104-	105	105	-8
1974:										
January-March	91-	92	91	96-	108	100	106-	113	109	-8
April-June	107-	116	114	120-	127	123	129-	129	129	-4
July-September	107-	208	159	130-	166	154	209-	209	209	-26
October-December	129-	185	153	133-	233	170	209-	209	209	-19
1975:										
January-March	161-	223	199	206-	257	236	209-	209	209	13
April-June	193-	250	200	197-	234	220	197-	197	197	12
July-September	168-	250	182	197-	212	208	-			
October-December	156-	250	169	163-	199	182	-			
1976:										
January-March	134-	172	168	184-	187	186	166-	166	166	12
April-June	132-	150	145	135-	142	140	157-	157	157	-11
July-September	132-	184	140	135-	150	141	150-	150	150	-6
October-December	132-	137	135	135-	152	142	157-	157	157	-10
1977:										
January-March	132-	142	137	135-	152	144	149-	149	149	-3
April-June	132-	143	140	134-	147	146	149-	149	149	-2
July-September	114-	191	167	130-	146	139	149-	149	149	-7
October-December	115-	142	124	134-	146	139	149-	149	149	-7
1978:										
January-March	125-	149	133	128-	159	137	157-	176	174	-21
April-June	128-	178	149	134-	186	157	175-	176	175	-10
July-September	157-	202	186	142-	207	182	186-	186	186	-2
October-December	158-	201	187	142-	209	195	186-	195	195	

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 82.--Carbon steel products: Ranges and weighted averages of importers' lowest purchase prices and selling prices, importers' gross margins, U.S. producers' lowest selling prices, and importers' price discount or premium in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Importers' prices						U.S. producers' lowest selling price		Importers' price discount or premium (percent)
	Lowest purchase price			Lowest selling price					
	Range (A)		Weighted average (B)	Range (C)		Weighted average (D)	Range (E)		Weighted average (F)	(D-F)/F
	Nails, 16d common bright									
1973:										
January-March	95-	201	109	96-	197	125	100-	105	100	25
April-June	95-	226	119	122-	128	123	100-	108	100	23
July-September	122-	150	124	141-	141	141	100-	108	100	40
October-December	125-	202	156	141-	150	145	100-	112	102	42
1974:										
January-March	139-	301	205	141-	286	201	114-	118	118	71
April-June	196-	415	252	186-	425	269	146-	151	151	78
July-September	191-	271	214	222-	271	261	174-	184	180	45
October-December	140-	301	210	292-	292	292	185-	192	186	57
1975:										
January-March	145-	251	229	170-	271	189	185-	203	198	-5
April-June	127-	234	228	145-	271	228	182-	187	186	22
July-September	125-	159	158	143-	252	202	185-	188	186	9
October-December	126-	232	141	138-	230	187	173-	185	180	4
1976:										
January-March	117-	147	141	132-	230	164	164-	185	170	-3
April-June	125-	163	130	128-	306	155	164-	191	169	-9
July-September	141-	299	141	128-	230	172	172-	190	182	-5
October-December	149-	195	167	167-	230	192	171-	194	185	4
1977:										
January-March	146-	167	167	160-	230	207	172-	190	173	20
April-June	146-	182	162	155-	230	190	171-	202	182	4
July-September	141-	159	157	153-	230	186	171-	202	180	4
October-December	134-	149	145	139-	230	198	160-	192	169	17
1978:										
January-March	135-	200	154	111-	204	174	174-	220	180	-4
April-June	147-	203	154	122-	196	175	192-	206	197	-11
July-September	193-	220	206	149-	233	220	188-	219	210	4
October-December	179-	216	206	172-	262	222	206-	219	212	5

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 83.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions: prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Galvanized Sheet, commercial quality													
January-March													
102-181: 132		163	-19	25	1	25	3	75			181		
April-June													
139-189: 150		163	-8	33	2	67			1	33	176	14	
July-September													
139-190: 167		172	-3	50	5	83			1	17	186	11	6
October-December													
190-190: 190		184	3		1	100					190	14	7

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 84.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"													
January-March													
220-338	259	300	-13	71	1	14	6	86			338		
April-June													
220-310	285	300	-5	45	6	55			5	45	307	10	
July-September													
220-325	286	320	-11	43	2	29	4	57	1	14	320		7
October-December													
309-335	330	333	-1	22	1	11	7	78	1	11	335	15	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Table 85.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Hot rolled sheet, commercial quality, 14 ga. (.075 in.)													
January-March													
126-126	126	172	-27				1	100					
April-June													
126-183	141	172	-18	50	1	50			1	50	183	12	
July-September													
188-188	188	183	3	100	1	100					188	34	7
October-December													
189-189	189	195	-3	100			1	100				1	6

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 86.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter		
					in the same quarter		in the prior quarter					weighted average transaction price		Trigger Price
Range	weighted average				No.	%	No.	%	No.	%				
Cold rolled sheet, Class 1, commercial quality, .0299"														
January-March														
149-247:	187	195	-4	75	1	25	3	75			247			
April-June														
186-247:	230	195	18	100	2	67			1	33	234	23		
July-September														
149-255:	238	207	15	67	2	67			1	33	251	3	6	
October-December														
210-267:	250	215	16	100	2	67	1	33			262	5	4	

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 87.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Cold rolled sheet, Class 1, commercial quality, .0359"													
January-March													
119-173	157	176	-11	75			4	100					
April-June													
165-166	165	176	-7	50					2	100		5	
July-September													
179-191	186	187	-1	100	1	50	1	50			191	13	6
October-December													
190-194	193	195	-1	100			2	100				3	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 88.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions: prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Deformed reinforcing bars, ASTM 615, grade 40, No. 4													
January-March													
202-247	238	228	5		2	67	1	33			246		
April-June													
203-350	327	228	44	40	4	80			1	20	344	37	
July-September													
350-350	350	260	35		1	100					350	7	14
October-December													
360-360	360	271	33		1	100					360	3	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Table 89.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter		in both the same and the prior quarter 4/			weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
				Hot rolled bars (flats), 1/4" x 3"									
January-March													
232-250	241	246	-2	77	5	38	8	62			248		
April-June													
235-298	262	246	7	80	13	87			2	13	268	9	
July-September													
283-311	297	281	6	64	11	100					297	13	14
October-December													
289-342	306	293	5	71	5	71	2	29			332	3	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Table 90.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transaction prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter		in both the same and the prior quarter 4/			weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Angles, 2" x 2" x 1/4", A-36													
January-March													
204-262	215	212	2	75	7	58	5	42			224		
April-June													
226-280	254	212	20	50	8	100					254	18	
July-September													
260-304	267	241	11	76	17	100					267	5	14
October-December													
272-309	284	251	13	75	20	100					284	6	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Table 91.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
7/32" hot rolled rods, low carbon grade C-1008													
January-March													
197-246	203	279	-27	75			4	100					
April-June													
197-291	230	279	-17	71	5	71			2	29	287	13	
July-September													
269-309	277	296	-6	100	1	50			1	50	309	20	6
October-December													
223-301	254	309	-18	67			1	33	2	67		-8	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Table 92.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Baling wire, 14-1/2 gauge ASAE No. 6500													
January-March													
April-June													
198-224	210	207	1	100	3	75	1	25			214		
July-September													
231-231	231	219	5	100	1	100					231	10	6
October-December													
-		228											4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 93.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
			Angle L 6" x 4" x 3/8"										
January-March---													
141-155: 142		130	9	80	5	100					142		
April-June------													
151-175: 152		130	17	100	3	100					152	7	
July-September--													
170-176: 173		148	17	75	4	100					173	14	14
October-December													
174-183: 176		155	14	100	4	100					176	2	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 94.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Welded Standard Pipe - ASTM A-120, 3/4" nom. dia.													
January-March													
118-168	132			67	18	100					132		
April-June													
70-157	126			44	16	100					126	-4	
July-September													
75-177	144	153	-6	53	13	68	6	32			159	14	
October-December													
151-210	176	159	11	56	17	94			1	6	180	22	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 95.--Carbon steel products: Ranges and weighted averages of lowest importers' transaction prices, 1/ adjusted trigger prices, spread between transaction prices and trigger prices, number and percent of responses above and below trigger prices, weighted average of transaction prices above trigger price, and percent change in transaction price and trigger price, in 10 Western States, by quarters, 1978.

(Prices are per ton)

Importers' transaction price		Adjusted Trigger Price 2/	Spread(+/-%) between weighted average transaction price and trigger price	Related-Party transactions prices as % share of total number of responses 3/	Number and % of responses above Trigger Price				Number and % of responses below Trigger Price in both the same and the prior quarter 4/		Weighted average price of transactions above Trigger Price	Percent change(+/-) per quarter	
					in the same quarter		in the prior quarter					weighted average transaction price	Trigger Price
Range	weighted average				No.	%	No.	%	No.	%			
Nails, 16d common bright													
January-March													
135-204	154			64	11	100					154		
April-June													
149-196	154	190	-19	56	2	22	7	78			194		
July-September													
193-220	205	201	2	29	6	86	1	14			206	33	5
October-December													
208-223	209	209		50	3	75	1	25			218	2	4

1/ Import prices used in this table are for transactions between related parties(exporter and importer are related by corporate ownership) and unrelated parties. See text p. for explanation of terms and trigger price monitoring system.
2/ For the purpose of making the trigger price and market transaction price comparable, trigger price for this representative carbon steel product has been adjusted to include duty.
3/ Trading companies account for most related-party transactions. Only rarely are import transactions by trading companies considered unrelated-party transactions. The usual pattern is a transaction between the export subsidiary of the trading company and its import subsidiary in the United States.
4/ Responses below trigger price do not mean trigger price violations, see text for justifications of sales below trigger price.

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 96 .--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Galvanized Sheet, commercial quality							
1973:								
January-March			99	101		98		
April-June		89	96	101		95		88
July-September		90	95	101		94		89
October-December		118	90	104		87		114
1974:								
January-March			108	117		92		
April-June		145	128	127		101		113
July-September		168	134	163		82		104
October-December		148	162	184		88		80
1975:								
January-March		152	170	171		99		89
April-June			157	161		97		
July-September			149	158		94		
October-December			164	168		98		
1976:								
January-March			165	168		98		
April-June			158	166		95		
July-September		155	171	136		126		114
October-December		159	169	136		124		117
1977:								
January-March		151	178	146		122		103
April-June		150	164	146		112		103
July-September	164	161	172	147	101	117	95	110
October-December		158	171	147		116		107
1978:								
January-March		153	186	181		102		84
April-June		156	191	192		100		81
July-September	187	157	192	192	119	100	97	82
October-December		209	201	192		105		109

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 97.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Plate, structural grade, ASTM A-36, 3/8" x 72" x 240"							
1973:								
January-March		168	195	181		107		93
April-June		162	185	176		105		92
July-September		188	186	185		100		102
October-December		196	185	185		100		106
1974:								
January-March		271	185	191		97		142
April-June		304	189	214		88		142
July-September		385	245	257		95		150
October-December	404	432	228	265	93	86	177	163
1975:								
January-March		369	270	275		98		134
April-June		262	281	277		102		95
July-September		241	272	275		99		88
October-December	224	226	287	285	99	101	78	79
1976:								
January-March	220	224	285	269	98	106	77	83
April-June	244	239	287	285	102	101	85	84
July-September		268	289	286		101		94
October-December		269	320	309		104		87
1977:								
January-March	246	266	309	309	92	100	80	86
April-June	300	257	309	305	117	101	97	84
July-September	242	278	294	329	87	89	82	85
October-December		268	294	329		89		82
1978:								
January-March	329	262	333	298	125	112	99	88
April-June	329	285	350	338	116	103	94	84
July-September	365	312	363	349	117	104	100	89
October-December	384	341	359	351	113	102	107	97

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

Table 98.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Hot rolled sheet, commercial quality, 14 ga. (.075 in.)							
1973:								
January-March		89		100				
April-June		92		100				
July-September		107		100				
October-December		107		102				
1974:								
January-March		115		105				
April-June		135		126				
July-September		132						
October-December								
1975:								
January-March		207		164				
April-June				163				
July-September		140		162				
October-December		136		168				
1976:								
January-March				169				
April-June		133		167				
July-September		133		177				
October-December		143		177				
1977:								
January-March				186				
April-June				184				
July-September				200				
October-December				200				
1978:								
January-March		134		195				
April-June		148		202				
July-September		188		200				
October-December		189		204				

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 99.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Cold rolled sheet, Class 1, commercial quality, .0299"							
1973:								
January-March		98	100					
April-June		99	100					
July-September	123	109	99		113		124	
October-December		113	100					
1974:								
January-March		133	112					
April-June		175	127					
July-September	186	152	152		122		122	
October-December	195	201	152		97		128	
1975:								
January-March		196	152					
April-June		187	152					
July-September		141	145					
October-December		138	158					
1976:								
January-March	142		155				91	
April-June			157					
July-September		169	172					
October-December		170	168					
1977:								
January-March		169	153					
April-June		188	150					
July-September			175					
October-December		147	174					
1978:								
January-March	247	178	204		139		121	
April-June	234	186	214		126		109	
July-September	255	211	213		121		119	
October-December	253	219	223		116		114	

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 100.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Cold rolled sheet, Class 1, commercial quality, .0359"							
1973:								
January-March		89	100					
April-June		90	100					
July-September	111	97	99		114		112	
October-December		110	102					
1974:								
January-March		120	105					
April-June		138	106					
July-September		138	140					
October-December	176	182	142		97		124	
1975:								
January-March		177	140					
April-June		127	142					
July-September		127	143					
October-December	128	125	151		102		85	
1976:								
January-March			150					
April-June		127	150					
July-September	147	127	160		116		92	
October-December	147	152	160		96		92	
1977:								
January-March		154	160					
April-June		151	163					
July-September		151	165					
October-December		165	179					
1978:								
January-March	168	155	181		108		93	
April-June	165	178	191		93		86	
July-September	179	191	194		94		92	
October-December	194	190	199		102		98	

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 101.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price-- Of importers to-- End users or fabricators	Weighted average lowest selling price-- Of importers to-- Distributors or steel service ctrs	Weighted average lowest selling price-- Of producers to-- End users or fabricators	Weighted average lowest selling price-- Of producers to-- Distributors or steel service ctrs	Ratio of importers' end user price to importers' distributor price (Percent)	Ratio of producers' end user price to producers' distributor price (Percent)	Ratio of importers' end user price to U.S. producers' end user price (Percent)	Ratio of importers' distributor price to U.S. producers' distributor price (Percent)
	Deformed reinforcing bars, ASTM 615, grade 40, No. 4							
1973:								
January-March		137	244	136		179		100
April-June		142	137	143		96		99
July-September			162	153		106		
October-December		255	145	144		100		177
1974:								
January-March		233	238	284		84		82
April-June	351	353	209	318	99	66	168	111
July-September	375	376	335	304	100	110	112	124
October-December			336	301		111		
1975:								
January-March		229	217	235		92		97
April-June	242	250	282	234	97	120	86	107
July-September		201	243	227		107		89
October-December	214	195	222	209	110	106	96	93
1976:								
January-March	188	192	206	193	98	106	91	99
April-June	208	194	210	193	107	108	99	100
July-September	215	214	216	194	100	111	99	110
October-December	197		205	199		103	96	
1977:								
January-March	198	201	192	186	98	103	103	108
April-June	199	198	190	201	100	94	105	98
July-September		207	207	208		100		100
October-December	219	228	218	218	96	100	100	104
1978:								
January-March	232	240	240	201	97	119	97	119
April-June	275	267	238	207	103	115	116	129
July-September	375	375	248	231	100	108	151	162
October-December	395	394	278	267	100	104	142	147

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

Table 102.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Hot rolled bars (flats), 1/4" x 3"							
1973:								
January-March		190	180					
April-June		163	187					
July-September		370	191					
October-December		370	190					
1974:								
January-March		286	206					
April-June		378	263					
July-September		372	303					
October-December		410	309					
1975:								
January-March			307					
April-June		265	296					
July-September		236	304					
October-December		246	278					
1976:								
January-March		221	248					
April-June		209	273					
July-September		244	259					
October-December		234	298	360		83		65
1977:								
January-March	243	229	274	300	106	92	89	76
April-June	214	221	256		97		83	
July-September	220	230	261	310	95	84	84	74
October-December		236	283	307		92		77
1978:								
January-March	268	243		266	110			91
April-June	285	262		275	109			95
July-September	350	300	316	286	117	110	111	105
October-December	346	302	325	304	114	107	106	99

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

Table 103.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Angles, 2" x 2" x 1/4", A-36							
1973:								
January-March		140	185	215		86		65
April-June	154	155	187	215	99	87	82	72
July-September		169	189	215		88		79
October-December	210	189	180		111		116	
1974:								
January-March	273	281	205		97		133	
April-June	288	335	314	281	86	112	92	119
July-September	344	347	348	302	99	116	99	115
October-December	339	365	312	307	93	102	109	119
1975:								
January-March		345	269	317		85		109
April-June	400	338	314		118		127	
July-September		237	294	341		86		70
October-December		221	244					
1976:								
January-March	202	188	242	268	107	90	83	70
April-June	227	242	225	267	94	85	100	91
July-September		220	261	250		105		88
October-December	229	287	256	370	80	69	89	78
1977:								
January-March		196	226	241		94		81
April-June	210	192	267	289	109	93	78	67
July-September		190	274	262		105		73
October-December	205	202	275	279	101	99	74	73
1978:								
January-March	330	219		254	151			86
April-June	350	242		253	145			95
July-September	370	270		283	137			96
October-December	390	285	330	278	137	119	118	102

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

Table 104.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price-- Of importers to-- End users or fabricators	Weighted average lowest selling price-- Of importers to-- Distributors or steel service ctrs	Weighted average lowest selling price-- Of producers to-- End users or fabricators	Weighted average lowest selling price-- Of producers to-- Distributors or steel service ctrs	Ratio of importers' end user price to importers' distributor price (Percent)	Ratio of producers' end user price to producers' distributor price (Percent)	Ratio of importers' end user price to U.S. producers' end user price (Percent)	Ratio of importers' distributor price to U.S. producers' distributor price (Percent)
	7/32" hot rolled rods, low carbon grade C-1008							
1973:								
January-March	141		137				103	
April-June	148		139				106	
July-September	160		138				115	
October-December	159		137				116	
1974:								
January-March	212		144				147	
April-June	256		145				177	
July-September	319		151				211	
October-December	347		196				177	
1975:								
January-March	402	385	199		105		202	
April-June	223		241				92	
July-September	269		214				125	
October-December	231		214				108	
1976:								
January-March	220		214				103	
April-June	224		222				101	
July-September	249		230				108	
October-December	259		232				112	
1977:								
January-March	241		227				106	
April-June	232		222				105	
July-September	239		224				107	
October-December	245		232				106	
1978:								
January-March	209		231				90	
April-June	221	287	245		77		90	
July-September	277		269				103	
October-December	263		255				103	

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

Table 105.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price (Percent)	Ratio of producers' end user price to producers' distributor price (Percent)	Ratio of importers' end user price to U.S. producers' end user price (Percent)	Ratio of importers' distributor price to U.S. producers' distributor price (Percent)
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs				
	Galvanized wire 12 gauge, soft industrial quality							
1973:								
January-March			259	239		108		
April-June			285	239		119		
July-September			285	285		100		
October-December			285	295		97		
1974:								
January-March			332	358		93		
April-June			413	393		105		
July-September		540	460	455		101		119
October-December			380					
1975:								
January-March			667					
April-June		356	410					
July-September			410					
October-December			476					
1976:								
January-March			435	382		114		
April-June			417	382		109		
July-September			485	406		120		
October-December			408	406		100		
1977:								
January-March			442	406		109		
April-June		366	441	406		109		90
July-September			425	406		105		
October-December			417	406		103		
1978:								
January-March			417	525		79		
April-June			406	406		100		
July-September		480	407	473		86		102
October-December	664		458	524		87	145	

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

Table 106.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Baling wire, 14-1/2 gauge ASAE No. 6500							
1973:								
January-March		100		100				100
April-June		100		102				98
July-September		100		102				98
October-December		160		115				139
1974:								
January-March		156		154				101
April-June		175		206				85
July-September		178		202				88
October-December		170		206				82
1975:								
January-March		193		191				101
April-June		176		187				94
July-September		157		174				90
October-December		153		145				105
1976:								
January-March		144		164				88
April-June		147		165				89
July-September		159		171				93
October-December		163		165				99
1977:								
January-March		155		166				93
April-June		173		176				98
July-September		171		177				96
October-December				175				
1978:								
January-March				174				
April-June		210		188				112
July-September		231		194				119
October-December				195				

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 107.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Rails, 136 lbs. per yard							
1973:								
January-March			100					
April-June			110					
July-September			114					
October-December			114					
1974:								
January-March			119					
April-June			126					
July-September			164					
October-December			164					
1975:								
January-March			171					
April-June			171					
July-September			171					
October-December			185					
1976:								
January-March			185					
April-June			185					
July-September			199					
October-December	219		199				110	
1977:								
January-March			199					
April-June			199					
July-September	271		214				127	
October-December	217		214				101	
1978:								
January-March	331		214				154	
April-June			231					
July-September			238					
October-December			242					

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 108.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Angle L 6" x 4" x 3/8"							
1973:								
January-March			100	96		105		
April-June			98	100		98		
July-September			104	100		104		
October-December			103	100		103		
1974:								
January-March			116	100		116		
April-June			137	136		101		
July-September			161					
October-December			167					
1975:								
January-March			172	168		102		
April-June		148	164	168		97		88
July-September	270	138	166	168	196	99	163	82
October-December		139	164	168		98		82
1976:								
January-March	127	128	160	168	98	95	79	76
April-June	135	124	166	168	108	99	81	74
July-September	141	141	164	168	100	98	86	84
October-December	143	140	152		102		94	
1977:								
January-March	134	139	171	171	97	100	78	81
April-June		118	163	171		95		69
July-September		126	140	171		81		74
October-December		140	156	177		88		79
1978:								
January-March	142	142	193	148	100	130	74	96
April-June	152	175	195	150	87	130	78	117
July-September	208	175	197	164	119	120	106	106
October-December	185	174	199	185	106	107	93	94

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 109.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Welded Standard Pipe - ASTM A-120, 3/4" nom. dia.							
1973:								
January-March		77		100				77
April-June	82	81		101	101			80
July-September	103	92		101	111			92
October-December	103	94		100	109			94
1974:								
January-March		115		108				106
April-June	174	142		138	123			103
July-September		174		166				105
October-December		173		167				104
1975:								
January-March		169		182				93
April-June		144		184				79
July-September	120	109		182	110			60
October-December	114	105		182	109			58
1976:								
January-March	115	112		191	103			59
April-June	116	121		186	96			65
July-September	131	126		159	104			79
October-December	121	129		144	94			89
1977:								
January-March	148	122		162	121			76
April-June		124		174				71
July-September	125	142		176	88			81
October-December		120		188				64
1978:								
January-March	155	132		187	117			71
April-June	159	141		198	112			72
July-September	172	149		203	115			74
October-December	180	191		201	94			95

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 110.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Hot rolled square tubing, 14 ga. (.075 in.)							
1973:								
January-March								
April-June								
July-September		70						
October-December		75						
1974:								
January-March		80						
April-June		85						
July-September		128		156				82
October-December		85						
1975:								
January-March								
April-June								
July-September		93		114				82
October-December								
1976:								
January-March								
April-June								
July-September		98						
October-December								
1977:								
January-March								
April-June		104		115				91
July-September		103						
October-December								
1978:								
January-March	156	113		99	138			114
April-June	173	111		122	157			91
July-September	188	128			147			
October-December	203							

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 111.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Barbed wire, 12-1/2 ga., 2 pt., 4", 2 ply, 80 Rodreels							
1973:								
January-March				100				
April-June		202		118				171
July-September		202		117				172
October-December				118				
1974:								
January-March				128				
April-June		235		166				142
July-September		235		172				137
October-December				208				
1975:								
January-March				172				
April-June		165		169				98
July-September		237		168				141
October-December				163				
1976:								
January-March		144		172				84
April-June				172				
July-September		202		175				116
October-December				186				
1977:								
January-March				174				
April-June		201		181				111
July-September			175	187		94		
October-December			179	178		100		
1978:								
January-March	202			176				
April-June	210	165		189	128			87
July-September	217	177		197	123			89
October-December	225			191				

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 112.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Prestressed strand, 1/2 in., 7 wire, 270K							
1973:								
January-March	95	90	105	100	105	105	90	90
April-June	96	94	101	100	102	101	95	95
July-September	96	97	101	100	100	101	96	97
October-December	96	99	105	104	97	100	92	95
1974:								
January-March	98	106	106	113	92	94	92	94
April-June	126	120	129	129	105	100	98	93
July-September	155	153	209	209	102	100	74	73
October-December	178	133	209	209	134	100	85	63
1975:								
January-March	246	210	209		117		117	
April-June	225	201	197		112		115	
July-September	209	197			106			
October-December	181	187			97			
1976:								
January-March		186	166					
April-June	139	140	157		99		88	
July-September	141	140	150		101		94	
October-December	141	146	157		97		90	
1977:								
January-March	143	146		149	98			98
April-June	144	147		149	98			99
July-September	138	139		149	99			93
October-December	139	134		149	104			90
1978:								
January-March	137	136	174		101		79	
April-June	157		175				90	
July-September	177	190	186		93		95	
October-December	202	172	195		118		104	

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 113.--Carbon steel products: Weighted average lowest selling prices of importers and of U.S. producers to end users or fabricators and to distributors or steel service centers in 10 Western States, by quarters, 1973-78

(Prices are per ton)

Period	Weighted average lowest selling price--				Ratio of importers' end user price to importers' distributor price	Ratio of producers' end user price to producers' distributor price	Ratio of importers' end user price to U.S. producers' end user price	Ratio of importers' distributor price to U.S. producers' distributor price
	Of importers to--		Of producers to--					
	End users or fabricators	Distributors or steel service ctrs	End users or fabricators	Distributors or steel service ctrs	(Percent)	(Percent)	(Percent)	(Percent)
	Nails, 16d common bright							
1973:								
January-March		125	100	101		99		124
April-June		122	100	106		94		115
July-September			100	108		93		
October-December		150	100	111		90		135
1974:								
January-March		245	118	114		104		215
April-June		291	151	146		103		198
July-September		222	184	174		105		127
October-December			192	185		104		
1975:								
January-March		170	203	185		110		92
April-June		145	187	184		101		78
July-September		143	188	185		101		77
October-December	155	138	173	183	112	94	89	75
1976:								
January-March		137	164	184		89		74
April-June		137	165	190		87		72
July-September		132	177	190		93		69
October-December		181	171	193		89		94
1977:								
January-March		160	172	178		96		90
April-June		158	177	202		88		78
July-September		159	171	201		85		79
October-December		139	160	192		84		73
1978:								
January-March	160	175		180	91			97
April-June	129	176		197	73			89
July-September	154	221		210	69			105
October-December	176	228		212	77			107

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

Note: Price data in the above table were converted to index numbers to avoid disclosure of individual company data.

Table 1A.--Indexes of Western States apparent consumption of steel, Western States industrial and durable goods production, U.S. apparent consumption of steel and U.S. industrial production, 1962-78

(1967 = 100)

Year	Industrial production		Apparent consumption of steel		Durable goods production
	Western States	United States	Western States	United States	Western States
1962	71	72	75	78	1/
1963	76	77	83	84	75
1964	78	82	89	94	80
1965	83	90	101	107	84
1966	94	98	105	106	92
1967	100	100	100	100	100
1968	106	106	113	115	110
1969	111	111	107	110	112
1970	104	108	103	104	103
1971	103	110	101	109	107
1972	113	120	107	114	129
1973	126	130	118	131	139
1974	129	129	130	128	132
1975	121	118	88	95	132
1976	135	130	94	108	164
1977	139	137	102	116	192
1978	E 147	145	117	125	107

Source: Western States industrial production calculated from data by state provided by U.S. Steel Corp., based on Federal Reserve index; U.S. industrial production, Federal Reserve Bank; U.S. apparent consumption of steel, American Iron and Steel Institute; Western States apparent consumption of steel calculated from figures provided by Kaiser Steel Corp. based on AISI data; Western States durable goods production, 12th District Federal Reserve index.

1/ Not available.

Table 2A.--Western steel market demand indicators: Index of industrial production in the Western States, quarterly 1962-77

(1967 = 100)

Year	Industrial production index			
	Jan.-March	April-June	July-sept.	Oct.-Dec.
1962	68	69	73	73
1963	73	76	78	77
1964	77	78	80	78
1965	79	81	87	87
1966	89	93	97	97
1967	96	98	102	103
1968	104	105	109	108
1969	109	110	114	110
1970	106	104	105	101
1971	100	102	105	106
1972	108	112	116	117
1973	120	126	130	129
1974	127	130	132	127
1975	118	118	123	126
1976	127	137	140	133
1977	136	137	142	141

Source: Calculated from data by State provided by U.S. Steel Corp. based on the Federal Reserve index of U.S. industrial production.

Table 3A.--Western States steel market: Apparent consumption, domestic shipments in and to the region, and imports, in quantity and indexed, 1962-78

Year	Apparent consumption		Domestic shipments in and to the region		Imports	
	Quantity	Index	Quantity	Index	Quantity	Index
	1,000 tons	1967 = 100	1,000 tons	1967 = 100	1,000 tons	1967 = 100
1962----	6,310	75	5,374	81	936	51
1963----	6,975	83	5,825	88	1,150	63
1964----	7,500	89	6,177	93	1,323	73
1965----	8,500	101	6,796	103	1,704	94
1966----	8,859	105	6,969	105	1,890	104
1967----	8,455	100	6,633	100	1,822	100
1968----	9,558	113	6,921	104	2,637	145
1969----	9,056	107	6,474	98	2,582	142
1970----	8,728	103	6,326	95	2,402	132
1971----	8,575	101	5,889	89	2,686	147
1972----	9,035	107	5,730	86	3,305	181
1973----	9,985	118	7,174	108	2,811	154
1974----	11,021	130	6,926	104	4,095	225
1975----	7,412	88	5,086	77	2,326	128
1976----	7,982	94	5,123	77	2,859	157
1977----	8,648	102	5,337	81	3,311	182
1978----	9,906	117	5,586	84	4,320	237

Source: Apparent consumption and domestic shipments compiled from figures provided by Kaiser Steel Corp. based on AISI data; imports from official statistics of the U.S. Department of Commerce.

