CRISES IN THE STEEL INDUSTRY: AN INTRODUCTION

AND

THE STEEL INDUSTRY IN TRANSITION

MATERIALS PREPARED BY THE

SUBCOMMITTEE STAFF

AND THE

CONGRESSIONAL BUDGET OFFICE

FOR THE USE OF THE

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March 22, 1982

TO: Members, Committee on Energy and Commerce

Dear Colleague:

As you are aware, capital formation and industrial policy in the United States has been one of the principal focuses of the Subcommittee on Oversight and Investigations throughout the 97th Congress. Much of the Subcommittee's earlier inquiry concerned the sufficiency of aggregate profits, investment, and the role of increasing energy prices in the changing configuration of the American economy. It has become clear from the investigation conducted thus far that a more detailed inquiry into the problems and opportunities confronting certain basic American industries is necessary to a comprehensive evaluation of the performance of our economy during the past decade.

Accordingly, the Subcommittee will now commence a detailed investigation into the problems of the domestic steel industry, as a case study of the troubles besetting America's "heartland" industries and the role of government policy in the decline and revival of such industries.

The Subcommittee staff has interviewed officials of the eight largest U.S. steel companies, as well as a number of smaller producers. We have also contacted the United Steelworkers, steel analysts for Wall Street brokerage firms, investment bankers who raise capital for the industry, industry consultants, academics, and a sample of large steel users. In addition to the Subcommittee staff's resources, we have enlisted the assistance of steel experts in the Office of Technology Assessment (OTA), the Congressional Budget Office (CBO) and the full Committee staff to help prepare for a series of hearings which we trust will result in a comprehensive examination of the industry.

In preparing for this investigation, we are particularly indebted to the Congressional Budget Office. CBO has been conducting its own in-depth analysis of the steel industry and has made available drafts of its work in progress to the Subcommittee staff. Further, CBO has prepared a briefing paper for the use of the Subcommittee Members and the interested public, which has been reproduced as the second part of

this document. While there is substantial controversy surrounding much of the data associated with any analysis of the world steel industry, the CBO briefing paper presents a concise, well written, straight-forward analysis of the decline of the domestic steel industry and the factors which have contributed to the industry's problems. We are indebted to Dr. Alice Rivlin, the Director of the Congressional Budget Office; Lawrence Oppenheimer, the author of the steel industry analysis; and David Bodde, who provided direction and supervision on the project.

Preceding the CBO briefing paper is an analysis prepared by David Nelson, an economist with the Subcommittee staff, on the history of the issues surrounding government policy toward the steel industry. This document is also intended to provide background for the use of Members and the interested public as the Subcommittee begins public hearings on these issues.

Sincerely,

John D. Dingell
Chairman
Subcommittee on
Oversight and Investigations

CRISES IN THE STEEL INDUSTRY: AN INTRODUCTION

THE ROLE OF GOVERNMENT POLICY TOWARD THE STEEL INDUSTRY IN THE POSTWAR ERA

Introduction

The steel industry has been impacted by federal government policy virtually from its inception. Tariffs protected the industry from its British and Continental competitors during its early years. Around the turn of the century, the industry consolidated despite the Sherman Antitrust Act. World War I stimulated demand. The National Recovery Act (NRA) helped stabilize the steel companies during the Depression. Mills were built by the government as part of the war effort in the early 1940's and turned over to the industry at bargain prices after World War II.

However, it is the American experience in the postwar era that begs comparison with the policies of other governments toward their steel industries. Throughout the rest of the world, governments treat steel as a commodity vital to a national development and/or employment strategy and have promoted their industries accordingly. Many of the foreign firms exporting steel into the U.S. market, the only large, truly "open market" in the world, are owned outright by their governments. Most others have been heavily subsidized, directly or indirectly. Steel production levels are considered to be a matter of national policy and subject to formal or informal planning everywhere in the world, save in the United States. While excess capacity has brought serious problems to most mills throughout the world during the past eight years, the lack of a comprehensive national response in the

U.S. has resulted in the secular decline of our industry and severe economic hardship from Lackawanna, New York to Fontana, California.

The U.S. government has attempted to deal with certain aspects of the domestic industry's problems, usually during times of acute crisis. One of the more promising elements of the Carter Administration's response to the 1977 steel crisis was the formation of a Tripartite Committee headed by the Secretaries of Commerce and Labor and composed of the steel companies, the Steelworkers Union, and various interested government departments. That Committee, which has lapsed under the current Administration, conducted a number of studies and made various recommendations regarding government activities necessary for a modern domestic steel industry. Using capital estimates supplied by the industry, the Tripartite Committee decided that three elements of government policy required revision if the industry was to modernize sufficiently to be competitive in today's international market. The Committee called for a coherent trade policy designed to protect the U.S. market from unfairly imported steel, as well as improvements in tax policy and environmental relief.

This paper will discuss each of the elements of government policy identified by the Tripartite Committee. Additionally, other crucial policy elements, which have contributed to the current state of our steel industry or which could play some role in its revival, are discussed under the headings: Monetary Policy, Antitrust Policy, Government Capital Programs, and Human Resource Policy.

Postwar Government Policies

Every President in the postwar era has faced at least one major steel crisis. During the years prior to 1960, these crises largely

centered around a series of labor disputes. Particularly costly strikes occurred in 1946, again during the Korean War and finally, in 1959 when the strike lasted for 116 days. President Truman deemed the strike during the Korean War of sufficient threat to our national defense that he attempted to nationalize the steel companies in order to settle it. While the Supreme Court negated this action, Truman's War Mobilization Board did much to shape labor-management relations in the steel industry.

In 1962, public debate on steel policy shifted to the question of the impact of steel prices on the economy, despite the fact that inflation had been in the 1 to 1-1/2% range during much of the 1950's. Because steel price increases were assumed to reverberate through the entire economy, President Kennedy, in an attempt to keep prices from rising while stimulating the economy, committed his Administration to moderating wage and price increases in the steel industry. Arthur Goldberg, the Secretary of Labor and former General Counsel to the Steelworkers Union, pleaded the Administration's case during the 1962 negotiations. The result was a very modest wage settlement. In part because the Administration had intervened to moderate the Union's wage demands, the Kennedy Administration reacted swiftly and publicly when the industry announced a new round of price increases. The result was that the steel companies were "jawboned" into a substantial rollback of prices.

As might be expected, steel company officials are highly critical of government intervention in their pricing decisions. The production of steel is historically a very cyclical business. Productivity and profitability correlate very strongly with capacity utilization.

Further, steel is generally conceded to be a commodity of very low price elasticity; that is, demand is relatively unresponsive to changes in price. Therefore, the industry has little control over the demand for its product. Because total shipments cannot be increased substantially by lowering prices, the steel industry has traditionally suffered substantial revenue losses during economic downturns. Hence, many observers were highly critical of the Kennedy intervention and subsequent formal or de facto price controls, arguing that the industry needs to increase its prices during times of rising demand in order to raise the capital necessary for modernization.

While the impact of government price interventions on the industry is a debatable issue, the need for huge amounts of capital to remain competitive with foreign steel producers is indisputable. Technologically, the 1960's were a time of great change for the world steel industry. Both Japan and Western Europe were beginning to enjoy substantial postwar recovery and rebuilt their steel industries employing more modern techniques. The domestic industry's response during the 1960's was generally conceded to be one of rapid adaptation, particularly when compared with the slow pace of modernization during the subsequent decade. While only two new "greenfield" mills (completely new, fully integrated facilities) have been constructed in the United States since 1950, the industry converted much of its raw steelmaking capacity to the new Basic Oxygen Furnace (BOF) method during the 1960's. The industry also introduced modern second and third generation flat-rolling mill equipment during the late 1960's and early 1970's. Ten new hot strip mills were brought on line, mostly in the Great Lakes region.

The rebuilding of the Japanese and European industries confronted the U.S. steel industry with an import problem of an entirely new dimension. Until the 1959 strike, imported steel had not significantly penetrated the U.S. market. In fact, the U.S. remained a net exporter of steel through 1958. The extended strike created a serious shortage of U.S. mill products and resulted in a 159% increase in imported steel tonnage.

Steel imports grew generally through the 1960's, in part because foreign companies, particularly the Japanese, were building modern mills sited specifically for the export market. However, the quantum jumps in U.S. imports came in 1962 (28%), 1965 (63%), 1968 (57%) and 1971 (34%). In tonnage terms, imported steel rose from 1.8 million net tons in 1958 to 18 million net tons in 1968, dropped somewhat in 1969 and 1970 and reached 18.3 million tons in 1971.

