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Import Restraints and Reindustrialization: The Case of the U.S. Steel Industry

by Joel B. Dirlam*  
And  
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I. INTRODUCTION

The topic we will discuss requires that one assume a link between import restraints and reindustrialization. Before turning to the possible sets of relations between the two, however, it is necessary to define "reindustrialization." As it has been bandied about for the past year or so, the term seems to mean a reorganization of certain U.S. industries that would enable them to better meet foreign competition in both home and international markets.¹ The term "reindustrialization" is generally applied to all industries threatened by imports, or even more broadly, to those industries which are a drag on GNP growth. Reindustrialization refers to policies that will reverse a downward trend in labor productivity or

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Consultant with the World Bank and with several private domestic and foreign steel producers and importers' and exporters' associations.


enhance an inadequate upward flow, raise the national rate of capital formation, and augment useful expenditures on research and development.\(^2\)

We have neither the time nor the competence to assess the broader developments, including the emergence of the underground economy, that might account for a lagging GNP, let alone its interaction with international trade.\(^3\) Currently accepted assumptions are that savings rates are higher abroad, innovations are more rapidly introduced, and labor more loyal and industrious. It is necessary for us to put the steel industry in perspective so that we can appraise the consequences of selecting among various options for policy toward steel imports. Selection of the proper policy is important not merely for reindustrialization of the steel industry itself but for those industries that are consumers of steel. They make up an important share of the manufacturing sector that is said to be experiencing difficulties. If the costs of industrial steel consumers are increased because of adoption of a policy designed to help the steel industry, that policy will be counterproductive.

Before discussing restraints, it is essential to review the U.S. experience in protecting the steel industry. In most years since 1959, U.S. mill prices of steel products have been above those of their European and Japanese competitors.\(^5\) The differential has fluctuated with exchange rates, and especially with respect to our margin above the European ex-mill

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\(^3\) Some of the complexities, not to say uncertainties, of assessing the causes of our industrial slowdown may be gleaned from Oi, Slack Capacity: Productive or Wasteful (No. 2), 71 AM. ECON. REV. 64 (1981); Baily, The Productivity Growth Slowdown and Capital Accumulation, id. at 328; Vatter, The Atrophy of Net Investment and Some Consequences for the U.S. Mixed Economy, 16 J. ECON. ISSUES 237 (1982).


prices. In 1981, the U.S. mills were still at a disadvantage; Japanese prices for the major product lines were about 20 percent below the prices of the integrated U.S. plants, while the European differential exceeded 30 percent. For the products of the non-integrated American minimills, the gaps were much smaller or non-existent.

This price gap, prevailing over a period of 20 years, has created a climate in which U.S. steel firms have organized and orchestrated a protectionist policy. Once having gained a foothold in 1959, imports increased their market share. End users became accustomed to using imported steel. Although they suffered from inherent disadvantages in competing in the U.S. market, foreign mills provided in many cases superior service, and often a better quality product. Moreover, U.S. customers found that relying on several suppliers reduced the risk of unavailability.

II. A Summarized History of Steel Production Since the Mid-1960's

The U.S. steel industry launched its first major campaign against imports in the mid-1960s when it became clear that imported steel had

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7 Estimated from Metals Intelligence Int'l, supra note 5, at 5-7.
9 See Table 1, and OTA Report 1981, supra note 2, at 50.
10 The volume of steel imports in the 1980s assumed a staircase pattern, with the steps occurring in years of labor-contract negotiations. Adams, supra note 6, Fig. 1 at 53; L. Kiers, The American Steel Industry: Problems, Challenges and Perspectives 10, 12 (1980). The surges were caused by consumer hedge buying in anticipation of potential supply disruptions due to strikes.
11 "There are many disadvantages experienced by purchasers of imported steel which translate into hidden costs which purchasers must assume. Purchasers of imported steel must wait for steel ordered from abroad for a longer period of time than domestic customers. Currency fluctuations may run against the purchaser. With the steel being handled by so many more transport facilities, there tends to be more damaged steel and more rusted steel than in the case of domestic purchases. The purchaser also runs the risk of delays in ocean carriage which can disrupt his manufacturing operations," Statement by Alfred R. McCauley in Opposition to the U.S. Steel Antidumping Petitions before the U.S. Int'l Trade Commission Apr. 17, 1980, at 38-39. See also L. Friden, Instability in the International Steel Market 58, 63 (1972).
12 J. Jondrow, et. al., The Price Differential between Domestic and Imported Steel, (Center for Naval Analysis 1977); Comptroller General, Report to the Congress, New Strategy Required for Aiding Distressed Steel Industry, Ch. 3 (1981) [hereinafter cited as GAO Steel Report].
come to stay. The drive reached a high level of intensity in 1968, when 18 million tons of imported steel accounted for 16.7 percent of the domestic market. Domestic firms began to break ranks and published prices were discounted. With the conclusion of "voluntary" restraining agreements (VRA) between the State Department and the steel producers of the European Economic Community and Japan, price discipline was restored in 1969. Had imports not been checked, both the State Department and the foreign mills and governments were convinced that the U.S. steel industry had the political power to obtain quota legislation.

The VRA lapsed in 1974, partly as a result of a suit brought by the Consumers Union. Beginning in August of the same year, the international steel market suffered from a prolonged recession with occasional partial remissions. The decline in demand, which has characteristics that indicate it is more than a mere reflection of the normal business cycle, has been accompanied by an increase in steel-making capacity. Firms have been established in the Third World and their steel has been exported to developed countries, especially the United States. In the European Economic Community, where tacit collusion or price discipline could not be enforced because a diversity of nationalities made such collusion or price discipline impracticable, home market prices dropped severely, and most steel producers suffered losses that have continued to

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13 BACKGROUND MEMORANDUM ON AM. IRON & STEEL INST. IMPORT POLICY, reprinted in 113 CONG. REC. 4342, 44 (1967) [hereinafter cited as AISI MEMO].
14 Table 1 p. 23; Adams, supra note 6, Fig. 1, at 83.
17 Id.
18 COUNCIL ON WAGE AND PRICE STABILITY, A STUDY OF STEEL PRICES, 11 (1975).
20 Although the antitrust issue had not been formally presented, it was mentioned in the lower court opinion, Consumers Union v. Rogers, 352 F. Supp. 1319, 1323 (D.D.C. 1973). aff'd as modified sub. nom. Consumers Union of U.S. v. Kissinger, 506 F.2d 136 (D.C. Cir. 1974), cert. denied, 421 U.S. 1004 (1975), and in the opinion of the circuit court, a possibility remained that foreign firms participating in restraints could be liable to suits under the Sherman Act. See also L. Kiers, supra note 10, at 12.
the present.24 By contrast, the Japanese industry only lost money in 1975 and 197725 and recovered in the following years as a result of superior efficiency and a vigorous export drive.26 In 1982, operating at less than 70 percent of capacity, the Japanese mills were profitable.27

After a 25 percent drop of 3.9 million tons from 1974 to 1975, imports into the U.S. rose steadily.28 The increase from 1975 to 1977 was material. Low prices of imports and an inability to maintain posted prices troubled domestic producers more than the volume of imports, however. Largely as a result of defensive discounting,29 industry profits dropped almost to zero in 1977, although domestic shipments were higher than in either of the previous two years.