Table 4A.--Steel received in the Western States' market, 1/ total and by product categories, 1963-77

Year	Total		Plates		Structurals		Hot-rolled bars		Reinforcing bars		Hot-rolled sheet and strip	
	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change
	1,000 net tons		1,000 net tons		1,000 net tons		1,000 net tons		1,000 net tons		1,000 net tons	
1963	6,975	11	785	16	510	5	2/1,180	2/ 7	3/	3/	4/1,557	4/ 17
1964	7,500	8	945	20	581	14	2/1,347	2/ 14	3/	3/	4/1,548	4/ -1
1965	8,500	13	1,045	11	740	27	652	6/	908	6/	713	6/
1966	8,859	4	1,082	4	757	2	670	3	1,035	14	842	18
1967	8,455	-5	976	-10	739	-2	652	-3	913	-12	1,011	20
1968	9,558	13	1,215	24	755	2	693	6	958	5	1,063	5
1969	9,056	-5	1,083	-11	765	1	672	-3	973	2	897	-16
1970	8,728	-4	935	-14	711	-7	584	-13	1,051	8	887	-1
1971	8,575	-2	951	2	702	-1	587	1	1,005	-4	865	-2
1972	9,035	5	1,016	7	771	10	608	4	866	-14	1,079	25
1973	9,985	11	1,125	11	833	8	683	12	903	4	1,194	11
1974	11,021	10	1,447	29	897	8	876	28	901	-	1,159	-3
1975	7,412	-33	1,162	-20	584	-35	471	-46	689	-24	686	-41
1976	7,982	8	921	-21	494	-15	429	-9	641	-7	1,008	47
1977	8,648	8	913	-1	639	29	532	24	686	7	1,147	14

Year	Cold-rolled sheet and strip		Galvanized sheet		Standard and line pipe		Tin mill products		Other steel mill products			
	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change	Quantity	Percentage change		
	1,000 net tons		1,000 net tons		1,000 net tons		1,000 net tons		1,000 net tons			
1963	5/	5/	5/	5/	670	5	1,130	9	1,143	9		
1964	5/	5/	5/	5/	715	7	1,169	3	1,195	5		
1965	515	6/	505	6/	828	16	1,280	9	1,314	10		
1966	561	9	502	-1	879	6	1,153	-10	1,378	5		
1967	503	-10	478	-5	696	-21	1,290	12	1,197	-13		
1968	644	28	621	30	848	22	1,441	12	1,320	10		
1969	610	-5	591	-5	883	4	1,290	-10	1,292	-2		
1970	575	-6	597	1	797	-10	1,394	8	1,197	-7		
1971	573	-	620	4	830	4	1,243	-11	1,199	-		
1972	750	31	687	11	804	-3	1,083	-13	1,371	14		
1973	770	3	810	18	874	9	1,318	22	1,475	8		
1974	897	16	768	-5	1,043	19	1,384	5	1,649	12		
1975	426	-53	435	-43	598	-43	1,117	-19	1,244	-25		
1976	750	76	712	64	620	4	1,154	3	1,253	1		
1977	755	1	730	3	715	15	1,205	4	1,326	6		

1/ Comprises the number of tons shipped by steel mills, both domestic and foreign to customers in the 7 Western States of California, Oregon, Washington, Nevada, Arizona, Utah, and Idaho.
2/ Includes hot-rolled bars and rebar (reinforcing bars).
3/ Data are included with hot-rolled bars.
4/ Includes hot-rolled and cold-rolled sheet and strip and galvanized sheet.
5/ Data are included with hot-rolled sheet and strip.
6/ Not available.

Source: Compiled from American Iron and Steel Institute data supplied by Kaiser Steel Corp.

Table 5A.--Total steel received in the Western States market, quantity and indexed, quarterly, 1963-78

Year	Jan.-March	April-June	July-Sept.	Oct.-Dec.
	(Thousands of short tons)			
1963	1,660	1,985	1,854	1,485
1964	1,701	1,933	1,936	1,930
1965	2,195	2,282	2,146	1,877
1966	1,925	2,338	2,515	2,081
1967	2,133	2,176	2,180	1,966
1968	2,272	2,780	2,454	2,052
1969	2,199	2,468	2,350	2,039
1970	2,225	2,304	2,329	1,870
1971	2,209	2,723	1,438	2,205
1972	1,948	2,404	2,472	2,211
1973	2,417	2,733	2,375	2,460
1974	2,476	2,790	2,951	2,804
1975	2,341	1,814	1,627	1,630
1976	1,854	2,035	2,116	1,977
1977	2,036	2,252	2,280	2,080
1978	2,691	2,440	2,491	2,284
	(Index: 1967 = 100)			
1963	79	94	87	70
1964	81	91	92	91
1965	104	108	102	89
1966	91	111	119	99
1967	101	103	103	93
1968	108	132	116	97
1969	104	117	111	97
1970	105	109	110	89
1971	105	129	68	104
1972	92	114	117	105
1973	114	129	112	116
1974	117	132	140	133
1975	111	86	77	77
1976	88	96	100	94
1977	96	107	108	98
1978	127	115	118	108

Source: Calculated from figures provided by Kaiser Steel Corp. based on American Iron and Steel Institute data.

Table 6A.--Imports into the Western States, quantity and indexed, quarterly 1959-78

Year	January-March	April-June	July-September	October-December
	Thousands of short tons			
1959	117	183	230	218
1960	225	153	115	108
1961	101	141	169	165
1962	193	236	281	226
1963	233	294	348	275
1964	307	347	356	313
1965	398	444	494	368
1966	400	439	596	455
1967	442	474	459	447
1968	638	660	719	620
1969	666	709	658	549
1970	580	600	618	604
1971	691	893	72	1,030
1972	762	831	894	818
1973	848	766	588	609
1974	661	980	1,255	1,199
1975	839	566	413	508
1976	632	647	806	774
1977	734	821	899	857
1978	1,280	977	1,120	943
	Index - 1967 = 100			
1959	26	40	51	48
1960	49	34	25	24
1961	22	31	37	36
1962	42	52	62	50
1963	51	65	76	60
1964	67	76	78	69
1965	87	98	109	81
1966	88	96	131	100
1967	97	104	101	98
1968	140	145	158	136
1969	146	156	145	121
1970	127	132	136	133
1971	152	196	16	226
1972	167	182	196	180
1973	186	168	129	134
1974	145	215	276	263
1975	184	124	91	112
1976	139	142	177	170
1977	161	180	197	188
1978	281	215	246	207

Source: Official statistics of the U.S. Department of Commerce.

Table7A.--Domestic shipments of steel within and to the Western States, quantity and indexed, quarterly, 1963-78

Year	Jan.-March	April-June	July-Sept.	Oct.-Dec.
	(Thousands of short tons)			
1963	1,427	1,691	1,497	1,210
1964	1,394	1,586	1,580	1,617
1965	1,797	1,838	1,652	1,509
1966	1,525	1,899	1,919	1,626
1967	1,691	1,702	1,721	1,519
1968	1,634	2,120	1,735	1,432
1969	1,533	1,759	1,692	1,490
1970	1,645	1,704	1,711	1,266
1971	1,518	1,830	1,366	1,175
1972	1,186	1,573	1,578	1,393
1973	1,569	1,967	1,787	1,851
1974	1,815	1,810	1,696	1,605
1975	1,502	1,248	1,214	1,122
1976	1,222	1,386	1,310	1,203
1977	1,302	1,431	1,381	1,223
1978	1,411	1,463	1,371	1,341
	(Index: 1967 = 100)			
1963	86	102	90	73
1964	84	96	95	98
1965	108	111	100	91
1966	92	115	116	98
1967	102	103	104	92
1968	99	128	105	86
1969	92	106	102	90
1970	99	103	103	76
1971	92	110	82	71
1972	72	95	95	84
1973	95	119	108	112
1974	110	109	102	97
1975	91	75	73	68
1976	74	84	79	73
1977	79	86	83	74
1978	85	88	83	81

Source: Calculated from data on total steel received in the Western States market less imports.

Appendix D

The Japanese Steel Industry

The Japanese Steel Industry 1/

Industry structure

The Japanese steel industry is composed of over 50 companies. Eight large integrated companies operating 21 mills account for the bulk of the nation's output of crude steel.

The five largest companies 2/--Nippon Steel Corp., Nippon Kokan K.K., Kawasaki Steel Corp., Sumitomo Metal Industries, Ltd., and Kobe Steel Corp.--account for about 125 million metric tons of crude steel capacity, or more than 80 percent of Japan's total steelmaking capacity of approximately 151 million metric tons.

Nippon Steel Corp., which operates nine plants, is the world's largest steelmaker, accounting for about 50 million metric tons of Japan's crude steel capacity. This giant company's market power influences steelmaking policies and decisions in Japan and throughout the world. In addition to steel, Nippon Steel Corp. has a large number of subsidiaries and affiliates involved in other products such as aluminum, chemicals, cement, engineering and construction, and related activities.

Nippon Kokan K.K., with 24 million metric tons of steelmaking capacity, is the second largest Japanese producer. Its Fukuyama works, with a capacity of about 16 million tons, is the world's largest steel mill. The Ogishima works, virtually completed in 1978, will have a capacity of approximately 6 million tons and will be one of the world's most efficient integrated mills. 3/ Nippon Kokan K.K. is Japan's fifth largest shipbuilder and is one of the world's leading companies in engineering, fabrication, and construction of steel structures.

Kawasaki Steel Corp. and Sumitomo Metal Industries, Ltd., have about 20 million metric tons of steel capacity each. Kawasaki Steel Corp. has been a leader in technological advances. Sumitomo Metals produces a large variety of steel products; however, it is a leader in the production of pipe and tube. The company supplied large quantities of large diameter pipe for the Alaska pipeline. Sumitomo Metals accounts for almost one-third of Japan's capacity to produce steel pipe and tube.

1/ In January 1978, Mr. Howard Gooley and Mr. Quay Williams of the Commission staff conducted onsite interviews with leading officials of the Japanese steel industry and inspected six of the industry's large integrated mills. This field research provided the Commission's staff with a unique opportunity to witness firsthand Japan's steelmaking operations and their competitive capability, to acquire knowledge as to conditions and forecasts of domestic demand including export patterns, and to discuss other factors relevant to Japan's position in the world's steel market.

2/ All of these companies were visited by representatives of the U.S. International Trade Commission in January 1978.

3/ The Ogishima works, when completed, will replace virtually all of the adjacent Kehin works.

Kobe Steel Corp., with annual capacity of about 10 million metric tons of crude steel, owns about one-third of Japan's wire rod capacity.

About 82 percent of Japan's crude steel capacity has been built on land reclaimed from the sea. These mills, all built since 1960, have spacious plant layouts organized efficiently, from raw material inflow through the steelmaking process to product outshipment. They employ the latest in pollution-control technology including large greenbelt areas. 1/ All of these complexes possess highly automated computer-controlled equipment.

Raw materials

Japan is almost totally dependent upon imported iron ore and coking coal for steel production. In recent years, Japan has imported 99 percent of its iron ore needs and 89 percent of its coal requirements. Japan has been highly successful in developing dependable long-term sources of supply for its raw material needs. Australia, Brazil, and India are its principal sources of iron ore, and Australia, the United States, and Canada supply most of the coal. These raw materials are transported by huge cargo vessels largely built, owned, or leased by the major steel firms. By contrast, Japan is almost totally self-sufficient for its scrap needs.

Reflecting heavy inventories of coal and no growth in its steel production, the Japanese steel industry's imports of coking coal declined nearly 15 percent or almost 8 million metric tons in 1978. Accounting for most of this sharp drop, imports of coking coal from the United States fell from 15 million metric tons to 8.7 million metric tons. The dollar trade loss to the United States amounted to roughly $360 million.

Facilities

The Japanese steelmaking facilities are vast, employing huge blast furnaces, 2/ some of which are capable of producing 12,000 metric tons of pig iron per day. The large basic oxygen furnaces employ the latest technology; 28 of these BOF's have a capacity of more than 200 metric tons per charge. At the beginning of 1977, Japan had 72 blast furnaces and 101 BOF's.

Rolling and finishing facilities are fast, efficient, and capable of producing the largest sizes of steel material produced in the world. Individual mills tend to concentrate on a limited range of products reflecting Japan's goal of rationalized production.

Japan's steel market

Japan's production, apparent consumption, and trade in steel for 1973-78 are shown in the tabulation below (in 1,000 metric tons): 3/

1/ In recent years, environmental control expenditures have averaged about 18 to 20 percent of total annual capital expenditures.

2/ Japan has 14 of the 20 largest blast furnaces in the world.

3/ Data were obtained from the Japan Iron and Steel Federation.

	Production	Exports	Imports	Apparent consumption
1973----------	119,322	30,247	244	89,319
1974----------	117,131	38,409	254	78,976
1975----------	102,313	34,353	120	68,080
1976----------	107,399	42,355	176	65,220
1977----------	102,405	39,449	249	63,205
1978----------	102,105	36,212	412	66,305

About 80 percent of Japanese crude steel production is by the BOF, the remainder, by the electric furnace process. By early 1978, all of the remaining open-hearth furnaces had been phased out of production. About 50 percent of Japan's production is continuous cast, which provides for savings in thermal energy and scrap, eliminates some production processes, and provides for greater yields. Japan has about 130 continuous-casting machines in operation. Among the major steel producers of the world, Japan is the leader in continuous-casting installations.

Japanese work force

According to the Japan Iron and Steel Federation (JISEA), 302,000 persons (excluding contract employees) were employed in the Japanese steel industry in 1978, 22,000 less than in the peak year, 1975. Production workers totaled 219,000 in 1978, a reduction of 8,000 from the previous year as shown in the table below. While the exact number of contract employees is not known, the staff of the U.S. International Trade Commission, on the basis of field research, estimates that contract employees 1/ account for between 70 and 80 percent (160,000 to 185,000) of the number of production workers.

Employment in Japan's Steel Industry, 1973-78

Year	Production	Administrative clerical and technical	Total
1973----------	242,166	78,546	320,661
1974----------	242,885	81,031	323,866
1975----------	243,710	80,732	324,442
1976----------	233,995	86,321	320,316
1977----------	227,573	87,218	314,789
1978----------	219,270	83,214	302,487

1/ The Japanese steel companies use contract labor for many tasks associated with the production, finishing, and shipping of steel mill products. Contract workers are not employees of the steel mill; they are employed by both independent and subsidiary firms. Contract workers are used in such jobs as furnace repairing, maintenance, and packaging and shipping.

The Japanese labor force is relatively young, well educated, and highly motivated. Although Japanese labor productivity is among the highest in the world, actual productivity figures are difficult to calculate because contract employees are not included in Japan's labor productivity calculations. Thus, some published data on Japanese labor productivity may be suspect.

The Japanese steel industry is a recognized leader in technological advances, such as pretreatment of iron ore, coke quenching and reduction, blast-furnace enrichment and BOF control, and continuous annealing. Coke and energy consumption rates per ton of output have steadily declined, reducing costs per ton.

In recent years, Japan has become a net exporter of steel technology. Research and development expenditures have averaged slightly in excess of 1 percent of gross sales.

Japan has made heavy capital investments over three 5-year programs to modernize and expand its steel industry. In 1976, such expenditures for facilities and equipment were in the magnitude of between $4 billion and $5 billion. Currently no new investments are contemplated for greenfield plants. Capital investment in fiscal 1978 was about $3 billion, largely reflecting Nippon Kokan's expenditures for its new Ogishima works. 1/

Steel demand in the world and in Japan

World steel demand is important to Japan's steel industry and to the Japanese economy. Japan's steel industry in turn has a strong influence on the overall economy of the country. The following ratios highlight the steel industry's key role: In 1975, Japan's steel industry was responsible for 7 percent of cash wages and salaries paid by all manufacturing industries, contributed 9 percent of the total value of manufactured products, and accounted for 20 percent of total investment in fixed assets.

Japan's domestic demand for steel has declined since the peak year 1973, when crude steel output reached a level of 120 million metric tons. Japanese steel sources peg the change in pattern and level of demand to the 1973 oil crisis and its effect on world economic growth.

Since the oil shock and the attendant decline in world economic growth rates, world demand for steel--on a steady uptrend for more than 2 decades--has faltered. In the industrialized countries, which account for about 60 percent of world demand, steel consumption levels declined most sharply. In contrast, steel consumption in the Communist bloc countries has grown steadily through the 1970's. Although apparent consumption of steel in the developing countries has varied, the overall pattern reflects a steady uptrend led by increased demand in Asia, Latin America, North Africa, and the Middle East.

1/ Calculated at the exchange rate of September 1978.

The level of demand for steel in Japan follows the pattern in the industrialized countries. Apparent steel consumption in those countries has not recovered from the successive declines that began in 1974, as shown in the table below.

Apparent steel consumption in the world, 1972-78

(In millions of metric tons)

Area	1972	1973	1974	1975	1976	1977	1978
Advanced countries	381	436	418	341	364	372	371
U.S.A	138	156	150	114	128	139	147
EEC	117	127	122	100	113	105	103
Japan	71	89	78	68	65	65	68
Developing countries	49	57	69	71	74	83	92
Communist bloc	194	210	224	223	232	239	258
World total	624	703	710	641	670	694	721

Source: International Iron and Steel Institute.

Following the oil crisis, Japan's rate of economic growth dropped sharply to a low of 3.4 percent in fiscal 1976, in contrast to a rate of 10 percent or more during the 1960's and early 1970's. Moreover, there has been a change in the structure of gross national product (GNP) in Japan that has altered the level and structure of demand for steel.

Private plant and equipment investment in Japan dropped sharply from 20.5 percent of GNP in 1973 to 15.1 percent in 1976. The resultant decline in construction had an adverse effect on demand for steel. Steel consumption for construction, which has been about half of overall demand in the past, dropped to 36.9 percent in 1976 but strengthened somewhat in 1978. The post-oil-crisis tanker glut 1/ and sharp competition from new entrant countries in the shipbuilding industry (Korea and Taiwan) by 1978 had cut steel demand from Japan's shipbuilders to only 36 percent of the 1973 level. In 1976 and 1977, the Japanese automobile industry was the only segment of steel demand in which consumption was above the 1973 level, as shown in the following table. Demand for Japanese automobiles in 1978 boosted that sector's steel demand to almost 20 percent above the 1973 level. The electrical machinery sector was the only other sector to equal its 1973 consumption level in 1978.

1/ Tankers accounted for about 50 percent of total ship tonnage built prior to 1974. Steel demand for shipbuilding, 13 million metric tons in 1973, will only be 6 million metric tons by 1980 according to Japanese forecasts.

Indexes of Japanese steel demand, by sectors, fiscal years 1973-76

Demand sector	1973	1974	1975	1976	1977	1978
Construction	100.0	71.5	61.6	61.7	62.8	73.8
Shipbuilding	100.0	90.2	83.4	69.1	58.7	36.2
Automobiles	100.0	89.4	94.0	109.6	107.5	119.0
Industrial machinery	100.0	85.8	60.0	69.6	65.6	76.2
Electrical machinery	100.0	74.6	71.5	95.9	84.5	101.5
Others	100.0	76.9	72.1	74.1	67.9	70.0
Total	100.0	80.5	80.5	74.0	69.7	73.5

Source: From data provided by Japan Iron and Steel Exporters Association.

Although public investment has increased somewhat during the recession period, the pattern of such expenditures has changed from steel-intensive construction of expressways and bridges to housing and welfare projects using much less steel. However, the Japanese Government reportedly is budgeting funds for large steel-intensive projects such as a floating steel airport at Osaka, said to require 4 million to 5 million metric tons of steel.

Estimates of demand for steel in 1978 provided to the Commission's staff in Japan by steel industry economists were cautious, conservative, and contingent on the level of business and consumer confidence plus the strength of the Government's effort to reach a "target" economic growth rate of 7 percent. 1/ Although Japan's 5.75 percent growth in GNP in 1978 exceeded that of the other major industrialized countries, it fell short of the 7 percent target. The pessimistic industry forecasts of 1978 steel production were accurate. Crude steel production barely equaled the 102 million metric ton level of 1977. Domestic steel demand, however, expanded paced by strong automotive sector demand, increased private investment, a surge in residential construction and increased government spending. The increase in apparent consumption offset a 3 million metric ton drop in exports.

Japan's steel exports

In contrast to the post-oil-crisis lag in domestic consumption of steel, Japan's steel exports reached an alltime high of 37 million metric tons in 1976. Japan's exports of steel products increased from 25.6 million metric tons in 1973 to 33.1 million metric tons in 1974, declined to 30.0 million metric tons in 1975, then rose to 37 million metric tons in 1976. Exports amounted to about 35 million metric tons in 1977 but were 3 million tons less in 1978. Average export price declined from $345 per ton in 1975 to $294 per ton in 1976, or by about 15 percent. In 1976, Asian countries, Japan's largest export market, increased their steel imports from Japan from 8.9 million to 10.9 million metric tons. The Asian market grew by 20 percent in

1/ For the fiscal year ending March 31, 1979, Japan's economic growth is expected to reach slightly in excess of 5 percent.

1977 and, in 1978, steel exports from Japan increased 10 percent to 14.3 million metric tons. Exports to North America grew by 30 percent in 1976 to 7.9 million metric tons, maintained that level in 1977 but fell to 6.5 million tons in 1978. The U.S. market accounted for more than 90 percent of this tonnage. The Middle East, by 1978 the third largest market for Japan's steel exports, took 3.7 million metric tons, compared to only 2.9 million tons for all of Europe.

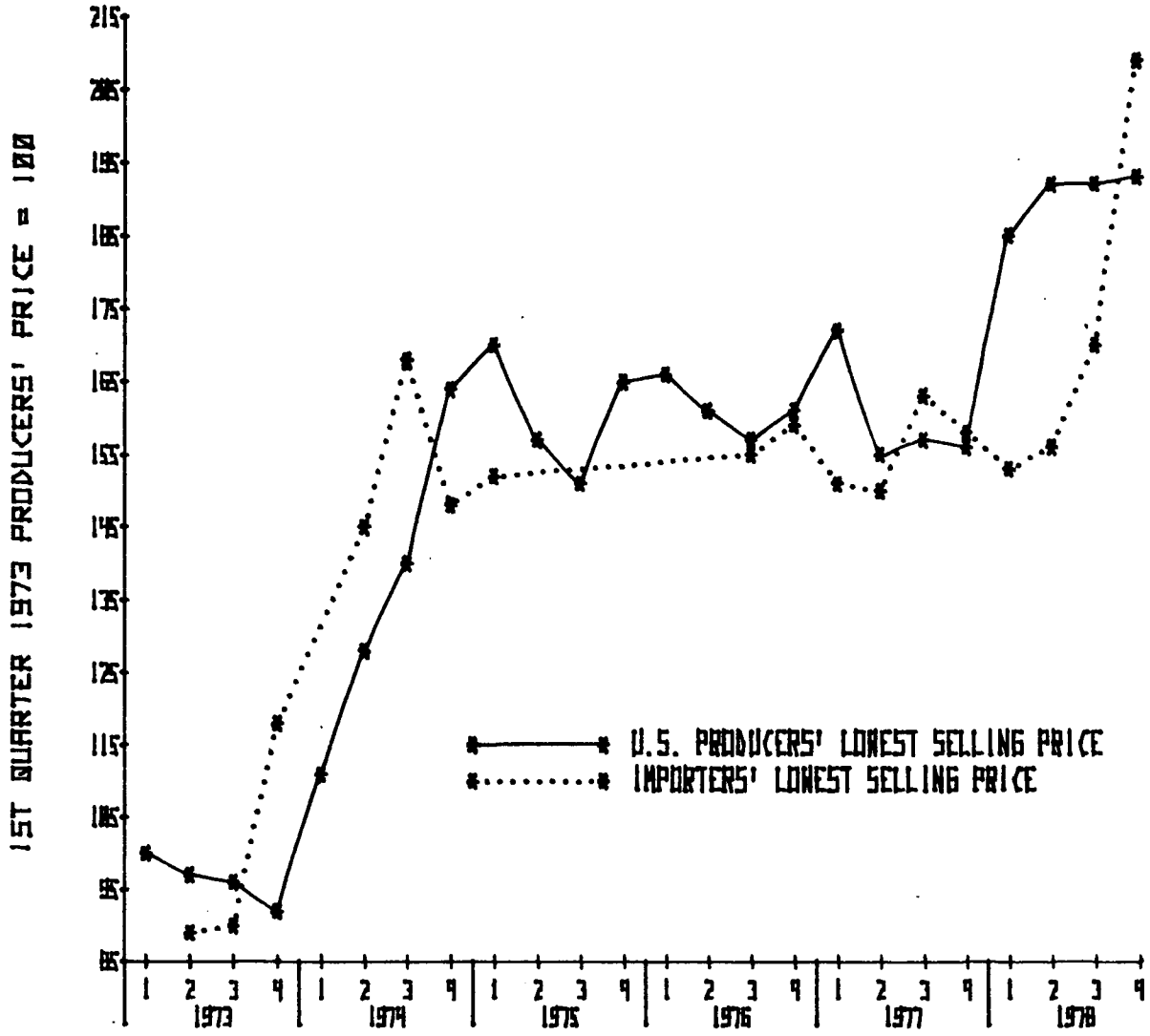
This export-destination pattern is sharply different from that of a decade ago when exports to North America accounted for 54 percent of total exports, compared with 21 percent in 1978. The developing countries accounted for about 40 percent of Japan's exports in 1968; their share in 1978 increased to almost 67 percent. According to trade sources, Japan, facing the problem of voluntary export restraint in Western Europe and the trigger price system in the United States, is counting on the growth in steel demand in the developing countries, the People's Republic of China, and the U.S.S.R. to bolster its steel exports. Exports to mainland China have grown steadily over the past decade from a base of 1 million metric tons in 1968 to 2.9 million in 1974. Since then, exports to the Peoples Republic have almost doubled to a level of 5.6 million metric tons in 1978, second only to the U.S. market which took 6 million metric tons of Japanese steel last year. China is expected to surpass the United States in 1979 as a market for Japanese steel.

As predicted by Japanese steel industry economists, steel exports fell nearly 10 percent in 1978, from 39 million to 36 million metric tons, dampened by the voluntary restraint policy with respect to the U.S. and Western European markets and energy-related foreign-exchange problems in some of the developing countries. However, direct exports of steel by Japan are only one dimension of demand for Japan's steel. More than 20 percent of steel produced is exported indirectly as input material in autos, ships, industrial machinery, and other related products. The steel industry has benefited from a sharp increase in Japan's exports of manufacturing plants, valued at an estimated $8 billion in 1977.