While no nationwide strike has occurred since 1959, each of the years associated with a surge of imports corresponded to national steel negotiations. Whenever the steel negotiations were approaching, both the domestic steel firms and their customers began to stockpile. The purchase of foreign steel as a hedge against a possible steel strike and the increase in the production of domestic steel for the same purpose produced a situation unacceptable to both the companies and the Union. The inventory buildup that took place prior to each steel settlement resulted in substantial drops in production following the signing of the labor agreements which, in turn, resulted in layoffs. Working off inventories during these years sometimes required up to nine months. These conditions led directly to the

signing of the Experimental Negotiating Agreement (ENA) in anticipation of the 1974 negotiations.

The ENA basically provided a guaranteed 3% increase in wages, a "signing" bonus of $150 per worker, and the continuation of a cost-of-living provision as minimum guarantees for the next national agreement. The parties then agreed to submit any outstanding issues from those negotiations to binding arbitration, with the exception of certain local issues which could be dealt with on a plant-by-plant basis where the no-strike agreement did not apply.

The ENA, which has been in effect for the last three sets of negotiations (each of which covered a three-year period), has been blamed for much of the rise in labor costs in the steel industry. In fact, the largest proportion of the increase in steel wages over this period has been the direct result of inflation. The cost-of-living clause, which was not substantially different from that found in auto contracts and many other smaller agreements, raised steelworker wages $4.42 per hour from May 1974 through February 1982. Other wage increases over the same period totaled only $2.16 per hour.

While the ENA did solve the stockpiling problem, imports still devastate the U.S. market periodically because of changing world economic conditions. World steel demand failed to keep pace with the growth in capacity throughout the 1970's. Many countries -- most notably Japan -- built their steel industries as part of a concerted strategy, not only to provide the base for national development but also as export industries designed to bring in revenue from abroad.

Trade Policy

The domestic industry has had a chronic problem with imported steel for many years. The governmental response, since 1968, has been spotty and very ineffectual. Successive administrations have provided some form of stop-gap quantitative, or price-fixing relief but failed to address the long-range problems.

Direct government subsidies such as those employed by most European nations and the lesser developed countries, and indirect subsidies such as those provided to the Japanese steel industry and to a lesser extent, the Canadian, have permitted foreign steel to be dumped below cost into the U. S. market during each international recession.

The capital shortage resulting from the price and quantity damage suffered by the domestic industry over time has seriously imperiled the steel industry's ability to modernize. Lower prices, necessary to compete with subsidized imports, and low capacity utilization, resulting from shrunken markets, have deprived the industry of crucial "marginal" dollars. Low prices and higher costs due to lowered utilization rates have denied the industry the $50 per ton of profit (or more) associated with steel production at 85% of capacity sold at "list prices."

Otherwise viable production facilities are permitted to deteriorate since dumping occurs during times of soft demand, thus depriving domestic firms of much of the cash flow needed for maintenance which should take place while production is slow. Capital projects, such as continuous casters, which greatly increase productivity and reduce labor and energy costs are often postponed for

lack of funds. Research and development efforts often must be cut back. All of these capital impacts take their toll over time. Domestic mills become less cost competitive than they would be absent subsidized imports, profits decline over time, and the management of steel firms has increasingly sought alternate lines of business to invest available capital.

Our government's earliest postwar response to the steel import problem was the negotiation of Voluntary Restraint Agreements (VRA's) with the Europeans and Japanese in 1968. These remained in effect through 1974 but turned out to have a devastating impact on one segment of the domestic steel industry. Because the initial VRA's were based on tonnage limitations, the Japanese and European producers switched their product-mix to the higher priced steels, that is, stainless and alloyed tool steels. Those specialty steel products later covered by import constraints experienced a 60% increase in import penetration on a tonnage basis between 1967 and 1976. The industry had won dumping cases in 1971 and 1972, but the Nixon Administration declined to levy duties. In 1975, the specialty industry filed and won its "201" case which resulted in the establishment of quotas for imports from the European Economic Community (EEC) and Sweden, and the Ford Administration negotiated an Orderly Marketing Agreement with Japan. These actions tied growth in imports to domestic market conditions from mid-1976 through early 1980.

The industry claims that these quantitative restraints resulted in a highly successful modernization program by stainless and alloy tool steel producers. The Office of Technology Assessment concurs

that the U.S. specialty steel industry is among the most technologically advanced in the world. Yet today, even the specialty steel companies are in trouble due to competition from subsidized imports.

The carbon steel industry did not have the same protection afforded the specialty steel manufacturers during the latter half of the 1970's. Consequently, they suffered from periodic waves of unfairly priced foreign steel, as well as the other problems which generally afflicted the manufacturing sector of our economy. The extent of the damage inflicted by these imports on the domestic industry, particularly the large integrated producers, cannot be fully understood outside the context of the enormous economic problems of the past decade and the macroeconomic policies employed by successive Administrations in their attempts to stabilize the economy.

The steel industry, like the rest of the economy, operated under varying conditions of price controls between 1971 and 1974. The latter year saw the last steel shortage that the world industry has experienced. During 1974, while the domestic industry was restrained from raising prices, imported steel was selling for premiums of up to a hundred dollars a ton (the average price of steel was under $300 a ton at the time).

The 1974 experience reinforces the industry's argument that it has been substantially damaged in its ability to modernize by explicit or *de facto* government price controls during the upswings in its business cycle. The corollary of this argument is that no comparably effective stabilization policy has prevented the industry from experiencing contracting employment and profits during the

increasingly severe downturns from 1975 forward. It also forms the basis of the argument that to continue to permit subsidized imports into the United States will accelerate the decline of the domestic industry to such an extent that when steel is again in short supply, the U.S. economy will be at the mercy of foreign steel manufacturers.

The energy crises of 1974 and 1979 sent shock waves through the U.S. economy, particularly the industrial sector. The resulting general inflation, chaos in the international money markets, and the restrictive monetary policy ultimately adopted in the U.S. to cope with these conditions, reinforced the disruptive effects of sharply higher relative prices for energy. These cumulative impacts brought about a sustained decline in our national capacity to manufacture automobiles, rubber, steel and other energy and capital-intensive goods.

While heavy industry declined on a secular basis throughout the 1970's, the year 1977 brought a particularly grave crisis in steel. The import penetration ratio jumped 35% and a major contraction of the domestic industry resulted. Bethlehem shut down many of its facilities at Lackawanna, New York, and Johnstown, Pennsylvania. Alan Wood Steel Company went into bankruptcy and the Lykes Corporation shut down the Campbell Works located in Youngstown, Ohio. At least one major integrated producer was in serious danger of collapse and many firms were evaluating whether to keep open marginal plants or product lines.

The Carter Administration's response was to form a task force headed by Anthony Solomon, Under Secretary of the Treasury. That interagency task force, working with the industry and the Union and

under considerable pressure from the Congressional Steel Caucus, fashioned a multifaceted program of relief whose centerpiece was the Trigger Price Mechanism (TPM). The TPM was specifically intended to forestall industry suits under the 1974 Trade Act by establishing minimum prices for imported steel below which dumping would be presumed. U.S. Steel and several other firms had filed or were about to file dumping suits but agreed to withdraw them after the announcement of the Solomon Plan.

The trigger prices were geared to the production costs of the lowest cost producer, Japan, and were adjusted for transportation charges, import duties and exchange rates. This still permitted "dumping" by the Europeans and all other foreign producers whose costs, by definition, exceeded those of the Japanese. During those time periods when importers complied with the trigger prices, a "floor" was established sufficient to permit U.S. firms to sell steel profitably in the American market. While the idea may have been sound, in practice, the TPM proved unworkable.

Under that program, when steel was imported below the trigger price, the government was supposed to file its own expedited dumping cases. Unfortunately, importers and foreign steel companies found numerous ways to circumvent the Customs Bureau's policing mechanism.

In 1980, U.S. Steel again filed a dumping suit. After a short suspension, the Carter Administration revised the TPM to transfer the responsibility from the Treasury Department to the Commerce Department and further provided a "surge mechanism." The latter was designed to monitor rapid increases in steel imports by product line and thus

further expedite the government's response to the dumping of imported steel. The U.S. Steel suit was then withdrawn.

During the interim, Congress passed the Trade Adjustments Act of 1979 which incorporated many of the changes made in the Tokyo Round of the General Agreement on Tariffs and Trade (GATT).

In retrospect, the Trigger Price Mechanism seems to have worked largely as a form of voluntary restraint on price cutting during times of economic downturn in the world steel market. The Japanese, who were the principal source of the domestic industry's problems in 1977, seemed quite content to stabilize their share of the U.S. market at the higher prices that resulted from the imposition of the TPM. For varying periods of time, the Europeans and the Third World countries also abided by the TPM arrangements.

However, these countries were particularly hard hit by the escalation in oil prices that began in 1979. Not only were their economies depressed, but the need for U.S. dollars to pay their rapidly inflating oil bills produced economic and political pressures to increase steel and other exports to the U.S. during 1980 and again in 1981. The record interest rates, which resulted from the watershed change in monetary policy by the Federal Reserve Board in October of 1979, caused a dramatic rise in the value of the dollar relative to other currencies, thereby altering drastically the comparative costs of manufacturing steel in favor of foreign producers.