Intensive lobbying by the steel industry and by the United Steel Workers, exerted through the newly formed Congressional “Steel Caucus”, put the Carter Administration under renewed pressure to reduce the flow of imports.30 Government officials were staunchly opposed to negotiating new “voluntary” quotas, and advised the industry to file antidumping petitions; but they retreated from this position when the firms responded enthusiastically by submitting a broadside of complaints.31 If these petitions had been successful, it was quite likely that a trade war would have been provoked with the European Economic Community. After the Administration put together a novel procedure for controlling imports, the so-called “trigger price mechanism” (TPM),32 the antidumping petitions were withdrawn.33 Purporting to be no more than a “device to monitor imports”, the TPM actually established de facto minimum prices for most steel products imported into the United States, based on esti-

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26 Id. at 23.
28 See Table 1 at 23.
30 Adams & Mueller, supra note 6, at 101-102, 130; R. Crandall, supra note 19, at 42.
33 McCormack, supra note 31, at 310.
mated production costs, including profit, of Japanese steel producers. Since the domestic industry had been claiming that it was as efficient as any of its foreign competitors, and could compete successfully if only competition were fair, the U.S. mills could not object to giving the TPM a chance.

During its first year in operation, the new system not only ended discounting by domestic producers but it also raised import prices by about 10 percent. Although the volume of imports climbed to a peak in 1978, firmer prices and a buoyant demand generated a significant rebound in industry profits. The quarterly increases in the trigger prices that accounted for the steel industry's prosperity, however, were attributable primarily to a strengthening of the yen relative to the dollar, thus raising the dollar price of the Japanese benchmark costs. By the middle of 1979, when the dollar ceased to fall, trigger prices inevitably stabilized to reflect stationary Japanese costs. Indeed, if the dollar failed to drop, or began to rise against the yen, the trigger price might begin to decline even with continuous improvement in Japanese productivity.

As long as the triggers continued to move upward in each successive quarter, the TPM was accepted by the industry, albeit grudgingly. Impatient with the government's refusal to raise the trigger, however, U.S. Steel filed antidumping petitions against all major steel producers of the European Economic Community in March 1980. Keeping its word, the Administration promptly suspended the TPM, on the ground that it had been instituted as an alternative to the filing of major antidumping petitions by private parties. The antidumping proceedings resulted in a preliminary finding by the ITC that there was a reasonable indication that sales at less than fair value had injured the domestic industry. At

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35 For a comprehensive review of the background of the adoption of TPM, as well as of its provisions and application, see McCormack, supra note 31, passim.
36 Crandall, supra note 19, at 109-110.
37 SE\textsuperscript{38}EL TRIGGER PRICE MECHANISM: A ONE-YEAR REVIEW for the Steel Tripartite Committee (June 25, 1979) at 3 and attachment C.
38 Marcus & Kiresis, supra note 5, at 20.
42 Id.
this point, the European Economic Community began to threaten retaliatory action if the proceedings should eventuate in the imposition of antidumping duties. Several months of negotiation resulted in the revision of the TPM to permit a substantial price increase, and to provide for an automatic investigation of imports rising above a specific share of the domestic market when the industry was operating at less than 87 percent of capacity. As a quid pro quo, U.S. Steel withdrew its petition.

As time passed, however, the industry became increasingly dissatisfied with the revised TPM. Opponents of the program argued that the TPM was not being consistently or vigorously applied against a continuing flow of imports whose list prices were subject to discounting. In every major importing country—France, Italy, Luxembourg, the Netherlands, and the United Kingdom, Pub. No. 1064 (1980) at 1.

44 McCormack, supra note 31, at 315.

45 The White House, A Program for the American Steel Industry, its Workers and Communities, Sept. 30, 1980; 45 Fed. Reg. 66833-66835 (1980). The suppression and subsequent re-institution of the TPM under the Carter Administration were carried out in circumstances very similar to those leading up to the promotion of the VRA under Nixon, and the first adoption of the TPM under Carter. Under the industry’s game plan, petitions were filed under the Antidumping Statute that, if carried to fruition, would have placed the U.S. government in an untenable position vis-a-vis the European Economic Community. In desperation, the Administration placated the industry with a compromise that was probably inflationary, and certainly raised costs to steel users, but which had the advantage of putting off the day when, under GATT rules, U.S. exporting industries would be subjected to retaliatory action.


47 Skrzycki, 2 U.S. Mills Ask Pre-Clearance Denial, AM. METAL MKT., Aug. 5, 1981 at 1, col. 1; Chase & Krause, Trigger Price Mechanism Under Pressure, AM. METAL MKT., Sept. 15, 1981 at 1, col. 2; News Roundup: Stricter Enforcement of Trigger System Sought by Process, AM. METAL MKT., Oct. 1, 1981, at 1, col. 4; Kramer, Steel Imports Rising in Great Lakes; Prices Below Triggers, AM. METAL MKT., Oct. 6, 1981 at 1, col. 3; Peters, New Trigger Manual Sealing Loopholes, AM. METAL MKT., Oct. 9, 1981 at 1, col. 3; Haflich, West Coast Steel Slump Deepens; Imports Set Record in East, AM. METAL MKT., Oct. 9, 1981 at 1, col. 1; Wasik, Steel Imports Rise at Chicago, Undercut Triggers $40-$65/MT, AM. METAL MKT. Nov. 5, 1981 at 1, col. 3. The Trigger Price Mechanism was under severe attack not only by domestic steel producers but by trade associations representing steel distributors. Most vocal among these were the Association of Steel Distributors and the Steel Service Center Institute, both of which asked for the discontinuance of the TPM and the imposition of quotas on imported steel.

U.S. distributors were troubled because importers owned or controlled by European mills sold steel at low figures which did not violate the trigger minimum because the steel had already entered the U.S. at the trigger price. Losses on such sales could be covered by the affiliated mills, or other off-shore sellers. Alternatively, the affiliated off-shore purchaser bought the product below trigger price, and made the first sale in the U.S. to the affiliated importer at trigger price. The profit was made by the off-shore affiliate. Nothing, of course, prevented domestic distributors from doing the same thing and some of them did indeed go this route. Steel Import Quotas Eyed by SSCI, AM. METAL MKT., Oct. 8, 1981 at 1, col. 4.
forts to avoid the filing of new antidumping petitions, the administration first tried the back-fire solution in November of 1981, by initiating a countervailing duty investigation on carbon steel plate from Belgium, Brazil, France, and South Africa, and an antidumping investigation on steel plate from Romania. The Secretary of Commerce went to Brussels in December in what was to prove a futile attempt to persuade the Europeans to promise to limit exports. Brushing aside the promises of stronger enforcement of the TPM, U.S. Steel and several other major steel producers filed sweeping countervailing duty and antidumping petitions against steel exporters from Germany, France, England, Italy, Belgium, Luxembourg, the Netherlands, Romania, and Brazil on January 11, 1982. The Reagan Administration appears to have washed its hands of the matter, and after once again suspending the TPM, will let the investigations run their course.