Appendix E

Indexes of Weighted Averages of, Importers' Lowest Selling Price and U.S. Producers' Lowest Selling Price of Selected Carbon Steel Mill Products

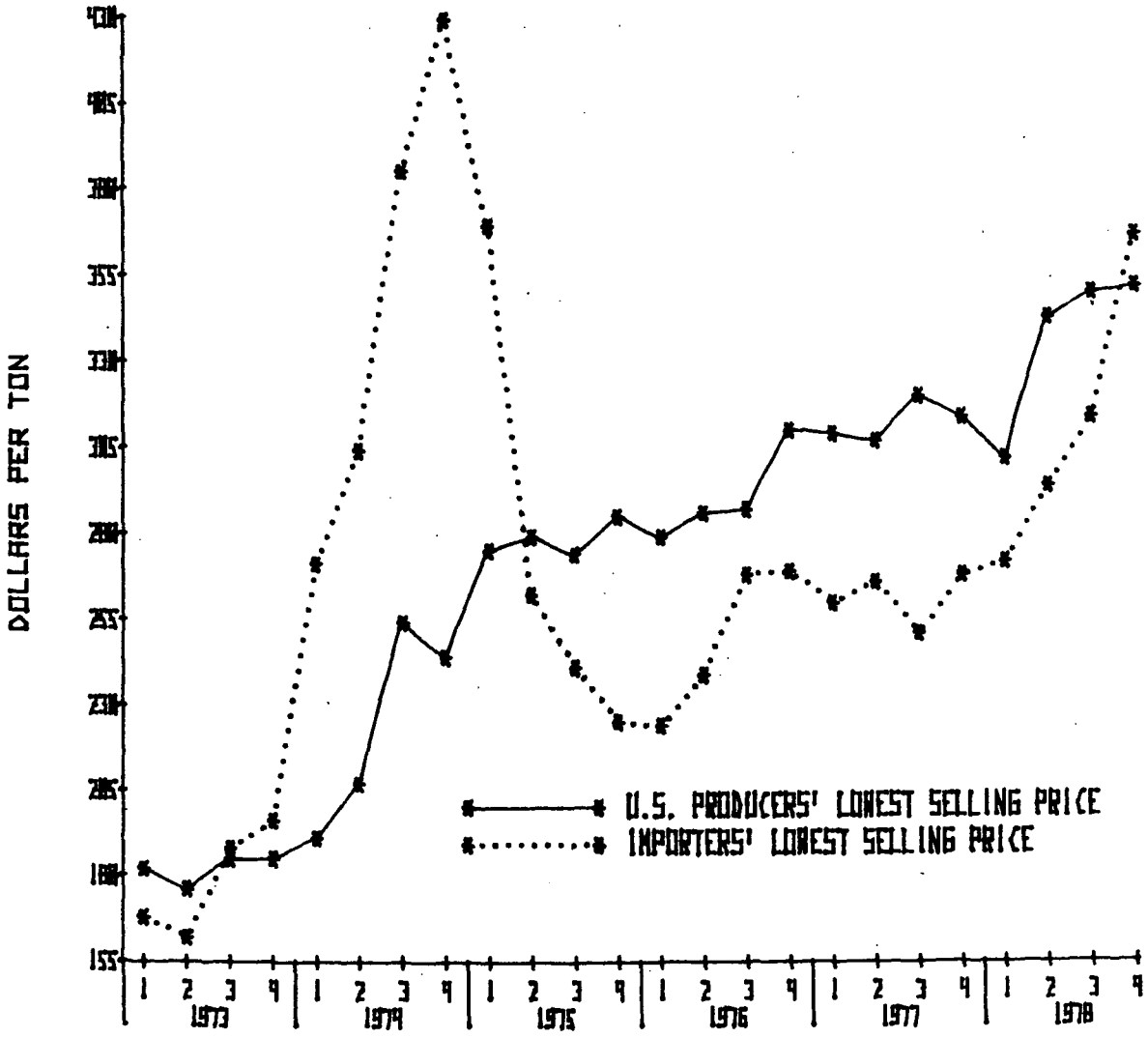
Figure E-1.--Galvanized sheet, commercial quality: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

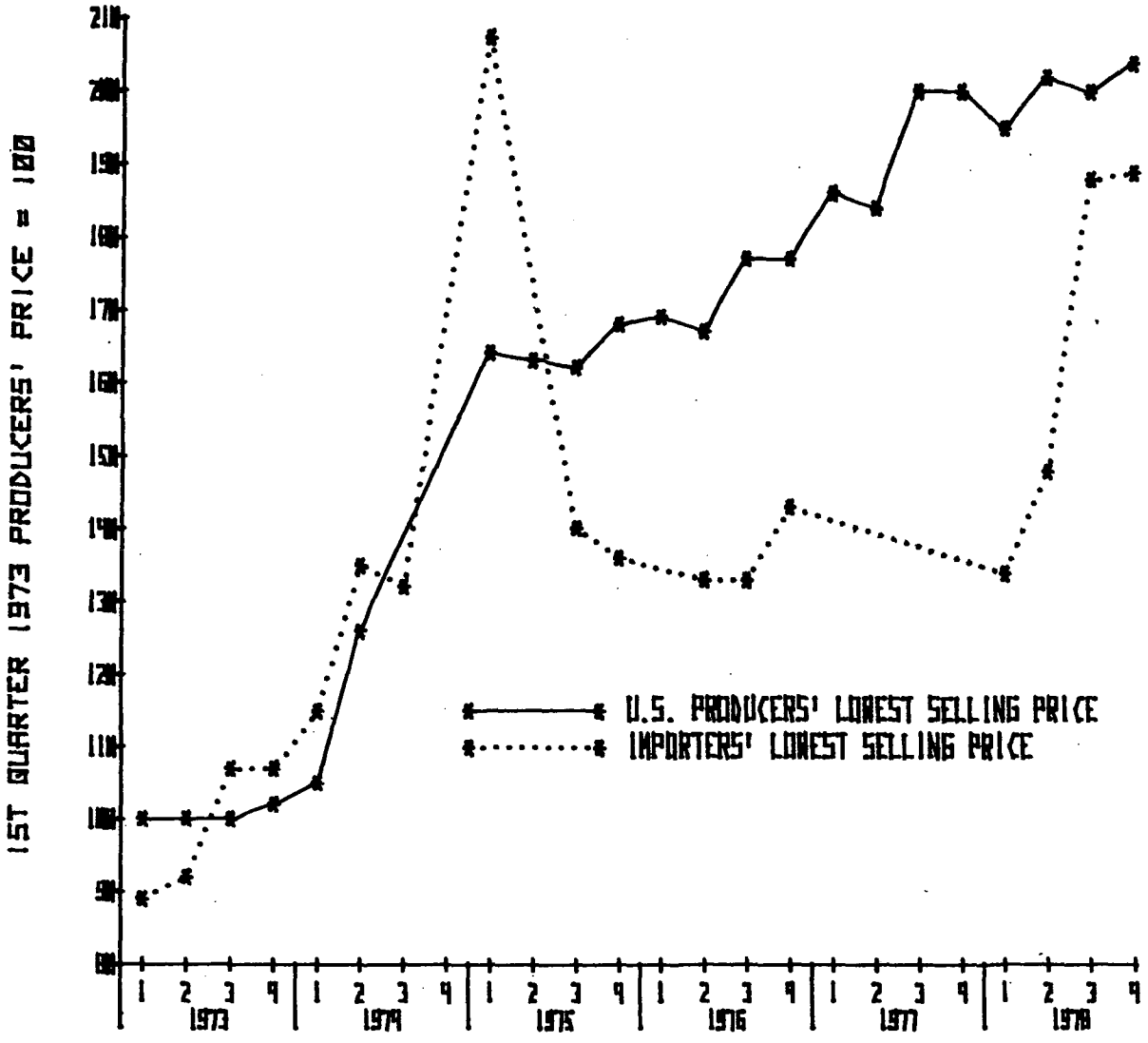
Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

Figure E-2.--Plate, structural grade, ASTM A-36, 3/"x72"x240": Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

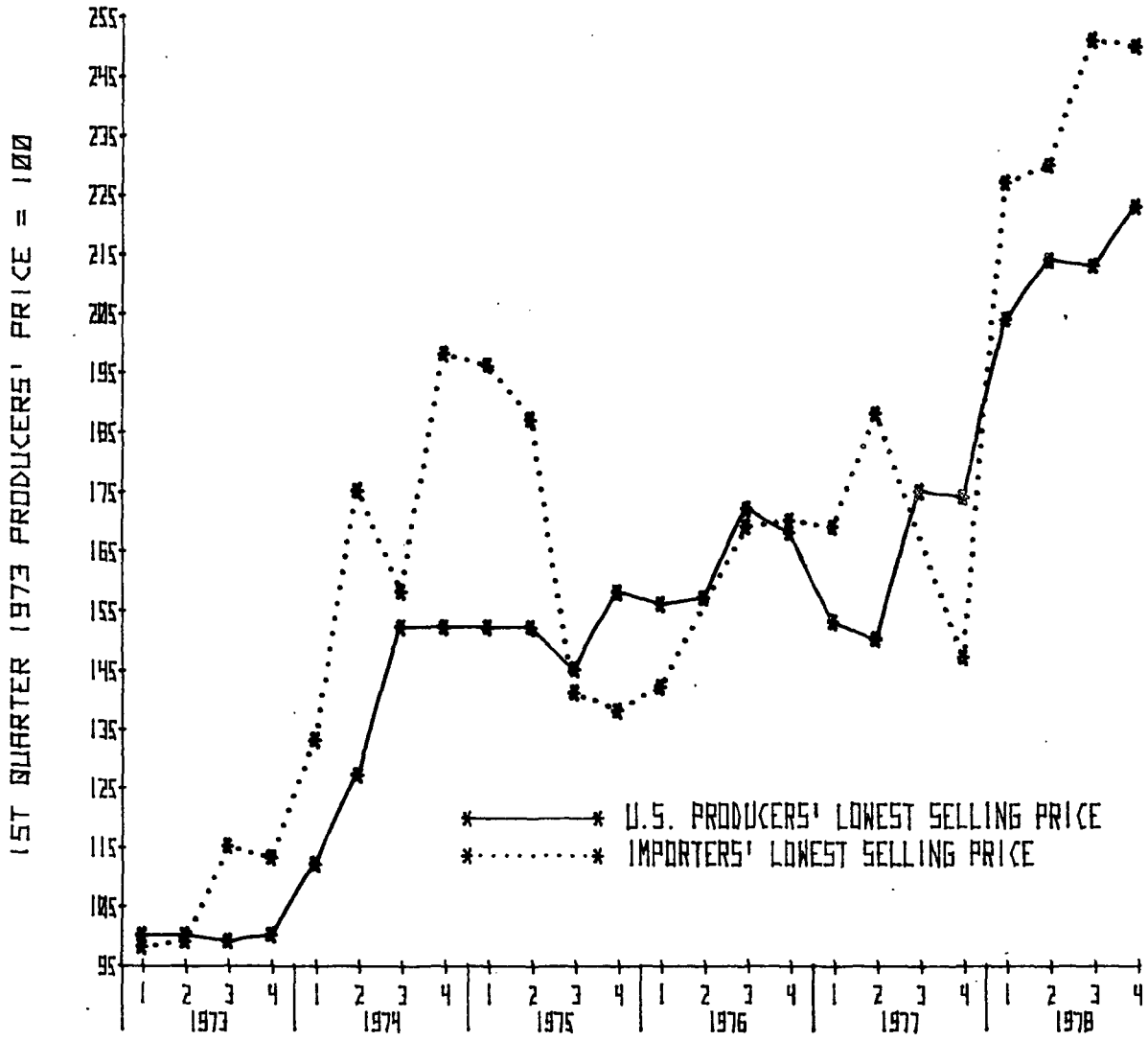
Figure E-3.--Hot rolled sheet, commercial quality, 14 gauge (.075"): Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

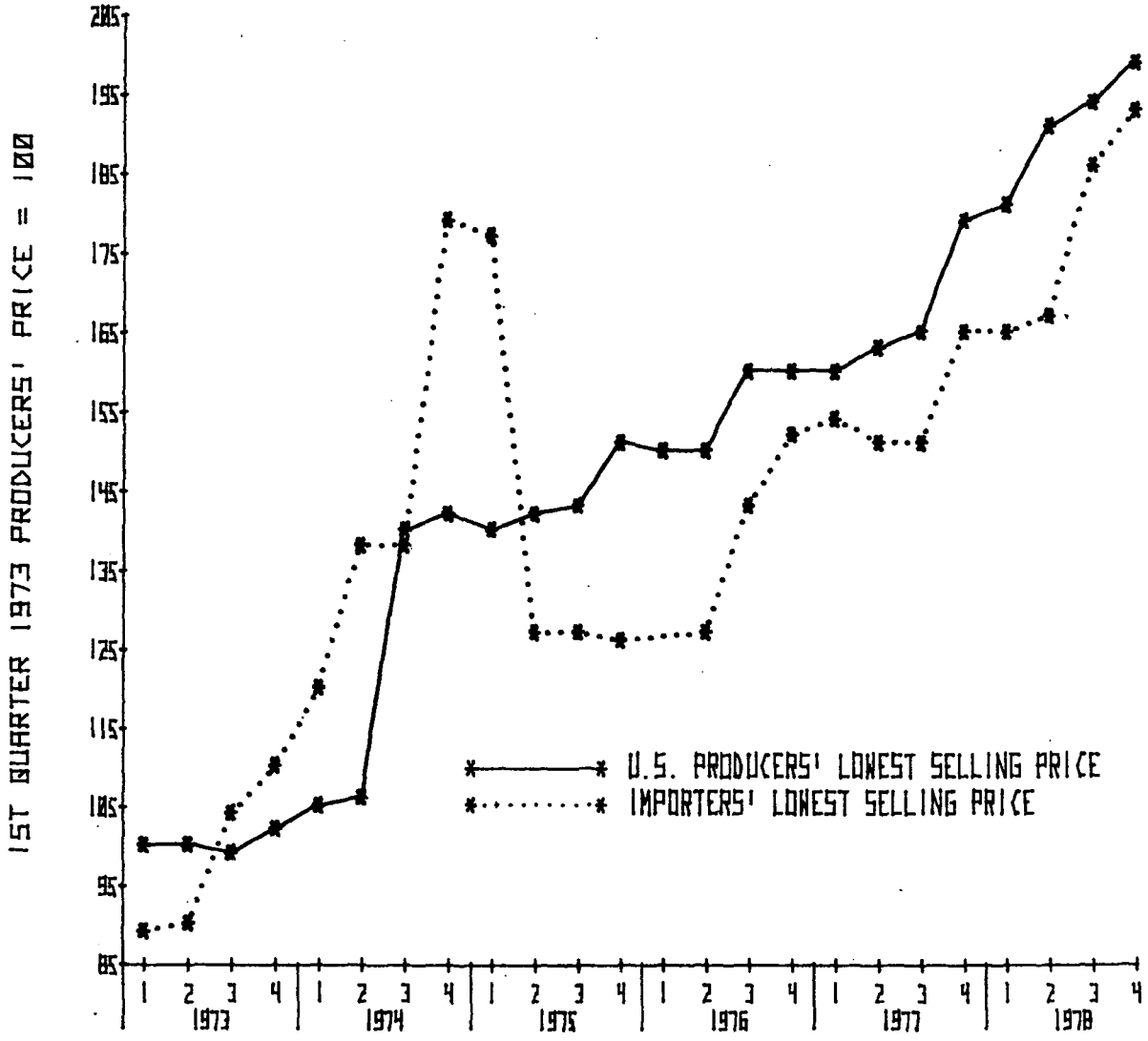
Figure E-4.--Cold rolled sheet, Class 1, commercial quality, .0299": Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

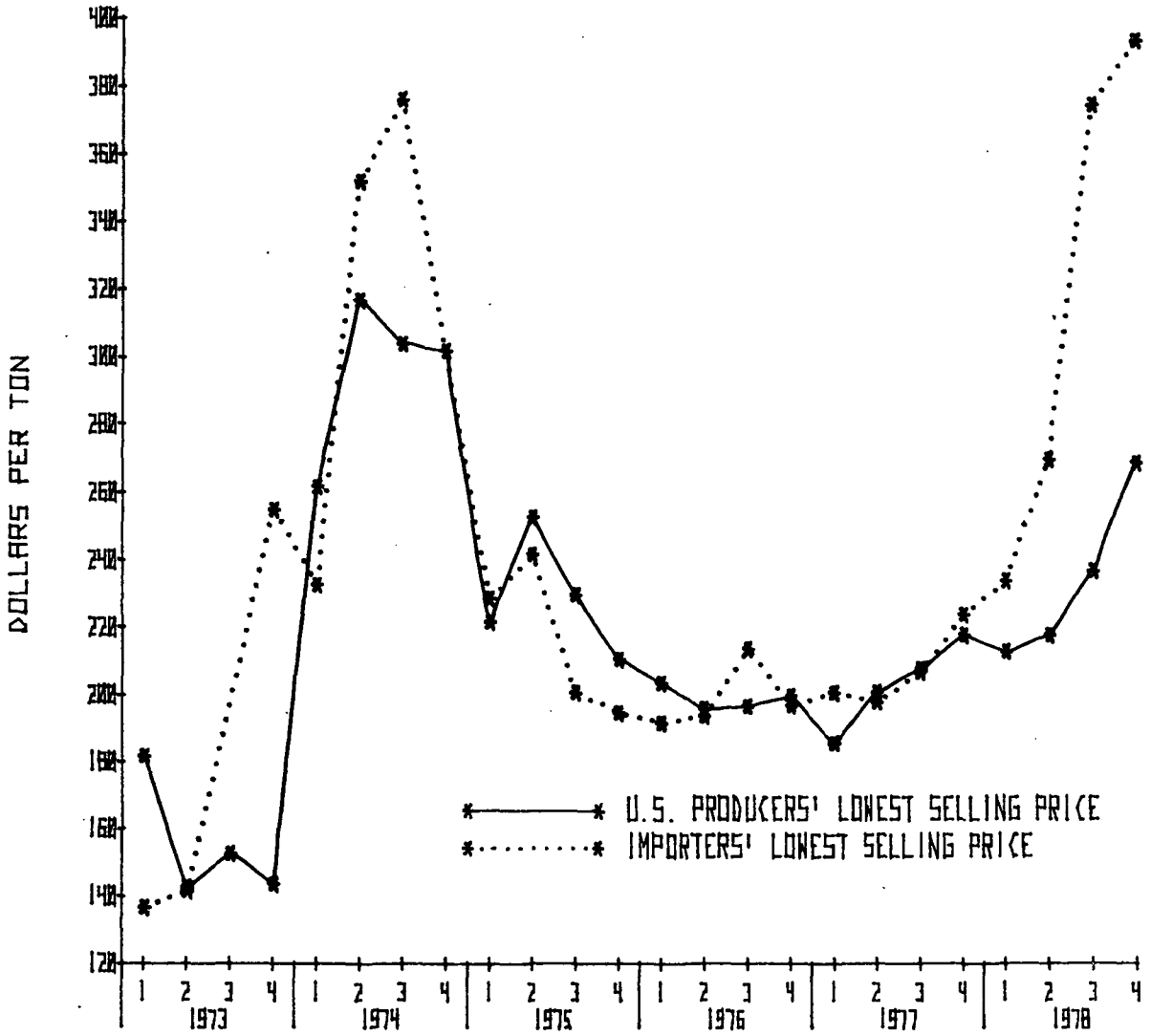
Figure E-5.--Cold rolled sheet, Class 1, commercial quality, .0359": Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

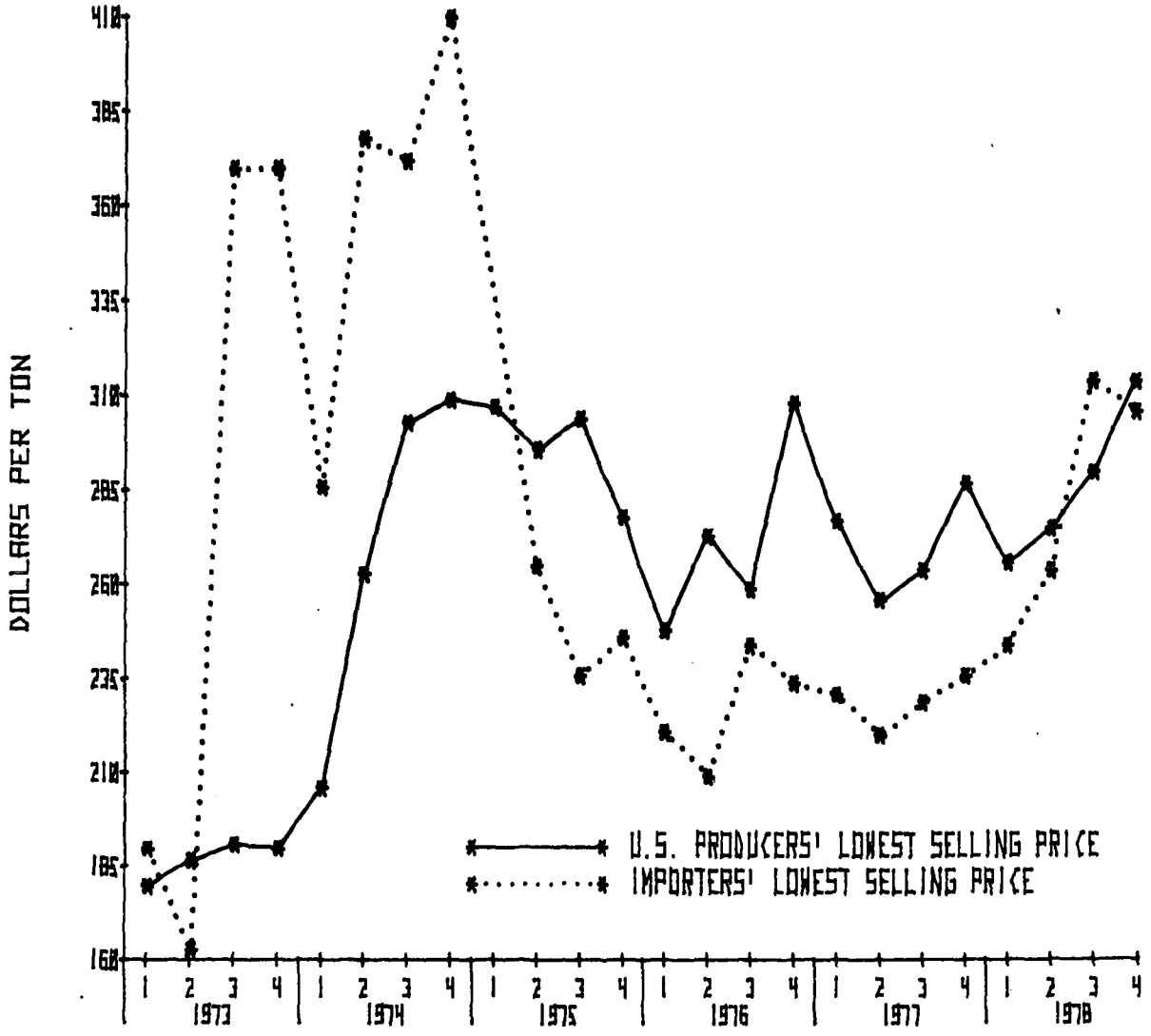
Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

Figure E-6.--Deformed reinforcing bars, ASTM 615, grade 40, No. 4: Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



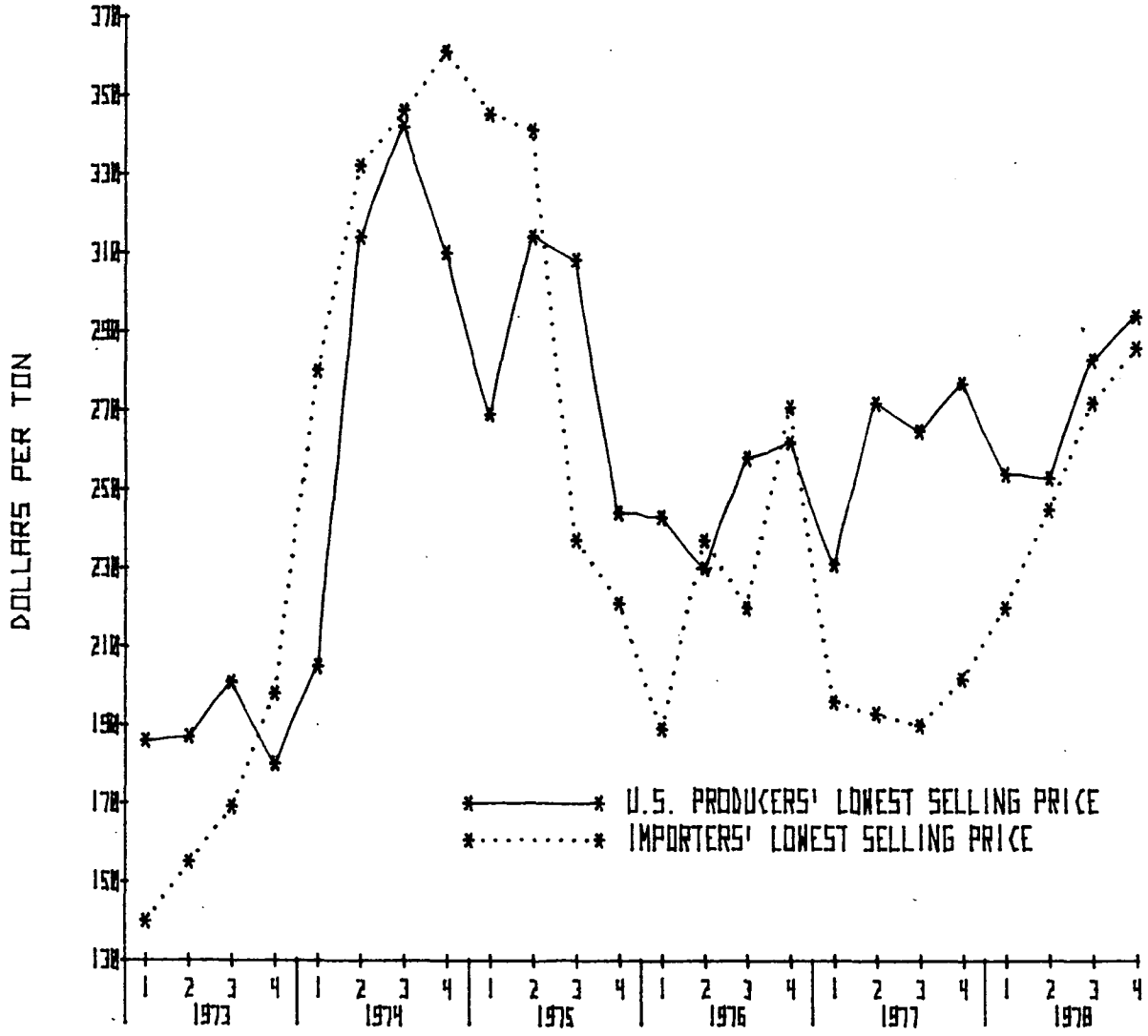
Source: Table

Figure E-7.--Hot Rolled bars (flats), 1/4" x 3": Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, in quarters, 1973-78.



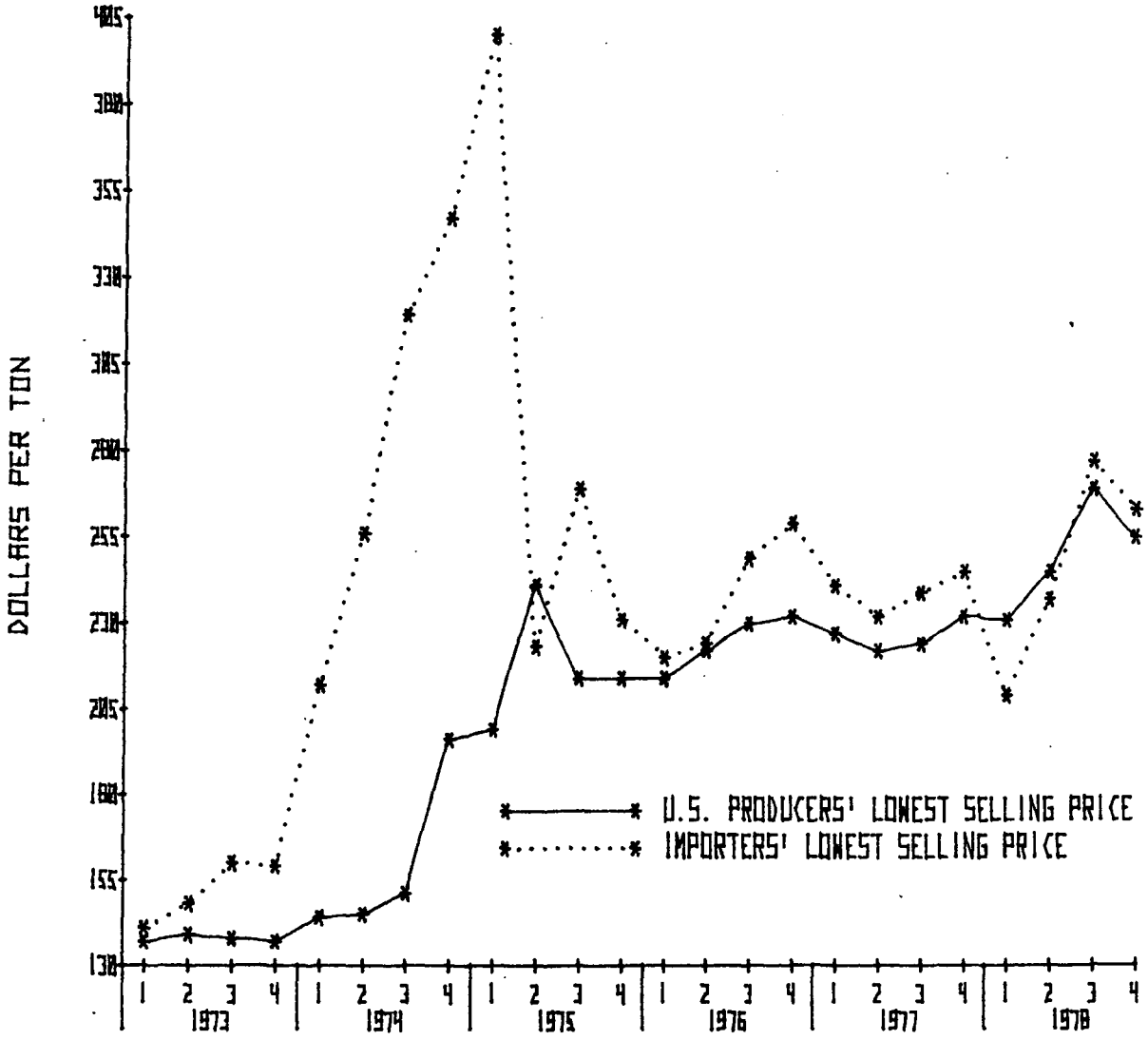
Source: Table

Figure E-8.--Angles, 2" x 2" x 1/4", A-36: Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, in quarters, 1973-78.