Given these economic incentives, European and Third World producers found little difficulty in devising means to circumvent the Trigger Price Mechanism. When imports began to rise again in 1981, the Commerce Department was arguably slow to institute its own dumping

suits. In part, this was a technical problem resulting from the shipping-time differential between the signing of contracts for the purchase of imported steel and the actual arrival of shipments at the United States ports. After that, another month passed before the customs data recording those shipments reached the Commerce Department. In any event, the Commerce Department suits were not sufficiently comprehensive, nor timely, to prevent serious harm to the domestic industry during the latter half of 1981.

Consequently, suits were filed by the domestic steel companies that alleged both dumping (the sale of imported steel at less than "fair value") and violation of the countervailing duty provisions of the Trade Adjustments Act of 1979, which are designed to counter subsidized imports. Further, the specialty steel companies have filed a suit under Section 301 of the Trade Act of 1974. Both the carbon and specialty steel suits are aimed largely at the Europeans and certain Third World producers, although further legal actions are under consideration which would expand the range of countries charged with unfair trade practices. The carbon steel firms allege that the European subsidies range between $125 and $533 per ton. By contrast, most carbon steel sells between $500 and $650 a ton in the U.S., although some specialty products command prices of up to $2,000 a ton.

On February 18, 1982, the International Trade Commission (ITC) made a preliminary finding of injury in cases involving 85% to 90% of the tonnage and value of the imports that were the subject of the carbon steel suits. On February 26, 1982, the Office of the U.S. Trade Representative agreed to accept the specialty steel suit under the Section 301 procedures.

The carbon steel cases now rest with the Commerce Department which has until June 10, 1982 to make its preliminary findings on the extent of the countervailing duty violations and to make its preliminary recommendations on the size of the duties to be imposed. It has until August 9, 1982 to take similar action with regard to the antidumping cases. Duties will be imposed retroactively to those dates. While the industry (and the importers, for that matter) may appeal the Commerce Department determination, the Administration has substantial discretion in the settlement of these suits.

The public position of the Reagan Administration on matters involving steel trade is confusing. No previous Administration has ever permitted a major dumping suit to proceed to final resolution. There is no generally accepted methodology for computing comparative costs and, therefore, the extent of dumping. Nor is there a generally accepted methodology for computing subsidies and, therefore, the extent of countervailing duties. Further, one of the options the Administration has is to find that the offending countries have voluntarily reduced or restrained the amount of steel dumped to the point that no injury of any substance afflicts the domestic industry.

While all of these determinations are subject to judicial appeal, legal precedents are insufficient to predict an outcome. To complicate things further, the State Department -- which has always been concerned with relations with our allies and has argued that any actions which might effectively preclude large amounts of foreign steel from reaching the U.S. market might bring retaliation against U.S. exports of other commodities -- has maintained, at least to date,

that it would defer to the Commerce Department and take no active role while the suits are pending.

Privately, most of the steel company officials interviewed have indicated an expectation that a negotiated settlement with the Europeans is likely. Unlike 1977, when U.S. Steel broke with the rest of the industry and the Union to oppose any form of quotas, most companies now believe that quantitative restrictions are the only practical solution to the problem of subsidized imports. Most would prefer an all-encompassing international agreement similar to the Multifiber Agreement which the U.S. negotiates with other textile-producing nations.

The Administration remains, thus far, steadfastly opposed to quotas. And the steel companies maintain steadfastly that they intend to pursue the legal remedies available to them under our trade laws. They are very skeptical of voluntary restraint solutions because the TPM has twice broken down under economic pressure in the four years of its existence. Although several countries, notably Japan, still appear to adhere to the TPM, it was formally withdrawn by the Reagan Administration upon the filing of the dumping cases. There has been much speculation that the threat of full pursuit of these cases will ultimately compel the Europeans to "sue for peace."

Tax Policy

The 1981 Tax Act brought more relief than the Tripartite Committee contemplated. The accelerated depreciation provisions brought the industry's tax status much closer to that of many of its international competitors, particularly the Canadians. It should be noted, however, that accelerated depreciation is useful only to

companies which make money and only on investments which pay out quickly enough to compete with alternative means of employing capital funds within the corporation. This would suggest that these provisions will be of little use to many steel companies over the near term. However, should the industry achieve substantial market improvement, which implies a long-run solution to the import problem, accelerated depreciation could generate much of the capital needed for the development of a modern, efficient domestic steel industry.

The leasing provisions in the 1981 Tax Act have been of substantial benefit to most steel companies already. According to officials of several firms, they were the difference between profit and loss in 1981 in their steel operations. At least one firm alleged that not only its modernization program, but its continued viability as an ongoing concern, is contingent upon the leasing provisions in the 1981 Tax Act. The recent suggestions by certain Members of Congress and the Administration that either the leasing provisions may be eliminated or a minimum tax imposed upon firms which employ those provisions have caused substantial concern within the industry as a whole.

Environmental Policy

A major difference between the domestic steel industry and its foreign competitors has been the adversarial relationship between the U.S. industry and the government. One of the most promising programs which came out of the Tripartite Committee was a consensus agreement on environmental relief for the industry from certain provisions of the Clean Air Act. The steel "stretch out" bill, passed last summer, gave the industry three additional years to comply with the 1982

requirements of that Act by permitting steel firms to "stretch out" their compliance schedules, provided that the companies committed equivalent funds to capital improvement projects over that same time frame.

The rationale was that the industry should not be burdened with retrofit requirements while constructing new facilities that would meet the Clean Air standards. Companies were required to commit to spending for new capital projects at least equivalent to the cost savings resulting from the delay in compliance with the Act.

The "stretch out" proposal came from the Tripartite Committee and represented an agreement between the steel companies, the steel workers and the Natural Resources Defense Council representing the interests of environmental groups. Part of that agreement, reflected in the legislation, provided that any company applying for "stretch out" be in compliance with existing consent decrees, except for de minimis violations. Because modification of an existing consent order requires the concurrence of the Federal Court, Justice Department clearance of any "stretch out" agreement is required. The Justice Department has construed the de minimis language (agreed to by the companies) to mean just that. The Department would likely oppose any changes in existing consent decrees of those steel firms more than minimally out of compliance with existing schedules. Consequently, only four companies, Rouge Steel, Sharon Steel and two smaller companies, have obtained preliminary approval and it appears that Inland Steel may yet obtain Environmental Protection Agency (EPA) clearance. The other nine firms which have applied for "stretch out"

have received no final word. Approval, however, seems unlikely at this point.

Each of the steel companies has its own "horror stories" regarding administrative delays at EPA and Justice. National Steel, like Armco and perhaps others, has given up entirely and is relying on "bubbles" to achieve compliance. The delays have meant that a number of firms that relied on "stretch out" relief may find it technically impossible to meet the December 31, 1982 deadline in the Act.

Apart from "stretch out", the industry does not appear to have the same intensity of concern about environmental costs that it has expressed in the past. This seems to be largely because of the industry's perception of sympathy from the new Administration at EPA. However, many companies have complained that the change in policy has yet to "trickle down" to the regional level, at least in enforcement cases.

Most notably, the industry expects administrative relief from the stringent effluent guidelines proposed by EPA under the Carter Administration pursuant to the Clean Water Act. Those guidelines, which govern the discharge of pollutants into waterways, are expected to be issued in final form shortly. The industry also expects EPA to revise substantially the primary air standards, the health-related standards established pursuant to the Clean Air Act which dictate the stringency of controls required in State Implementation Plans (SIP's) and permits for individual facilities.

The changes that the industry seeks in our air and water pollution control laws themselves involve provisions which do not currently impose costs on steel companies. The industry still worries

about secondary air (non-health based) standards and would like the Clean Air Act amended even though no timetable exists for development and implementation of those secondary standards. The industry also still publicly maintains concern that the "zero discharge" goal written into the Clean Water Act may someday result in regulatory activity, although this position appears to have very little credibility.

Monetary Policy

It is arguable that the government policy most directly responsible for the decline in the domestic steel industry, at least in recent years, has been high interest rates. Not only have the record interest rates of recent years impacted the industry directly, they have reverberated throughout the national and world economies and are rivaled only by energy shocks as a source of disruption of national and international markets.

The most direct impact on the steel industry has come from the secular rise in long-term interest rates. Throughout the 1970's, interest rates increased relentlessly. This has made it virtually impossible today for a profit-maximizing firm to commit to long-term capital spending projects. In calculating competing uses of limited capital funds, business firms customarily apply discount rates that are somewhat above expected long-term interest costs, as a means of comparing the relative profitability of competing projects. In an economy where AAA bonds bring yields regularly in excess of 15%, the discount rate applied to capital projects is often in the range of 20%. Therefore, any project which takes over three to five years to pay out is usually dismissed by rational capital planners.

