American Steel and International Trade: The Challenge of Globalization

James B. Burnham
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The American steel industry and the U.S. government have always had a high-profile relationship. President Truman tried to nationalize steel in 1952. John F. Kennedy imposed *de facto* price controls on the industry in 1962, largely on the grounds that “as steel goes, so goes inflation.”¹ More recently, the initiatives have run the other way, as steel unions and management regularly descend upon Washington, demanding tax breaks, loans, and protection from foreign steel imports.

Earlier this year, industry and union leaders worked together to introduce several pieces of protectionist legislation. At the same time, numerous “anti-dumping” suits were launched to reduce the flow of a wide variety of steel imports into the United States. While the centerpiece of the legislative program was soundly defeated in the Senate (after being passed by a wide margin in the House of Representatives), the dumping suits have had considerable success in stemming certain steel imports—and raising their domestic prices.

All this is taking place at a time when the industry’s shipments are running at near-record levels—and steel producers are importing substantial amounts of steel-related products themselves. In 1998, the industry imported over 12 million tons of

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pig iron, steel slabs, and higher-end product—more than the entire amount of steel imported in 1980. The industry is also receiving substantial inputs of foreign technical expertise and financial capital. British, Canadian, Korean, Japanese, and Brazilian steel companies have made major investments throughout the United States.

Making sound public policy in such a fluid and complex environment is not easy. But a critical starting point should be a clear understanding of the industry’s problems and an appreciation of the impact on the economy of additional barriers against imports. At the same time, it makes sense to consider what alternative steps by management, labor, and government could be taken to put the industry on a firm, competitive course.

Perhaps of even greater importance, an effort to understand the issues facing the American steel industry\(^2\) can throw light on some of the much larger and more general issues of how business, government, and the electorate should respond to the increasing globalization of national economies.

**Legacy of the Past**

Much of our steel industry is burdened by its past successes. Throughout the first half of the twentieth century and until the 1960s, American steel (and its most important customer, the automobile industry) reigned supreme as the epitome of American industrial might and success. An industry-wide strike—or price increase—and the federal government’s reaction made national headlines. As late as 1970, well over 600,000 workers were employed in the business. The heads of the major steel companies were in the front row of America’s “captains of industry.”
A combination of technological change and the geographic dispersion of steel-using customers has provided an incentive for the industry to establish smaller, more advanced facilities.

The last major integrated steel plant was completed in the 1960s. Since then a combination of technological change and the geographic dispersion of steel-using customers has provided an incentive for the industry to establish smaller, more advanced facilities in new locations. Over 10 million tons of new capacity has been added in the past five years. These facilities generally use steel scrap, pig iron, electric furnaces, and thin-slab casting. Such mills will rarely employ more than 500 workers.

However, none of the major integrated companies has chosen to invest in the new technology, choosing instead to stick with their existing sites and more traditional approach of iron ore, basic oxygen furnaces, and thick-slab casting technology. As a result, new companies such as Nucor
and Steel Dynamics have emerged to seize the opportunities, and now account for over 40 percent of industry production. Not surprisingly, they also boast a significantly higher degree of profitability than their older, larger competitors, despite the fact that they have concentrated on lower value-added product lines.³

In the current environment, some steel firms are buckling under the fierce competitive pressure. Their workers, shareholders, and communities are being hurt. But this is largely the result of companies with aging plant and equipment, union-imposed work-rule agreements that stifle productivity, slow-to-change management strategies, and poor geographic locations. (Some newer mills have fallen short of expectations, too, but generally as a result of trying out new ideas rather than sticking to the tried and true.) Most of the traditional firms have made major efforts to increase their productivity, with measurable results, but their more nimble competitors at home and abroad are changing more rapidly.

Challenges of the Present

In addition to the ongoing competitive pressure from changes in technology, the American steel industry has been challenged by three global developments. One of these is transitory; one is a legacy of the past; and the third is just beginning to emerge.