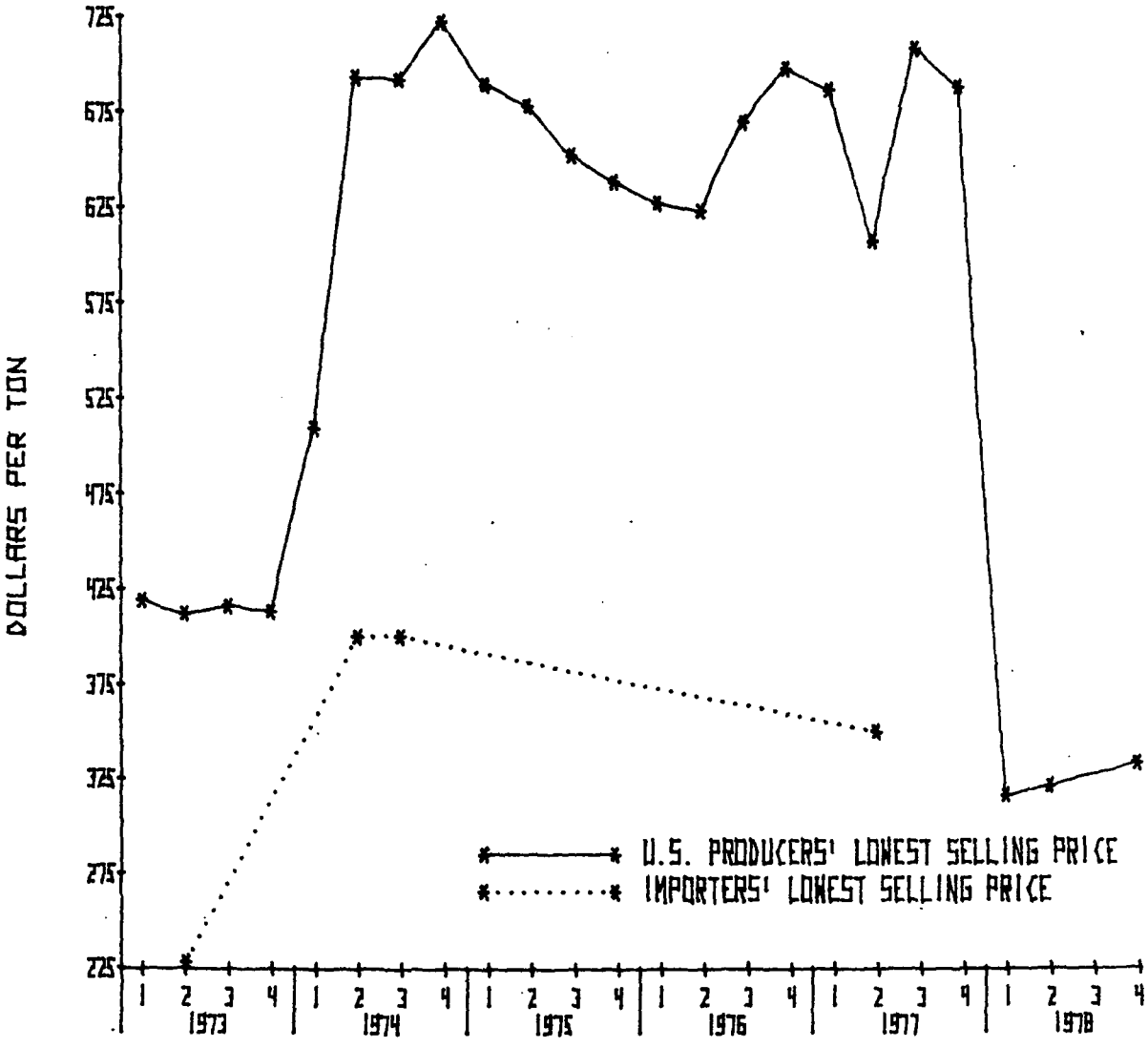
Source: Table

Figure E-9.--Hot rolled rods, 7/32", low carbon grade C-1008: Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, in quarters, 1973-78.



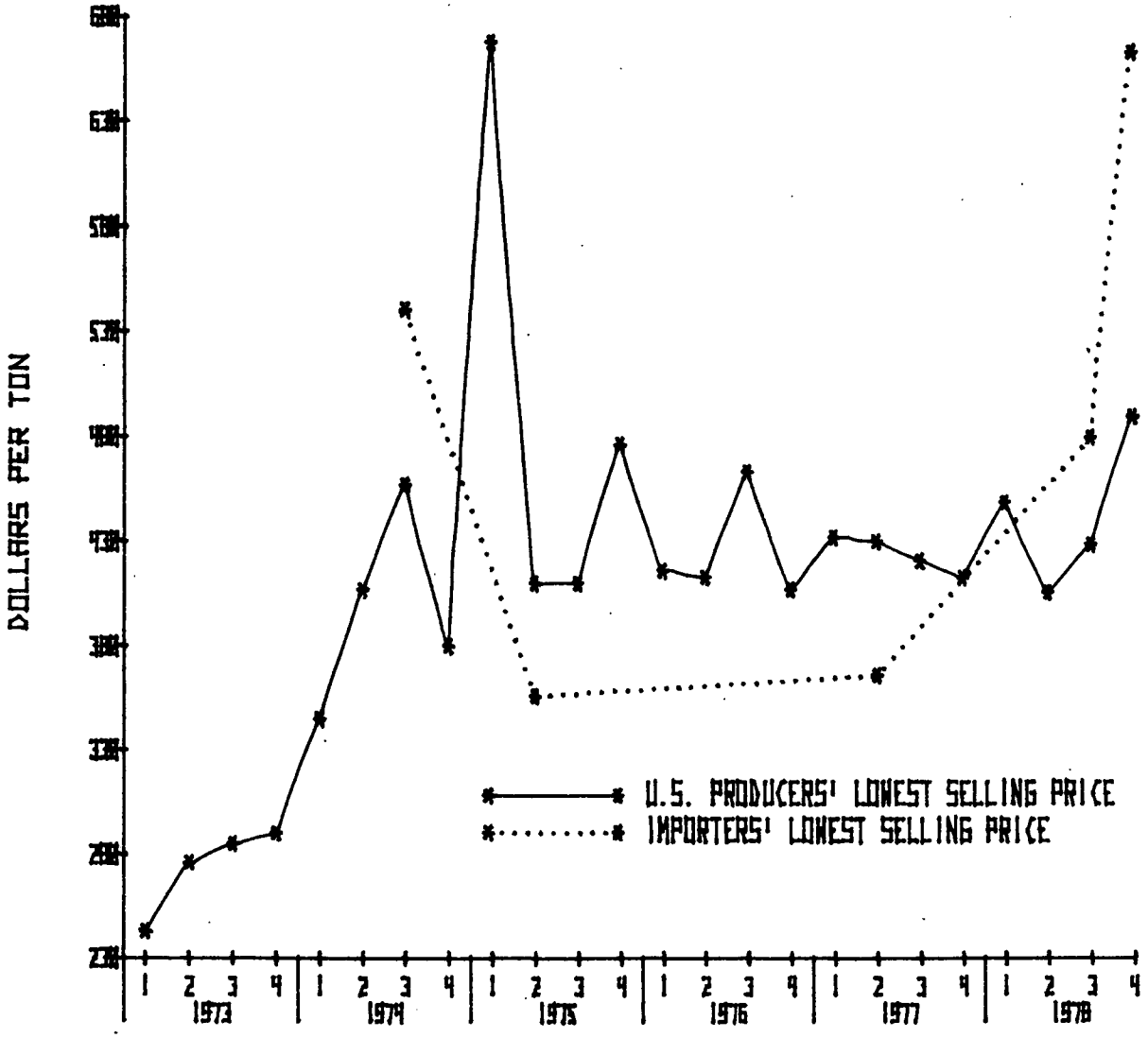
Source: Table

Figure E-10.--Manufacturers coarse steel wire, 12 gauge: Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



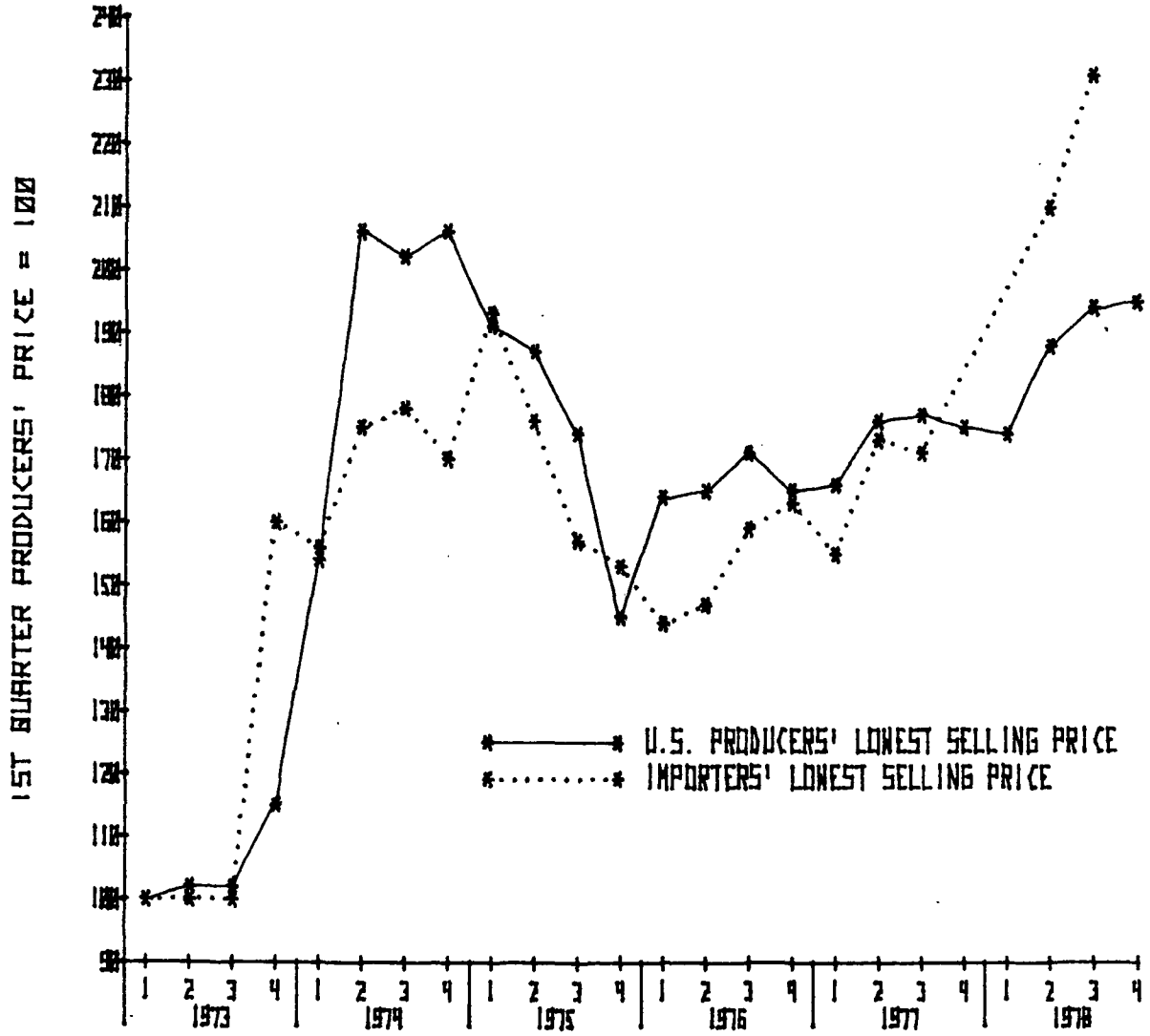
Source: Table

Figure E-11.--Galvanized wire, 12 gauge, soft industrial quality: Weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

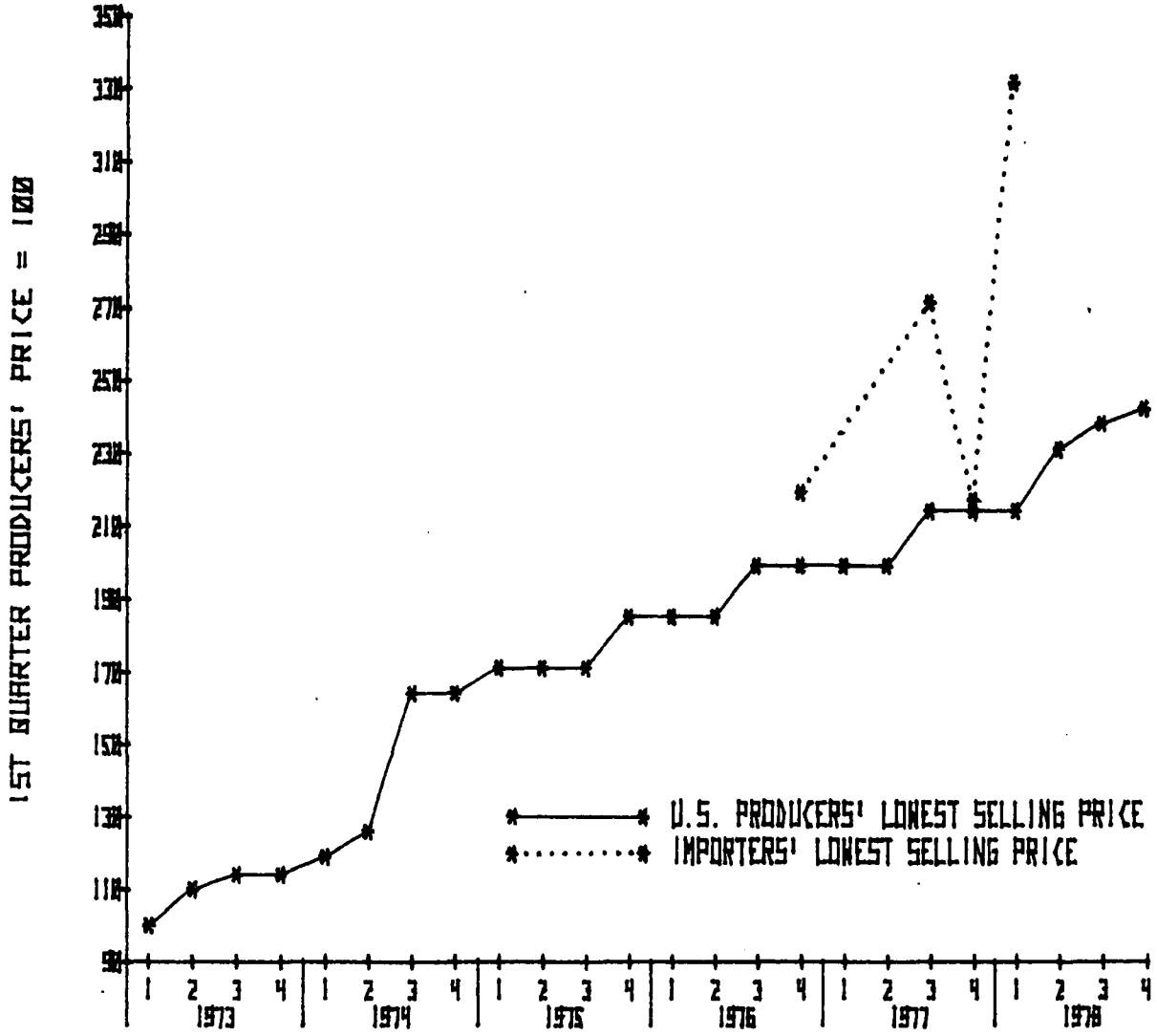
Figure E-12.--Baling wire, 14-1/2 gauge, ASAE No. 6500: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source:

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

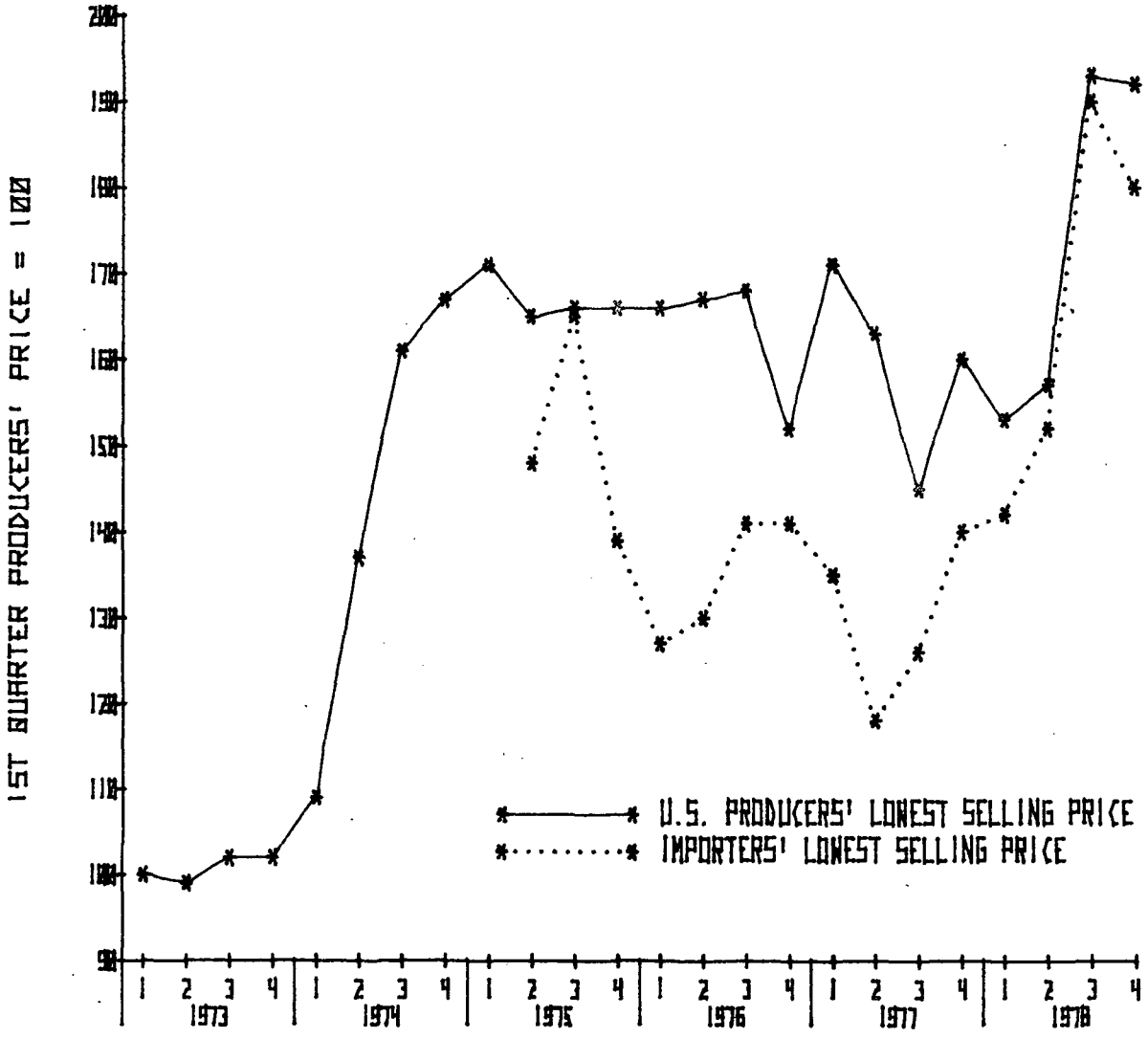
Figure E-13.--Rails, 136 pounds per yard: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

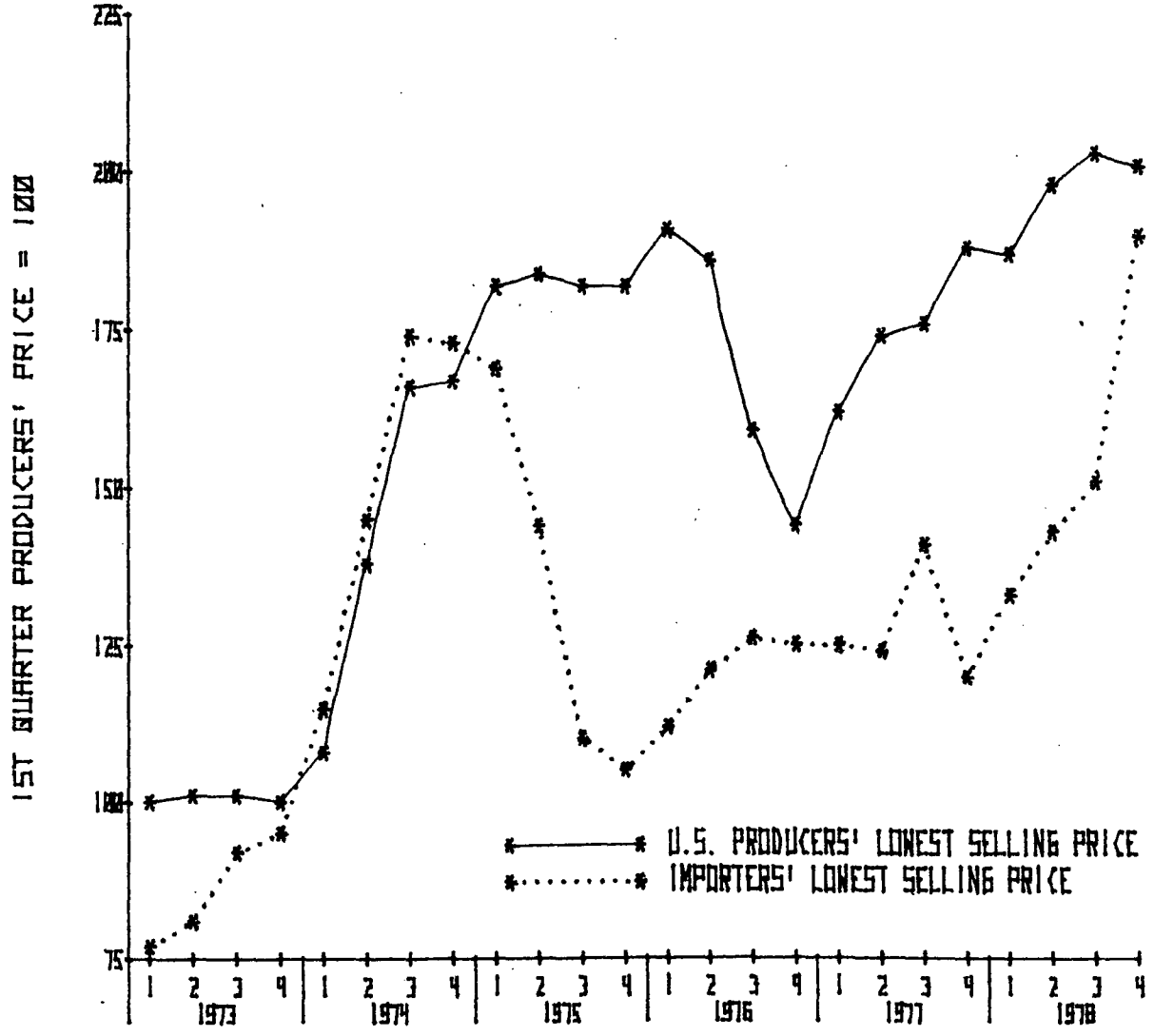
Figure E-14.--Angle L, 6" x 4" x 3/8": Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

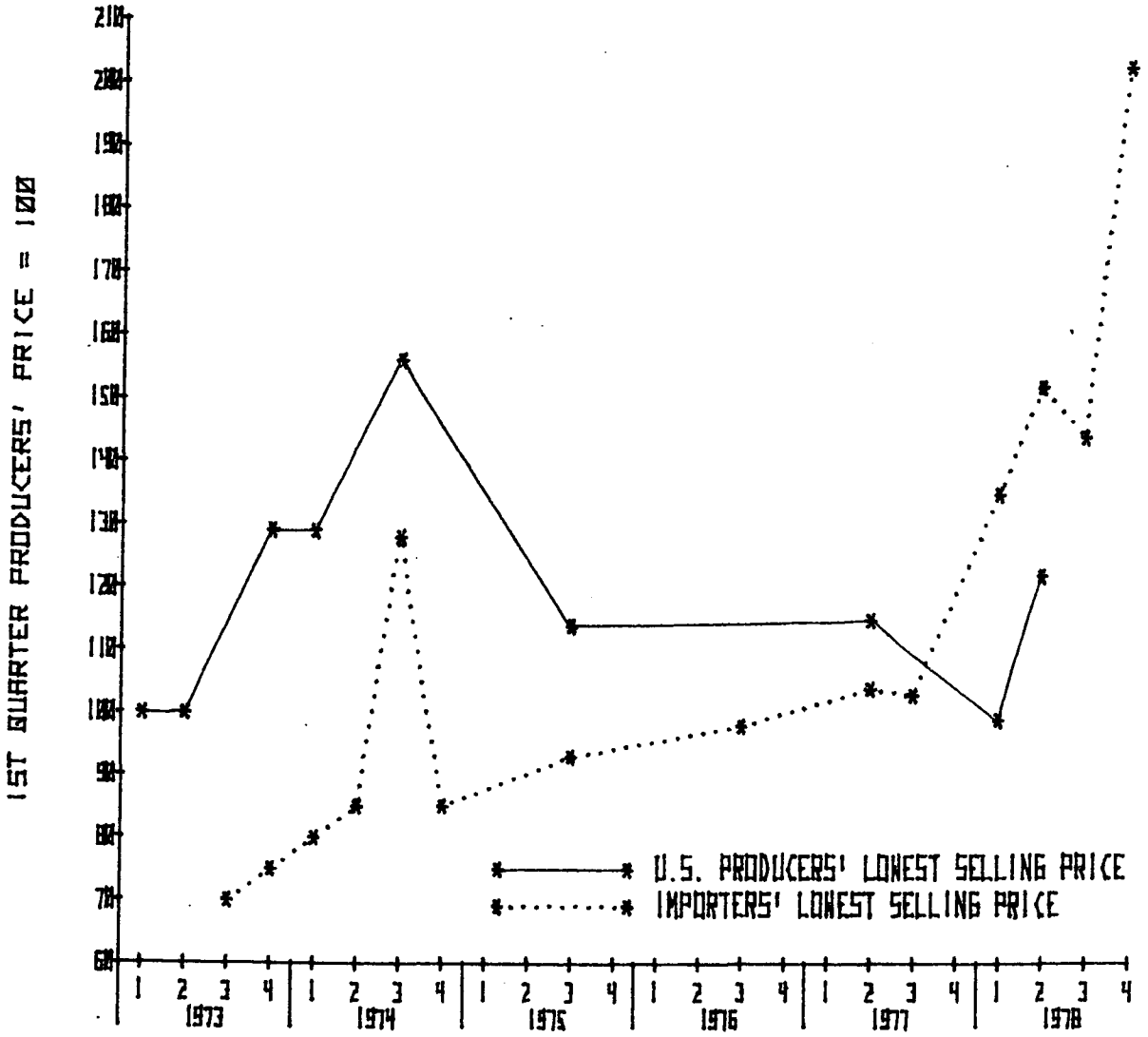
Figure E-15.--Welded standard pipe, ASTM A-120, 3/4" nominal diameter: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

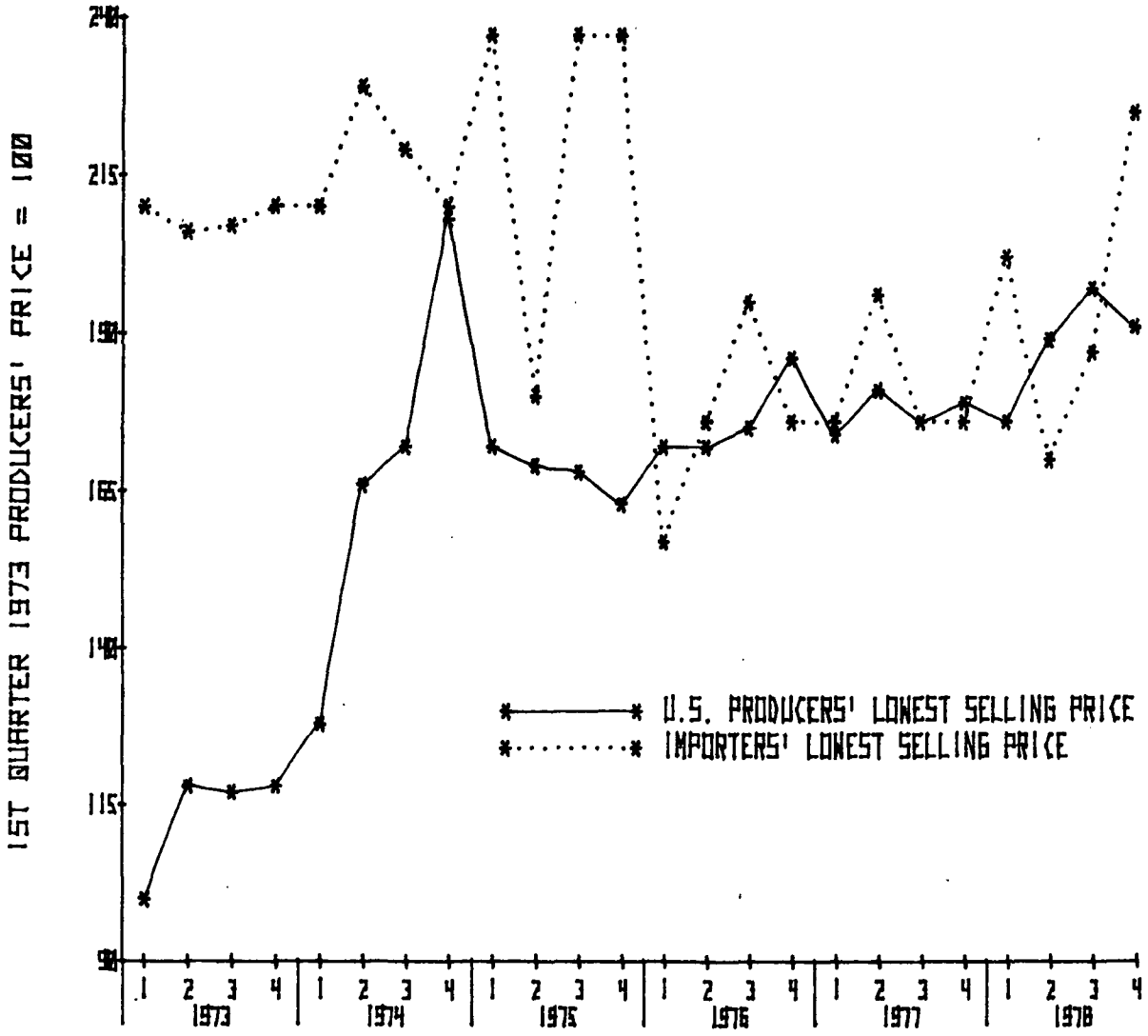
Figure E-16.--Hot rolled square tubing, 14 gauge (.075 inches): Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