Since modernization in the steel industry regularly involves evaluating capital projects in the tens and hundreds of millions of dollars, which also have very long payouts, those projects fare poorly when there are competing opportunities for the use of capital. This is particularly relevant to firms that are already diversified, but also applies to other steel firms which must decide whether to reinvest in the industry or to take the cash flow generated by the steel business and invest elsewhere.

Within the steel industry, there are exceptions because certain capital investments must be made in order to avoid forfeiting the capital already sunk into a mill. For example, the relining of blast furnaces may cost millions of dollars, but if they are not relined the entire hot metal operation of a particular mill must shut down.

Not only are direct investments in the steel industry at jeopardy because of long-term interest rates, the capital spending plans of the traditional customers of the steel industry face the same limitations of the "bottom line" of their financial statements. The effect can be seen in the continual deterioration of the manufacturing sector as a percentage of the domestic economy. High long-term interest rates, combined with an accelerated depreciation program, tend to shift investment toward rapid pay-out equipment, such as computers and other products of high technology industries which can increase a firm's productivity with relatively small capital investment. Large, steel-intensive projects, such as the construction of new

manufacturing facilities, tend to be postponed pending a more "rational" capital market.

Short-run interest rates also impact negatively on the steel industry, particularly the integrated producers who have invested heavily in flat-rolled facilities. Traditionally, one-third of the market for steel was in consumer products. At least one integrated firm now estimates that the decline in the automobile and appliance industries has reduced steel demand from the consumer sector to no more than 22% of total steel sales. This, combined with increased import penetration, has devastated the sales of flat-rolled products.

There is little dispute that high interest rates have contributed substantially to the depression in the auto industry. The demand for appliances, the second largest use of flat-rolled products, is directly related to the construction of new housing. When the impact on these two industries of the interest rates that the economy has experienced for the past two-and-one-half years is combined with the general slowdown in economic activity associated with tight money, it is very easy to see why the integrated steel firms are in serious trouble. The problems of these firms are further complicated by the fact that excess capacity in flat-rolled lines was built in the late 1960's and early 1970's before the downsizing of automobiles and the downturn in domestic auto sales began. Consequently, many mills designed to ship to the auto industry are in serious jeopardy.

The public policy implications of the problems associated with flat-rolled steel, the prices of which have been depressed for a decade or more, become even greater when the changing demands for product quality by the auto companies is factored into the equation.

Japanese firms, which function under an entirely different capital structure, are currently constructing five new coated product lines which will substantially improve the ability of the Japanese auto industry to warrant their automobile bodies against corrosion. It is reasonable to assume that as the Japanese improve the quality of their autos, American car manufacturers will demand similar improvements in the quality of domestic flat-rolled products. This is precisely the sector of the U.S. steel industry which is least able to generate the profits to justify capital expenditures for construction of entirely new rolling equipment.

Antitrust Policy

Yet another aspect of government policy which may adversely affect the domestic steel industry involves certain applications of our antitrust laws. In 1978, two of the largest domestic steel producers, Youngstown Sheet and Tube and Jones & Laughlin Steel, both subsidiaries of conglomerates which had purchased them a decade earlier, appeared ready to fold. After considerable debate within the Carter Administration, and allegedly only after the personal intervention of Attorney General Griffin Bell, the Justice Department permitted the firms to merge under the "failing company doctrine". At the time of the merger, it appeared highly unlikely that the combined firm would be able to prosper. However, with the shutdown of some obsolete facilitea and the introduction of aggressive management techniques, plus the fortunate positioning of the firm in the oil country goods industry, the surviving firm, Jones & Laughlin, has achieved what is generally considered a truly remarkable turnaround.

Integrated steel mills apparently can no longer be built profitably on a "greenfield" basis in the United States. Because of the large sums of money involved in each segment of an integrated operation, capital investment in the steel industry has traditionally proceeded on a "brownfield" basis. This means that every integrated mill has certain facilities that are more modern than the rest of the plant. Thus, particularly in those firms heavily involved in the production of flat-rolled products, a serious question can be raised as to whether either direct mergers or modifications of the antitrust laws to permit joint use of certain facilities might not make viable otherwise uncompetitive mills.

Another facet of antitrust policy which may hinder significantly the U.S. steel industry to the benefit of its foreign competitors involves research and development. The European and Japanese firms apparently do not suffer the same restrictions placed on the U.S. industry in the joint development of new technologies or improved processes.

In lieu of direct sharing of information among competing firms, another public policy option would be to revive and expand the role of government organizations, such as the Bureau of Mines, in the development of such technologies. At minimum, the government might provide a mechanism for testing and experimentation with such technologies, the results to be shared with all firms in the industry. For any firm to interrupt its normal operations -- for example, to test potentially improved feedstock for iron making in its blast furnace -- would involve enormous costs that hardly could be justified on the basis of theoretical probabilities for success. On the other

hand, facilities exist at mills which have been shut down, that the government might be able to resurrect and use for such experimentation.

Other possibilities along this line would involve government assistance to firms for the building of pilot plants to test new coking technologies. Such public investments could potentially yield energy savings consistent with a national conservation policy.

Government Capital Programs

Yet another aspect of government policy which must be examined involves potential direct and indirect subsidies to the steel industry. This issue is particularly important to consider if political relations with our traditional trading partners are deemed to be too sensitive for any long-term solution to the import problem. All other important steel-producing countries provide some form of direct or indirect subsidy to their industries, consistent with a national development policy and/or employment strategy.

As part of the Solomon "solution" to the 1977 steel crisis, the Carter Administration dedicated Economic Development Administration (EDA) funds sufficient to provide 500 million dollars in guaranteed loans for modernizing the domestic steel industry. This program achieved some limited success and some notable failures (Wisconsin Steel went bankrupt shortly after receiving a large EDA loan). The Reagan Administration is seeking to terminate the entire EDA program.

Most of the companies interviewed have expressed the strongest opposition to any form of governmental involvement in their investment decisions. Surprisingly, this includes some companies which have been the recipients of EDA loans. They fear that loans, grants or other

forms of direct governmental aid, which might be used to offset the subsidies granted by foreign governments to their competitors, will result in increasing encroachment on managerial discretion and ultimately lead to substantial government control of the industry. While there are a few company officials who see some benefit to low interest loans, the larger firms in the industry seem certain to oppose any financial aid to their domestic competitors.

Over and above the issue of government control, part of the opposition to a program of government support (presumably through low interest loans) centers on the fact that EDA funds in the past were largely used to aid failing companies. An alternative approach might be to provide some form of low interest capital to modernization projects which are clearly viable, save for the present high cost of money.

One of the serious problems affecting the ability of U.S. firms to compete with foreign steel is the structure of foreign steel industries. Some two-thirds of the European companies are owned by their governments. The rest are heavily subsidized. Certainly, the European experience suggests that such a program of direct government assistance targeted to the steel industry could well lead to an industry that is ultimately so dependent on the Federal government that economic decisions become totally subordinate to political considerations. However, both the Japanese and Canadian experiences suggest that there are alternate models of government-management cooperation that might provide useful lessons to government policymakers.

The Japanese industry was apparently constructed as part of a comprehensive national development plan which was designed to permit the country to acquire substantial export revenues while providing the necessary inputs for the development of other industries. The Japanese achieved this to a large extent by building their industry on a debt, rather than an equity, basis. While ownership remains in private hands, at least 80% of the Japanese steel industry was built on borrowed capital. The Bank of Japan, the Japanese trading companies, and the Japanese government participate jointly with the Japanese steel companies in developing and maintaining a rational, modern and highly productive industry.

The Canadian model is based on an import policy which permits foreign steel to enter the country during times of high demand but limits severely the import of steel during economic downturns. This policy, plus the fact that Canadian firms export excess production to the U.S. market, permits Canadian steel companies to produce consistently at very high, and thus very efficient, operating rates and has made the Canadian industry the most profitable in the world.

One of the big issues dividing the Steelworkers Union and the companies on government policy toward the industry, concerns whether or not the government should require that additional revenues, accruing to the companies from import restraint or other governmental policies, be reinvested in existing steel communities. The companies have opposed vigorously any such restriction and the Union has not, in the past, succeeded in translating its position into public policy. This, however, may change as the quality of life in steel communities continues to deteriorate.

Human Resource Policy

One of the most important indirect approaches of the Carter Administration to deal with the steel crisis was to expand the eligibility requirements for Trade Adjustment Assistance (TAA). Under that program, almost 150,000 steelworkers were eligible for temporary supplemental unemployment payments because their layoffs were attributable, at least in part, to increased imports. The Trade Adjustment Assistance Program was also designed to provide job retraining to ease the individual misery associated with plant shutdowns. The job retraining program was not successful. The Reagan Administration has already drastically reduced TAA benefit payments and seeks to eliminate them entirely on July 1, 1982.