III. Aggregate Estimates of the Cost of Protection

Whether the protective institutions the government has introduced since 1968 have raised the price and reduced the quantity of imported steel, and by how much, is difficult to determine with precision. There can be no question, however, that the protection made it possible to increase the price of domestically manufactured steel, and to transfer purchasing power from the general public to the steel industry and its employees. For the VRA, careful estimates of the cost, made on somewhat different assumptions about the nature of the U.S. steel market, range from $386 million to $1 billion. For the TPM, the cost has been estimated at close to $1 billion for each of the years 1978 and 1979. This latter estimate understates the cost because it does not take into account the disappearance of price discounting, which had been rampant among domestic producers prior to the introduction of the TPM.
by the VRA, or by preventing price competition among imports and moderating competition between imports and domestic products through the TPM, transferred income from consumers to the protected manufacturers. But as shown in Table 4, there is little or no indication that the U.S. steel firms used their additional income to foster increased efficiency or to invest in needed technological updating. Regional product markets were becoming less dependent on major plant concentrations; and equipment installed prior to 1960 needed modernization. The necessary decisions were postponed because of the extended breathing space offered by the succession of protective instruments and the declining value of the dollar. Until the late 1970s, the industry made little progress in bringing its technological level and plant efficiency up to levels achieved in Japan and Europe.

IV. SPECIFIC CONSEQUENCES OF PROTECTION

A. Distortions in Resource Use

The VRA to a degree, and most certainly the TPM because of its price-fixing, distorted the patterns of domestic consumption both with respect to the geographic flow of imported steel, and with respect to the use of domestic instead of imported steel by certain consuming industries. Taking up first the alterations in the transportation cost-related flows of domestic and imported steel, the TPM formulae incorporated artificial transportation costs in their price minima. Certain U.S. regions, notably the fastgrowing markets of the Western and Southwestern States, can be served by domestic integrated mills from the Midwestern and Northeastern States only at the cost of a substantial freight premium which makes the American product more expensive in these markets. This would be true even if ex-mill costs were identical for American and foreign producers. The TPM system, based as it was solely on Japanese transport costs, put domestic steel competing on the West Coast at an even more than normal disadvantage. Great Lakes c.i.f. prices, on the other hand, which had been relatively low, were elevated far above their usual levels by us-
ing the transport cost from Japan.\textsuperscript{60} Much imported steel was thereby excluded from the Great Lakes, unless it was to be sold at less than the trigger price.

Domestic regional capacity in sheet and plate products in the Western and Gulf markets is insufficient to satisfy demand except in a severe recession, so that these areas would ordinarily have consumed a substantial amount of imported product.\textsuperscript{61} To the extent that the trigger prices were effective maximum prices, domestic sheet and plate could not maintain even its justified share of these markets.

In certain product lines, especially tubular goods,\textsuperscript{62} domestic capacity was inadequate to meet demand whereas in others, imported steel has carved out a niche for itself because of its superior quality.\textsuperscript{63} Many American steel users began to buy imported steel because domestic mills had tended to neglect\textsuperscript{64} customer service and importers were anxious to please new buyers. Furthermore, some foreign mills were willing to supply certain products, such as odd sizes and small batches of plates, that domestic mills would not have bothered to make available.\textsuperscript{65}

\textsuperscript{60} The differences in delivered prices between the West Coast and the Great Lakes as set by the TPM formulae, varied from $8 per 100 lbs. for plates to $32 for seamless pipe, and for the majority of products was approximately $12 per 100 lbs. See Marcus & Kirsis, \textit{WSD Monitor Reports Steel Pricing, Core Report A, WORLD STEEL DYNAMICS}, Nov. 1979, at A-3-105, 107.

\textsuperscript{61} "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," U.S. \textit{INT'L TRADE COMM.}, Pub. No. 1004, Final Report on Investigation No. 332-87 Under Sec. 332 of the Tariff Act of 1930, As Amended, Conditions of Competition in the Western U.S. Steel Market Between Certain Domestic and Foreign Steel Products 32 (1979).

\textsuperscript{62} Purchases of "oil country tubular goods" increased from 2.6 million tons in 1979 to 6.1 million tons in 1981. In the same period, domestic shipments rose from 2.5 to 4.2 million tons, Bradford, \textit{supra} note 39, at 29. A chart prepared by the National Supply Co., a subsidiary of Armco, shows a large excess of U.S. demand for oil country tubular goods over production capacity, \textit{Metal Bull.} Sept. 4, 1981 at 35.

\textsuperscript{63} The higher quality of some of the imported steel has been verified by several surveys. "[M]ost companies who criticized domestic steel quality pointed to Japanese steel as exemplary. The officials, however, identified high quality steel purchased from mills in 14 other countries. As a rule, the high quality was derived from more modern plants regardless of the country in which located." GAO \textit{STEEL REPORT}, \textit{supra} note 12, at 346. Rolling equipment operated by the integrated domestic steel firms has a higher average than similar equipment in Europe and Japan. For cold-rolling and plate mills see Adams & Mueller, \textit{supra} note 6, at 117; for plate, hotstrip, cold-rolling, and rod mills—U.K., Germany and U.S. only—see J. Ayle, Plant Size and Efficiency in the Steel Industry: an International Comparison, at 16 (Econ. Dep't U. of Salford, Sept. 1981).

\textsuperscript{64} AISI \textit{MEMO} \textit{supra} note 13, at 818; GAO \textit{STEEL REPORT}, \textit{supra} note 12, at 3-10-3-12.

\textsuperscript{65} GAO \textit{STEEL REPORT}, \textit{supra} note 12, at 3-7.
B. Higher Costs to Consumers of Steel

Protection of the U.S. steel industry and higher steel prices tended to shift imports from semi-finished steel to fabricated steel or steel-containing products that were not controlled by the TPM system. American steel users who had to pay considerably higher prices for their steel than their foreign rivals found their competitiveness reduced in both their home markets and abroad.

While the cost increase attributable to the VRA or the TPM may be relatively small for sophisticated steel fabricating activities, the burden is greater on those industries for which expenditures on purchased steel inputs is a substantial part of total costs. These industries include those firms fabricating dry-docks, drilling platforms, bridge components, large containers, heavy equipment for the energy industry, wire rope, forgings, and fasteners. Other predictable cost raising consequences of the TPM took the form of a squeeze, and inevitably led to pressures to bring more finished steel products under the system. For example, West Coast wire product fabricators, who compete against imported fabricated products made from off-shore low-cost wire rod, were disadvantaged when they had to purchase wire rod at trigger prices. To put competition on a fair basis, either wire rod should have been exempted from the TPM, or all fabricated wire products would have to be included. Similarly, the automobile industry had to pay $100 to $150 more for steel per car or truck than its foreign competitors. Although steel cost is only a small part of

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64 See McCormack, supra note 31 at 313, 314, and Bennett, Fabricator's Import Defense Begins to Take Shape, Iron Age (July 17, 1978) at 24.

65 R. Crandall, supra note 19, at 150, Table 8-2.

66 For illustrations, see Cabinet Committee on Economic Policies, Report to the President on the Economic Position of the Steel Industry (1971), at 54.

67 According to Daniel Minchew, former Chairman of the International Trade Commission, the introduction of the TPM caused the basic materials cost of fastener producers to rise as much as 30 percent. Bowers, Carter Was Wrong on Fasteners-Minchew, Iron Age, July 17, 1978, at 30. A trade paper report referred to "an increasing number of reports in the last year that forgings, most frequently from Italian sources, were being sold at prices below the cost of raw steel, and a growing belief that this is a device for avoidance of the steel price mechanism," Am. Metal Mk., Nov. 17, 1981, at 1 col.1.


71 Davis Walker Corp. v. Blumenthal, 460 F. Supp. 283 (D.D.C. 1978). David Walker is a large fabricator of wire products which buys steel wire rod as its primary raw material. Its integrated competitors, and those competitors that are subsidiaries or associates of foreign producers of wire rod, were able to sell fabricated wire products at prices that substantially squeezed Davis Walker's (and other independent wire products fabricators') margin. Id. at 246. The Dept. of Commerce finally remedied this inequity. See, e.g. note 70.