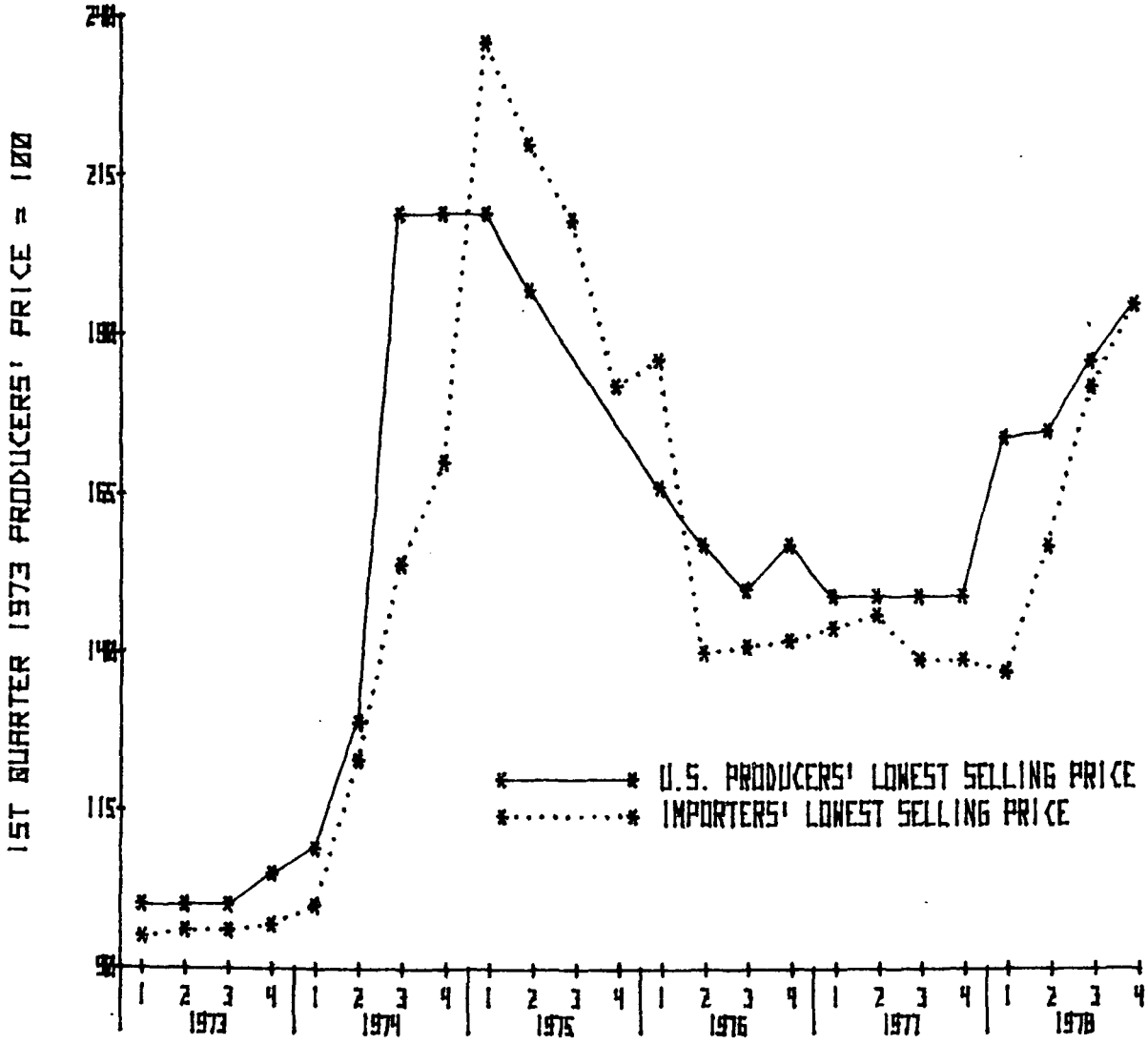
Figure E-17.--Barbed wire, 12-1/2 gauge, 2 pt., 4", 2 ply 80 rodreels: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

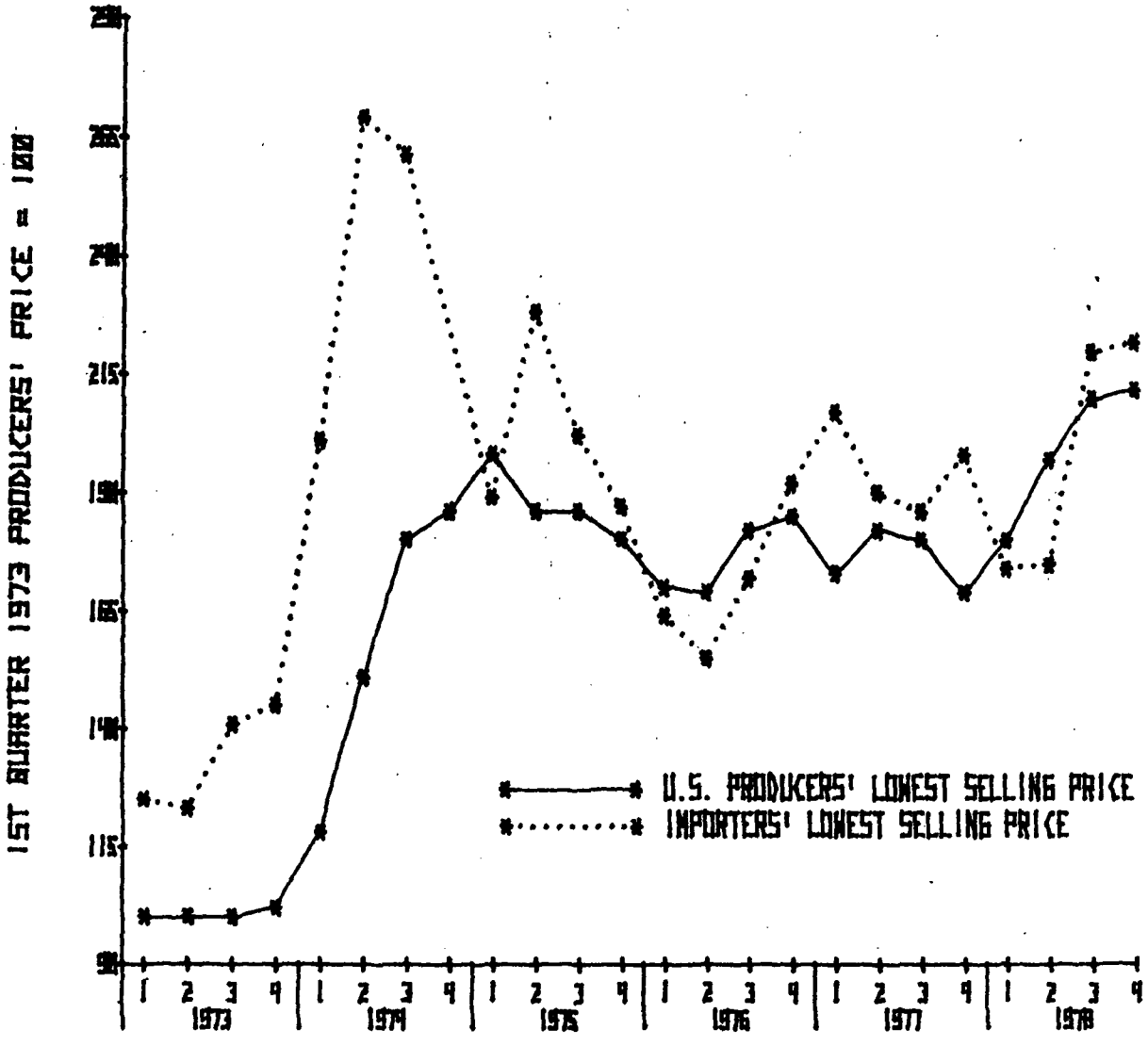
Figure E-18.--Prestressed strand, 1/2 inch, 7 wire, 270 K: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.



Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

Figure E-19.--Nails, 16d common bright: Indexes of weighted averages of importers' lowest selling price and U.S. producers' lowest selling price in 10 Western States, by quarters, 1973-78.

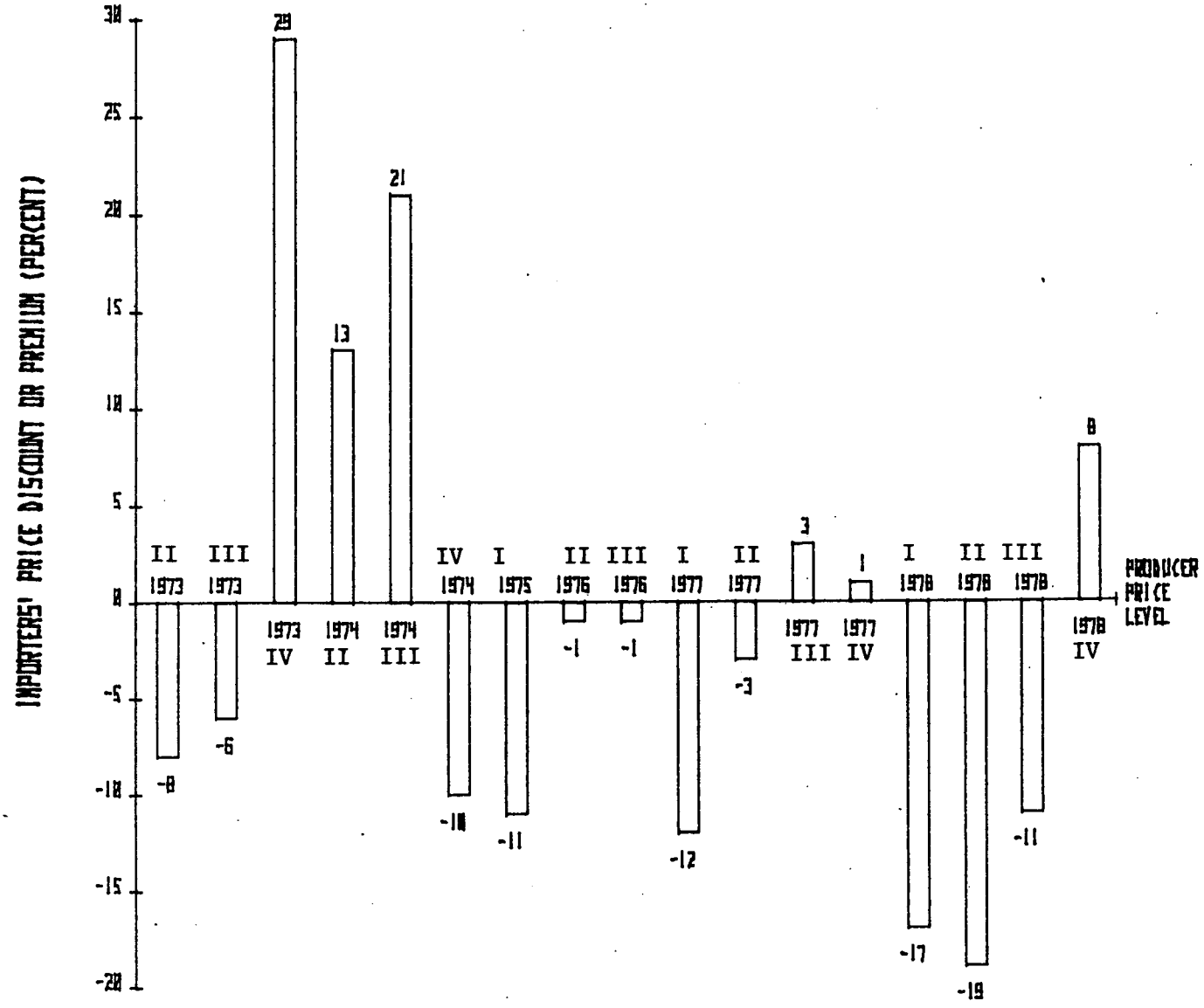


Source: Table

Note.--Transaction prices were changed to index numbers to avoid disclosure of confidential data supplied by a single U.S. producer or only two U.S. producers.

The Percent Discount of Importers' Lowest Selling Price Below (-) U.S. Producers' Lowest Selling Price, or, the Percent Premium of Importers' Lowest Selling Price Above (+) U.S. Producers' Lowest Selling Price

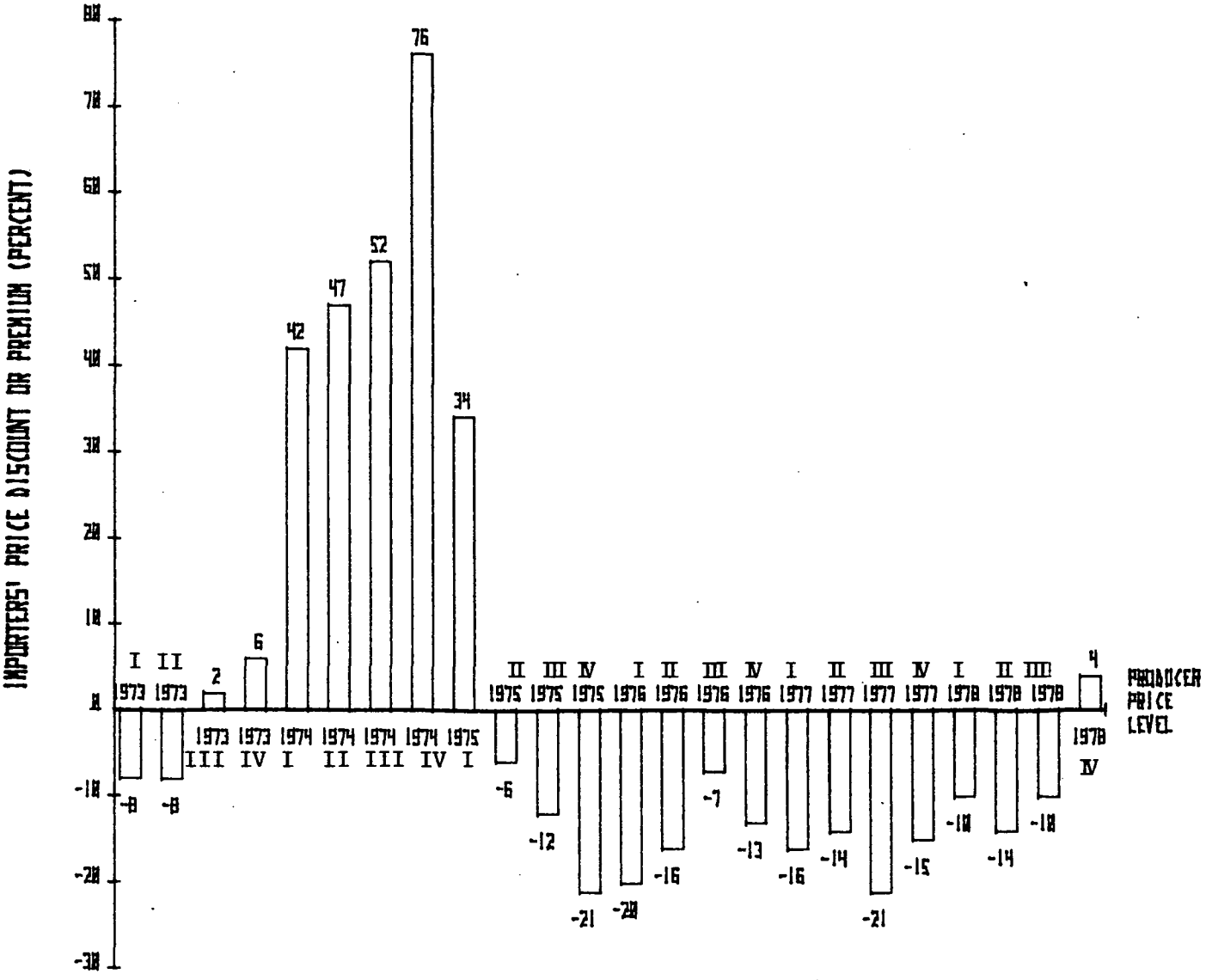
Figure F-1.--Galvanized sheet, commercial quality: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

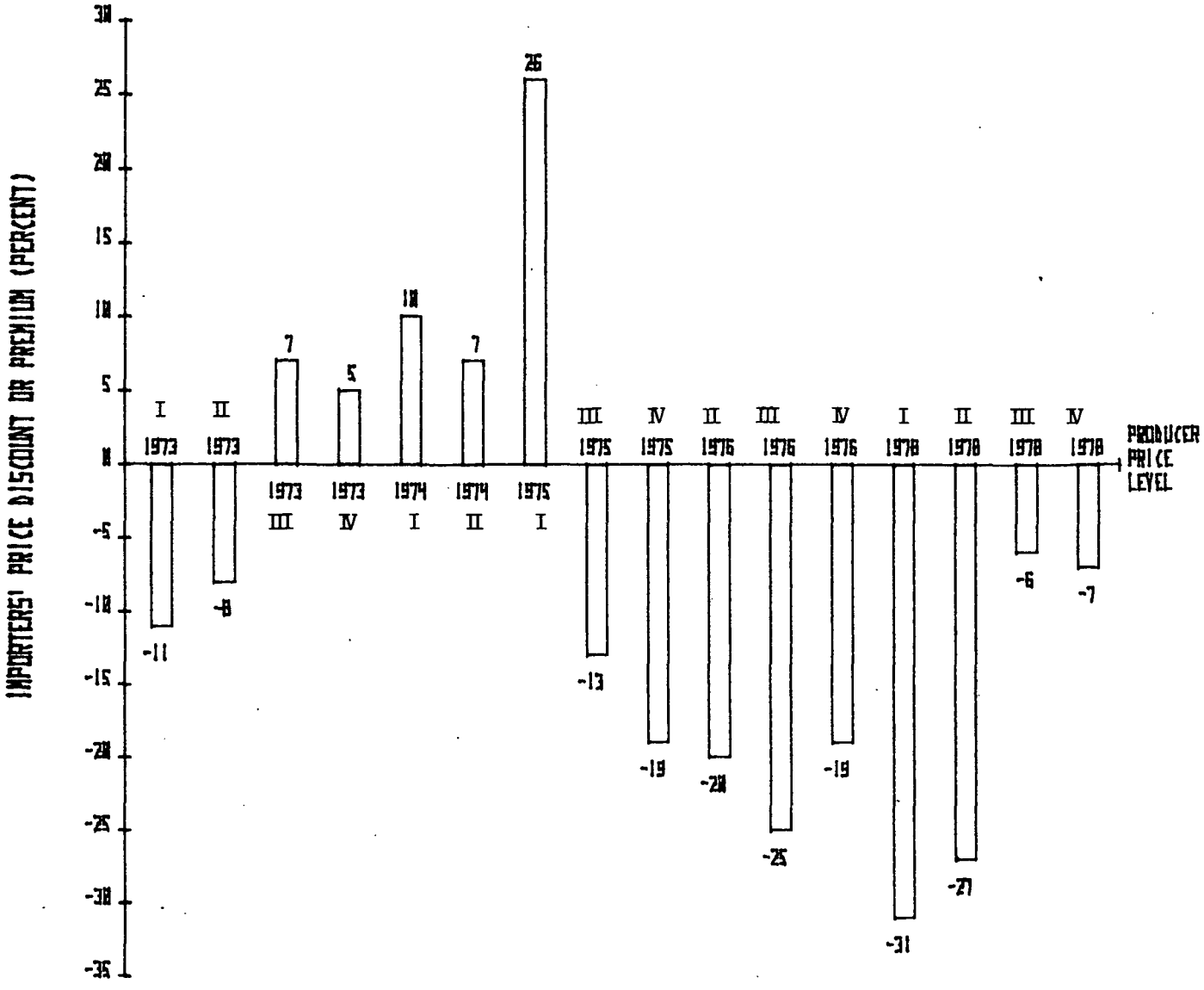
Figure F-2.--Plate, structural grade, ASTM A-36, 3/8"x72"x240": The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

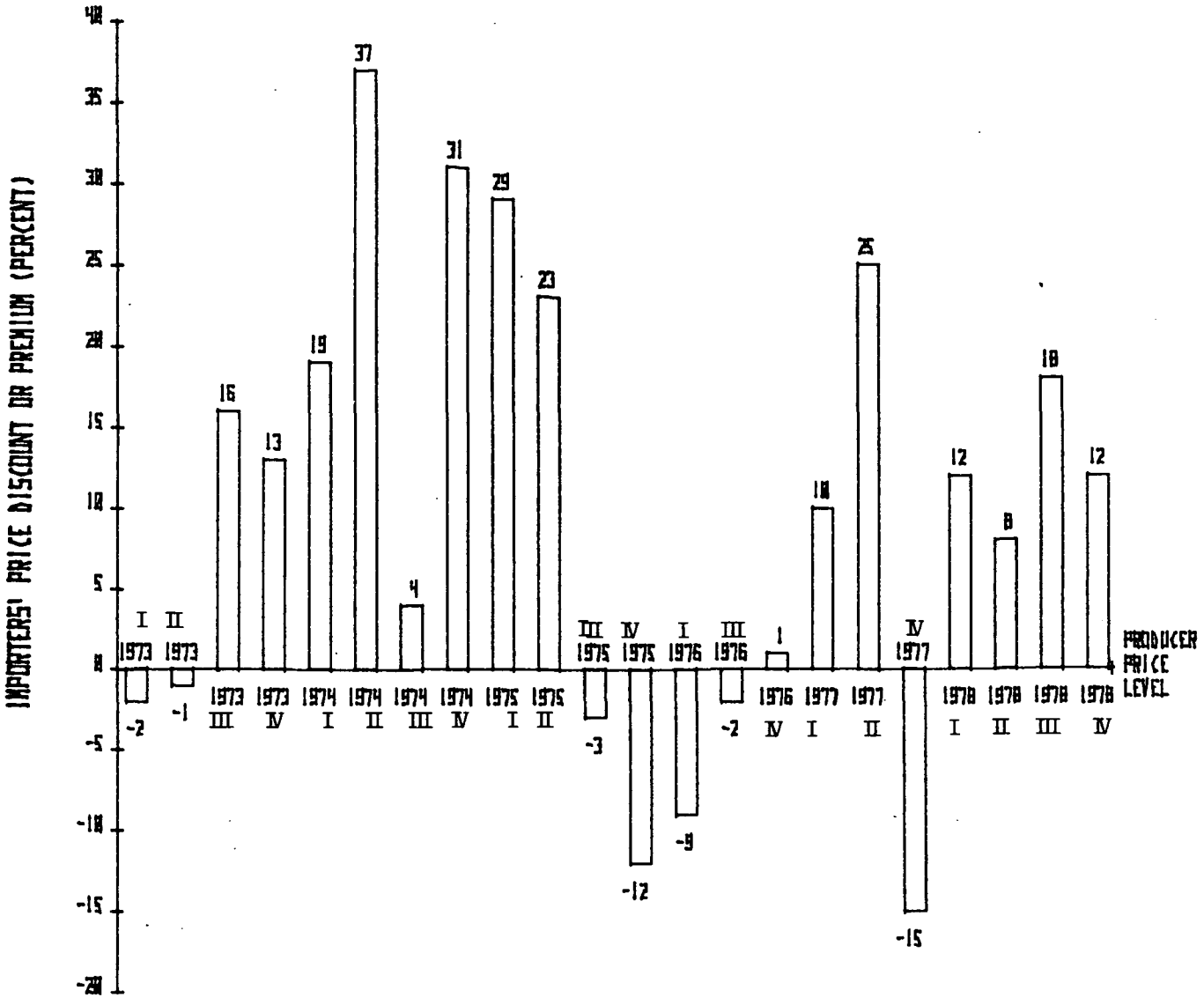
Figure F-3.--Hot rolled sheet, commercial quality, 14 ga. (.075"): The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

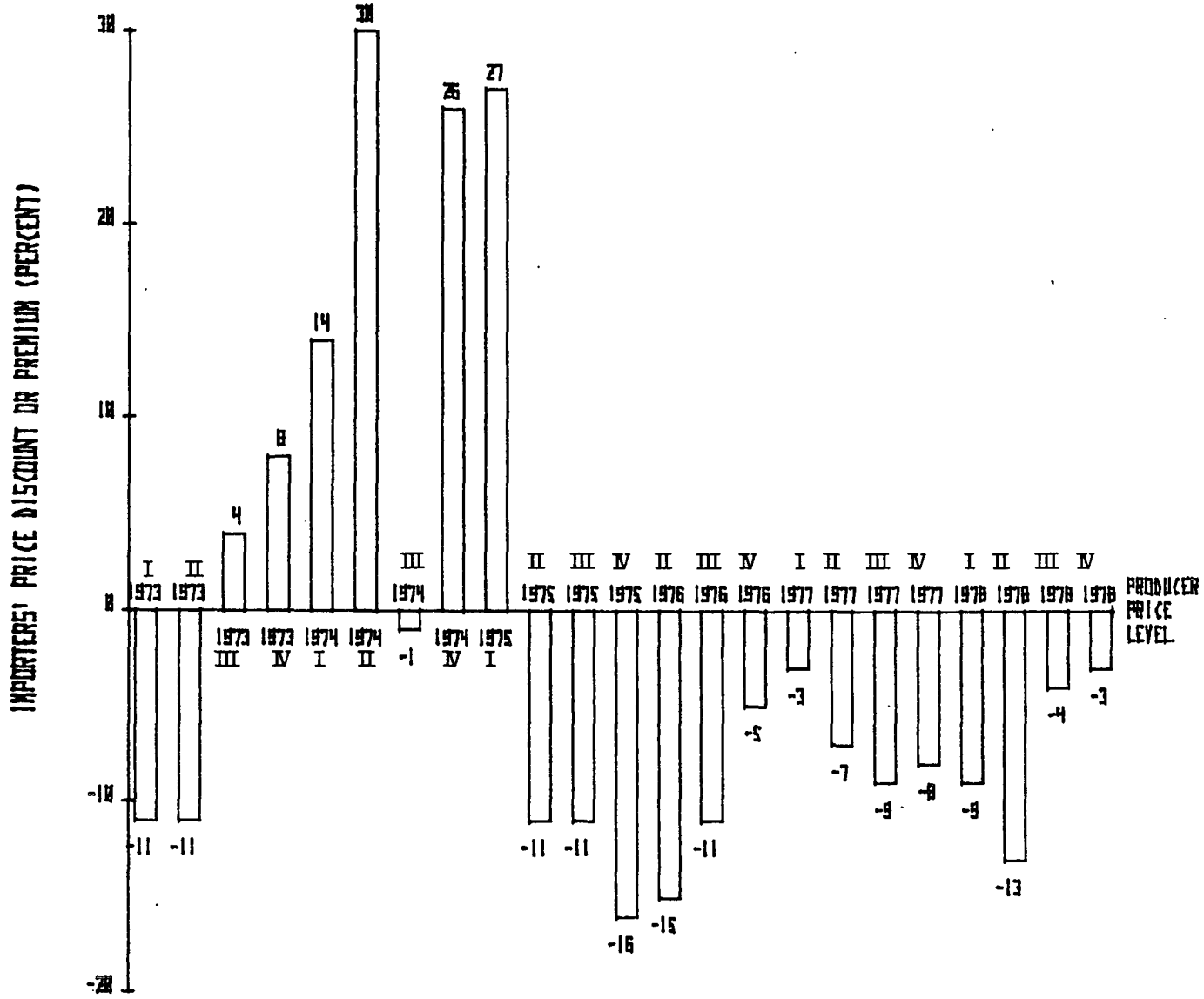
Figure F-4.--Cold rolled sheet, class 1, commercial quality, .0299": The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

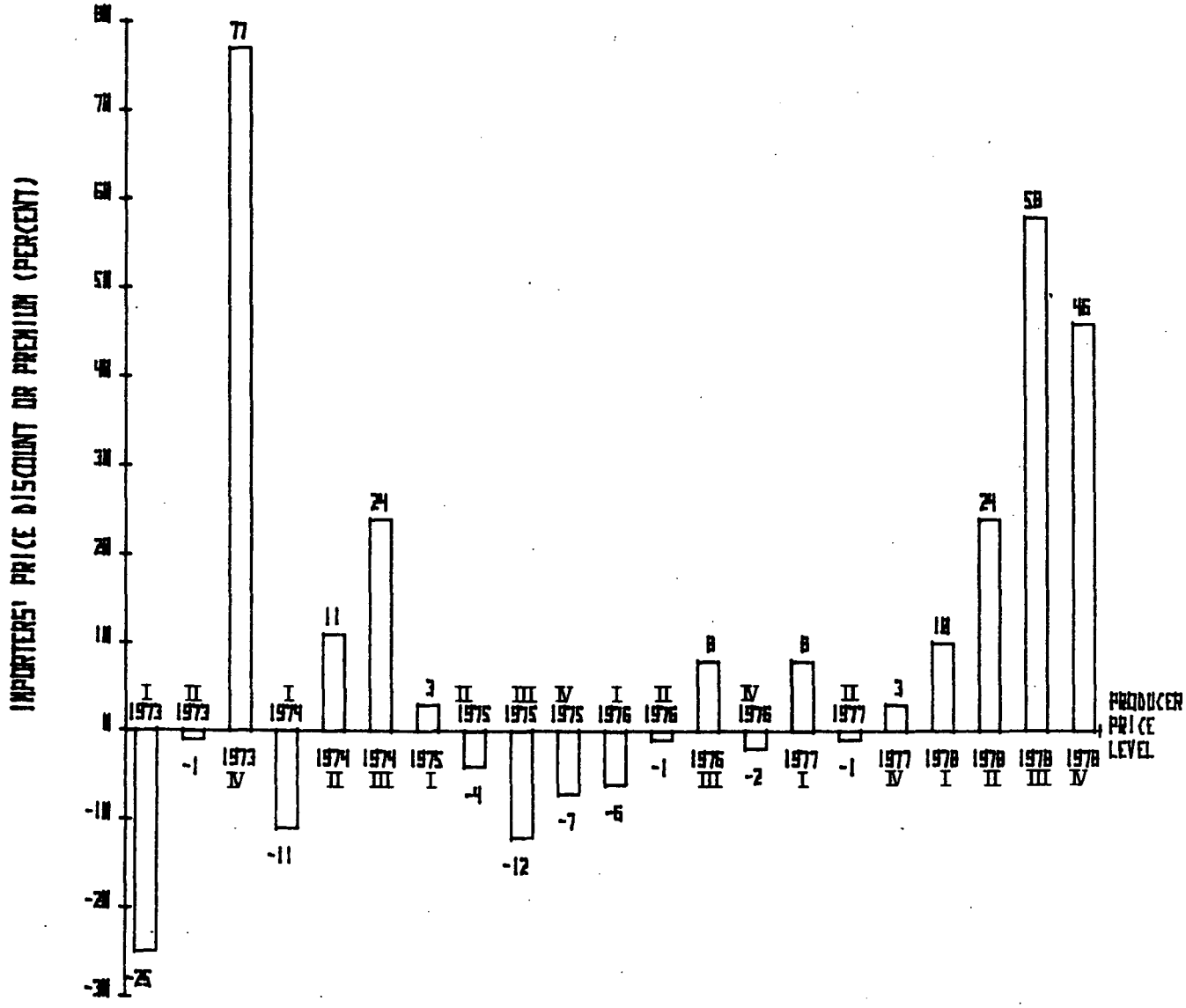
Figure F-5.--Cold rolled sheet, class 1, commercial quality, .0359": The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