The first global development was the combination of a financial collapse in East Asia, starting in the summer of 1997, and a near simultaneous crisis in Russia. Both situations led to a collapse in the demand for steel in the economies affected and sizable drops in the affected countries’ exchange rates. Steel that had been des-
tined for construction and other uses in these countries was redirected into the global marketplace. The United States, with relatively few import restrictions, was the market of first resort. Substantial devaluations of the Korean won, Japanese yen, and Russian ruble against the U.S. dollar provided an additional incentive for exporters from those countries to concentrate on the U.S. market.

By 1999, however, the East Asian and Russian crises were losing their impact on steel markets. Local demand and exchange rates strengthened, leading to a revival of steel consumption in most of the affected countries. Anti-dumping suits and “suspension” agreements with Russia and Brazil also helped to moderate substantially the flow of steel imports into the U.S.—and raise steel prices.

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**Nearly all analyses of global steel supply and demand point to substantial excess capacity in the industry at the present time.**

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The second development is largely a legacy of the past, and more difficult to deal with: how to phase out inefficient productive capacity in many countries. Nearly all analyses of global steel supply and demand point to substantial excess capacity in the industry at the present time. While some analysts profess cautious optimism that the “steel industry profitability in the next decade is unlikely to be threatened by vast amounts of excess capacity,” the near-term situation will continue to be clouded by surplus capacity for most basic steel products on a global basis.
However, for several reasons, operators of out-of-date plant and equipment around the world are tempted to continue hoping for the best. First, the variable costs of operation such as ore, energy, and direct labor can usually be covered, even if selling prices do not cover full costs. Fixed costs such as debt service, depreciation, and (for the mature American producers) pensions and retiree medical costs must be accounted for whether or not production takes place. This encourages most marginal producers to operate at close to full capacity, at least until bankruptcy threatens or equipment fails.

Industry imports are rapidly increasing in other “upstream” steel-related product areas, such as pig iron and steel slabs. These products reduce or eliminate the “hot end” of the steel-making process.

Second, local and national governments have a history of being especially sympathetic to the plight of steel companies failing and their workers facing unemployment. Some of this stems from a traditional inclination to protect “the commanding heights of industry” on national security or prestige grounds. An additional reason may be the political leverage for assistance that the traditional large mills can exert on local political representatives on the basis of their large concentrations of employees.

A final important reason may be that the owner of the steel mill is a government with a clear desire to maximize employment, even at the cost of low or non-existent profitability. In this respect, American
The third global development challenging American steel is just beginning to emerge, and accounts for much of the schizophrenia within the industry about international trade and investment relationships. Of course, the industry has long been an importer of raw materials, chiefly iron ore from Canada, Brazil, and Venezuela, as well as coke for use in blast furnaces. However, industry imports are rapidly increasing in other “upstream” steel-related product areas, such as pig iron and steel slabs. These products reduce or eliminate the “hot end” of the steel-making process, allowing companies to concentrate on the more profitable finished products. Figure 1 illustrates the rapid

A Global Steel Industry?

*Pig iron plus steel ingots, blooms, billets, and slabs.

Source: Compiled from Department of Commerce and American Iron and Steel publications.
Table 1

U.S. Imports of Upstream Product as a Percentage of Domestic Steel Shipments

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1998</th>
</tr>
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<tbody>
<tr>
<td>Semi-finished and pig iron imports as a percentage of total steel product and pig iron imports</td>
<td>3.5%</td>
<td>26.4%</td>
</tr>
<tr>
<td>Semi-finished and pig iron imports as a percentage of mill shipments</td>
<td>1.0%</td>
<td>12.2%</td>
</tr>
</tbody>
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*Source: American Iron and Steel Institute Annual Statistical Report* for import and shipment levels.

increase in the total volume of such imports since 1980. Table 1 contrasts the relative importance of upstream imports, in terms of total imports and ultimate mill shipments, in 1998 with 1980. While the importance of imports trended upwards throughout the 1980s, a major spurt began in 1993, with pig iron imports now showing the most rapid growth. Nowhere is the love-hate relationship of American steel with international trade more dramatically illustrated.

