IMPORT DISCIPLINE: THE CASE OF THE UNITED STATES STEEL INDUSTRY

by Lawrence B. Krause

INTRODUCTION

Keeping up with the times is just as important for those providing the ‘theoretical’ rationale for economic policy as it is for any seller of a product in a competitive market. Economists defending the case for a more liberal commercial policy for the United States are no exception to the rule and in general have not been found wanting in their ability to stress those particular theoretical truths that make use of current political or economic conditions in support of this position. Their skill in this respect is seldom matched and indeed only topped by the inventive genius of others supporting the case for a more protectionist trade policy. Before World War II, static comparative advantage and the gains of a more efficient allocation of resources provided the foundation for the liberal position. Immediately after the war, the direct controls of other countries over international commerce limited the application of comparative advantage. The goal of economic policy became the improving of a ‘second best’ position. Under these conditions a liberal trade policy for the United States could be defended on the need to correct the imbalance in trade of the United States vis-à-vis the rest of the world as evidenced by the dollar shortage.

The sudden reversal of the balance of payments position of the United States following the Suez crisis once again forced a re-appraisal of the weapons in the free trade arsenal. Not only had the force of the argument of helping other countries lost its appeal, but the alteration of the economic situation clearly gave ammunition to protectionists to prove the reverse of the argument. Another weapon was found by looking at some of the beneficial effects of international trade on the domestic economy that have received little or no attention in the past. The existence of price inflation since the war during prosperous and recessionary periods alike has focussed attention on the many inflexibilities of the American economy and particularly

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1 The author wishes to acknowledge assistance received from Martin Shubik, John Hooper, Ned Phelps and other members of the Cowles Foundation. Helpful comments were also received from John Perry Miller, M. A. Adelman and Peter B. Kenen. A more technical discussion of the methods used in this paper may be found in the Cowles Foundation Discussion Paper #119 of June 12th, 1961.

2 This is true for the developed countries, but the argument still holds some force for underdeveloped countries.

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upon the monopolistic powers of business and labor unions leading to the cost push phenomenon. It is argued that international trade provides real competition to domestic industries which in its absence would be without any effective source of competition. The specter is often raised of unions and management coming together in industries producing products for which the final demands are very inelastic and conspiring to force up money wages and prices to the detriment of the general public. It is argued that if these industries were forced to compete with imports which are outside their control, very strict limits would be put on their price-raising abilities even if the domestic ownership of production is highly concentrated in a few firms. Raising domestic prices above import prices could only lead to reduced output and profits and unemployed workers. The discipline of foreign competition is supposedly sufficient to ensure conditions of effective price competition. Thus Haberler states when listing the dynamic benefits of trade that 'Free international trade is the best antimonopoly policy and the best guarantee for the maintenance of a healthy degree of free competition'.[8] Raymond Vernon making a similar point argues that monopolistic control has reached such a point in some industries that competitive pricing, cost-cutting and product development can only be achieved by extreme foreign competition.[24] This proposition has very special appeal, since a competitive pricing policy if forced upon American producers would stem the tendency for United States goods to be priced out of world markets, which is considered a contributing factor to current balance of payments difficulties. This leads to the rather paradoxical policy recommendation that the way to improve the balance of trade would be to stimulate competitive imports.

The belief in the therapeutic effects of foreign competition is rather widespread and has had its effect on public policy. Faced with the problem of growing labor demands for higher wages and with the unmistakable signs of forthcoming price increases by heavy industry, the French Government on March 23rd, 1961, announced the intention of reducing the French tariff ahead of the Common Market schedule in order to exert pressure on the domestic price of industrial goods.[9] Thus foreign competition was called upon to perform the function previously assigned to direct wage and price controls. A similar argument has been presented in defense of the proposal that Great Britain join the European Economic Community.