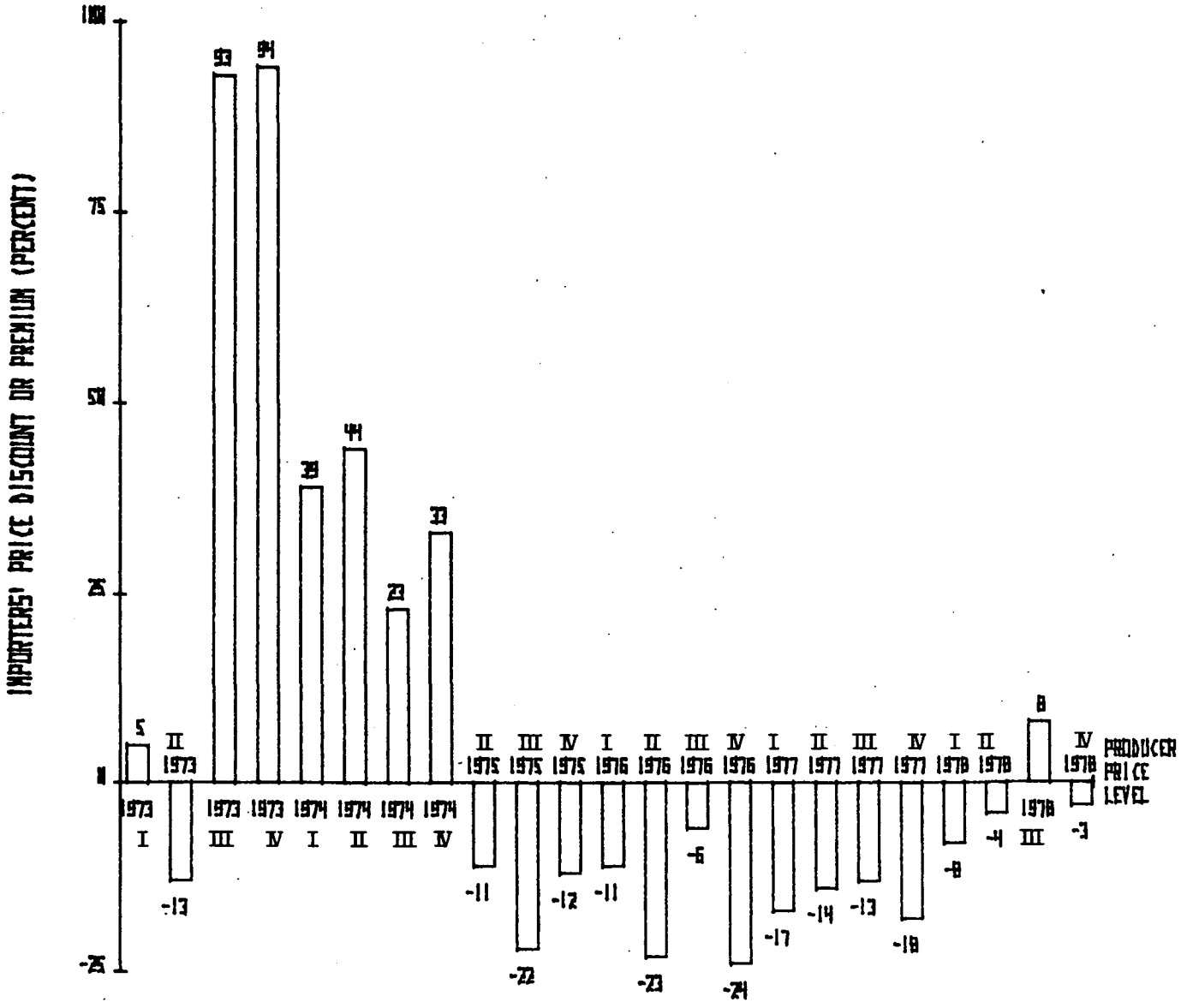
Figure F-6.--Deformed reinforcing bars, ASTM 615, grade 40, No. 4: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

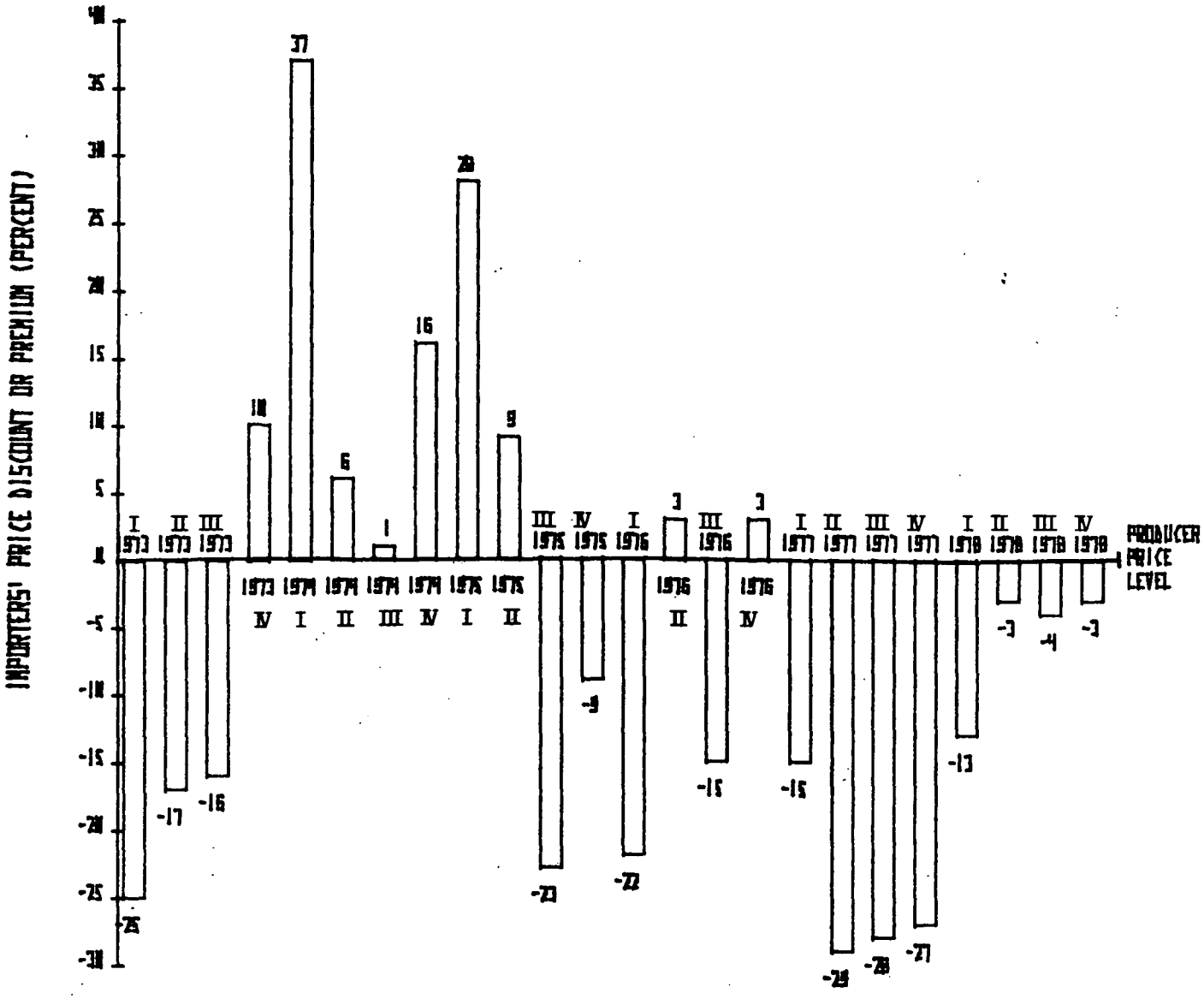
Figure F-7.--Hot rolled bars (flats), 1/4" x 3": The percent discount of importers' lowest selling price below (-) U.S. producers lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

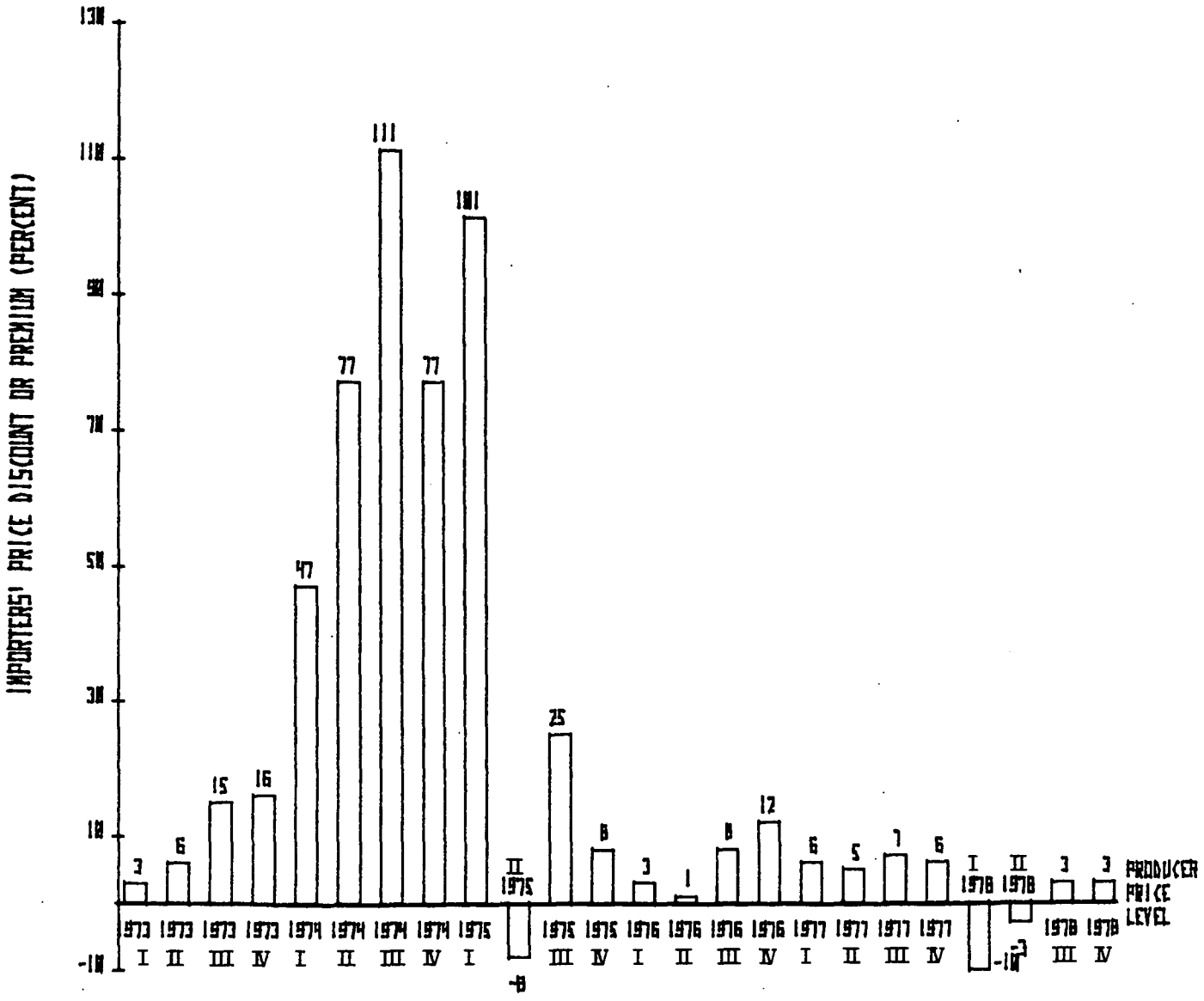
Figure F-8.--Angles, 2"x2"x1/4", A-36: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

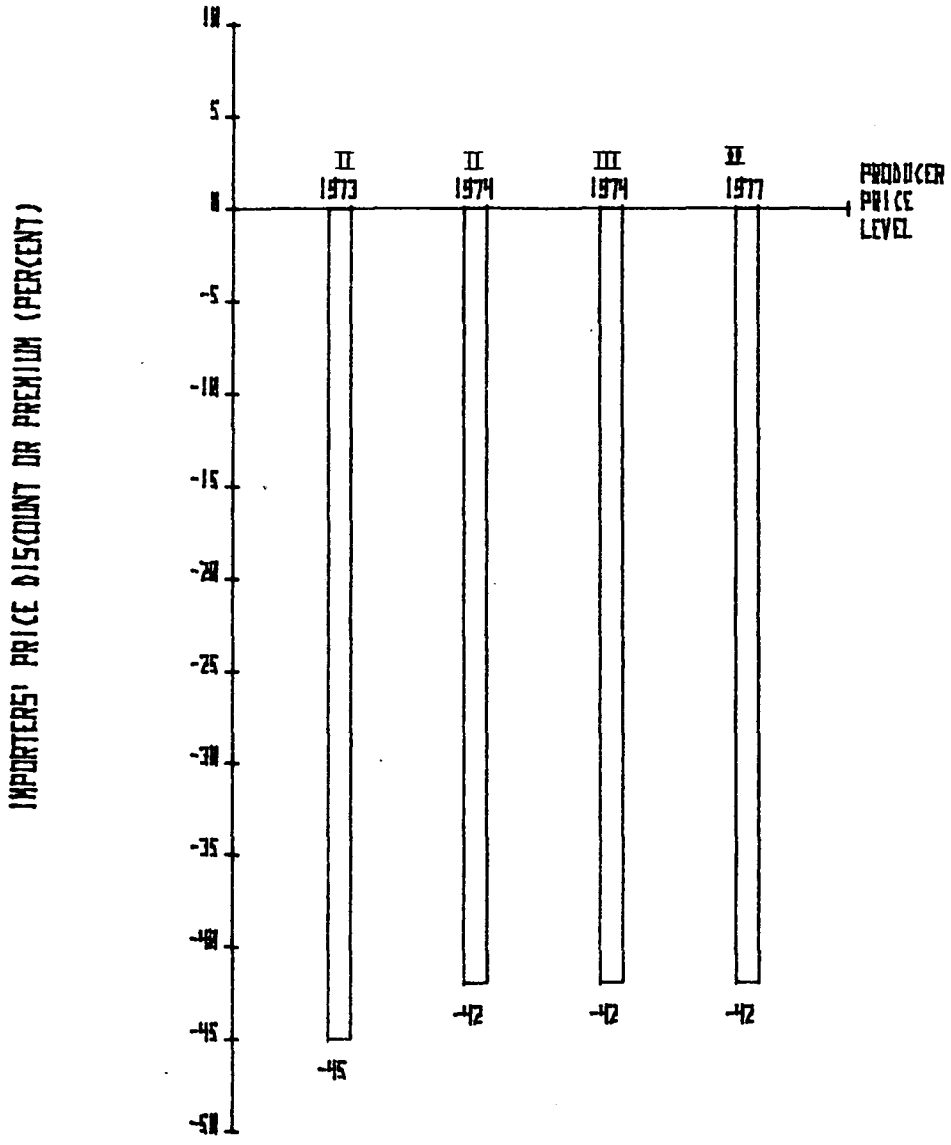
Figure F-9.--Hot rolled rods, 7/32", low carbon grade C-1008: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

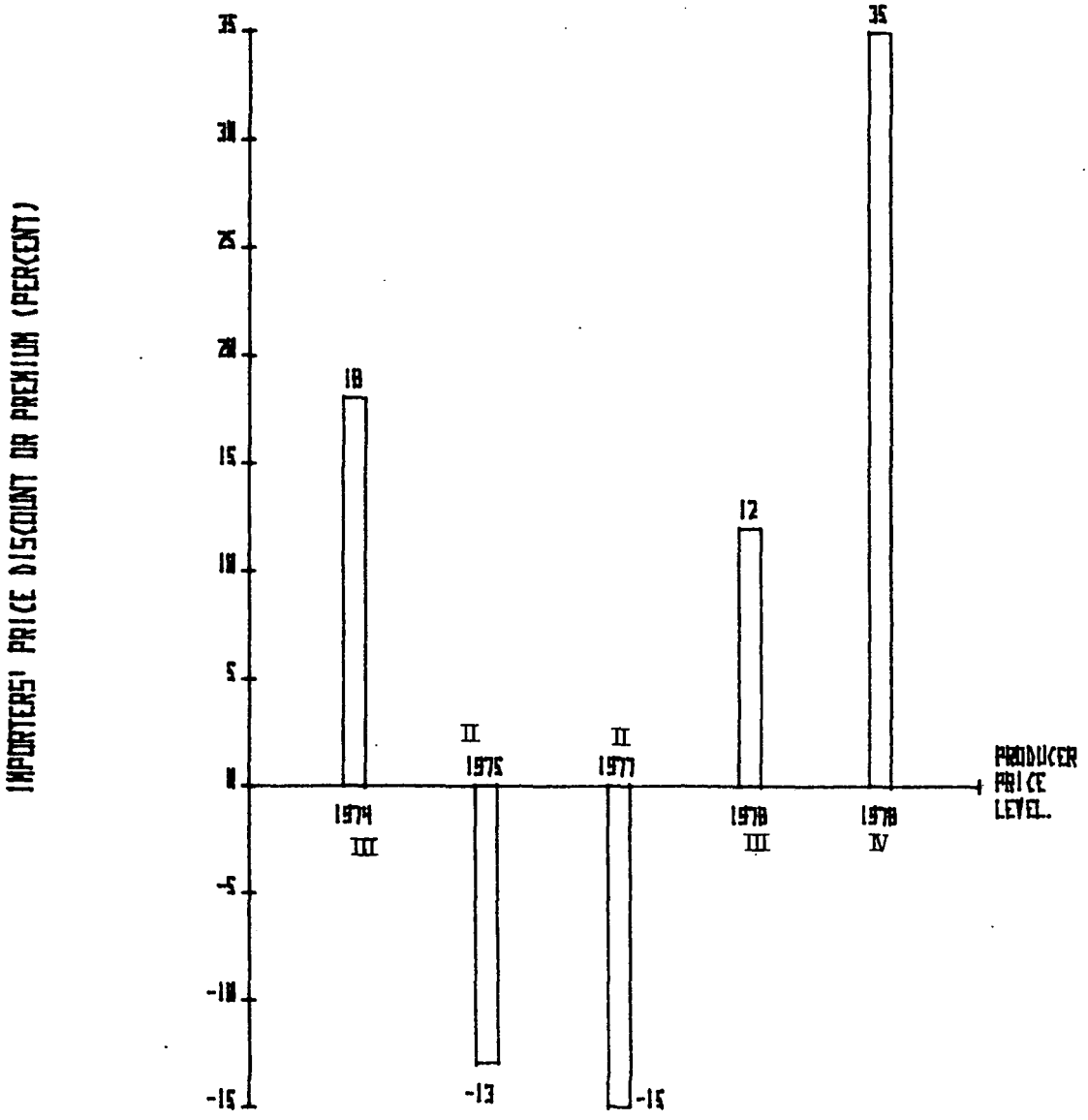
Figure F-10.--Manufacturers coarse steel wire, 12 gauge: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

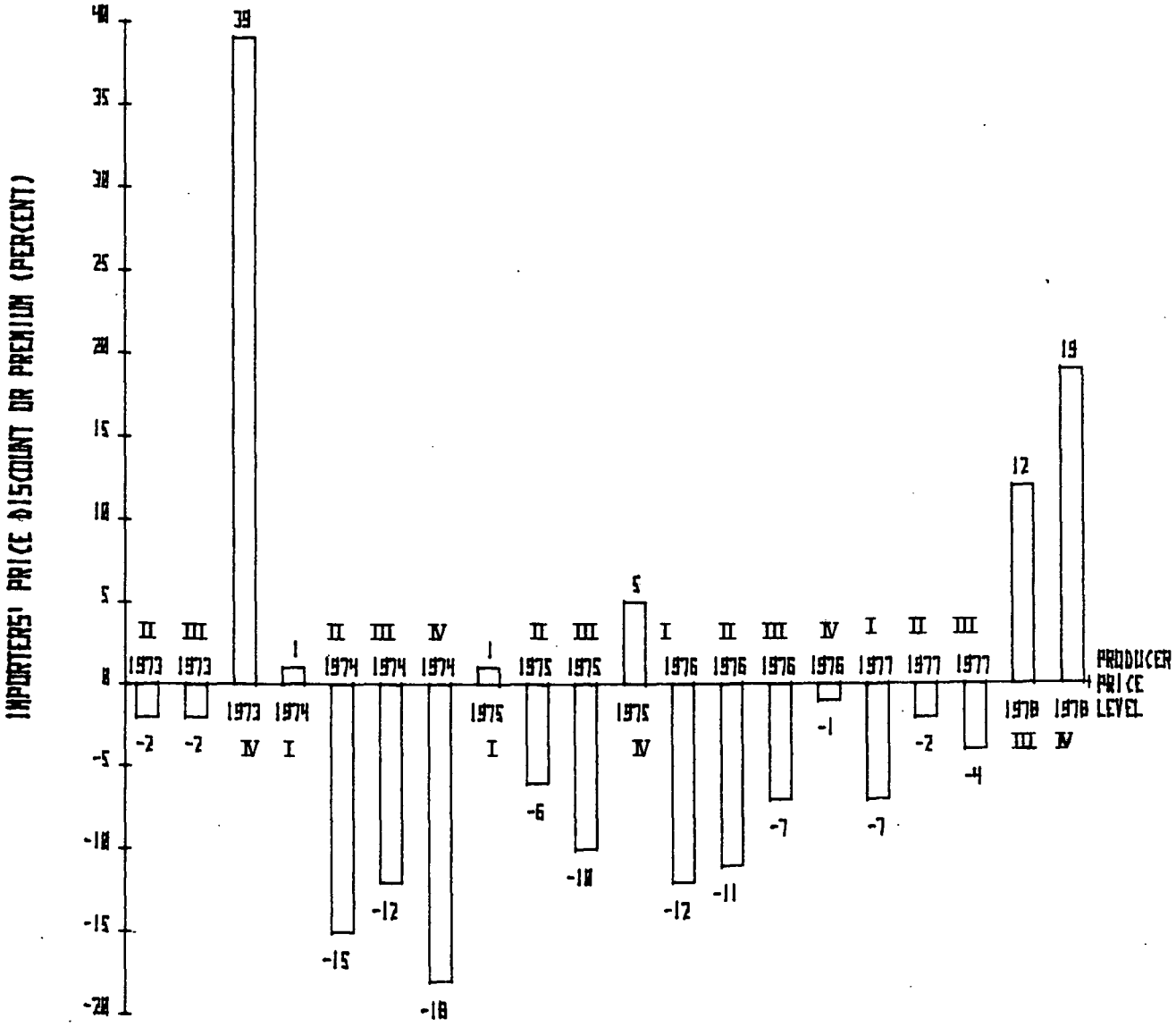
Figure F-11.--Galvanized wire, 12 gauge, soft industrial quality: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

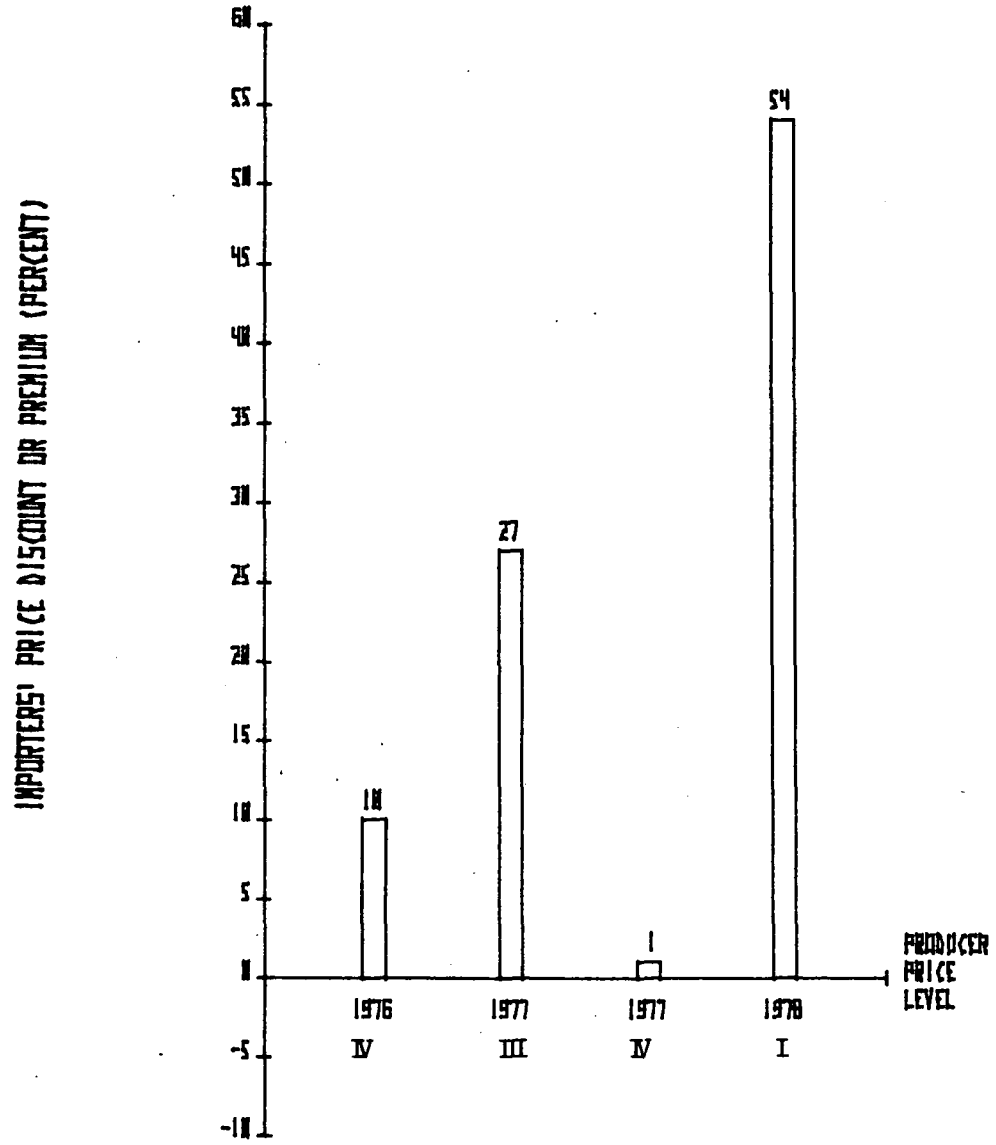
Figure F-12.--Baling wire, 14-1/2 gauge, ASAE No. 6500: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

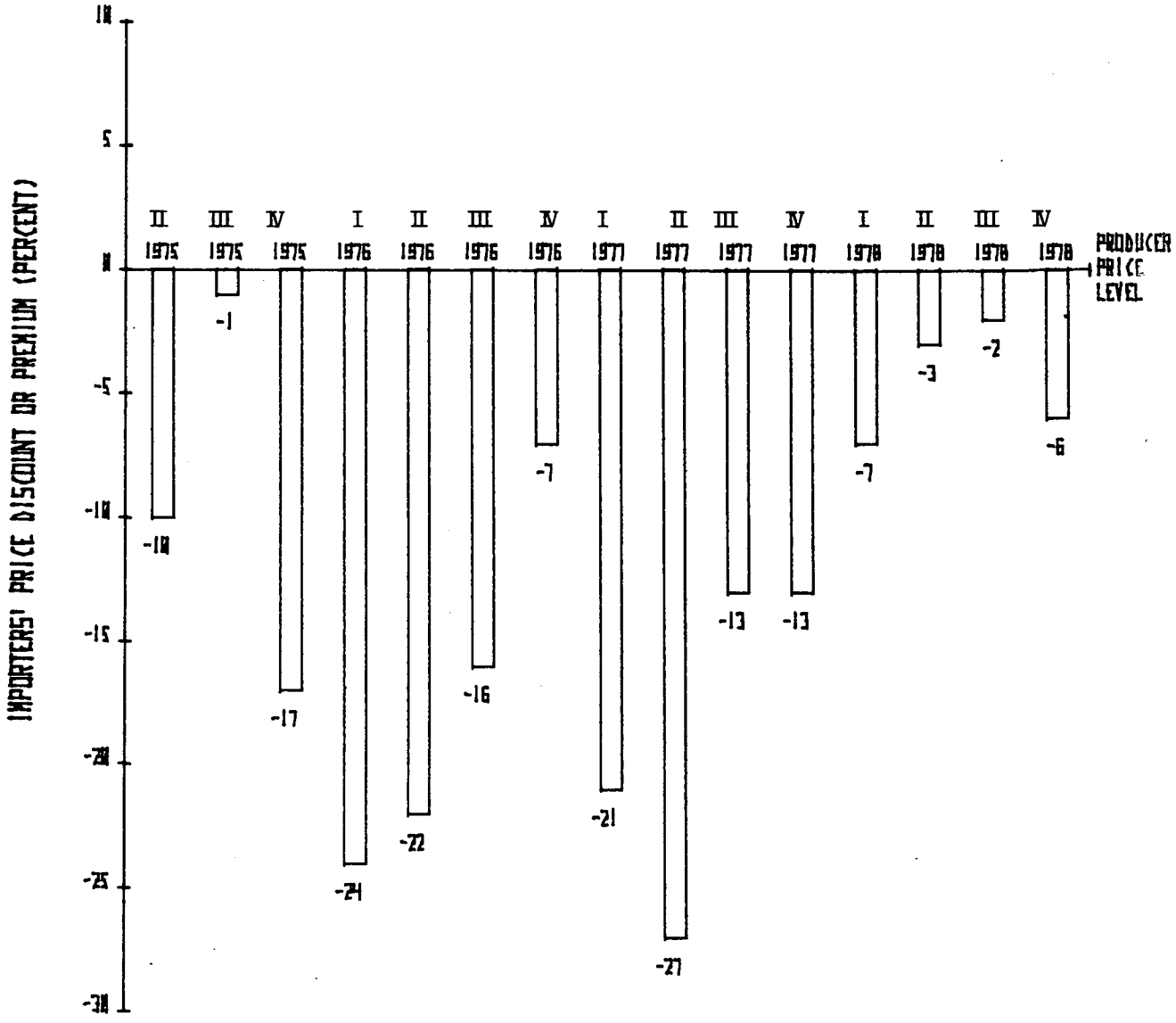
Figure F-13.--Rails, 136 pounds per yard: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