72 A spokesman for the Armco Steel Corporation declared that the savings from the use of imported steel "would not exceed $150 per car," Letter to the Wall St. J., Apr. 2, 1981 at 4, col. 2. The Carter Administration evidently had no doubt that controls on steel imports.
the sticker price of an automobile the total annual cost increase is nearly $1 billion.73

V. PROTECTION AND THE PERFORMANCE OF THE AMERICAN STEEL INDUSTRY

The stated purpose of the first major interference with U.S. steel trade in the postwar period, the 1969-1974 voluntary restraint agreements, was to provide breathing space in which the steel industry was expected to improve its structure and efficiency.74 Unpredictable increases in the volume of imports were seen as a disruptive influence on the industry's modernization efforts.

There is little evidence that the industry undertook such efforts. Capital expenditures during the period fell considerably short of the amounts spent in the preceding six-year period.75 Virtually nothing was done to tidy up the splintered structure of the firms, to close down obsolete installations,76 or to improve product specialization in individual plants.77 Due to the existence of many undersized plants, excessive duplication of expensive equipment took place.78 Capital productivity remained below that attained by the steel industries of Europe and Japan when measured in terms of productive capacity installed or replaced per dollar invested.79 The industry managed to defend its advantages in labor productivity relative to most of the European industries, but it began to

would only hurt the domestic automobile industry. Robert Hormats, deputy U.S. trade representative, expressed concern that any action resulting in higher steel prices "will make our cars that much more expensive. We are sensitive to the impact of price measures in the steel area on the auto industry." Am. Metal Mkt., Mar. 31, 1980 at 2, col. 1.

73 It may be assumed that the total number of motor vehicles produced each year will approach, as a minimum, 8 million. Statistical Abstract of the U.S. (1980), at 648. See also OTA Report 1981, supra note 2, at 16.


75 AISI, Annual Statistical Report, Table 1c at 9 (1975).

76 Adams & Mueller, supra note 6, at 87-89.


78 W. Hogan, supra note 16, at 34.

79 Capital productivity is inferred from the cost of putting into place and maintaining an industry's productive capacity. From 1950 to 1979 the U.S. steel industry invested a total of $63.9 billion into its steel operations, measured in 1978 dollars, exclusive of nonsteel investment, and in Japanese purchasing power equivalent (the original U.S. figures were adjusted by a factor of .8 to take account of lower Japanese construction costs). For three different periods, the results were as follows (total investment expenditures and amounts per ton of finished steel capacity added or replaced):
lose out to the Japanese by 1973,\textsuperscript{80} and to the Germans by 1979.\textsuperscript{81} Likewise, in energy productivity the American steel industry continued to trail both the Japanese and the Europeans.\textsuperscript{82} Adoption rates of innovative technology are difficult to evaluate because specific conditions often differ significantly between national industries.\textsuperscript{83} Table 4, which contains several indicators of technological performance, reveals that the American steel industry, particularly the integrated producers, generally lagged behind foreign competitors.\textsuperscript{84}

A prolonged strike and threats of strikes played a major role in drawing foreign steel to the American market. However, there is little evidence that import protection swayed the United Steel Workers (USW) to relent in demands concerning wages and work rules. Steelworkers' wages and fringe benefits have traditionally been above the average level for manufacturing in the United States. Between the end of WWII and 1968, this premium had grown from 15 percent to 29 percent.\textsuperscript{85} It soared to more than 50 percent by the time the quota agreements expired and further to 75 percent in 1981 as a result of concessions made to induce the union to bar nationwide strikes.\textsuperscript{86} In contrast, Japanese steelworkers' total employ-

\begin{tabular}{|l|c|c|c|c|c|}
\hline
    & Per cap. & Per cap. & Per cap. \\
    & Totals & ton & Totals & ton & Totals & ton \\
\hline
U.S. & $63.9^*$ & $419$ & $45.1^*$ & $524$ & $35.3^*$ & $525$ \\
EC (of Six) & 64.2 & 387 & 48.9 & 448 & 34.1 & 353 \\
Japan & 61.6 & 337 & 57.4 & 463 & 50.1 & 414 \\
\hline
\end{tabular}

*This column in billions of dollars.


\textsuperscript{81} Id.

\textsuperscript{82} INTERNATIONAL IRON AND STEEL INSTITUTE, 1980 STATISTICAL Y.B. at 42.

\textsuperscript{83} B. GOLD, G. ROSEGER, & M. BOYLAN, EVALUATING TECHNOLOGICAL INNOVATIONS 95-106, 129-130 and 191-209 (1980).

\textsuperscript{84} COWPS REPORT, supra note 5, at 127.

\textsuperscript{85} Id.

\textsuperscript{86} The lagging performance of the steel industry with regard to value-added-per-production-worker-hour, the BLS productivity index, and the above-average rise in steelworkers' wages are shown in tabular and graphical form, for the years 1960 to 1979, in OTA REPORT 1981, supra note 2, at 54-60.

"Labor represents about 35 percent of domestic production costs. Were steel workers compensated at the historic level of 130-135 percent of average manufacturing wages instead of the current 175 percent level, production costs would be $4 billion lower a year, or $30-$40 less per ton."
ment cost per hour exceeds the manufacturing average by about 30 percent and the European Community by only 15 percent.\textsuperscript{87}

VI. CONSEQUENCES OF PROTECTION: CONCLUSION

The VRA, and the successive versions of the TPM undoubtedly benefited large U.S. steel companies and their employees by sheltering them from the impact of keen foreign competition. We have also seen that the managers of those companies did not take sufficient advantage of the cash flow and breathing space afforded them by the protection to reorganize their management and to modernize their plants. Jonathan Aylen's authoritative review of plant efficiency concludes that:

American steel firms typically operate a number of fairly large, highly integrated works, each producing a wide product range, but made up of smaller plant units, often duplicating undersized plant items within\textsuperscript{88} a works.

America tends to fall badly behind at processes where technology has evolved steadily over time, such as blast furnaces, strip mills and rod mills . . . . As a result large American works are composed of older, smaller and technically backward plant items\textsuperscript{89}. . . . The American steel industry has broadly maintained its output while running down its capital stock . . . . The run-down has been delayed by low energy prices and protection.\textsuperscript{90}

It is simply not the case, as the spokesmen for the large companies have asserted, that the funds were not available to make the necessary improvements.\textsuperscript{91}

\textsuperscript{87} Eurostat, Wages and Incomes, No. 3, 1981 at 2, and No. 4, 1981 at 1-2; T. Kono, The U.S. Steel Industry Since World War II, Tokyo, Nippon Steel Corporation, at 61 (1980). We have corrected for use of contract workers who are paid about 30 percent less in total hourly wages and compensation than regular employees. More than one third of all employees of Japanese steel plants are contract workers. See H. Mueller & K. Kawahito, STEEL INDUSTRY ECON.: A COMPARATIVE ANALYSIS OF STRUCTURE, CONDUCT AND PERFORMANCE, (1978) at 17, Table 2.1, n. 8.

\textsuperscript{88} J. Aylen, supra note 63 at 12.

\textsuperscript{89} Id. at 15.

\textsuperscript{90} Id. at 18.