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8 Such arguments are generally substantiated through illustrations drawn from the steel industry. The special attention given the steel industry in this context makes it a natural subject for quantitative research.
The effects of imports in a competitive market are fairly clear. Imports provide an augmentation of market supply and will tend to lower the equilibrium price assuming no change in demand or domestic supply. Under oligopolistic conditions, however, the consequences of imports are not so simply deduced. In order to explore some of the implications of the import discipline argument, a particular set of market structure conditions will be assumed and the effect of international trade examined. Suppose we are dealing with an industry producing an identical product \( i \). There are only a few firms, one of which has a dominant market position and is the recognized price leader. The price is set by the leader, however determined, and this price is adhered to by all domestic suppliers. Having set the price, domestic firms are prepared to sell as much of product \( i \) as the market will absorb up to the point of full capacity. A buyers' availability curve, for convenience called an industry supply curve, results which is perfectly elastic to the point of full capacity and then turns almost completely inelastic (curve ss, Fig. 1b). The domestic demand for product \( i \) (dd) is quite inelastic for most price ranges, but becomes substantially more elastic at a very high price. In the absence of international trade, the price \( P_u \) will rule in the market and a quantity \( Oa \) will be produced and consumed at home.

Fig. 1a represents the market conditions for product \( i \) in the rest of the world. The rest of the world is treated as if it were a single entity with the characteristics of demand and supply exactly parallel to the industry conditions in the United States except for an apparent shortage of capacity. The price \( P_r^* \) would clear the market omitting trade with the United States although it is very likely that
the Government or the industry itself would impose a ceiling price, say \( P_r \), and the horizontal part of the supply curve is drawn accordingly. The allocation of output would be accomplished through a formal or informal rationing scheme. In order to illustrate the effects of international trade, the traditional method of picturing both sets of demand and supply curves on the same diagram (Fig. 2) is employed with the quantities increasing from left to right on the horizontal axis for the United States and from right to left from the common origin for the rest of the world. An amount \( ab \) (equal to \( f_g \)) would be exported from the United States to the rest of the world. The difference in the market price \( P_u \) in the United States and the price in the rest of the world \( P_r \) would be absorbed by foreign tariffs, transportation costs, and middlemen profits. The middlemen may be specialized traders who arbitrate between buyers and sellers, or the service could be performed by the buyers or sellers themselves.

Now we postulate that with the passage of time, the competitive position of the United States in product \( i \) has deteriorated and the comparative advantage has shifted to the rest of the world. The demand curves in both areas have shifted to the right (Figs. 1a and 1b) in parallel fashion. In the rest of the world, net investment in the industry has substantially increased capacity; however, factor price increases including profits have been limited to productivity gains so that the new supply curve \( SS' \) is merely a horizontal extension of the old supply curve \( SS \). Excluding trade with the United States, the market price remains at \( P_r \) and the quantity \( Qf' \) would be produced leaving some excess capacity in the industry. Supply
conditions in the United States, however, are substantially different. While net investment has also increased capacity in sufficient amounts to satisfy domestic needs, factor prices have increased in excess of productivity gains causing an upward shift of the whole supply curve to $s^s'$. In a closed economy situation, a higher domestic price $P_u'$ would prevail with the quantity $Oa'$ being produced and sold.

Removing the closed economy restraint with the comparative advantage situated in the rest of the world ($P_u' > P_r$), yields a situation as illustrated in Fig. 3. The relation of imports to the market structure as assumed for the United States is equivalent to the entry of a new firm into the industry. If this was indeed a new domestic firm and its capacity was small in relation to the price leader, the motivation would be present for it to follow the existing price leadership. The only change resulting would be that the established firms would give up some of their output to make room for the new entry. If the new firm was so large as to take a commanding position within the market, it would assume leadership within the industry and set prices for all firms. The analogy between imports and a new firm is not quite complete in that even if the export capacity of foreign producers is not large in relation to the United States market, foreigners are not able to follow the existing price leadership because of their revealed prices established for domestic sales. The rest of the world would export a quantity $f'g'$ of $i$ to the United States (equal to $a'b'$) allowing foreign producers to operate at full capacity while generating more slack in the American industry. The domestic price of $i$ in the United States would be unaffected remaining at $P_u'$ with
the margin between it and the import price $P_I$ being absorbed by American tariffs, transport costs and middlemen profits.