As the domestic industry continues to contract, the human cost mounts geometrically. Many steel mills are located in communities where no equivalent employment opportunities exist or are likely to exist. Thus, the human cost of the decline in steel industry employment extends far beyond the income loss to the individuals involved. A multiplier effect ratchets through the community, impacting small businessmen and decimating the local tax base, thus resulting in decreased government services and a continued deterioration in the quality of life.

Studies have shown that even after several years of "readjustment," most displaced steelworkers do not attain 75% of their previous income, even those fortunate enough to find employment with other manufacturing firms. Besides the direct loss in wages and benefits, the majority of workers have most of their savings tied up in the equity of their homes. When the principal employer in a community

ceases to do business, the market value of those houses and, thus, the savings of the workers employed at the mill or in businesses dependent on the prosperity of the mill can be wiped out. This has grave implications for the ability of the individual workers and their families to relocate.

A longer-term problem was raised in a recent speech by Fred Jaickes, the Chairman of Inland Steel. He suggested that the true cost to our society of the fallout from the permanent decline of the heavy industry sector of our economy may be greater than economists and accountants can measure. Contrasted with the high technology and other light industry employment which is growing in the United States, industries like steel provided opportunity for upward mobility to those workers who did not have the advantage of formal higher education. Mr. Jaickes pointed out that such a worker in a steel mill had a real opportunity to work his way up to foreman, and even higher in the managerial structure of the company, without the necessity of acquiring additional formal education. Such is not generally true in the high technology fields. Those industries require managers with substantial formal training.

Mr. Jaickes' analysis could be carried a step further. Many production and maintenance jobs in the steel industry require years of experience, involve a considerable degree of discomfort and, in a number of cases, physical danger. They are, accordingly, well compensated compared with the average production job in many other industries. In the past, this permitted lifelong steelworkers to provide educational opportunities for their children and thus promoted intergenerational upward mobility. As blue collar jobs in high paying

industries such as steel, auto and rubber disappear, an important part of the consensual basis of our society may be placed in jeopardy.

THE STEEL INDUSTRY IN TRANSITION

The Congress of the United States
Congressional Budget Office

INTRODUCTION

The domestic steel industry is in a period of transition. The centralized, fully integrated industry is changing to one that is more decentralized, diversified, and competitive. This transition has already been marked by a decline of the large, integrated producers in terms of market share, profitability, and employment. Their place in the market has been taken by smaller, nonintegrated domestic steelmakers and by imports.

The purpose of this paper is to present a general overview of these events and to describe the prospects of the industry over the coming decade. This paper summarizes background research undertaken for the Subcommittee on Oversight and Investigations of the House Energy and Commerce Committee. Its contents include:

- A description of the recent performance of the integrated steel producers;
- An examination of the factors affecting that performance;
- A summary of the current federal role in the steel industry; and
- Projections regarding the performance of the steel industry over the coming decade if current federal policies and industry conditions remain unchanged.

The domestic steel industry includes seven corporations with annual sales in excess of $1.5 billion, and another 30 or so smaller firms. All of the large firms and several of the small firms are known as integrated producers--they are involved in all steps of the steel production process from iron ore and coal to steel plates, coils, bars, or tubes. The rest of the firms, the nonintegrated steelmakers, typically do not refine steel from iron. Rather, their source of raw material is scrap steel, which they melt and reprocess. Some small firms use modern highly productive technologies to fabricate steel into basic products for regional markets. Other firms manufacture specialty steels such as stainless steel, grain-oriented steel, tool steel, and special alloys.

This paper focuses on the large, integrated producers of carbon steel--U.S. Steel, Bethlehem, National, Armco, Inland, LTV, and Republic--because the future of the integrated steel industry is the subject of most of the current policy debate, and is the sector with the most problems. If current federal policies and industry conditions continue, the 1980s are

likely to witness a steady, though not dramatic, erosion of the market share, profits, and labor force of the integrated steel firms, which in 1981 provided 72 percent of the nation's supply of steel. By contrast, importers and nonintegrated domestic steelmakers are likely to increase their market share during this transition. Accordingly, increases in employment and investment by nonintegrated producers will, to a degree, compensate for the decline of the integrated sector.

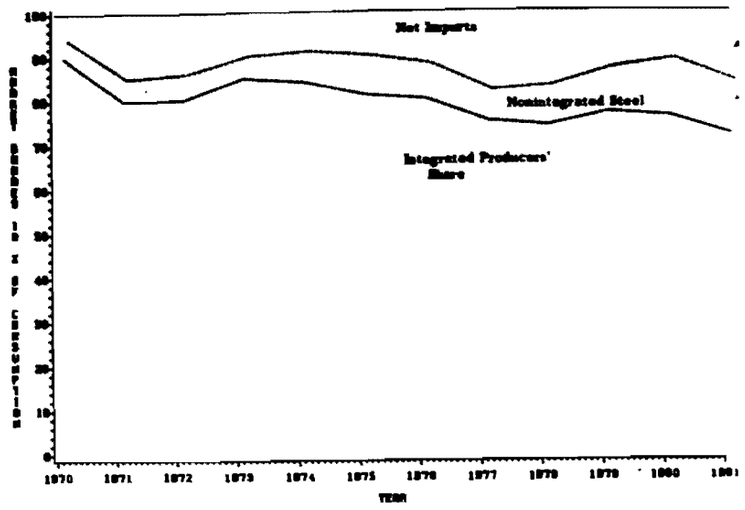
THE DECLINE OF THE INTEGRATED STEEL PRODUCERS

The domestic integrated iron and steel industry is slowly but steadily contracting. Total demand for steel products in the United States did not increase during the 1970s, and domestic integrated producers lost markets to domestic nonintegrated producers and to imports. The integrated producers held roughly 83 percent of the domestic market from 1970 through 1975, but their share fell to about 72 percent by 1981, as shown in Figure 1. To some extent, the decline of the integrated producers has been counterbalanced by the growth of the nonintegrated firms. Shipments from nonintegrated producers tripled during the 1970s, and attained a market share in 1981 of 12 percent. 1/ The nonintegrated producers cannot, however, by the nature of their technology, expand into a majority of the markets and product lines. About two-thirds of all steel consumed are flat-rolled products requiring large rolling mills. It would not be economic for small nonintegrated firms to enter such markets.

More important than the shift of market share has been the effect of intense price competition from abroad. Excess capacity in international markets has led to low profit margins for virtually all products and all producers--integrated and nonintegrated alike. U.S. integrated producers' combined annual real income after taxes, from 1975 through 1980, has been about 50 percent of what it was during the decade of 1965 to 1975.

The steel industry is highly cyclical, and this characteristic, shown in Figure 2, often masks long-term trends until they are far advanced. The industry depends on substantial profits in good years to compensate for low profits during off years of the business cycle. In the most recent upswing, however, profits did not recover, and some firms in the industry may be financially unable to survive the lean years ahead. Its cyclical nature also injects an element of risk into the steel industry that reduces its overall attractiveness to the investment community. The stock market has not been slow to notice this risk, and the decline in profitability; so a typical share of steel company stock today sells for less than 40 percent of its book value.

FIGURE 1. MARKET SHARES OF IMPORTS, INTEGRATED AND NONINTEGRATED FIRMS

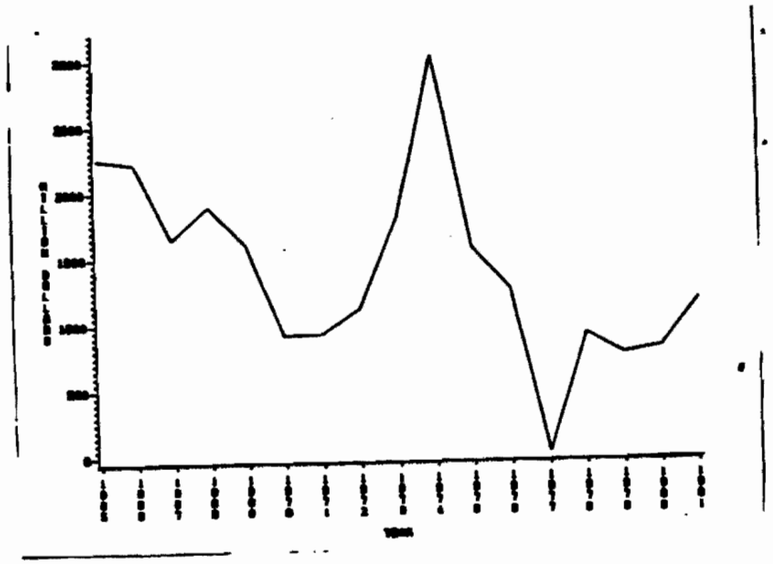


SOURCES: American Iron and Steel Institute, Annual Statistical Report (1980).