According to trade sources, nearly all major steel companies and most smaller companies import a portion of their semifinished requirements, although not all of them on a regular basis. Even companies that have been active in supporting dumping suits against imports of finished steel are frequent importers of slabs. Imports of pig iron have risen from roughly 400,000 tons in 1991–93 to an average of 4 million tons in 1996–98.

What is taking place in the steel industry appears to be part of a wider pattern that
is taking place in the global trading system: the phenomenon of “vertical specialization.” Due to lower tariffs, continuing improvements in air and sea transport economics, and rapid advances in telecommunications, industries are increasingly able to separate, on an international scale, various stages of production and processing to take advantage of individual countries’ comparative strengths. Automobile manufacturing in North America and Europe, “maquiladora” assembly operations in Mexico, and the Japanese electronic trade in the Far East are all examples where international trade in parts and components has grown rapidly. This pattern of “dis-integration” now appears to be emerging in the steel industry as well, where it is further reinforced by the decline in energy costs over the past decade.

Location remains a critical variable in the final step between producer and customer, even if distance is increasingly less of a factor in upstream stages, where steel products are more like commodities.

An important element in this development is the need to be increasingly responsive to customer preferences regarding product specifications, delivery times, and service. For industries such as steel and automobiles, this means increased emphasis on placing the final assembly or process stage as close as possible to the customer. Steel users, particularly in such sectors as vehicles, packaging, and industrial equipment, want their suppliers to meet a myriad of frequently changing size and metallurgical specifications for their particular
requirement. This means that location remains a critical variable in the final step between producer and customer, even if distance is increasingly less of a factor in upstream stages, where steel products are more like commodities.10

The Emerging Multinational Steel Companies

In most industries today, large multinational firms are highly visible leaders. In manufacturing, names like Exxon, British Petroleum, Ford, Toyota, Nokia, IBM, Bayer, Electrolux, and Nike are household names in many parts of the world. Such companies produce in multiple locations and engage in substantial international trade within their own organization.

The steel industry has been notable by its absence from such a list, with the exception of sourcing raw material on a global basis. While firms in a number of countries export a large share of their production, investment and organizational linkages to other parts of the world have been modest. But mainly for the reasons discussed earlier, this situation appears to be changing, at least at firms headquartered outside the United States.

The first major wave of external activity was by Japanese steel companies in the 1980s, when they established numerous linkages and some joint ventures with U.S. steel companies. Many of these were driven by the needs of their Japanese automobile manufacturing customers, who were setting up facilities in the U.S. and wanted their suppliers to accompany them. For example, Inland Steel entered into a joint venture with Nippon Steel to produce high-end products.

More recently, British Steel has emerged as perhaps the leading interna-
tional player. It has made major investments in two mini-mills and a direct reduction iron plant in the United States, and has investments in Sweden, Turkey, Norway, and Spain. In June 1999, it announced a major merger with Hoogoven’s, a leading Dutch steelmaker, which will result in the world’s third-largest steel company.

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The British Steel program in Europe is being followed by most other major European steel producers. Here, the incentives posed by the European Union’s single market and the introduction of the Euro currency make an integrated, multi-country operating philosophy in the EU a logical strategy. The process is facilitated by the gradual privatization of government ownership of steel companies. State ownership, in terms of crude steel output, fell from 49 percent in 1990 to less than 6 percent in 1997.11 The largest steelmakers, like British Steel, are also setting their sights further abroad. Usinor, the large French company, has made acquisitions in Turkey, the United States, Brazil, and Thailand in recent years, some of which have been in the specialty steel sector. Investment in Eastern European facilities is high on the agenda of several companies.