In the event that foreign producers had a great deal of export capacity such that foreign competition was a substantial threat to the American industry, then the import price would become the price leader. The discipline of the domestic oligopoly would break down as those firms servicing areas near ports of entry shaded their prices to compete effectively against the imports. Such price concessions would quickly spread to the entire market. This would appear as a downward shift in the domestic supply curve of United States producers to $s^*s^*$ (Fig. 3). The market price of $i$ would drop to $P_u^*$ reducing the price differential $(P_u^* - P_I)$ to just the American tariff and transport costs. After the adjustment was made, presumably the foreign export capacity would have to be demonstrated before the American industry would react, imports would cease and the domestic industry would produce and sell the quantity $Oa^*$. The total effect of the import competition would be the reduction of domestic prices and a slight increase in output depending upon the elasticity of the domestic demand curve.

If imports are to have their therapeutic effects upon the domestic industry, they must break the discipline of the oligopoly price and substitute one of their own. If the country involved was the Netherlands, there would be little question as to the reasonableness of the assumption. The economic size of the Netherlands is small in relation to world productive capacities and if a Dutch industry became uncompetitive with respect to foreign sources of supply, it is clear that a substantial portion of the domestic market would be lost to imports. For Dutch producers, meeting foreign competition is a matter of survival. Much the same situation would apply for most British industries if she were to join the European Economic Community. When one turns to consider the United States, however, the situation is radically different. Not only are actual imports for most products quite small in relation to total United States consumption, but potential imports are often severely bound at any point in time by capacity constraints. This does not suggest that a loss of as little as 5 per cent of the market wouldn’t be missed by domestic producers since its effect on profits may be greatly multiplied, but the loss of profits may well be less than would result if the import price was allowed to become the price leader. There is some point in the growth of imports, however, when the domestic firms will meet the import price rather than give up more of the market. This point will differ from product to product depending on marginal cost conditions and the elasticities of demand.
APPLICATION TO THE STEEL INDUSTRY

A remarkable amount of public attention and concern over the pricing policies of the steel industry in the United States has been prevalent since the war and is traceable to the extent of the inflation in steel prices that has occurred and its effects on the whole economy. According to the U.S. Bureau of Labor Statistics, the wholesale price index for iron and steel products increased by 88 per cent from 1947 to 1958 while the wholesale index for all commodities (other than farm and food) increased by only 32 per cent during that period. Steel product prices have been cited as being particularly strategic in the post-war inflation because steel is an input in so many products and inflationary wage bargains determined in the steel industry appear to have served as a pattern for other industries. [7]

The actual process of price formation in the steel industry has been studied by a number of people but without a general consensus of opinion resulting. [4] The characteristics of the steel industry are well known and approximate the assumptions of the oligopolistic industry discussed above except that the industry produces a number of generally distinct products rather than one. Robert Lanzillotti [10, 20] came to the conclusion that there is in fact price leadership in the steel industry and in general, prices are set by the leader so as to yield a target rate of return on investment (stockholders investment plus long-term debt). This return does not maximize profit but is one that is fair as determined by a process called ‘public utility like thinking’ and tempered by the need to face the competition of substitute metals, limit the pressure from congressional committees and avoid antitrust actions. Furthermore, the structure of the prices of individual steel products is influenced by the cost conditions peculiar to the product and the company’s leadership position with respect to the rest of the industry. What results from this kind of price leadership is short-run stability in steel prices plus a few discrete shifts in the level of prices reflecting cumulated cost changes.

The process of price setting is viewed somewhat differently by Adelman. [2] He sees the steel industry actually seeking to maximize profits with a group monopoly price but it is faced with conditions of uncertainty about the demand curve and a diversity of cost conditions. As a result, the price level has been raised in rather small discrete steps in an effort to search out the discontinuity in the demand curve indicating the end of the inelastic portion which would correspond to profit maximization (Fig. 16). The discrete jumps in

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4 In addition to the authors specifically cited, references [1, 4, 5, 14, 15, 23] are also devoted in part to the subject.
price are frequently correlated in time with wage rate adjustments to limit public censure, but are not in fact a direct result of them. This process also means that there will be short-run stability in prices.

A much different view is held by Martin Bailey.[21] While recognizing the short-run stability of the list price of steel products (used by the BLS for their index), he contends that actual prices paid by steel consumers do fluctuate and reflect competitive factors in the industry. The form of a price decline is much different from products sold in a normally considered competitive industry; however, they are just as real. At times of weak demand, steel companies will absorb all or part of the freight charges, not charge for some extras, and give substantial quantity discounts. As demand strengthens, these hidden price concessions are rescinded leading to flexible prices in both an upward and downward direction. If this is in fact of real importance in the steel industry, then changes in foreign competition would be reflected in actual steel prices if not in list prices.