Joseph Wyman, Steel Mini-Mills (Shearson Loeb Rhodes, Inc., 1980).

CBO estimates.

FIGURE 2. REAL NET INCOME FROM INTEGRATED STEEL PRODUCTION
(In millions of 1980 dollars)



SOURCES: American Iron and Steel Institute, Annual Statistical Report (1980).

Annual reports of individual companies.

"Steel Profits Rebound in 1981," Iron Age (February 19, 1982).

This financial decline has been accompanied by a low rate of investment in basic steelmaking. If a firm loses profitability, it also loses the ability to generate funds to invest, and thereby finds it more difficult to be profitable in the future. Domestic steel producers have fallen into this downward spiral. Figure 3 illustrates how the integrated steel industry has fallen short of other industries, such as paper and wood products, in generating internal "cash flow" for investment. As a percentage of sales, cash flow for the steel industry has averaged 7.7 percent since 1970, compared with 9.3 percent for all industry. 2/ The industry can also generate investment funds externally by selling stock, or acquiring more debt. But the steel industry has not been aggressive in pursuing external financing, in part because prospective investors recognize the poor cash flow and profitability, and place a high risk premium on steel company investments. Since 1970, aggregate return on invested capital has averaged 6.8 percent for steel firms compared with 14.6 percent for all domestic manufacturing industries. When income from non-steel subsidiaries is excluded, return on invested capital in steel is between 3 and 6 percent, compared with a cost of capital of 15 to 18 percent. 3/ Until recent years, the industry was also reluctant to sell assets (such as coal reserves) or to use capital generated by non-steel operations to provide investment capital.

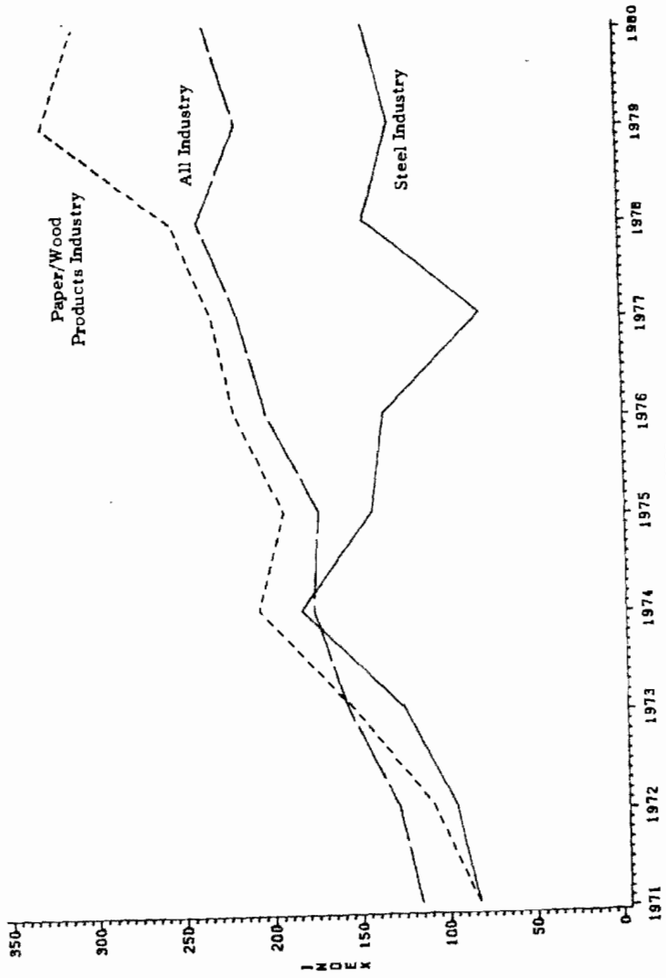
Just to maintain facilities—or to replace them as they physically depreciate on a 25-year cycle—requires capital expenditures in steelmaking of between $4 billion and $5 billion per year, by the industry's estimate. 4/ Because of poor prospective returns from investment the integrated industry has not attained this level of investment since 1970.

The decline of the integrated steel industry has led to reduced employment. In the decade before 1974, employment in the industry varied between 500,000 and 550,000. But since 1974 it has fallen to about 391,000, a drop of about 3.8 percent per year since 1974. The decline in employment has resulted as much from increases in productivity as from lack of growth. By contrast, employment by nonintegrated producers has increased to about 30,000 due to expansion of capacity, as shown in Figure 4.

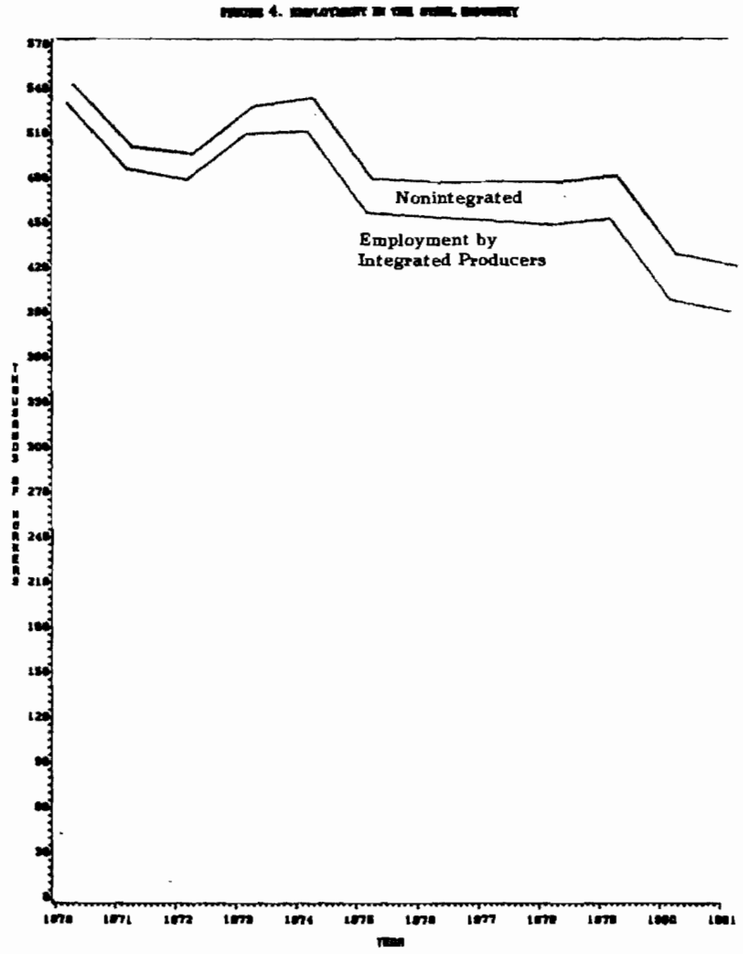
CAUSES OF THE DECLINE

The decline of the integrated producers during the past decade has its roots in several factors. First, the demand for steel has been stagnant, not only in the United States but in the rest of the non-Communist world as well, accompanied by significant overcapacity worldwide. Second, competition from foreign producers and nonintegrated domestic firms has depressed prices and eroded the market share and profitability of the integrated steel companies. Third, the rate of change of labor costs has exceeded produc-

FIGURE 3. COMPARISON OF CASH FLOW



SOURCES: Steel-Coal, Basic Analysis (Standard and Poor's Industry Surveys, October 30, 1980).



SOURCES: American Iron and Steel Institute, Annual Statistical Report (1980).

Annual reports of individual companies.

CBO estimates.

tivity gains, thus reducing the ability of the integrated firms to compete on the basis of price. And finally, other factors including management, lack of innovation, environmental regulations, and tax policy have also figured in the situation of the integrated steelmakers. In what follows, each of these factors is addressed separately.

The Demand for Steel

The United States is affected by the world steel market because supply and demand conditions in foreign countries exert a strong influence on domestic prices. World demand since 1974 has been stagnant because of slow economic activity, price increases, and the substitution of other products for steel. Steel use in developed nations has declined relative to real GNP by about 21 percent between 1970 and 1981. Most producers did not foresee this decline and continued to expand capacity during the period. As a result, the free world's aggregate capacity utilization rate (operating rate) has not exceeded 75 percent since 1974. Because many producers cannot operate profitably at such low rates, competition has been intense, and most producers have been cutting prices in order to increase their sales.

Competition in Steel Production

The salient condition affecting world steel markets is overcapacity. In 1981, raw steel production capacity in the free world was 665 million tons, but only 455 million tons were produced. 5/ Because of this, many foreign producers sell steel in the United States at prices below their average cost. At the same time the nonintegrated domestic producers, with their inherent cost advantages, compete more successfully in regional U.S. markets. The result is lower profitability and reduced market share for the domestic integrated steelmakers.

Foreign Competition. In recent years, the steel-producing nations that compete with the United States have evolved into three groups: high-technology, high-cost producers, including most European nations; low-technology, low-cost producers, including most developing nations; and high-technology low-cost producers, primarily Japan and Canada. Each of these groups has unique advantages and disadvantages in the American market. Table 1 shows the principal steel-producing nations and their exports to the United States.