In the United States, U.S. producers have been relatively cautious.12 However, customers, such as the major automobile companies, are clearly encouraging a more
global attitude. The foreign investment that has taken place is generally associated with customers’ global operations. For example, USX and LTV have established positions in Mexican auto-related operations, and USX has invested in a Slovakian facility that makes finished steel for container customers.

However, two U.S.-based companies in the hands of foreign owners may well be the prototypes of future multinational organizations. California Steel Industries (CSI) is based in the former Kaiser Steel complex in Fontana. Its owners are Kawasaki of Japan and CVRD of Brazil. CSI now concentrates on rolling imported slabs from its parent companies in Japan and Brazil. It is the largest steel processor on the west coast, shipping 1.6 million tons of product in 1998.

Inland Steel, one of the larger U.S. producers, was bought by Ispat International in 1998. The new owner (incorporated in the Netherlands but operating from London) is the eighth-largest steel company in the world, with operations in six countries. It ships reduced ore (a substitute for scrap in electric furnaces) from a world-class facility in Trinidad to operations elsewhere, and is now processing slabs from Mexico at its Inland Chicago facilities. In addition, it benefits from global purchasing on its own account, as well as the ready transfer of engineering, operating, and metallurgical ideas between different countries’ operating units.

A Culture of Defensiveness

The marked inactivity of most large U.S.-owned steel companies in the face of active international involvement by many of their foreign competitors stands in contrast to the active, aggressive behavior by
U.S. leaders in most other industries, ranging from pharmaceuticals to aluminum and motor vehicles to telecommunications. What accounts for this passiveness?

In my opinion, the root, general cause is best described as “a culture of defensiveness,” particularly among the large integrated producers, their workers, and the communities in which they live. It is based on decades of conflict among management, unions, and the federal government, even though recent years have been less stressful than before. This fortress mentality is reinforced by the limited degrees of freedom the large integrated producers have in managing their workforces and investment strategies, thanks to still-restrictive union work rules reinforced by plant locations and layouts that can date back to the 1940s. (In some cases, the steelworkers union has successfully insisted on dictating a firm’s location and timing of major investment decisions.) Financial degrees of freedom have declined markedly in recent years as well, after a major effort by some firms in the 1980s to diversify away from steel.

A contributing factor historically was the large size of the U.S. market, which discouraged initiatives abroad, except for raw materials. There was usually sufficient business at reasonable prices in the North American market to keep the relatively few (but large) companies in the industry satisfied. Transportation costs and foreign governments’ tendency to protect their “national champions” also helped to keep producers focused on the domestic market. But, as discussed earlier, these factors have faded in importance in recent years, at the same time that the major companies’ financial performance has weakened.

The operational implications of this culture of defensiveness, so far as international issues are concerned, are that
management and union leaders spend most of their time and resources on building and maintaining trade barriers against steel imports, or in seeking tax and loan subsidy favors as compensation for damage done to them by foreign competition. Of course, the new, more profitable domestic steel companies (as well as foreign-owned firms), with markedly different cultures, sometimes join in such campaigns, but more as “free riders” than as active participants.

Using Government to Beat Up Customers

The first significant impact of any successful import barrier is to raise the prices paid by an industry’s customers, and make them more vulnerable to foreign competition. In the United States, steel-using companies employ over 8 million workers. If these companies were able to pass on to their customers all of the cost increase (without losing any business) then the cost of protection would be borne eventually by consumers. For example, one independent analysis suggests that the recent quota legislation defeated in the U.S. Senate would have raised imported steel prices by $29 a ton and domestic prices by $6 a ton. Given the amount of steel consumed in the U.S., this would have resulted in additional costs to ultimate consumers of $1.5 billion. Over half of this amount would have accrued to the lucky foreign steel mills with quotas ($800 million). The cost of saving an estimated 1,700 steel jobs would have been over $800,000 a year per employee.\(^{18}\)