The position of the American steel industry in international trade has changed quite noticeably over time. Immediately after World War II, because of either the competitive level of U.S. steel prices or the lack of capacity in other countries or both, the American steel industry exported a great deal more steel tonnage than was imported. Steel was imported to some extent during periods of crises such as the early years of the Korean war or during steel strikes, but these inroads into the American market were short lived. Around 1954-55 an upward trend to steel imports and a downward trend to exports appears. The pattern of the aggregate, however, is not reflected proportionally in all of the separate products. While foreign barbed wire and concrete reinforcing rods provide an important part of domestic consumption, American cold rolled steel, for instance, continues to be exported in large volume.

NATURE OF THE TEST

The fact that there is heterogeneity among steel products with respect to foreign trade makes it possible to use the experience of this industry in making a weak test of the import discipline hypothesis. Since some steel products faced increased competition from foreign sources while others did not, this difference should reflect itself in differential price changes of the products if the hypothesis is applicable. Prices of those steel products under the greatest import pressure should have declined relative to those products without foreign competition. The method employed to see whether in fact

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5 International trade played such a small role in the pre-war steel picture that it wasn't even considered as a possible area for fruitful research. [13]
this occurred was a multiple correlation calculation. Changes in the prices of individual steel products between 1954 and 1958 were correlated with two measures of import competition, e.g. changes in import prices during the same period and the volume of imports in 1958. Volume of imports were measured in terms of tonnage and value as well as a per cent of domestic tonnage shipped and of sales.6

It was anticipated that large price increases of domestic goods would be positively correlated with changes in import prices and negatively related to import volume. If, for instance, the price of imported steel rails went up a great deal during the period and the volume of imports was small, one would expect the domestic price of steel rails to have increased more than the domestic price of wire nails where the import price did not rise very much and where import volume was substantial.7 Ideally one would like to have a complete explanation of steel pricing including growth in product demand and capacity in order to measure the importance of the foreign trade factors in the overall picture. This unfortunately is not possible since our knowledge of steel pricing is incomplete. However, by looking at the relationship between steel prices and the foreign trade variables alone, one can get an approximation of whether these factors are likely to be of some importance in a complete explanation. If they did appear important, this would give enough encouragement to pursue the research further, even though it may well occur that adding other factors would substantially lessen the explanatory power of the previously considered ones. On the other hand, if in the simple form the foreign trade variables did not appear to have greater power after additional factors have been added.8

RESULTS OF THE CALCULATIONS

The results of the calculations are shown in Table I. They suggest that the foreign trade variables were not very important in determining changes in domestic steel prices. The coefficients of multiple correlation were no higher than one would expect to obtain from correlating truly random variables ("F" test). Import price changes

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6 The analysis could have been carried out in terms of export changes. A recent government publication will facilitate future work in this area. See U.S. Bureau of the Census, Exports as Related to Output in 1950, 1961.
7 It is of some importance that both 1954 and 1958 were relatively slack years for the U.S. steel industry. If there had been shortages of capacity, large domestic price increases could easily have occurred in the face of great import volume.
8 This would require a compensating relationship among the independent variables themselves that wouldn't make sense in this economic application. The sources of data and the listing of products appear in the appendix.
are positively correlated with domestic price changes as expected but not sufficiently enough to be statistically significant.

In an effort to improve the explanation of price changes, the data were stratified into the three major classifications of steels products. This held some hope of success in that it is well known that the market for wire products differs substantially from carbon steel. The results of these calculations are shown in Table II using volume of imports as the quantity variable. While there is, in fact, a great deal of improvement as the correlation coefficient reaches 0.49, the estimates are still unreliable as measure by the 'F' test. This is in part due to the fact that after stratification, the number of observations in each group is rather small. There is also some encouragement to be gained by the fact that the wire products group gave the best estimates.