The overcapacity problem is most acute in Europe because European demand is depressed, and steelmakers there have lost many traditional export markets in developing countries to new producers in those nations.

TABLE 1. MAJOR COMPETITOR NATIONS: STEEL CAPACITY, PRODUCTION, AND EXPORTS TO THE UNITED STATES

	1981 Steel Shipment Capacity (millions of tons per year)	1981 Shipments (million of tons per year)	1981 Exports to U.S. (thousands of tons)	Percent of Production Exported to U.S.
United States	115	84	---	---
High-Technology, High-Cost Producers				
West Germany	56	37	2,165	7
France	26	19	1,290	8
Belgium-Luxembourg	23	15	1,110	9
Italy	29	20	768	6
United Kingdom	24	17	575	4
High-Technology, Low-Cost Producers				
Japan	124	79	6,220	8
Canada	15	12	2,900	25
Low-Technology, Low-Cost Producers				
South Korea	7	6	1,220	24
Spain	12	10	730	8
Brazil	12	11	550	6
South Africa	8	7	370	7

SOURCES: AISI, Annual Statistical Report (1980), and Imports of Iron and Steel Products (1981).

Charles Bradford in Steel Industry Quarterly (Merrill Lynch, February 1980), p. 32.

International Iron and Steel Institute, Map of World Steel Production and Consumption (1981).

NOTE: For clarity, the statistics for capacity and production are measured on the basis of tonnage shipped from mills, not on the more common basis of raw steel produced.

As a result, the United States has become the Europeans' largest export market.

Most European steelmakers have been unprofitable in every year since 1974, primarily because of overcapacity. They have poor access to markets and raw materials, as well as high labor costs and low productivity. Much evidence suggests that the price of European steel landed at United States ports has been below the average cost of European producers. In many cases, it appears that the European producers have cut prices of exports below their production costs in order to sell their products and maintain employment in their mills.

Subsidies in various forms have become increasingly important in the last eight to ten years, and tend to preserve the ability of European steelmakers to sell exports below cost. These subsidies are a continual element of public and political debate in Europe. 6/ Since 1976, European countries have spent the equivalent of about $14 billion in steel subsidies—or $46 per ton produced. 7/ For example, in February 1982, the European Economic Community approved a coordinated subsidy program by its member governments worth an additional $1.4 billion during 1982. 8/

High-technology, low-cost producers such as Japan and Canada find that they too must operate at low rates because of the depressed market. Except for high-value specialty products such as seamless pipes, they too are losing profits to producers selling below production cost. Low-cost, low-technology producers have less flexibility in adjusting product lines to meet markets, so they are also affected by the price cutting. Although their production costs are low, both Brazil and Spain have had suits brought against them by U.S. steelmakers charging that they have sold below cost in order to meet competition.

International Cost Comparisons. It will be helpful to make some broad comparisons of production costs in order to determine whether the U.S. industry can expect in the long run to compete profitably with imports. In this paper, production costs are defined as the weighted average costs for all carbon steel produced within a nation.

International cost comparisons must be used with caution. Considerable ambiguity surrounds the cost data for foreign producers, and fluctuations in exchange rates and operating rates can shift apparent costs markedly. Nevertheless, some general conclusions can still be drawn. First, the historic advantage of the United States in raw materials costs no longer exists. As Table 2 suggests, material costs for U.S. steelmakers are somewhat higher than those in West Germany and Japan, due primarily to German and Japanese exploitation of new ore reserves and to lower shipping

TABLE 2. COST COMPONENTS FOR WEST GERMANY, JAPAN, AND THE UNITED STATES IN 1981, ACCORDING TO SEVERAL SOURCES

	West Germany (dollars per ton)			Japan (dollars per ton)			USA (dollars per ton)
	a/	b/	d/	a/	c/	d/	d/
Production Costs							
Materials			274		252	294	326
Labor			143		107	111	184
Financial			56		109	104	43
Total		521	473		468	509	553
Transportation Costs	71		71	81	110	81	—
Total Cost			544		578	590	553
Operation Rate (percent)		62			58		75
Exchange Rate (per dollar)		2.29			222		—

NOTE: Estimates have been adjusted in order to be comparable.

SOURCES:

a/ Council on Wage and Price Stability, Prices and Costs in the United States Steel Industry (October 1977), p. 74.

b/ U.S. Steel, Petition for Relief: West Germany (1981).

c/ Department of Commerce, reported by Charles Bradford in Steel Industry Quarterly (Merrill Lynch, February 1982), pp. 36-37.

d/ Peter Marcus, World Steel Dynamics: Core Q (Paine, Webber, Mitchell, and Hutchins, Inc., September 1981).

costs. Second, foreign producers have lower labor costs than domestic steelmakers. Although labor input per ton produced in West Germany and Japan is similar to that in the United States, the wage rates for steelworkers are lower in those countries. Third, U.S. steelmakers remain competitive in domestic markets because of lower financing costs and because they pay no transportation charges to reach the United States. The low finance costs are due to relatively low debt levels of domestic producers, and to low levels of capital investment.

Relative advantages in production costs fluctuate markedly with operating rates and exchange rates. With regard to operating rates, the United States' apparent cost advantage over Japan in 1981 was due in large part to much higher operating rates in this country during the first three quarters of the year. This advantage disappeared entirely during the last quarter when both nations' steel producers operated at similar rates. Table 3 illustrates U.S. landed production costs for several countries at different operating rates. The table shows that a relatively higher operating rate is one reason for the favorable U.S. cost position in 1981. If business conditions change so that U.S. producers' operating rate is similar to that of Japan or West Germany, this advantage could erode.

Exchange rate fluctuations can also alter apparent relative costs very quickly. For example, the West German cost advantage in 1981 was primarily a result of the depreciation of the mark by 26 percent against the dollar. Apparent German production costs changed from a relative disadvantage of $64 per ton in 1980 to an advantage of $9 per ton in 1981. These factors illustrate the volatility of relative cost advantages, and also suggest that domestic steel could be quite capable of competing with imports if the imports were priced at their apparent average production cost plus transportation. However, there is some evidence to suggest that they are not.

Many analysts have argued that some, but not all, foreign steelmakers sell in U.S. markets at prices lower than average production costs. For example, Figure 5, drawn from data by Peter Marcus of Paine Webber and by a Petition for Relief filed by U.S. Steel, compares aggregate production costs per ton for French and German producers with the revenues realized for their exports to the United States. (The Germans have typically been the most efficient of the European producers, while the French have been about average.) These data indicate that the average cost of producing a ton of steel in West Germany and France substantially exceeds the revenue received for the steel in United States markets. One result of this price competition has been to keep U.S. steel prices low enough to discourage investment in new capacity.

TABLE 3. LANDED PRODUCTION COSTS OF SELECTED COUNTRIES AT DIFFERENT OPERATING RATES IN 1981 (In dollars per ton)

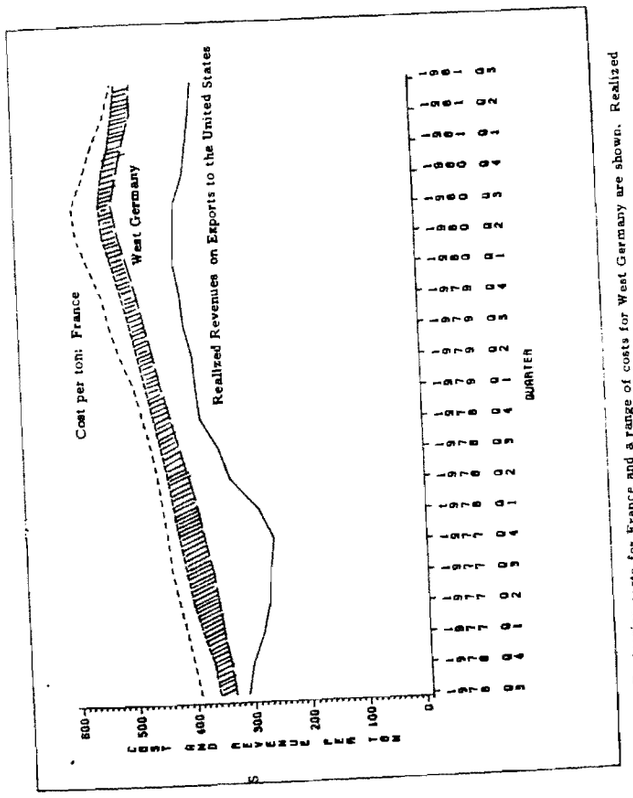
	USA	Japan	West Germany	France	Great Britain
Operating at 70 Percent of Capacity	562	569	534	585	689
Actual Conditions (Operating Rate)	553 (75.0)	590 (58.0)	544 (62.1)	581 (74.6)	706 (61.3)
Operating at 90 Percent of Capacity	534	508	489	545	621

SOURCES: Council on Wage and Price Stability, Prices and Costs in the United States Steel Industry (October 1977), p. 74.