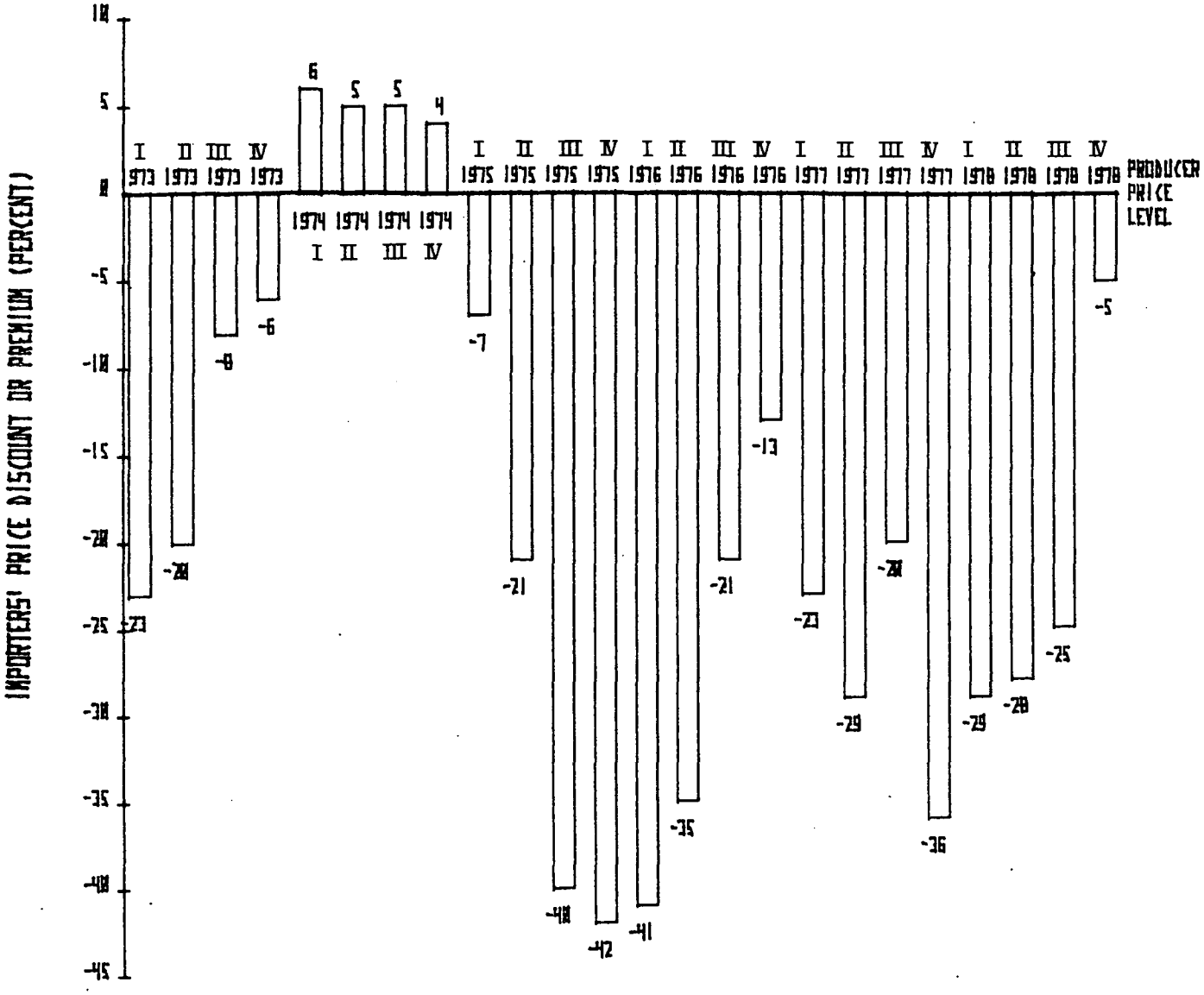
Figure F-14.--Angle L, 6"x4"x3/8": The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium if importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

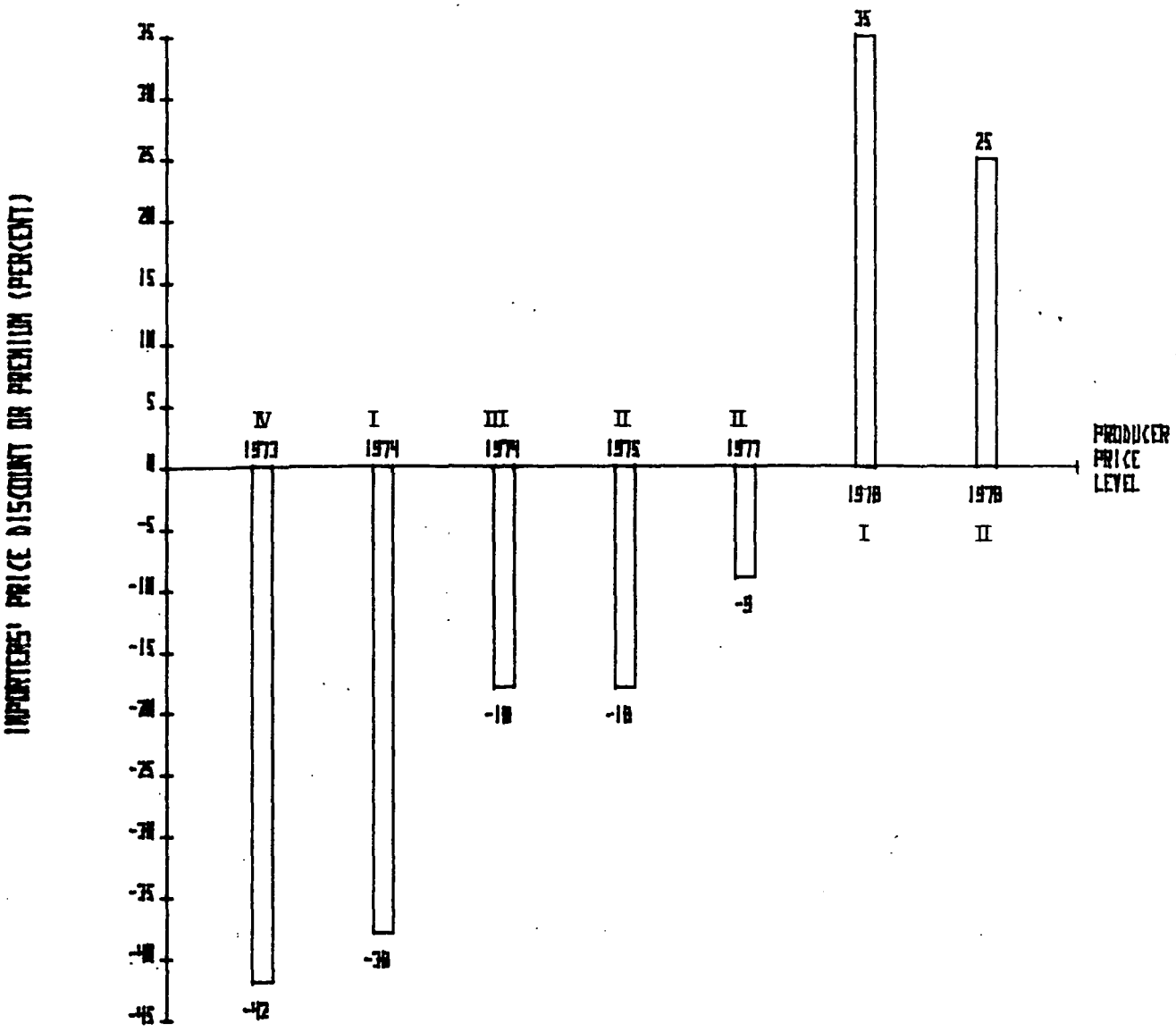
Figure F-15.--Welded standard pipe, ASTM A-120, 3/4" nominal diameter: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

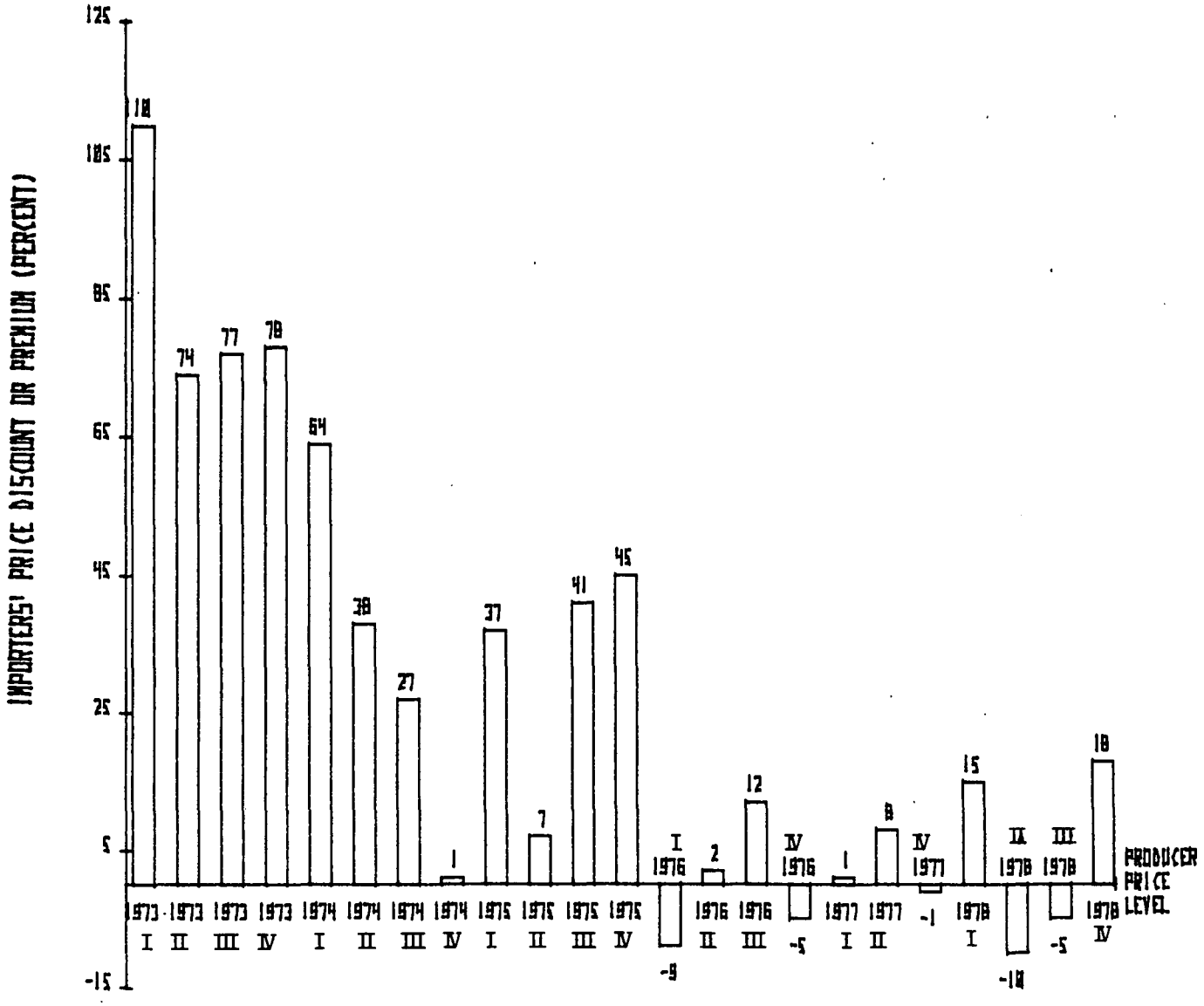
Figure F-16.--Hot rolled square tubing, 14 gauge (.075 inches): The percent discount of importers' lowest selling price below(-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling rpice, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

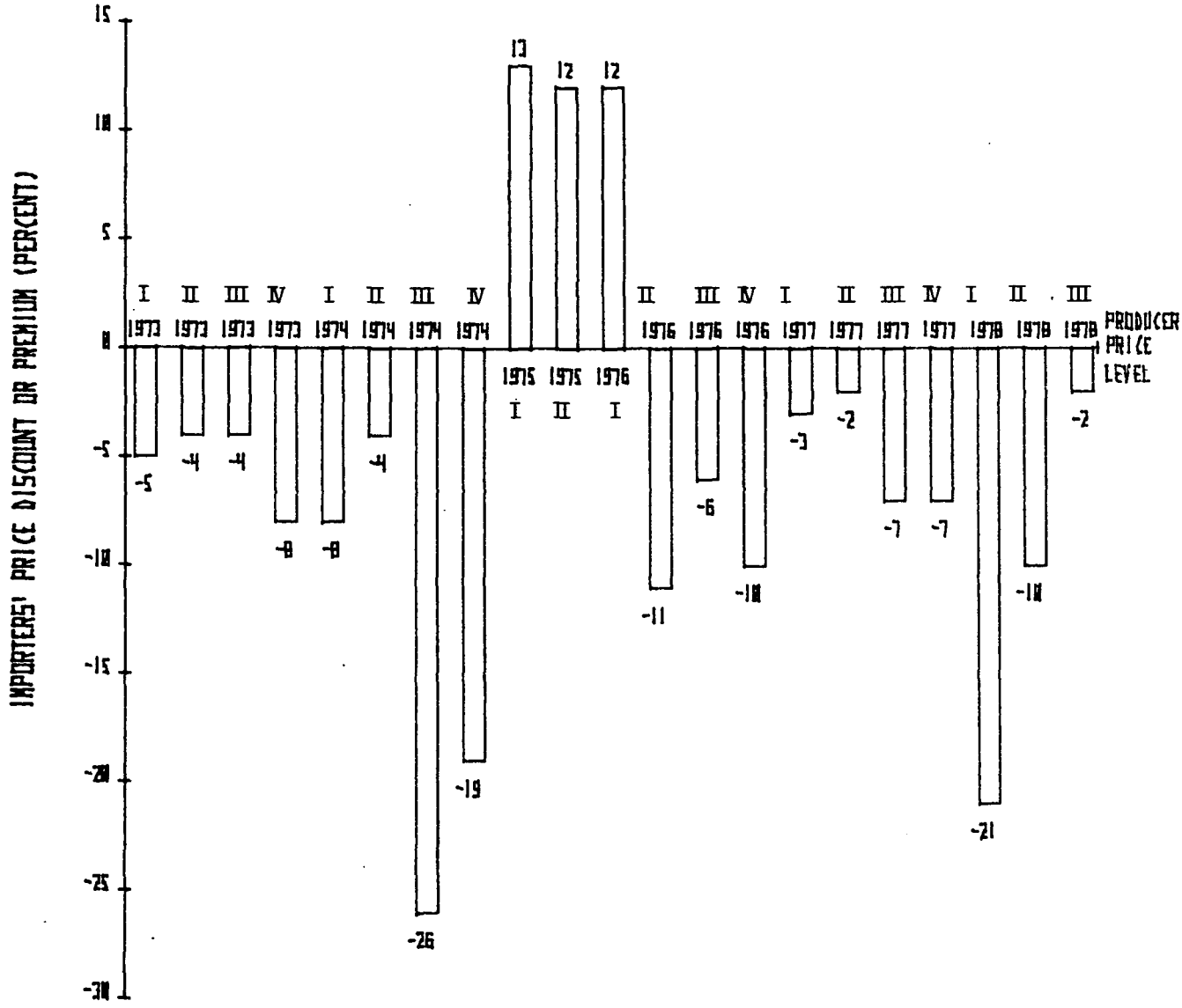
Figure F-17.--Barbed wire, 12-1/2 gauge, 2 pt., 4", 2 ply 80 rodreels: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source:

Note.--Applicable quarter appears above or below each designated year.

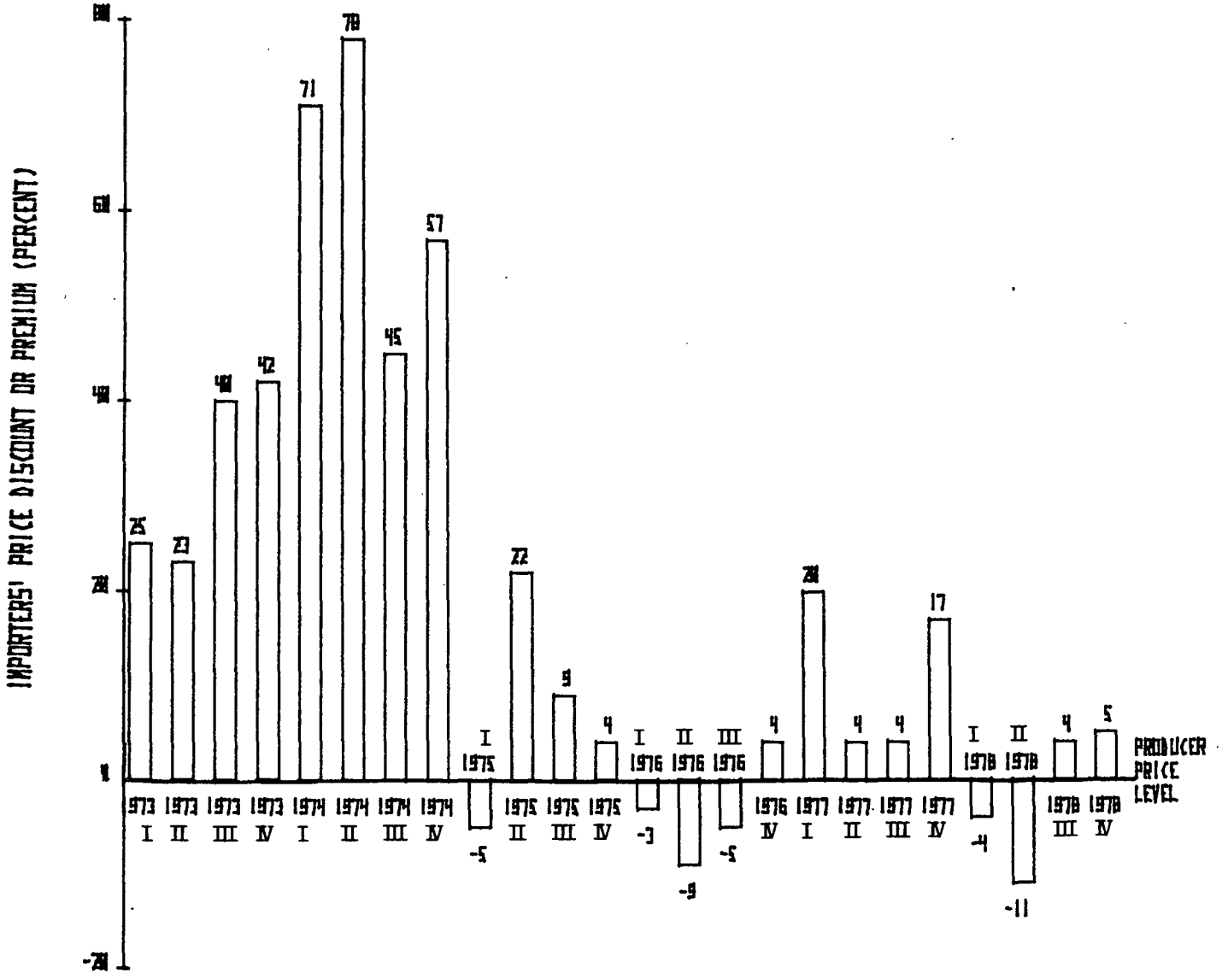
Figure F-18.--Prestressed strand, 1/2 inch, 7 wire, 270 K: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price abobe (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source: Table

Note.--Applicable quarter appears above or below each designated year.

Figure F-19.--Nails, 16 d common bright: The percent discount of importers' lowest selling price below (-) U.S. producers' lowest selling price, or, the percent premium of importers' lowest selling price above (+) U.S. producers' lowest selling price, by quarters, 1973-78.



Source:

Note.--Applicable quarter appears above or below each designated year.

Appendix G

Mill sources of Japanese trading companies, by product group, 1976 and 1977

Table C-1.--Tin mill products: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading Company	Mill source end year																											
	Mill No. 18		Mill No. 19		Mill No. 17		Mill No. 9		Mill No. 45		Mill No. 46		Mill No. 24		Mill No. 25		Mill No. 15		Mill No.		Mill No.		Mill No.		Mill No.			
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977		
A	B	B	B	B																								
B																												
C	P	P																										
D																												
E	P	P	S							S			S				S											
F	S	S	P	P		S																						
G	S	S	S			S					P	P																
H	P	P			S	S					S	S																
I																												
J																												
K	P	P			S	S							S			S												
L																												
M		S					P	P		S																		
N																												
O																												
P																												
Q																												

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B" a balanced sourcing among 2 or more supplying mills.

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

Table G-2.--Carbon steel plate: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill Source and year																									
	Mill No. 17		Mill No. 9		Mill No. 15		Mill No. 18		Mill No. 19		Mill No. 20		Mill No. 21*		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A		S			S	P	S	S	P																	
B					S	P	S	S			P															
C																										
D									P	P																
E					S		S	P	P																	
F	P	S			S	P		S																		
G		S			B	P	B	S	B																	
H	S	B	S	B			P	B																		
I	P	P					S	S	S	S																
J			S	S	S	S	P	P																		
K	B	B	S				B	B																		
L	P																									
M			P	P																						
N					P	P	S	S	S					S												
O	P		S			P																				
P																										
Q	P				S																					

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

(*) Non-Japanese mill sources.

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

Table G-3.--Sheets and strip: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																													
	Mill No. 19		Mill No. 22		Mill No. 23		Mill No. 17		Mill No. 18		Mill No. 24		Mill No. 25		Mill No. 26		Mill No. 15		Mill No. 27		Mill No. 9		Mill No. 28		Mill No. 29		Mill No. 30	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A	S	S							P	P			S	S																
B										B					P	B	S	S	S									
C																												P	
D	P	P												S															
E	S	S							S	S							P	P											
F		S					B	P	B	S	S																		
G	S	S							P	P											S	S							
H							B	B	B	B							S	S											
I	S	S					S	S	P	P																			
J					P	P			S	S			S	S							S	S							
K							B	B		B							B										S	S	
L									B	S												B	B	B	S				
M										S											P	P							
N	S	P							P	S							S	S											
O	P	P	S	S	S	S																							
P																													
Q									S	S	B	P					B	S											

1/ The letter "P" denotes a primary source; the letter "S" a secondary source; the letter "B" a balanced sourcing among 2 or more supplying mills.

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

Table G-4.--Deformed concrete reinforcing bars: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading Company	Mill No. 31		Mill No. 32		Mill No. 33		Mill No. 13		Mill No. 34		Mill No. 35		Mill No. 36		Mill No. 37		Mill No. 38		Mill No. 39		Mill No. 14		Mill No. 40		Mill No. 7		Mill No. 41		Mill No. 42		Mill No. 43	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A																																
B			S	P			B		B																							
C																																
D	S		P					P																								
E								P																	P	S			S			
F					P																											
G													P																			
H							P										P															
I															P	P																
J	VARIOUS JAPANESE MILLS																															
K																	P		P		S		S									
L																																
M			P	P							S																					
N			S																S	P											P	
O																																
P																																
Q																																

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

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

Table C-5.--Bar size shapes: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading Company	Mill source and year																							
	Mill No. 7		Mill No. 3		Mill No. 8		Mill No. 48		Mill No. 52		Mill No. 53		Mill No. 54		Mill No. 55		Mill No. 56		Mill No. 57*		Mill No. 58		Mill No. 36	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A																								
B							P	P	S	S	S			S										
C																	P	P						
D																								
E																P			B		S		B	
F	P	P	S	S	S	S																		
G																								
H															P	P								
I	S										P	P		S	S	S								
J	Included in angles, shapes and sections																							
K							P		S	P														
L																								
M																								
N									B	P	B	S												
O																								
P																								
Q																								

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

(*) Non-Japanese mill sources.

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

Table C-6.—Bars other than deformed concrete reinforcing bars: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																															
	Mill No. 1		Mill No. 2		Mill No. 3		Mill No. 4		Mill No. 5		Mill No. 6		Mill No. 7		Mill No. 8		Mill No. 9		Mill No. 10		Mill No. 11		Mill No. 12		Mill No. 13		Mill No. 14		Mill No. 15	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A																														
B					P	P			S	S			S			S														
C																														
D							B	S			B	P																		
E				S									P	P		S									S		S			
F			P	P		S																								
G					S	S		P		P										S	S									
H					B			P		B			S	S	S															
I				S	P	P	S	S		S																				
J	VARIOUS JAPANESE MILLS																													
K			P	B											S	S							S	B						
L																					P									
M																	P	P												
N	S				S								P	S														S	P	
O							P	P	S																					
P																														

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

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

Table G-7.--Wire rods: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading Company	Mill source and year																									
	Mill No. 18		Mill No. 44		Mill No. 9		Mill No. 2		Mill No. 15		Mill No. 23		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A									P	P																
B																										
C			P	P																						
D																										
E									P	P																
F	P	P	S	S																						
G	P	P			S	S					S	S														
H	P	P		S		S	S		S																	
I																										
J									P	P																
K																										
L																										
M					P		S	P																		
N			S						P	P																
O																										
P																										
Q																										

1/ The letter "P" denotes a primary source; the letter "S", a secondary source.

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

Table G-8.--Wire: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																																			
	Mill No. 2		Mill No. 46		Mill No. 63		Mill No. 64		Mill No. 65		Mill No. 66		Mill No. 67		Mill No. 68		Mill No. 69		Mill No. 70		Mill No. 71		Mill No. 12		Mill No. 72		Mill No. 73		Mill No. 74		Mill No. 75		Mill No. 4		Mill No. 76	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A																													P	P	S	S				
B			S		P	P																														
C					S	S																				P	P									
D																																				
E																																				
F							P	P	S	S																										
G							P	B								B	B																			
H					B	B	B										B		B		B															
I																																				
J	Various Japanese Mills																																			
K	P	S																					S	P	S	S										
L			P	P																																
M	P	P									S	S	S	S																						
N																	B	B	B	B											S				S	
O																																				
P																																				
Q																																				

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

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

Table C-9.--Angles, shapes and sections: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																													
	Mill No. 18		Mill No. 17		Mill No. 53		Mill No. 55		Mill No. 19		Mill No. 36		Mill No. 50		Mill No. 52		Mill No. 20		Mill No. 48		Mill No. 59*		Mill No. 60		Mill No. 61		Mill No. 55		Mill No. 62	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A	P	P									S	S	S	S																
B					S										P	S	S	P		S										
C																														
D									B	P	B		S																	
E											P	S																		P
F			P	P	S	S	S	S																						
G	S	S									B	P	B	S																
H	P	P											S	S	S													S		
I						S							B	S									B	P	S					
J	P	P	+ Various Japanese Mills																											
K					S								S		P	P														
L							P	P																						
M											S										P									
N									S	S			P	S	S	P														
O									P																					
P									P	P																				
Q									P	P			S																	

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

(*) Non-Japanese mill sources.

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

Table G-10.--Rails: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																							
	Mill No. 47		Mill No. 48		Mill No. 49		Mill No. 17		Mill No. 18		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A																								
B																								
C																								
D																								
E																								
F																								
G																								
H	B	B	B	B				B																
I																								
J																								
K																								
L																								
M																								
N									P	P														
O			S	S	P	P																		
P																								
Q																								

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

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

Table G-11.--Joint bars and tie plates: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																									
	Mill No. 50		Mill No. 49		Mill No. 48		Mill No. 51		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.		Mill No.	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A																										
B																										
C																										
D																										
E																										
F																										
G																										
H		P																								
I																										
J																										
K																										
L																										
M																										
N							p	p																		
O				P		S																				
P																										
Q																										

1/ The letter "P" denotes a primary source; the letter "S", a secondary source.