**Table I**

<table>
<thead>
<tr>
<th>Constant</th>
<th>Import price changes</th>
<th>Volume of imports</th>
<th>Values of imports</th>
<th>Volume as a % of market</th>
<th>Value as a % of market</th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1961</td>
<td>0.0322 (0.0674)</td>
<td>0.0041 (0.0095)</td>
<td></td>
<td></td>
<td></td>
<td>0.10</td>
</tr>
<tr>
<td>1.1998</td>
<td>0.0312 (0.0620)</td>
<td>0.0013 (0.0083)</td>
<td></td>
<td></td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>1.2001</td>
<td>0.0300 (0.0630)</td>
<td></td>
<td>0.0049 (0.0472)</td>
<td></td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>1.2005</td>
<td>0.0214 (0.0631)</td>
<td></td>
<td>-0.0005 (0.0141)</td>
<td></td>
<td></td>
<td>0.08</td>
</tr>
</tbody>
</table>

*Figures in parentheses indicate standard errors. Forty-six observations were used in each of the calculations.*

**CONCLUSIONS**

The import discipline hypothesis is a very powerful argument for freer trade. It can also provide the Government with a policy instrument to deal with cost push inflations. The Government might lower tariffs to increase foreign competition on the products of industries that raised prices despite the Government’s admonitions. The policy will work best if the domestic industry reacts competitively to the increase in foreign competition by immediately lowering its prices. If the domestic industry lacks effective competition
original, however, a cost of the policy will be the increased underutilization of domestic capacity experienced while imports build up to the point where the loss of profits via lower prices would be less than that suffered from further imports. From the evidence examined here with respect to the U.S. steel industry, the competitive type response was absent during the 1954-58 period. Even if one accepted these results as conclusive for steel, this does not prevent the hypothesis from being valid for other industries. There is in fact circumstantial evidence to indicate that imports were important in undermining the effectiveness of the heavy electric generator cartel leading eventually to lower prices. The recent experience of the American automobile industry also illustrates that foreign competition can force adjustments, but the time lag may be substantial. However, one must use this argument with caution for the very market conditions that presented the need for outside sources of competition may prevent a flexible price response.

One can find technical reasons to help explain the inability of the statistical results to validate the import discipline hypothesis for the steel industry. The technique employed was intended to provide only a first approximation; however, the results of the calculations give the rather clear impression that the domestic steel industry was quite indifferent to imports, at least as far as pricing policy was concerned. Certainly the explanation for this result in part lies in the fact that imports were simply too small to become the price leader in our market, as the theoretical discussion indicates could be the case.

There are also institutional factors in the steel industry that add

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Constant</th>
<th>Import price changes</th>
<th>Volume of imports</th>
<th>Correlation coefficient</th>
<th>n = number of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon steel</td>
<td>1.2901</td>
<td>-0.0551</td>
<td>0.0000</td>
<td>0.37</td>
<td>n = 19</td>
</tr>
<tr>
<td></td>
<td>(0.0889)</td>
<td>(0.0754)</td>
<td>(0.0668)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire and wire products</td>
<td>0.9528</td>
<td>0.2140</td>
<td>0.0571</td>
<td>0.49</td>
<td>n = 14</td>
</tr>
<tr>
<td></td>
<td>(0.1935)</td>
<td>(0.1829)</td>
<td>(0.0527)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alloy steel</td>
<td>1.2223</td>
<td>0.0347</td>
<td>-0.0538</td>
<td>0.33</td>
<td>n = 13</td>
</tr>
<tr>
<td></td>
<td>(0.1405)</td>
<td>(0.1129)</td>
<td>(0.0432)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Figures in parentheses indicate standard errors.
credence to the apparent indifference of the industry to the inroads of imports. Steel products are sold both by fully integrated and non-integrated firms. A non-integrated firm frequently finds itself in competition with a fully integrated firm in the sale of final steel products, but dependent on that same firm for an important part of the materials going into its production process. Suppose a great deal of foreign barbed wire were offered to the American market at a price below the ruling market price. The integrated firm might well have enough profit margin and have the desire to meet the foreign price, but if they lowered the price of barbed wire and not the price of wire rod, the non-integrated firm would be put into a substantial profit squeeze. Since the integrated firm not only sells barbed wire, but also wire rod to be made into barbed wire, it is in a position to drive non-integrated firms out of business if they desire (or force them to integrate). The U.S. Justice Department is known to take a dim view of this type of profit squeeze on non-integrated firms. Yet it may well be that it does not pay the integrated firm to lower its price on wire rod which is used for other products besides barbed wire even though it was prepared to meet the foreign price on the final product. The end result may be that all domestic prices are held at the same level and the imports allowed to enter the market rather than face governmental displeasure. 9 This is another instance of the U.S. antitrust laws acting in a way to protect competitors rather than competition.