\textsuperscript{91} According to David M. Roderick, U.S. Steel Chairman, "If we had the cash flow [in the steel sector], would we have more casters? Yes. If we had the cash flow, would we still have 17% open hearths? No." Forbes, Jan. 5, 1981 at 192. The issue was not, however, that U.S. Steel did not have the funds for modernizing its aging steel plants; it was rather that the company did not consider steel an attractive investment choice. On January 1, 1982, U.S. Steel paid $3.8 billion for 51 percent of the shares of Marathon Oil Co. and the remain-
At the same time, there have been some favorable consequences of competition. During the three years between the demise of the VRA and the installation of the TPM, the domestic industry has had to face imports in a free market. There were widely publicized plant closures, and associated job losses. In 1977, several major plants and installations were permanently shut down. Furthermore, after the interlude of 1978 and 1979, the boost in import prices as a result of the TPM reduced the urgency of structural shrinkage, and diminished the steelworker’s worries about job security.

Rationalization efforts were undertaken once more when demand dropped again in late 1979, and the TPM was suspended in 1980. Several large steel companies shut down blast furnaces, converters, and rolling mills that had long since lost their competitiveness, compared with domestic minimills and foreign mills. Nearly all large companies brought in foreign consultants to help increase the efficiency of their plants.

There are also indications that the USW is adopting a more flexible attitude: if the merger is affirmed, will be converted into 12.5 percent notes of U.S. Steel Corp. U.S. STEEL CORP., 1981 ANN. RPT. 36-37 (1982). The industry attempts to back up its claims of insufficient capital spending by pointing to lower average capital expenditures by the U.S. industry, per ton of raw steel produced 1972-1977, than by its major rivals (e.g. U.S. $19, Japan $26, Germany $24, France $28). AM. IRON AND STEEL INST., STEEL AT THE CROSSROADS: THE AMERICAN STEEL INDUSTRY IN THE 1980s, (1980) ch. 3. However, in contrast with their rivals, the U.S. firms financed virtually no growth out of these expenditures. If the effects of these differences in capacity expansion were taken properly into account—by estimating the amounts spent per ton of capacity added or replaced—the domestic industry can be shown to have outspent both the Europeans and the Japanese, even after allowance is made for the considerable non-steel investments made by the U.S. industry. For the 1960-1979 period our results were as follows (in 1978 dollars per ton of finished steel capacity added or replaced): U.S. $524, the original European Community (of six members) $448, and Japan $463. See note 79 supra at 12. During this period, the U.S. industry added about 11 million tons of finished steel-product capacity, whereas the Europeans added 65 million tons and the Japanese 107 million tons. Replacement estimates (based on a 25 year capital life) were as follows: U.S. 75 million tons, European Community 44 million tons, Japan 17 million tons.

Our explanation of the low capital productivity achieved by the integrated domestic producers is that poor structural characteristics (small plant size and deficient layout) led to the costly duplication of investment efforts, the installation of undersized equipment, as well as suboptimal utilization of new equipment.
tude concerning work rules, and in isolated instances, even workers’ benefits. In short, it was not the breathing space created by protectionist measures that stimulated management and eventually labor to give serious attention to the task of improving industry performance, but rather the shock of renewed foreign competition when protection was temporarily lifted from the U.S. steel market, and the sustained competition from efficient domestic minimills. It is interesting that Mr. Roderick, who is now anxious to use U.S. Steel’s managerial expertise in the energy field, has borne witness to a revolutionary change in U.S. Steel’s policies. Listing strategies to guide the company in the eighties, he said,

We will modernize what can be updated to our long term benefit. We will not pour dollars into a bottomless pit of antiquated facilities with problems that can’t be fixed. . . . [T]he corporation is moving to a true division organization with each group vice president in charge of his particular business segment. . . . [W]e are now perceived as a company on the move, that U.S. Steel is looked upon as a place where a young person can go to work and have opportunity for the future . . . .

The economics of Mr. Roderick’s program for new investment and abandonments, and his efforts to change the image of U.S. Steel are not debatable. His emphasis on the importance of, and the necessity for a changed strategy, however, only underscored the imperfection of the previous management regimes.

VII. POLICY TOWARD IMPORTS

In selecting the policy toward steel imports which will be good not only for the steel industry, but for the country, we should take into account as best we can all the costs and benefits associated with alternatives. Some costs are obviously very difficult to quantify and yet should

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98 There are about 45 such firms in operation with a total of 60 plants. Whereas an integrated steel mill, using blast furnaces and oxygen converters, has a minimum efficient size of four to five million tons and costs several billion dollars to construct, minimills use the electric steelmaking techniques, operate efficiently at less than 500,000 tons annual output, and cost only $50 to $100 million to build. Due to technical constraints, the majority of these firms competes only in the markets for carbon-grade bars, rods, and light shapes. Their total share of the domestic market is now approximately 15 percent, but it is expected to rise to 25 percent by the end of the decade, largely at the expense of the integrated mills. Recent closures of bar and rod mills by the large companies were primarily the consequence of competition by minimills, not by foreign suppliers. See OTA REPORT 1980, supra note 4, at 251-257.

not be ignored. Calculations such as those made by Crandall\textsuperscript{100} of the costs imposed on domestic steel consumers by the VRA or the TPM, neglect benefits that may be traceable to keeping steel workers off unemployment rolls. On the other hand, these cost estimates also neglect the losses attributable to prolonging the managerial policies that have diminished the international competitiveness of the U.S. steel industry, and weakened the competitive power of steel-using industries over the years.\textsuperscript{101}

Even in selecting the goals for the steel industry, there is little we can rely on that conforms to normal economic standards. Although many estimates have been made of the costs of making the U.S. self-sufficient in steel, no serious study has managed to provide a figure for exactly how much steel capacity the U.S. "needs" — for the very good reason that, using neo-classical economics, only the behavior of the market could provide the answer.\textsuperscript{102}

While asserting that their only goal is to eliminate the unfair competition of subsidized or dumped imports, the domestic steel producers have strongly urged that imports should be kept to levels that would enable a profitable U.S. steel industry to satisfy peak steel demand at little or no price increase. The studies carry estimates of deficiencies in capital expenditures, and set forth the increments that would be required to construct the requisite capacity.\textsuperscript{103} Nowhere do the calculations compare the burden that higher prices would impose on consumers of steel in periods of moderate or slack demand with the possible benefits, measured with the present value of whatever price reductions they might enjoy in future booms.

An alternative to a protectionist policy would directly subsidize the building of the additional capacity necessary to make the U.S. "self-sufficient" in steel. According to Crandall, who assumed two additional plants of 6 million tons each, taxpayers would have to provide $2.4 billion a year if U.S. capacity were to be expanded to match the 1973-1974 level of consumption.\textsuperscript{104}

Subsidy would avoid the even greater transfers of income from steel purchasers to all steel producers that would be required to make the incremental plants profitable under the industry's program. Such sub-

\textsuperscript{100} R. Crandall, supra note 19, at 103-115.

\textsuperscript{101} See R. Crandall, supra note 19, at ch. VII. Crandall's estimates of inefficiencies resulting from protection focus almost exclusively on transfers of income from consumers of steel products to steel producers, including workers. Hence, he underestimates the cost of protection. And compare Crandall's assumption that trigger prices did not raise domestic steel prices with the discussion in GAO Steel Report, supra note 12, at 6-4 — 6-5.

\textsuperscript{102} See relevant discussions in R. Crandall, supra note 19, chapter VI; AISI Steel Crossroad, supra note 91, at 5-6.