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

Table G-12.---Pipes and tubes: Mill sources of Japanese trading companies, by types, 1/ 1976 and 1977

Trading company	Mill source and year																																											
	Mill No. 18		Mill No. 17		Mill No. 19		Mill No. 77		Mill No. 78*		Mill No. 79		Mill No. 80		Mill No. 81		Mill No. 82		Mill No. 83		Mill No. 84		Mill No. 85		Mill No. 86		Mill No. 15		Mill No. 60		Mill No. 87		Mill No. 88*		Mill No. 31		Mill No. 89*	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
A		S							S																		S						P		P		S						
B															P	S	S	P	S			S																						
C																																											
D					P	P					S	S	S	S																													
E	B	S										S															B										S		F			
F	B	P	B	S			S	S																																			
G			P	P			S	S																			S	S															
H			S	P	S		P	S												S																							
I		S				S	P	P													S	S																					
J							P	P							S	S								S	S																		
K							S				S	S	P	P							S																						
L					S																								B	P	B	S											
M								S			P	S											P																				
N	S	S				S					S																P	P															
O					P	S	S	S	S	P																																	
P																																											
Q			P	P									S														S	S															

1/ The letter "P" denotes a primary source; the letter "S", a secondary source; the letter "B", a balanced sourcing among 2 or more supplying mills.

(*) Non-Japanese mill sources.

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

Appendix H

The Impact of Major Supply and Demand Variables on Shipments of Western Market Steel

This study attempts to measure the impact of the major supply and demand variables on shipments of domestically produced steel in the western steel market. The method used for the study is that of linear regression. Specifically, a "reduced" form equation is used to estimate how domestic shipments are affected by changes in the prices of factor inputs into the steel industry (fuel and labor), the level of activity in industries that use steel heavily (durable goods production and construction), and the prices of Japanese steel imports. The data used are for an aggregate of all steel products, and consist of quarterly series from 1963 to 1978.

Based on the model presented below, one expects changes in the demand variables (durable goods production, construction and the prices of imported steel) to positively influence shipments of domestic steel. The supply variables (the price of labor and material input prices) should have a negative influence on shipments of domestic steel. That is, a rise in the level of a demand variable, ceteris paribus, should cause shipments of western steel to increase. Conversely, an increase in one of the supply variables should cause shipments of domestic steel to decrease.

On the whole, the results of the study should be interpreted very cautiously. There are several variables, notably those for construction and material prices, that should exert an influence on western steel shipments, but none of the empirical estimates were able to reliably measure that influence. There are also variables left out of the model (such as capital and changes in inventories) due to unavailability of data . Finally, the model employed is not really appropriate for the analysis of an oligopolistc industry, so its assumptions are surely somewhat strained when applied to any

portion of the steel industry. Nonetheless, the estimated results may be fairly indicative of general relationships between the variables. The numerical estimates of the coefficients, however, are inevitably subject to a significant margin of error.

With these caveats in mind, the results can be summarized as follows: The results of this study tend to confrim that changes in the level of industrial production, import prices and the price of labor significantly influence the level of western shipments of domestic steel. The coefficients for durable goods production, the price of imports and the price of labor were significant and of the proper sign. Surprisingly, if the estimated import price coefficient is accurate, western shipments of domestic steel are fairly unresponsive to changes in the price of imports, at least in the short run. This unresponsiveness tends to indicate that there are significant nonprice considerations within the western market that inhibit domestic competition with imports. Viewed in relative terms, the estimated results for the three variables indicate that the price of labor exerts the strongest influence on the domestic shipments of steel, almost twice that of import prices, and something less than three times that of durable goods production. Unfortunately, the effects of the other variables (construction and material prices) on steel shipments are too unreliable to included in this comparision.

MODEL

The model used in this study is taken from a paper by Alan Sykes[1] on

1 Available from the Office of Economic Research, U.S. International Trade Commission.

"Empirical Analysis of Injury: Import Price Effects on Price, Output and the Demand For Labor in Domestic Industries." The underlying assumptions are that firms profit maximize, and that long run profit maximization is well approximated by a static maximization model. For purposes of deriving empirically estimable price and output equations for steel, two alternative sets of assumptions are utilized. These sets of assumptions are outlined below.

In the first alternative, it is assumed that technology is constant returns to scale Cobb Douglas as given by:

$$(1) \quad X = AK^{a}L^{b}M^{u}e^{ht}$$

where A, a, b, u, t are parameters, all positive; a+b+u=1
K = capital
L = labor
M = raw materials
h = the rate of technical progress
X = output
t = time

Demand is log-linear (constant elasticity) as follows:

$$(2) \quad X = Bp^{-v}Y^{s}I^{n}$$

where B, v, s, n are parameters, all positive
p = output price
I = price of imports
Y = a measure of economic activity for the for the consumers of X

Domestic output is assumed to be an imperfect substitute for imported goods; the cross price elasticity of demand is given by n. When profits are maximized (for fixed K) subject to (1) and (2), one obtains the following equation for short run output:

$$(3)\quad X = A' e^{h' t} Y^{s'} I^{n'} w^{-b'} q^{-u'} K^{a'}$$

where

A' = a constant

$h' = \frac{hv}{b+u+av}$ $\qquad$ $b' = \frac{bv}{b+u+av}$

$s' = \frac{s(b+u)}{b+u+av}$ $\qquad$ $u' = \frac{uv}{b+u+av}$

$n' = \frac{n(b+u)}{b+u+av}$ $\qquad$ $a' = \frac{av}{b+u+av}$

w = price of labor

q = price of materials

The short run price equation reduces to:

$$(4)\quad p = A'' e^{-h'' t} w^{b''} q^{u''} K^{-a''} Y^{s''} I^{n''}$$

where

A'' = a constant

$h'' = \frac{h'}{v}$ $\qquad$ $b'' = \frac{b'}{v}$

$s'' = \frac{s'}{b+u}$ $\qquad$ $u'' = \frac{u'}{v}$

$n'' = \frac{n'}{b+u}$ $\qquad$ $a'' = \frac{a'}{v}$

In log form these equations are estimable as:

$$(5)\quad \ln(X) = \ln(A') + h't + s'\ln(Y) + n'\ln(I) - b'\ln(w) - u'\ln(q) + a'\ln(K)$$

and

$$(6)\quad \ln(p) = \ln(A'') - h''t + b''\ln(w) + u''\ln(q) - a''\ln(K) + s''\ln(Y) + n''\ln(I)$$

The second set of assumptions considered is that of linear demand and fixed coefficients technology. Demand is assumed to be well approximated by the following function:

(7) $X = B - vp + sY + nI.$

Technology is given by:

(8) $X = \min(\frac{K}{a}, \frac{L}{b}, \frac{M}{u})$

It is assumed that the capital stock is fixed, giving a short run model, and that the firm is producing below capacity at all times. The equation for output is:

(9) $X = \frac{B}{2} + \frac{s}{2}Y + \frac{n}{2}I - \frac{v}{2}(wb + qu).$

The price equation reduces to:

(10) $p = \frac{B}{2v} + \frac{s}{2v} + \frac{n}{2v} + \frac{1}{2}(wb + qu).$

Before presenting estimates of equations 5, 6, 9 and 10, several remarks are in order. Some variables are excluded due to unavailability or unsuitability of the data. Material input prices, for example, are excluded due to statistically insignificant results. For the variables that are included, a major problem is the paucity of regional data on the west coast steel market. Construction variables, especially, are weak in this regard. Also, using data for the aggregate steel market undoubtedly masks many of the structural changes occurring within the steel market. For example, if domestic firms stop producing a specific steel product, it is no longer relevant to look at the import-domestic cross price elasticity of demand for this product. There is no longer a domestic substitute, so an aggregate import price index that includes the price of this product may distort the desired empirical estimates of the study.

If the western steel industry functions as an oligopoly there are three reasons why the model specified will be inadequate to explain variations in

price and output. First, oligopolies are often characterized by price ridgidity: Each firm feels that if it lowers prices all other firms in the industry will meet the lower price; the firm's market share will remain the same and its revenue will decrease. On the other hand, if the firm increases price none of the other firms will follow. The firm will again lose revenue as consumers shift to the lower priced goods of other firms. Thus, there is a kink in the demand curve facing the firm. Above the current price, the firm faces an elastic demand curve, while below the current price demand is inelastic. Therefore, there is a discontinuous marginal revenue curve at the current price. Even if cost structures are changing, firms will maintain the current price as long as their marginal cost curves pass through the discontinuous portion of the marginal revenue curve. A second problem with oligopoly exists where there is price leadership behavior in the industry. The assumption that firms maximize profits may obtain only for the lowest cost firm. Finally, if firms acknowledge the interdependence of their prices, demand curves are not truly exogenous as assumed above. With these qualifications in mind, the results of the study are discussed below.

ESTIMATES OF EQUATIONS (5) AND (6)

The dependent variable is shipments (shps). Shipments are approximated by consumption of steel, in quantity, in the western market minus west coast imports of steel. Consumption of steel consists of western steel production minus exports of steel from the region plus imports plus shipments of nonwestern domestic steel into the western market.

The regressors are durable goods production (DGP), construction awards, broken down into nonresidential (NRC) and nonbuilding (NBC) construction awards, a fuel price index for the manufacturing industries hourly wages for iron and steel workers (WGS) and an iron and steel price index for Japanese exports (IMP). The durable goods production is for the Federal Reserve District 12. The construction variables represent construction awards in a seven state western region comprising about 90 percent of the western market's steel consumption and production. The fuel price index and the hourly wages index are both BLS series for the entire country. The Japanese export price index for iron and steel products was obtained from the Bank of Japan's Price Indexes Annuals and Export and Import Price Indexes, and adjusted for exchange rate fluctuations. The Japanese export prices are for shipments to all countries.

In running the regressions, the wholesale price index for fuel was found to be statistically insignificant. The equations were run in both linear and (double) log linear form with fuel prices lagged up to eight quarters. Being a materials input price, fuel prices should inversely affect shipments (i.e., the coefficient for fuel prices should be negative). However, the t-statistic was never found to be higher than about 0.5, and had inconsistent sign. The fuel price variable was subsequently dropped from the equations.

Materials prices for iron ore and coke (BLS producer price indexes) were also regressed against shipments. While these indexes had consistently negative coefficients, their t-statistics were below one in all the equations. Since these variables did not add significantly to the explanitory power of the regression they were also dropped from subsequent equations.

The shipments variable was then regressed against the remaining variables in both linear and log linear form. Polynomial distributed lags were also performed on the independent variables to glean some idea of the lag structure for each of the variables. The best equations are shown on the accompanying page. As shown in regressions 1 and 2, the durable goods production variable, the hourly wages variable and the import price variable are all statistically significant with the proper sign. However, the construction awards variables are not significant at the 95 percent confidence level. Moreover, the nonbuilding construction variable has the wrong sign. These results will be expounded upon below.

Combined, nonresidential and nonbuilding construction account for approximately 55 percent of all western steel consumption, with industrial production accounting for most of the remainder. These variables should therefore exert a significant, positive, effect upon western steel consumption. As indicated in regressions 1 and 2, however, neither variable was significant at the 95 percent confidence level. In fact, the nonbuilding construction variable's coefficient had a negative sign. A weighted average of the two variables, with appropriate lags, was also tried, but the coefficient of this combined variable was again not significant. The use of construction awards is apparently not an appropriate substitute for the consumption of steel by the construction industry. (The value of construction put in place would be a more appropriate construction variable, but was not available for the western market.)

Aside from the three statistically insignificant variables in regressions 1 and 2, there remain three regressors with coefficients acceptable at the 95 percent confidence level: durable goods, production, Japanese export prices

of steel, and hourly wages in the steel industry. These coefficients also carry the proper signs. Unfortunately, the explanatory power of the regression, as measured by the R^2, never exceeds about 57 percent in any of the equations. (This result is not surprising because of the variables excluded from the model, and the fact that the model is not totally appropriate for oligopolies).

Before proceeding with the discussion of the estimated results, a few remarks need to be made concerning the interpretation of the coefficients in equations (5) and (6). The coefficients (n',b', etc.) will always be less than or equal to the corresponding exponents (n,b, etc.) in equations (1) and (2). The relative size of the coefficients depends on the values for "a" and "v"; i.e., the size of n',b', etc. relative to n,b, etc. depends on capital's share in the production process (a) and the price elasticity of demand for steel (v). The larger the product of "a" and "v" is, the larger the elasticities (n, b, etc.) in equations (1) and (2) will be relative to the corresponding coefficients in equations (5) and (6). For example, the estimated coefficient (n') for import prices (equal to about 0.6) is smaller than the actual cross price elasticity of demand for imports (n). Therefore, the actual cross price elasticity of demand for imports is more elastic than the estimated coefficients indicate.

Table 1 below shows what the actual value of "n" (or "s") will be for various values of n' (or s') and v. (Analogous tables can be constructed for the other coefficients of equations (5) and (6).) Because capital's share in the production process appears, on the basis of 1976 cost figures, to be a maximum of about 20 to 30 percent, "a" is set equal to 0.25 in the table. The price elasticity of demand for steel may be greater than one, although in the

absence of empirical estimates this is merely conjectural. As can be seen from the table, if the elasticity of demand for steel is greater than about 2.5 the actual cross price elasticity of demand (n) will be elastic even with the estimated coefficient being about 0.6. Therefore, although the distinction between the estimated coefficients and actual elasticities will be ignored in the exposition that follows, it should be kept in mind that the estimated coefficients understate the actual elasticities. For ease of exposition, the price elasticity of demand for steel is assumed to be less than about 2.0. Thus, the estimated coefficients are assumed to reflect the general characteristics of the elasticities of equations (1) and (2).

TABLE 1

n':	0.5	0.6	0.7	1.0	1.5
v					
0.5 :	.58	.70	.82	1.17	1.75
1.0 :	.67	.80	.93	1.33	2.00
1.5 :	.75	.90	1.05	1.50	2.25
2.0 :	.83	1.00	1.17	1.67	2.50
2.5 :	.92	1.10	1.28	1.83	2.75
3.0 :	1.00	1.20	1.40	2.00	3.00

Value of n Given n',v and a

a = .25

b + u = .75

In the log form equation, the coefficient of the Japanese export price variable (equal to about 0.6) seem a little low for a coefficient of the import price elasticity of demand for steel. A coefficient of elasticity of 0.6 indicates that for a one percent increase in the price of imported steel domestic shipments increase six tenths of a percent. Because steel products are relatively homogeneous, i.e., there is little perceptible difference between homologous domestic and imported products, you would expect an elastic demand for steel. The coefficient should be greater than one (a one percent rise in imports price causes a greater than one percent shift to domestic steel). Assuming the estimated import price elasticity is accurate, the inelastic demand could be the result of several factors. Domestic producers may not produce directly competing products with imports, or domestic producers may not be able to meet increased demand for domestic versus foreign steel in the short run (or the market period---i.e., the very short run---whichever is being captured in the model). Buyers also may be tied to contracts in the short run despite increasing import prices. (On the basis of polynomial distributed lag estimation the current period, or at most a one period lag, appears most appropriate for measuring the effect of Japanese export prices on shipments of western steel. Thus, explanations of low elasticity attributed solely to short run market conditions seem somewhat impotent). Another possibility is that an increase in Japanese prices causes substitution of imports from another country rather than the substitution of domestically produced steel. Of course, the explanation of a low import elasticity estimate could simply be the result of Japanese export prices to all countries not accurately representing the import prices of all countries into the U.S. western market. Also, the data used in this study are for all

steel products. The elasticities undoubtedly vary widely between specific steel products.

The coefficients of both the other variables seemed in line with expectations. The coefficient of durable goods production was positive with a fairly large magnitude. In log form, the coefficient for durable goods production was about 0.7; i.e., a one percent rise in durable goods production causes domestic shipments to increase by seven tenths of a percent. You would expect the coefficient for durable goods production to be about 0.45 since durable goods production and construction combined should have a coefficient of about one. Thus, durable goods production may be picking up some of the movement explained by the construction variables due to multicollinearity between these demand variables. The coefficient for hourly wages was negative with a magnitude of about -1.6 in the log equation. This seems a plausible, although somewhat high, value for the coefficient. However, similar to the demand variables, the wages variable may be moving collinearly with materials prices, and thus picking up some of the change in shipments caused by material prices. The correlation matrix for the supply variables tends to substantiate the hypothesis of multicollinearity (coefficients around .8 or .9 are found). However, the evidence is less clear for the demand variables.

ESTIMATES OF EQUATIONS (9) AND (10)

A price variable was also regressed on the same regressors as used in the shipments equations. That is, steel prices (STLPR) were regressed against durable goods production, Japanese export price, nonresidential and nonbuilding construction and hourly wages in the steel industry. The price of

steel should be positively influenced by each of the independent variables. As can be seen from regressions 3 and 4 below, after adjusting for serial correlation in the error term, only the coefficients for wages and import prices are significant. These two coefficients also carry the proper (positive) sign. Furthermore, the coefficient of the wages, in log form, has a greater magnitude than the import price coefficient. (This result is expected because import prices have only an indirect effect on domestic prices of steel, although the import price coefficient does seem rather small). Thus, these coefficients seem plausible in view of expectations. The coefficients of the three demand variables, durable goods production, nonresidential and nonbuilding construction, all are insignificant, and have negative signs in at least one of the equations. The estimated coefficients for the three variables are thus of no use in explaining movements in price. But this poor performance of the demand variables in explaining price is characteristic of an oligopolistic industry. That is, prices tend to respond poorly to shifts in demand in an oligopolistic industry, price being determined more by changes in costs.

CONCLUSION

Not surprisingly, the results of this study tend to confirm that changes in the level of industrial production, import prices and the price of labor significantly influence the level of western shipments of domestic steel. Assuming the estimated coefficients of these variables, in log form, are reasonably accurate measures of the actual market (an admittedly tenuous assumption), we also know the approximate magnitude of the effect changes in

these variables will have on western market domestic steel shipments. Perhaps the most interesting result of the study, if the coefficient for import prices in the log equation is accurate, is that the demand for domestic steel is somewhat unresponsive to changes in import price. This inelasticity of the demand for imports tends to indicate that there are structural constraints in the western steel market, aside from imports simply undercutting domestic prices, that inhibit domestic competition with imports. Unfortunately, the poor quality of data for the model, along with reservations about the model's usefulness for an oligopolistic industry, necessitate that all findings be regarded as somewhat inclusive.

Regression 1

$\ln(Shps) = 2.91 + 0.68 \ln(DGP) - 1.48 \ln(WGS_{t-1}) + 0.63 \ln(IMP) + 0.15 \ln(NRC_{t-2}) - 0.07 \ln(NBC_{t-2})$

t-stat. (3.20) (3.75) (-5.67) (4.67) (1.17) (-1.16)

Adjusted $R^2 = .5524$

Regression 2

$Shps = 1508.62 + 6.83\ DGP - 306.08\ WGS_{t-1} + 3.62\ IMP + 2.93\ NRC - 0.68\ NBC_{t-2}$

t-stat. (6.33) (3.09) (-4.79) (3.66) (1.44) (-.72)

Adjusted $R^2 = .5238$

Regression 3

$\ln(STLPR) = -1.32 - 0.058 \ln(DGP) + 0.476 \ln(WGS_{t-1}) + 0.281 \ln(IMP) - 0.012 \ln(NRC_{t-2}) - 0.006 \ln(NBC_{t-2})$

t-stat. (-2.48) (-.706) (3.59) (6.165) (-.495) (-.836)

Adjusted $R^2 = .9971$; R^2 in terms of changes = .5003

Regression 4

$STLPR = .493 + .00002\ DGP + .151\ WGS_{t-1} + .0021\ IMP - .0001\ NRC_{t-2} - .0002\ NBC_{t-2}$

t-stat (1.58) (.019) (5.159) (6.630) (-.300) (-1.442)

Adjusted $R^2 = .9970$; R^2 in terms of changes = .5899

WEIGHT: NONE
NUMBER OF OBSERVATIONS AFTER WEIGHTING: 60

	LDP12	LHRWGL1	LJAPEXP	NRCL2	NBCL2
LDP12	1.00000	.949838	.865282	-.126099	-.399054
LHRWGL1	.949838	1.00000	.954936	-.184157	-.400664
LJAPEXP	.865282	.954936	1.00000	-.843312E-01	-.378296
NRCL2	-.126099	-.184157	-.843312E-01	1.00000	.152812
NBCL2	-.399054	-.400664	-.378296	.152812	1.00000
	1	2	3	4	5

RESULTS OF COVARIANCE PROCEDURE
****
WEIGHT: NONE
NUMBER OF OBSERVATIONS AFTER WEIGHTING: 60

	DP12	HRWGL1	JAPEXP	LNRCL2	LNBCL2
DP12	1.00000	.954953	.844408	-.147968	-.475030
HRWGL1	.954953	1.00000	.928975	-.187964	-.467013
JAPEXP	.844408	.928975	1.00000	-.560486E-01	-.418784
LNRCL2	-.147968	-.187964	-.560486E-01	1.00000	.230542
LNBCL2	-.475030	-.467013	-.418784	.230542	1.00000
	1	2	3	4	5

EQUATION 1
****
ORDINARY LEAST SQUARES
DEPENDENT VARIABLE: LSHPS
SUM OF SQUARED RESIDUALS = .528217
STANDARD ERROR OF THE REGRESSION = .989029E-01
MEAN OF DEPENDENT VARIABLE = 7.33691
STANDARD DEVIATION = .147823
R-SQUARED = 0.5903
ADJUSTED R-SQUARED = 0.5524
F-STATISTIC(5., 54.) = 15.5600
LOG OF LIKELIHOOD FUNCTION = 56.8415
NUMBER OF OBSERVATIONS = 60.
SUM OF RESIDUALS = .295639E-04
DURBIN-WATSON STATISTIC (ADJ. FOR 0. GAPS) = 1.5639

RIGHT-HAND VARIABLE	ESTIMATED COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	2.91447	.910360	3.20145
LDP12	.680848	.181370	3.75392
LHRWGL1	-1.47990	.261092	-5.66814
LJAPEXP	.629009	.134660	4.67107
LNRCL2	.151462	.129067	1.17351
LNBCL2	-.651706E-01	.560806E-01	-1.16209

ESTIMATE OF VARIANCE-COVARIANCE MATRIX OF ESTIMATED COEFFICIENTS

	C	LDP12	LHRWGL1	LJAPEXP	LNRCL2	LNBCL2
C	.828755	-.124819	.164559	-.693263E-01	-.167147E-01	-.162000E-01
LDP12	-.124819	.328951E-01	-.400917E-01	.130809E-01	-.865038E-02	.141514E-02
LHRWGL1	.164559	-.400917E-01	.681688E-01	-.309462E-01	.160579E-01	-.430774E-03
LJAPEXP	-.693263E-01	.130809E-01	-.309462E-01	.181333E-01	-.775174E-02	.409180E-03
LNRCL2	-.167147E-01	-.865038E-02	.160579E-01	-.775174E-02	.166584E-01	-.130512E-02
LNBCL2	-.162000E-01	.141514E-02	-.430774E-03	.409180E-03	-.130512E-02	.314564E-02
	1	2	3	4	5	6

EQUATION 2

****

COCHRANE-ORCUTT ITERATIVE TECHNIQUE

DEPENDENT VARIABLE: LSTWFI

ITERATION	RHO
*********	***
1	0.896798
2	0.922858
3	0.936229
4	0.946667
5	0.956391
6	0.965660
7	0.973503
8	0.978750
9	0.982561

FINAL VALUE OF RHO = 0.982561

NO. OF ITERATIONS = 9

STANDARD ERROR OF RHO = 0.024207

T-STATISTIC FOR RHO = 40.589630

SUM OF SQUARED RESIDUALS = .180400E-01

STANDARD ERROR OF THE REGRESSION = .184493E-01

MEAN OF DEPENDENT VARIABLE = .320882

STANDARD DEVIATION = .341290

R-SQUARED = 0.9973

ADJUSTED R-SQUARED = 0.9971

F-STATISTIC(5., 53.) = 3959.00

LOG OF LIKELIHOOD FUNCTION = 155.017

NUMBER OF OBSERVATIONS = 59.

SUM OF RESIDUALS = .355952E-01

DURBIN-WATSON STATISTIC (ADJ. FOR 0. GAPS) = 1.2566

RIGHT-HAND VARIABLE	ESTIMATED COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-1.32138	.533095	-2.47870
LDP12	-.579647E-01	.819935E-01	-.706944
LHRWGL1	.476184	.132662	3.58747
LJAPEXP	.280699	.455304E-01	6.16508
LNRCL2	-.124230E-01	.251106E-01	-.494732
LNBCL2	-.576032E-02	.689175E-02	-.835829

ESTIMATE OF VARIANCE-COVARIANCE MATRIX OF ESTIMATED COEFFICIENTS

	C	LDP12	LHRWGL1	LJAPEXP	LNRCL2	LNBCL2
C	.	.284190	-.322568E-01	-.167502E-01	-.643842E-02	-.225869E-02	-.278391E-03
LDP12	.	-.322568E-01	.672293E-02	-.233252E-02	-.347748E-05	.769746E-04	.498499E-04
LHRWGL1	.	-.167502E-01	-.233252E-02	.175991E-01	-.213568E-02	-.145077E-03	-.906180E-04
LJAPEXP	.	-.643842E-02	-.347748E-05	-.213568E-02	.207302E-02	-.128246E-03	.235598E-04
LNRCL2	.	-.225869E-02	.769746E-04	-.145077E-03	-.128246E-03	.630542E-03	-.223618E-04
LNBCL2	.	-.278391E-03	.498499E-04	-.906180E-04	.235598E-04	-.223618E-04	.474962E-04

1 2 3 4 5

ORDINARY LEAST SQUARES
DEPENDENT VARIABLE: SHFS
SUM OF SQUARED RESIDUALS = .143919E+07
STANDARD ERROR OF THE REGRESSION = 163.254
MEAN OF DEPENDENT VARIABLE = 1552.45
STANDARD DEVIATION = 226.324
R-SQUARED = 0.5238
ADJUSTED R-SQUARED = 0.4797
F-STATISTIC(5., 54.) = 11.8787
LOG OF LIKELIHOOD FUNCTION = -387.694
NUMBER OF OBSERVATIONS = 60.
SUM OF RESIDUALS = .708008E-02
DURBIN-WATSON STATISTIC (ADJ. FOR 0. GAPS) = 1.5229

RIGHT-HAND VARIABLE	ESTIMATED COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	1508.62	238.249	6.33213
DP12	6.83447	2.21415	3.08672
HRWGL1	-306.083	63.9256	-4.78811
JAPEXP	3.62399	.990996	3.65691
NRCL2	2.92935	2.03833	1.43713
NBCL2	-.675478	.938421	-.719803

ESTIMATE OF VARIANCE-COVARIANCE MATRIX OF ESTIMATED COEFFICIENTS

	C	DP12	HRWGL1	JAPEXP	NRCL2	NBCL2
C	56762.6	-17.5516	-3264.68	64.3916	-390.859	-81.3466
DP12	-17.5516	4.90246	-122.549	1.00270	-1.27477	.240366
HRWGL1	-3264.68	-122.549	4086.48	-51.1992	53.2578	-3.28505
JAPEXP	64.3916	1.00270	-51.1992	.982073	-.813084	.881963E-01
NRCL2	-390.859	-1.27477	53.2578	-.813084	4.15480	-.255168
NBCL2	-81.3466	.240366	-3.28505	.881963E-01	-.255168	.880634

1 2 3 4 5 6

EQUATION 4

EQUATION 4
****
COCHRANE-ORCUTT ITERATIVE TECHNIQUE
DEPENDENT VARIABLE: STWPI

ITERATION	RHO
*********	***
1	0.893631
2	0.933129
3	0.950479
4	0.961474
5	0.969217
6	0.974679
7	0.978541

FINAL VALUE OF RHO = 0.978541
NO. OF ITERATIONS = 7
STANDARD ERROR OF RHO = 0.026825
T-STATISTIC FOR RHO = 36.478134
SUM OF SQUARED RESIDUALS = .464160E-01
STANDARD ERROR OF THE REGRESSION = .295935E-01
MEAN OF DEPENDENT VARIABLE = 1.46396
STANDARD DEVIATION = .538199
R-SQUARED = 0.9972
ADJUSTED R-SQUARED = 0.9970
F-STATISTIC(5., 53.) = 3826.05
LOG OF LIKELIHOOD FUNCTION = 127.138
NUMBER OF OBSERVATIONS = 59.
SUM OF RESIDUALS = .320549E-01
DURBIN-WATSON STATISTIC (ADJ. FOR 0. GAPS) = 1.2354

RIGHT-HAND VARIABLE	ESTIMATED COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	.493202	.311791	1.58184
DP12	.174778E-04	.896156E-03	.195031E-01
HRWGL1	.151055	.292752E-01	5.15983
JAFEXP	.205525E-02	.309979E-03	6.63028
NRCL2	-.119623E-03	.398958E-03	-.299840
NBCL2	-.164325E-03	.113928E-03	-1.44236

ESTIMATE OF VARIANCE-COVARIANCE MATRIX OF ESTIMATED COEFFICIENTS

		C	DP12	HRWGL1	JAFEXP	NRCL2	NBCL2
C	.	.972134E-01	-.982418E-04	-.552651E-02	.292008E-05	-.112201E-04	.731603E-07
DP12	.	-.982418E-04	.803096E-06	-.755828E-05	-.897922E-08	.279430E-07	.108060E-07
HRWGL1	.	-.552651E-02	-.755828E-05	.657038E-03	-.306358E-05	-.114540E-05	-.367836E-06
JAFEXP	.	.292008E-05	-.897922E-08	-.306358E-05	.960868E-07	-.763038E-08	.259581E-08
NRCL2	.	-.112201E-04	.279430E-07	-.114540E-05	-.763038E-08		
.159166E-06	-.365198E-08						
NBCL2	.	.731603E-07	.108060E-07	-.367836E-06	.259581E-08	-	
.365198E-08	.129796E-07						
1	2	3	4	5	6		

R-SQUARED IN TERMS OF CHANGES = 0.5899

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