It is quite likely that the import discipline hypothesis would be valid for most industries in the United States if imports increased substantially relative to the entire economy. No industry can long stand a continued erosion of its market without responding to the competition in like manner or preparing to go out of business. The competitive response would surely be speeded and made more certain if it was clear that the Government would not bail out the industry in case of serious trouble through restrictive trade policies. On the other hand, under present levels of imports and current market structures, foreign competition may mean greater unemployment for some time until the competitive response is forthcoming.

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9 An analogous situation occurred in 1948 when the prices of intermediate products were raised more than final products.
The data used are cross sections of steel products in the two years 1954 and 1958. Data concerning the domestic price of steel products are available from two sources, neither of which is perfectly satisfactory. The U.S. Bureau of Labor Statistics report wholesale prices of many steel products[19] but these are taken from list prices given out by the industry and are subject to the major criticisms indicated by Bailey. Since 1954 and 1958 are both years when censuses of manufacturing were taken, data as to quantity and value of shipments of many steel products are reported and thus unit value prices can be calculated.[16] These data have the desirable properties of coming from the same source as the quantity data and yield more observations than BLS, but are subject to the criticism of being too broad in classification. Despite this reservation, the unit values were used yielding forty-six observations. All questions of definitions were settled by use of[6]. Freight absorption will not be reflected in these prices but hidden price concessions will. The products fall into three major groups, carbon steel products, wire and wire products and alloy steel products.

The import prices employed are also the result of unit value calculations taken from data reported in the annual import statistics. [18] These figures were adjusted to reflect the American tariff.[17] The import quantity statistics were taken from the same source[18] and when expressed as a ratio to the domestic counterpart, the census reports provided the denominators.[16] The units of the variables involved are as follows: the price ratios are percentage figures, volume of imports are tens of millions of pounds, value of imports are millions of dollars, the volume and value relatives are hundredths of a per cent.

**Carbon Steel Products**

<table>
<thead>
<tr>
<th>Steel ingot</th>
<th>Steel sheet, hot rolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skelp</td>
<td>Steel sheet, cold finished</td>
</tr>
<tr>
<td>Wire rods</td>
<td>Galvanized steel sheet</td>
</tr>
<tr>
<td>Steel concrete bars</td>
<td>Steel plate</td>
</tr>
<tr>
<td>Steel bars, hot rolled</td>
<td>Tin plate</td>
</tr>
<tr>
<td>Steels bars, cold finished</td>
<td>Terne plate</td>
</tr>
<tr>
<td>Steel strip, hot rolled</td>
<td>Steel structural shapes</td>
</tr>
<tr>
<td>Steel strip, cold finished</td>
<td>Steel pipes and tubes</td>
</tr>
<tr>
<td>Steel strip, H.R., galvanized</td>
<td>Steel rails</td>
</tr>
<tr>
<td></td>
<td>Steel rail braces and bars</td>
</tr>
</tbody>
</table>
Wire Products

- Wire nails
- Wire tacks and staples
- Barbed wire
- Woven wire fencing, galvanized
- Bailing wire
- Steel wire
- Galvanized steel wire
- Steel cut tacks
- Steel cut nails, spikes, and brads
- Paper machine wire cloth
- Wire mesh
- Wire strand
- Wire rope and cable
- Industrial wire cloth

Alloy Products

- Galvanized steel wire alloy
- Steel wire alloy
- Steel ingot alloy
- Wire rods alloy
- Steels bars, H.R., alloy
- Steel bars, C.R., alloy
- Steel strip, H.R., alloy
- Steel strip, C.F., alloy
- Steel sheets, H.R., alloy
- Steel sheets, C.F., alloy
- Steel plate, alloy
- Steel pipes and tubes, alloy
- Steel structural shapes, alloy

BIBLIOGRAPHY