\textsuperscript{103} Id. at 44-45.

\textsuperscript{104} R. Crandall, supra note 19, at 123.
dized capacity, however, is unlikely to match the performance of imported steel with respect to product mix, regional supply pattern, customer service, reliability of deliveries, and price. Furthermore, in the product lines that minimills can supply, domestic capacity will continue to grow without any need of public financial assistance. On the other hand, in regional markets showing deficits for the product lines of integrated mills in the West and Southwest, little import substitution will be achieved unless the subsidized capacity is to be built in those areas.

What then, should be our trade policy toward steel? One alternative is to allow the industry to exercise its rights under the legislation that Congress has passed to deal with international trade. Under the Trade Act of 1974 and the Trade Agreements Act of 1979, there are a number of procedures under which domestic mills can call on governmental agencies for protective relief. Moreover, the industry can call for help directly from the President through the Special Trade Representative. If these statutes had been written and applied so that their enforcement would consistently contribute to maintaining fair competition in international trade, there could be no economic loss from the indiscriminate filing of antidumping and countervailing duty petitions. As the proceedings have developed, however, they do not always conform to the requisites of competitive economics. Firstly, there is no recognition of the impact that fluctuating exchange rates have on foreign costs and prices. Moreover, there is no assurance that such basic concepts as the industry,
or the measurement of material injury, will be applied by the International Trade Commission so as to distinguish between fair but vigorous competition, and unfair competition.\^113

Some of the measures of material injury upon which the Commission is directed to rely in reaching its conclusions are only tangentially relevant to distinguishing between fair and unfair competition, such as the volume of imports, or their increase relative to consumption in the United States. Furthermore, the Commission tends to apply the tests mechanically.\^114 In effect, the ITC has complete discretion in deciding whether to blame the industry, the business cycle, or other events for losses in sales.\^115

The U.S. antidumping legislation is also warped by the constructed cost provision.\^116 Although the Act purports to provide a method for determining home market value when the home market value is not obtainable, or when the product is produced by countries where costs are not market determined, the provision is also to be employed when sales in the home market are made at less than "cost of production." Therefore, under the statute foreign firms that fail to recoup their full cost by raising prices during a recession can be accused of selling at less than cost of production, and hence subjected to the constructed cost standard. The statute leaves the door open for using constructed cost whenever a foreign

\^113 Contrast, for instance, the decisions of the ITC, under Sec. 201 of the Trade Act of 1974 in Certain Motor Vehicles and Certain Chassis and Bodies Therefor, Report to the Pres. on Investigation TA-201-44 Under Sec. 201 of the Trade Act of 1974. USITC Publication 1110, Dec. 1980, with its preliminary determination in Certain Carbon Steel Products from Belgium, the Federal Republic of Germany, France, Italy, Luxembourg, the Netherlands, and the United Kingdom, Determinations by the Comm. in Investigating Mos. 731-TA-18-24 (Preliminary) under the Tariff Act of 1930. [Hereinafter cited as Belgian Steel]. USITC Publication 1064, May 1980. The antidumping and countervailing duty statutes, of course, require the ITC to find only that materially injured "by reason of" imports whereas the escape clause requires that the imports be a "substantial cause" of "serious injury".

\^114 "Material injury" is defined in 19 U.S.C. § 1677(7)(a) (Supp. V 1981) as "harm which is not inconsequential, immaterial or unimportant." The ITC held that imports of hot-rolled carbon steel sheet and strip from Belgium were a cause of material injury, or a threat thereof, to the U.S. industry, when the ratio of imports of this product from Belgium had registered a "dramatic increase" from less than 0.5 percent of apparent domestic consumption in 1980 to 0.7 percent in January-November 1981. Certain steel products from Belgium, Brazil, France, Italy, Luxemburg, the Netherlands, Rumania, the United Kingdom, and West Germany, USITC Pub. No. 1221, Feb. 1982, Vol. I at 34-35. Similarly, imports from France of cold rolled carbon steel sheet and strip were held to cause or threaten material injury when they had dropped in 1978-1980 from 1 percent to 0.8 percent of apparent domestic consumption, but had risen to 0.9 percent in January-November 1981. Id. at 47.


Countervailing duty statutes are equally obscure and have been subject to conflicting interpretations and enforcement. While some subsidized competition may be unfair, the purpose of the subsidy, and the conditions of its availability may be significant. Steel firms may have received financial assistance to train workers, to retain unneeded employees, and to facilitate the relocation of plants and workers. Whether such aids amount to subsidies that permit the sale of steel in foreign markets at lower prices will have to be examined on a case-by-case basis. Where steel firms have gone into public receivership, operating subsidies will have to be sorted out from equity contributions by the new owners, the respective governments. Also, in some cases the national interest may dictate close cooperation with an ally and the Department of Commerce may be unwilling to conduct a thorough investigation of subsidies.

Finally, the easy access to governmental agencies permits the domestic firms to launch antidumping or countervailing duty proceedings with the assurance that most of the costs of the proceeding will be borne by the Department of Commerce and the ITC. Once underway, the pro-

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117 The European Economic Community has amended its antidumping code by adopting a provision similar to the constructed-cost section of the U.S. statute, perhaps in order to strengthen its retaliatory powers. No. 3017/79, Dec. 1980. The arbitrary character of the constructed-cost provision is illustrated by its use in the Gilmore case, where in the absence of information on the exporter's production cost, the Treasury simply used U.S. data (which are far from accurate). See Mueller & Kawahito, An Examination of Recent Allegations of Japanese Steel Dumping, 5 J. OF ECON. 79 (1979); 42 Fed. Reg. 54489 (1977); 43 Fed. Reg. 2033 (1978), and USITC PUBLICATION 882, CARBON STEEL PLATE FROM JAPAN, DETERMINATION OF INJURY IN INVESTIGATION No. AA1921-179 UNDER THE ANTIDUMPING ACT, 1921, AS AMENDED, TOGETHER WITH INFORMATION OBTAINED IN THE INVESTIGATION, Apr. 1978 at A-19.

118 See FTC STEEL REPORT, supra note 15, Chapter 6 for the diversity of purposes for which national governments made financing available to steel companies and the burdens, in the form of interferences with price and employment policies, that those companies were forced to accept. While the GATT code appears to make allowance for offsetting the burdens against the aids the U.S. Trade Agreements Act of 1979 (Pub. L. No. 96, 93 Stat. 178 1979) leaves only an extremely narrow margin for compensatory consideration.


120 The Commerce Department suspends liquidation, that is the closing of a customs file on an import entry, upon its affirmative finding in a preliminary less-than-fair or subsidy value determination, which must be made no later than 85 days after an investigation is begun. The International Trade Commission must hand down a preliminary determination in its investigation on the presence or threat of material injury within 45 days of the beginning of the investigation. If these determinations are affirmative, both these agencies continue with their investigations. See Cole & Dirlam, supra note 109, at 4-11; McCormack,
ceeding cannot be stopped, except by withdrawal of the petition. The importer and his customers must be prepared to spend disproportionate amounts of time and money in fighting allegations that are often without merit. Use of the Trade Acts for harassment is common.

For these reasons, we are loath to advocate, as a substitute for TPM, free resort to the import injury, antidumping, and countervailing duty provisions of the Trade Acts by the steel industry. Nor do these statutes seem to lend themselves to an effective program for coping with what is a genuine instance of unfair competition; export of steel to the United States from government-owned mills enjoying protected home markets when these mills have been designed to earn foreign exchange, to add to national prestige, or to constitute one segment in a program of high-cost industrial self-sufficiency.