Of course, a critical but usually unstated assumption by proponents of protection is that imports of steel-using products do not increase—which is clearly incorrect. Dumping actions against Japanese producers of semi-conductors in the 1980s
gave Japanese computer makers like Toshiba an extra edge in the U.S. market; protecting Georgia peanut producers against foreign competition makes importing peanut butter more profitable. In the case of steel, the entirely predictable result of raising trade barriers will be to give foreign competitors of steel-using industries (autos, appliances, steel fabricators, and the like) an additional incentive to export to the U.S. market.

The recent quota legislation defeated in the U.S. Senate would have raised imported steel prices....this would have resulted in additional costs to ultimate consumers of $1.5 billion.

Furthermore, raising the costs of steel-using industries will hurt their ability to export. For example, Caterpillar is one of the country’s leading exporters. It came out strongly against the unsuccessful steel quota legislation, which would have raised its costs and hurt its international competitiveness. It was particularly concerned that foreign countries would retaliate against steel-intensive U.S. exports, such as Caterpillar’s earthmoving equipment.

The Case against Quotas

Each of the weapons that steel industry protectionists promote has serious flaws. Quotas—the first weapon—are exceptionally disruptive for many steel users, as well as potentially illegal under our international commitments to the World Trade Organization. As documented in the early 1999 debate on quota legisla-
tion, many companies—from Connecticut to Illinois, Texas, and the state of Washington—would have found it difficult or extraordinarily expensive to import special grades or sizes of steel that are not made in this country, and that are vital to the products they make. A congressman from the Pacific Northwest pointed out: “When we built the trade center in Seattle, we needed a piece of steel to span the freeway to rest the building on. There was no place to buy that steel except Korea. That is where we bought it.”

More broadly, shifts in industry requirements mean that quotas based on prior years’ data will not reflect current operating needs. Furthermore, under a country quota system of trade protection, higher prices mean that the foreign producers who are lucky enough to get quota allocations will be among the primary beneficiaries, as documented earlier.

A final point: over time, country-specific trade barriers are relatively easy to evade. Production shifts to uncovered countries; certificates of origin are falsified or shipments are routed through third countries; additional processing transforms a product into a new, uncovered classification. At what point does metal “rod” become metal “wire”? Evasion of trade barriers is limited only by the ingenuity of the thousands of participants in the global steel trade.

The Case against Anti-dumping Legislation

Anti-dumping suits are a second and increasingly popular tool to protect domestic producers. Such suits are based on U.S. laws that make illegal what are perfectly acceptable pricing practices in domestic trade. Foreign producers, who temporarily
sell below their full costs (including normal profit margins) in the U.S. market, or below prices being charged in their home market, are considered to be “dumping” and liable for punitive, retroactive tariffs if their action has caused injury to U.S. producers.

If this concept were applied to supermarkets, there would be no “loss leaders;” forget “end of season” clearance sales at department stores; advertisements promising “below cost” specials would be equivalent to public announcements of lawbreaking, if competitors complained. In fact, U.S. steel companies can sell below cost in the U.S. market, even when their foreign competitors cannot.

The original intent of dumping legislation was to protect buyers from “predatory” pricing. The theory was that a foreign competitor would drive domestic firms out of business by selling below costs, and then jacking up prices well above the original level in the absence of any competition. Some countries’ dumping legislation continues to reflect this concern for consumers of steel and steel-using products. Canada, for example, requires government agencies to formally consider “the public interest” in dumping suits brought by domestic producers.22

The theory of predatory pricing has remained largely just that. It certainly has little sustained relevance to international trade in today’s world. The spread of technology, combined with lower transportation and information costs, has vastly expanded the number of potential suppliers in most industries, including steel. Any attempt to raise prices above their competitive level by one or a handful of foreign producers will shortly see new competitors enter the market. If the number of suppliers is small and they attempt to collude in
raising prices, anti-trust legislation makes such action illegal—and expensive.\textsuperscript{23}