A second alternative, at least with respect to pricing rules, may be to bring the behavior of foreign steel sold in U.S. markets under the same statute that governs the behavior of domestic companies, Section 2 of the Clayton Act. The change would permit foreign suppliers to meet the realized prices of their domestic competitors regardless of the levels at which prevailing exchange rates may have pegged their production costs or home-market prices. Subjecting all sales made in U.S. markets to a single set of rules may help eliminate some of the undesirable volatility of import volume caused by unstable currency ratios. It is also possible, however, that it may lead to an equally undesirable rigidity of the price structure. The proposal may nevertheless by worth a thorough examination.

Of course, there are economists who take the position that imports should always be welcomed, whether or not they are subsidized, or being sold at discriminatorily low prices. Where domestic producers and workers can easily adapt to changing volume of output, the savings from


122 The "procedural protectionism" afforded by the antidumping and countervailing duty law is substantial. Imports are inevitably disrupted upon the filing of a countervailing duty or antidumping petition, because the importer is at risk, substantial duties may be added to those already in force. The Commerce Department suspends liquidation of duties 20 days after the filing of a petition and requires posting of a bond equal to the amount of subsidy or dumping margin found in the preliminary determination. 19 U.S.C. §§ 1671b (d) (2), 1673b(d) (1976). P. Ehrenhaft, Protection Against International Price Discrimination: United States Countervailing and Antidumping Laws as Barriers to Trade—The United States and the International Antidumping Code, 57 Cornell L. Rev. 491 (1958); Adams & Dirlam, supra note 111, passim; McCormack, supra note 31, at 301-302.


124 Federal Trade Commission, supra note 15, passim Ch. 8.
purchasing low-priced imports may indeed exceed the cost of moving resources into and out of the market. It hardly needs to be pointed out that any easy and cost-free mobility of resources is not among the characteristics of integrated steelmaking. The construction and starting up of integrated capacity is a costly process as is the complete shutdown of a major integrated facility. While these costs may not represent a valid reason for protecting domestic producers from foreign competitors possessing clearcut comparative advantage, they caution against the facile acceptance of the argument\textsuperscript{125} that all imports at cut-rate prices increase the national welfare.

In sum, we support a trade policy that, by keeping the market open to the hard competition provided by efficient foreign steel producers, forces the integrated domestic suppliers and their employees to seek the highest possible level of operating efficiency and technological performance. Besides, as we have pointed out, a substantial share of imports has been complementary, not adversary, to domestically produced steel. Certain regions and steel consumers would suffer severely if imported steel became unavailable.\textsuperscript{126} Regarding the segment of the market that can be supplied by domestic minimills, we have no doubt that the vigorously competitive behavior of these firms will ensure an outcome of optimum resource allocation and economic progress.

Because steel is an essential material for the American manufacturing sector, the reindustrialization of this sector can be furthered by assuring American steel users that they will have access to steel products on similar terms as their foreign competitors, especially regarding price and quality. In other words, our analysis has shown that protecting the do-

\textsuperscript{125} According to the Fed. Trade Comm., imports should not be challenged unless they are being sold in the U.S. market at less than marginal cost. Federal Trade Commission, \textit{supra} note 15, passim Ch. 8. Following the same prescription, domestic mills should also adopt marginal cost pricing. Although the proposal has a certain theoretical attraction, it can scarcely be used as the basis for policy. See Dirlam, \textit{Marginal Cost Pricing Test for Predatory Pricing: Naive Welfare Economics and Public Policy}, 26 \textit{Antitrust Bull.} 769, 804-06, 811-14 (1981). A full cost policy, such as that advocated by the U.S. steel industry, and incorporated in the constructed cost test, is even more objectionable. See our discussion \textit{supra} p.19.

\textsuperscript{126} According to the FTC proposal, imports should not be challenged unless American consumers of sheet and plate products located in the Western and Southwestern states would have to pay higher prices for two reasons. First, higher freight costs would be incurred to bring these products from domestic plants clustered in the Great Lakes and Eastern regions. See note 59, \textit{supra}. Second, these mills have higher production costs than many of their foreign competitors. Adams & Mueller, \textit{supra} note 6, at 121-24; Marcus & Kirsis \textit{supra} note 5, Table 5. The inability of the domestic industry to supply the U.S. market with more than 90 percent of total requirements in years of relatively normal demand such as 1978 and 1979 is shown in Table 1 (strong consumption) and in Table 3 (high capacity utilization).
mestic steel industry by raising the cost of steel reduces the American manufacturing sector's international competitiveness and, hence, its chances for swift reindustrialization.

We suggest, however, that there should be monitoring of steel shipments from industries launched with government sponsorship and enjoying protected home markets. In our view, irregular surges of such shipments may discourage investments by efficient domestic producers and, over the longer term, prove harmful to the interests of American steel consumers. Because the majority of these steel mills are located in countries of the Third World and the Communist Bloc, this problem may ultimately have to be resolved within the framework of North-South and East-West talks.

Table 1
UNITED STATES FOREIGN TRADE IN STEEL MILL PRODUCTS
(in thousands of net tons)

<table>
<thead>
<tr>
<th></th>
<th>Net Shipment by U.S.A.</th>
<th>Imports as a Percentage of Apparent Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Producers</td>
<td>Exports</td>
</tr>
<tr>
<td>1959</td>
<td>69,377</td>
<td>1,677</td>
</tr>
<tr>
<td>1960</td>
<td>71,149</td>
<td>2,977</td>
</tr>
<tr>
<td>1961</td>
<td>66,126</td>
<td>1,990</td>
</tr>
<tr>
<td>1962</td>
<td>70,552</td>
<td>2,013</td>
</tr>
<tr>
<td>1963</td>
<td>75,552</td>
<td>2,224</td>
</tr>
<tr>
<td>1964</td>
<td>84,945</td>
<td>3,442</td>
</tr>
<tr>
<td>1965</td>
<td>92,666</td>
<td>2,496</td>
</tr>
<tr>
<td>1966</td>
<td>89,995</td>
<td>1,724</td>
</tr>
<tr>
<td>1967</td>
<td>83,897</td>
<td>1,685</td>
</tr>
<tr>
<td>1968</td>
<td>91,856</td>
<td>2,170</td>
</tr>
<tr>
<td>1969</td>
<td>93,877</td>
<td>5,229</td>
</tr>
<tr>
<td>1970</td>
<td>90,798</td>
<td>7,062</td>
</tr>
<tr>
<td>1971</td>
<td>87,038</td>
<td>2,827</td>
</tr>
<tr>
<td>1972</td>
<td>91,805</td>
<td>2,873</td>
</tr>
<tr>
<td>1973</td>
<td>111,430</td>
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</tr>
<tr>
<td>1974</td>
<td>109,472</td>
<td>5,833</td>
</tr>
<tr>
<td>1975</td>
<td>79,957</td>
<td>2,953</td>
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<td>89,447</td>
<td>2,654</td>
</tr>
<tr>
<td>1977</td>
<td>91,147</td>
<td>2,003</td>
</tr>
<tr>
<td>1978</td>
<td>97,935</td>
<td>2,422</td>
</tr>
<tr>
<td>1979</td>
<td>100,262</td>
<td>2,818</td>
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<tr>
<td>1980</td>
<td>83,853</td>
<td>4,101</td>
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<tr>
<td>1981</td>
<td>87,024</td>
<td>2,904</td>
</tr>
<tr>
<td>1982</td>
<td>59,783</td>
<td>1,842</td>
</tr>
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</table>

Table 2
Sources and Shares of U.S. Steel Imports:
Selected Years, 1960-1981
(quantities in millions of net tons)

<table>
<thead>
<tr>
<th></th>
<th>Volume of Imports</th>
<th></th>
<th>Share of Imports (in%)</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Japan</td>
<td>EC</td>
<td>Others</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>1982</td>
<td>5.2</td>
<td>5.6</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>1981</td>
<td>6.2</td>
<td>6.5</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>1980</td>
<td>6.0</td>
<td>3.9</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>1979</td>
<td>6.3</td>
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<td></td>
<td>1978</td>
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<td>7.5</td>
<td>2.4</td>
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<td>1977</td>
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<td>1975</td>
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<tr>
<td></td>
<td>1971</td>
<td>6.9</td>
<td>8.5</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>1968</td>
<td>7.3</td>
<td>8.4</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>1965</td>
<td>4.4</td>
<td>4.9</td>
<td>.6</td>
</tr>
<tr>
<td></td>
<td>1960</td>
<td>.6</td>
<td>2.1</td>
<td>.2</td>
</tr>
</tbody>
</table>

Table 3
Operating Performance: U.S. Steel Industry
Selected Years, 1960-1981
(Output and Adjusted Capacity in Millions of Net Tons)

<table>
<thead>
<tr>
<th>Output (tons)</th>
<th>Adjusted Shipping Capacity*</th>
<th>Operating Rates (in percent of capacity)</th>
<th>Number of Workers (thousands)</th>
<th>Hours Worked (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>56.9</td>
<td>102</td>
<td>47.3</td>
<td>55.8</td>
</tr>
<tr>
<td>1981</td>
<td>89.0</td>
<td>104</td>
<td>78.3</td>
<td>86.5</td>
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<tr>
<td>1980</td>
<td>81.4</td>
<td>104</td>
<td>72.7</td>
<td>78.3</td>
</tr>
<tr>
<td>1979</td>
<td>99.0</td>
<td>104</td>
<td>87.5</td>
<td>95.2</td>
</tr>
<tr>
<td>1978</td>
<td>99.6</td>
<td>104</td>
<td>86.6</td>
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<td>1977</td>
<td>90.1</td>
<td>102</td>
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<td>88.3</td>
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<td>1976</td>
<td>91.4</td>
<td>106</td>
<td>80.9</td>
<td>86.2</td>
</tr>
<tr>
<td>1975</td>
<td>83.4</td>
<td>105</td>
<td>76.2</td>
<td>79.4</td>
</tr>
<tr>
<td>1971</td>
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<td>79.8</td>
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<tr>
<td>1968</td>
<td>90.5</td>
<td>104</td>
<td>89.0</td>
<td>87.0</td>
</tr>
<tr>
<td>1965</td>
<td>91.0</td>
<td>99</td>
<td>NA</td>
<td>91.9</td>
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<tr>
<td>1960</td>
<td>70.7</td>
<td>94</td>
<td>NA</td>
<td>75.2</td>
</tr>
</tbody>
</table>

*Capacity sustainable for at least one year, adjusted for special output-constraining events occurring in a given year such as harsh weather, shortages of inputs (natural gas, coking coal, iron ore, etc.) due to international problems or strikes, strikes by railroad workers or the steel haulers, etc.

Source: AISI, ANNUAL STATISTICAL REPORTS. Capacity adjustment by authors.
### TABLE 4
Indicators of Technological Performance, 1980

<table>
<thead>
<tr>
<th>Plants</th>
<th>Capacity of the largest 5 plants, in million net tons (mNT) of maximum raw steel output</th>
<th>U.S.</th>
<th>Total EC</th>
<th>Germany</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>36</td>
<td>52</td>
<td>34</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Capacity of the largest 10 plants, in mNT of maximum raw steel output</td>
<td>59</td>
<td>83</td>
<td>--</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Number of plants with a raw steel capacity in excess of 6 mNT</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>

Blast Furnaces (Smelting)

- No. of blast furnaces with an inner volume in excess of 70,629 cubic feet (2,000 cubic meters) 6 19 8 39
- Adoption of the bell-less system* 0.5% 9% 8% 8%
  (best practice: 100%)
- Fuel rate (coke and fuel oil only)** 0.596 0.538 0.540 0.466
  (best practice: 0.460-0.480)

Steelshops (Melting)

<table>
<thead>
<tr>
<th>Total output, in mNT</th>
<th>U.S.</th>
<th>Total EC</th>
<th>Germany</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>111.8</td>
<td>140.9</td>
<td>48.3</td>
<td>122.8</td>
<td></td>
</tr>
<tr>
<td>Output in oxygen converters, mNT</td>
<td>67.6</td>
<td>102.8</td>
<td>37.8</td>
<td>92.7</td>
</tr>
<tr>
<td>Output in electric furnaces, mNT</td>
<td>31.2</td>
<td>33.5</td>
<td>9.6</td>
<td>30.1</td>
</tr>
<tr>
<td>Output with obsolete methods, mNT</td>
<td>13.1</td>
<td>4.5</td>
<td>3.2</td>
<td>--</td>
</tr>
<tr>
<td>Adoption of modern melting processes</td>
<td>88.4%</td>
<td>96.8%</td>
<td>93.3%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
  (best practice: 100%)

Continuous Casting

<table>
<thead>
<tr>
<th>Output in mNT</th>
<th>U.S.</th>
<th>Total EC</th>
<th>Germany</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.7</td>
<td>55.2</td>
<td>22.3</td>
<td>73.1</td>
<td></td>
</tr>
<tr>
<td>Adoption rate</td>
<td>20.3%</td>
<td>39.2%</td>
<td>46.0%</td>
<td>59.5%</td>
</tr>
</tbody>
</table>
  (best practice: 85-95%)

Yield, or the amount of finished steel obtained per ton or raw steel produced (adjusted for differences in product mix)

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Total EC</th>
<th>Germany</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>72%</td>
<td>77%</td>
<td>75%</td>
<td>85%</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *Data refer to the year 1977; **U.S. 1979, other data refer to the year 1978; ***Certain products, such as very large plates, can only be produced via the conventional ingot route.

### TABLE V

Differences in the Equipment Vintage of Major Steel Industries

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>EC(9)</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of 1974 capacity installed before 1960</td>
<td>36%</td>
<td>26%</td>
<td>0%</td>
</tr>
<tr>
<td>Age of coke ovens:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older than 10 years</td>
<td>84%</td>
<td>67%</td>
<td>32%</td>
</tr>
<tr>
<td>Older than 20 years</td>
<td>57%</td>
<td>37%</td>
<td>2%</td>
</tr>
<tr>
<td>Cold-rolling mills:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older than 10 years</td>
<td>89%</td>
<td>83%</td>
<td>66%</td>
</tr>
<tr>
<td>Older than 20 years</td>
<td>56%</td>
<td>42%</td>
<td>11%</td>
</tr>
<tr>
<td>Plate mills:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older than 10 years</td>
<td>83%</td>
<td>84%</td>
<td>66%</td>
</tr>
<tr>
<td>Older than 20 years</td>
<td>55%</td>
<td>46%</td>
<td>13%</td>
</tr>
</tbody>
</table>