The U.S. steel industry has perfected the use of dumping suits, or just the threat of dumping suits, to keep foreign steel out of the country. A study by the Wall Street Journal reported that over a 20-year period, the steel industry filed 46 percent of all “unfair” trade complaints, even though steel accounts for less than 5 percent of U.S. imports. Over the past decade, the industry has lost 54 percent of its cases, compared to a failure rate of 48 percent in nonsteel cases.\textsuperscript{24} But the industry can keep imports out simply by filing a case, since penalty tariffs are imposed on any imports that enter the country after the complaint has been filed, if the petition proves successful.

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The result of this process is an elaborate guessing game by foreign exporters, which exacerbates surges in imported steel (or any other commodity which might be involved): just the threat of a suit being filed leads to anticipatory imports into the U.S., which provides further ostensible ammunition to those calling for protection.

The one form of temporary relief available to industry, which is designed for the current situation specifically, addresses “surges” in imports. So-called Section 201 legislation is consistent with WTO rules, and would permit temporary duties or, in extreme cases, quotas. But, with one mi-
nor exception, the industry has chosen to ignore this route for temporary relief in its search for “instant” results, despite administration encouragement to pursue this approach. Instead, the industry is attempting to modify the dumping law to weaken existing standards regarding the definition of “injury” and related provisions.

**Needed: A Better Way**

The discussion above has highlighted the many ongoing factors that are changing world steel (and other industries as well). None of these major factors is under the control of the United States government: for example, rapid technological advances, privatization of government-owned firms in other countries, shifts in customer preferences and locations, and “vertical specialization” in international trade.

The U.S. steel industry is changing, too. But the process is slow, divisive, and needlessly costly, thanks to the “culture of defensiveness” that permeates too much of the industry. This culture manifests itself in an excessive dependency on Washington for trade protection, an inability to adopt new models of organization and labor relations, and a reluctance to think globally.

What might a new paradigm for the industry consist of? I suggest each of the three major players—management, labor, and government—consider a set of new priorities.

For management, specifically those still influenced by the “culture of defensiveness,” the priority should be to devise and implement a strategy to break out of the old model of the integrated steel works. In certain cases, this should entail exiting much of the “hot end” of the business. Concurrently, it means devising a way for the weakest traditional producers to exit
the industry, through consolidation, for example. In some cases, it also means a strategy to adopt the best features of mini-mill technology.

The preferred course [of the government] should be to rely on anti-trust legislation to achieve the original objectives of the dumping statutes: to protect customers from being damaged by sellers that dominate a particular market.

For labor, the new paradigm should be to embrace change, not fight it. The coal mine workers, under John L. Lewis, did this decades ago when they accepted radically new technology that would substantially reduce the demand for miners—but the union received sizable compensation from the mine owners for the displaced workers, as well as those who remained. Failure to act with vision will mean a further diminution of the union. This threat was dramatically illustrated recently in Pittsburgh, when an outcry developed over the fact that $50 million of structural steel for new, taxpayer-supported sports stadiums was being fabricated by nonunion workers; but it turned out that the only union shop fabricators for such projects are now all located overseas.²⁵

For government at all levels, the issues are similar: how to manage change in the long-run interests of all constituents, not just the most vocal. The acid test of any policy—whether it is tax breaks, adjustment grants, or trade protection—should be whether or not the net impact will be to facilitate the industry’s adjustment to
the changing structure of the world steel industry. For example, favorable tax treatment of post-employment support for workers who are laid off in certain situations might ease the adjustment process.

Perhaps the most pressing area where change is needed is in anti-dumping legislation. By defining “dumping” as selling below full cost, the law flies in the face of observed behavior in nearly all markets. As noted earlier, there is nothing to prevent U.S. producers from selling below their cost in the U.S.; the law applies only to foreign producers. Secondly, applying this concept is inherently arbitrary, as anyone who has followed the procedure in an actual case can testify, given the assumptions that must be made about accounting systems, profit margins, and similar matters.

The preferred course should be to rely on anti-trust legislation to achieve the original objectives of the dumping statutes: to protect customers from being damaged by sellers that dominate a particular market. This, in fact, is the stance taken by the European Union among its members. A decidedly second-best approach would be to go back to an earlier version of the legislation that defines “dumping” only as selling below prices charged in the producer’s home market. In any event, if anti-dumping legislation remains on the books, amendments should be made to include the interests of consumers as a policy factor, as the Canadian legislation does through its “public interest” clause.

A final matter of government policy is the question of how to deal with massive surges of imports that take place as a result of temporary disruptions in world trade, such as the East Asian and Russian financial crises. Some would argue that receiving countries should just “grin and
bear it.” But that position reflects little understanding of the politics of democracies. Temporary relief to industries is available under both U.S. trade law and international agreements through “safeguard” provisions, although the steel industry (with one exception) has chosen to ignore this route. Such provisions are part of the NAFTA agreement covering the textile industry, for example.

If one accepts the principle that government actions should be based on facilitating change, then there is a place for safeguards legislation, fairly administered. Certainly, improvements in existing legislation and agreements can and should be made, and such action should be part of the federal government’s trade policy program.

**Conclusion**

Trying to halt or turn back the clock on the globalization of an industry such as steel hurts everyone. It threatens to hurt American steel’s customers (encouraging them to look for alternative materials) and raise prices for automobile and appliance buyers, as well as anyone else who uses steel. But, equally important, erecting new barriers to imports impedes the necessary evolution of many firms within the industry itself. By removing the continuing pressure to implement changes being forced on them by technology, customers, and competition, they—and their workers and shareholders—will create even larger problems for themselves and taxpayers in the years to come. But, as suggested in the preceding pages, there are a variety of feasible, sensible steps that management, labor, and government can take to create a new paradigm for their industry—and join the ranks of other globally successful American industries.
Endnotes


2. This paper focuses on the carbon steel industry, at the expense of excluding the smaller but still important specialty steel industry.

3. Thick slab casting remains, to date, the preferred technology for some high value-added products.


5. See the January 7, 1999 White House Report to Congress on a Comprehensive Plan for Responding to the Increase in Steel Imports, paragraph 1.

6. A small portion of pig iron imports are destined to foundries for making castings. The bulk of imports are for steel companies, principally for use in electric furnaces. However, an unknown percentage is bought by integrated producers in lieu of their own blast furnace production.


9. In addition to the importance of energy costs in the transport of steel products, the industry is a heavy energy user in its processes.

10. Alternatively, customers can locate adjacent to the source of their steel, as has taken place with some of Nucor’s plants.


12. USX is somewhat of an exception. In the 1970s, it established close links with steelmakers in Spain and Brazil, but these were subsequently terminated. In addition, its consulting subsidiary, UEC, is active in international assignments involving the steel industry.

13. In early 1999, General Motors announced long-term contracts with 40 steelmakers to supply its operations on a global basis. The contracts would meet 90


16. USX spent roughly $14 billion on two oil company acquisitions during this period.

17. Technically, the industry had many characteristics of an "oligopoly."


19. See the letter from Caterpillar President and CEO Glen Barton, Congressional Record, March 17, 1999, p. H1358.


21. Under its system for administering U.S. quotas on apparel imports, the Hong Kong government auctions off quota rights to local producers—and keeps the proceeds.


23. The recent $725 million Department of Justice fine against two foreign producers of vitamins is an example of such action. Wall Street Journal, May 21, 1999, p. A3.


26. Trebilcock and Howse, p. 121.

27. Again, see Trebilcock and Howse for some specific suggestions, p. 176.
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