Peter Marcus, The Steel Strategist #4 (Paine, Webber, Mitchell, and Hutchins, Inc., September, 1981).

NOTE: Production costs include freight charges and duties to the port of entry into the United States.

FIGURE 5. COMPOSITE PRODUCTION COSTS AND REALIZED REVENUES PER TON FROM EXPORTS



NOTE: Production costs for France and a range of costs for West Germany are shown. Realized revenues per ton are the same for both nations.

SOURCES: U.S. Steel, Petition for Relief: West Germany (1981).

Peter Marcus, World Steel Dynamics: Core Q and Core S (Paine, Webber, Mitchell, and Hutchins, Inc., September 1981).

Nevertheless, the U.S. steel industry has generally shown a profit, with the exception of net losses in 1977 and 1980, while the European industry has consistently shown operating losses (see Table 4). Foreign producers that export below their production costs apparently do so in order to maintain employment and perhaps also to maintain capacity in the event that demand for steel rises in the future. With this as their goal rather than profits, and with government subsidies to sustain them, European steelmakers appear capable of stiff price competition with the U. S. industry for the foreseeable future.

Domestic Competitors. Imports have not been the only source of competition; in addition, many smaller, nonintegrated domestic steelmakers have prospered at the expense of the integrated firms.

The conventional approach to making steel through an integrated process has been avoided by a number of companies that buy scrap iron and remelt it in electric furnaces to make steel. While the integrated process is highly energy-intensive and reflects the costs of iron ore and coking coal, the nonintegrated process uses much less energy and reflects mostly the cost of scrap. During most of the 1970s, the costs of integrated processes have exceeded those based on scrap steel. The integrated producers expected that scrap prices would increase faster than the equivalent costs of iron ore and coal, but this did not happen. As a result, the nonintegrated producers have thrived and have tripled their production levels since 1970. 9/

The nonintegrated mills have seized the opportunity provided by low-cost raw materials. They have built new facilities in regions where (1) scrap was available, (2) demand for basic products (such as construction materials) was growing, (3) no integrated mills existed, and (4) electricity and labor rates were low. Most of these facilities used nonunion construction and operating personnel and installed highly efficient but flexible processes to produce steel for growing regional markets--particularly those in the South and Southwest. Several of the integrated producers have recognized these advantages and have converted some mills into electric furnace operations. Nonintegrated mills succeeded in capturing markets for certain products from both integrated mills and imports. Table 5 shows how nonintegrated producers have penetrated certain markets--such as wires and bars--and it also shows that the nonintegrated firms cannot compete in markets for about 65 percent of domestic steel products.

The advantages of the nonintegrated firms are low labor and material costs. Some new nonintegrated mills require only 1.5 to 2.5 man-hours per ton shipped. The average for nonintegrated firms is between 4 and 6 man-hours per ton, compared to 8 to 9 man-hours for the average integrated firm

TABLE 4. OPERATING PROFITS AND LOSSES IN DOLLARS PER TON

	United States	Japan	West Germany	France	Great Britain
1981	15	---	(43)	(50)	(75)
1980	(18)	24	(13)	(79)	(218)
1979	35	47	10	(48)	(48)
1978	30	10	(16)	(42)	(67)
1977	(6)	(15)	(46)	(83)	(52)
1976	3	(17)	(18)	(56)	(34)
1975	7	(10)	(26)	(69)	(68)
1974	26	18	39	1	(1)
Average Profit (or Loss) per ton 1/	16	10	(9)	(53)	(59)

SOURCE: Annual reports and preliminary quarterly reports of major operating companies.

Peter Marcus, World Steel Dynamics, Core Q (Paine, Webber, Mitchell, and Hutchins, Inc., September 1981).

1/ Average price per ton was about $300.

TABLE 5. DOMESTIC PRODUCERS' SHIPMENTS COMPARED WITH MARKET SHARE OF NONINTEGRATED FIRMS

	Total Shipments by Domestic Producers (millions of tons)	Actual Market Share of Nonintegrated Firms (percent of specific product)	Potential Market Share of Nonintegrated Firms (percent of specific product)
Flat Rolled Products			
Sheets	33.6	0	0
Coated Products/ Tin Plate	5.7	0	0
Large Structural Shapes and Rails	5.2	5	10
Plates	8.1	5-10	25
Semi-Finished Products	5.3	5	10
Pipe and Tubing	9.1	5	25
Other			
Bars and Small Shapes	13.3	50	85
Wire	1.8	30	100

SOURCE: American Iron and Steel Institute, Annual Statistical Report (1980).

Office of Technology Assessment, U.S. Congress Technology and Steel Industry Competitiveness (June 1980), p. 257.

Personal Conversation with Joseph Wyman, Shearson American Express, February 17, 1982.

in 1981. 10/ At an average labor cost per hour in 1981 of $20.50, the advantage in labor costs for the nonintegrated firm is $60 to $80 per ton. Similarly, the material costs of making steel have averaged $10 to $15 per ton lower for scrap-based processes than for integrated processes. Although the nonintegrated firms have slightly higher financial costs per ton, and produce lower-priced products than the integrated producers, their profits per ton have usually exceeded those of the integrated firms. Since 1974 pretax profit margins of nonintegrated firms averaged 10.0 percent, compared with 3.2 percent for integrated firms. Return on equity has averaged 14.9 percent, compared with 5.9 percent for integrated firms. 11/ As a result, the nonintegrated firms have grown while the integrated firms have contracted.

Labor Costs

In addition to price competition, labor costs have been a primary contributor to the decline of the integrated steelmakers. Labor productivity growth since 1966 was not only slower in basic steel than in any other industry in the United States (except other primary metals), but steel wages also rose faster than any other. 12/ Wage rates in the domestic steel industry have grown so fast in the last decade that compensation for steelworkers in 1980 averaged 176 percent of the average manufacturing wage. Although this can be explained in part by the workers' skill and experience, as well as by hazardous working conditions, the wage differential has become a major cost disadvantage to domestic producers.

Labor costs in the United States in 1981 are estimated to be about $184 per ton shipped, compared to estimates of $143 per ton in West Germany and $111 per ton in Japan. 13/ Domestic nonintegrated producers were able to produce steel products at labor costs of $100 to $130 per ton. Direct comparisons are difficult, however, because some producers rely on contract workers for some of the tasks included in the production process.

If the U. S. industry had continued the productivity gains it attained during the growth period of 1950 to 1970, the high wage rates would not have become a competitive factor. But productivity increases after 1970 slowed considerably. This was primarily because world capacity exceeded demand, and new investment slowed. For example, from 1950 to 1970 the amount of capital stock available per U.S. worker grew at an average of 5.0 percent per year. As a result, tons produced per worker increased by 2.8 percent per year. Since 1970, productive capital has increased by only 0.4 percent per year, tonnage per worker by only 1.0 percent per year. 14/

Management

The industry has also been criticized for management inflexibility—or a reluctance to adjust to changing circumstances. There is no objective way to evaluate the management of an industry, and it is not the intent of this paper to make such an evaluation. However, many of the decisions made by managements of integrated firms have not turned out well either because of sheer bad luck or other reasons. For example, it appears that most integrated firms did not:

- foresee that demand would not grow, and take appropriate action to reduce capacity;
- aggressively pursue cost-saving innovations or develop new product lines;
- realize that scrap would become so plentiful that nonintegrated operations would be less costly than integrated ones;
- control the rapidly rising labor costs;
- use their assets or leverage to increase cash available for investment; or
- anticipate that other nations would subsidize their producers rather than cut capacity.

Decisions on these matters involved high risks. If the integrated steelmakers had been more aggressive, they might be in a better position today. On the other hand, in an industry that is not growing, and with firms that are in a precarious financial situation, a wrong decision can jeopardize a company's whole future. For this reason, management spokesmen believe that they have been prudent, rather than overly conservative.

Innovation

The U.S. steel industry has been innovative in some cases, but slow to adopt new technology in others. For example, several studies have addressed the conversion to basic oxygen furnaces during the 1960s. They conclude that domestic integrated producers were reluctant to introduce oxygen furnaces; however, after the furnaces became a proven and advantageous technology, no major producing country converted its existing plant to an optimal mix of basic oxygen furnaces more rapidly than the United States. 15/

By contrast, the acceptance of another, more recent, innovation--continuous casters--has been quite slow. Continuous casters are able to provide substantial savings of manpower and energy, and reduce the amount of waste steel. Continuous casting also provides a higher quality product. Several countries—Japan, West Germany, and Italy—have installed casters much faster than the United States, and most nonintegrated mills now use continuous casters. Because these casters provide unusually high returns on investment, the reluctance of the domestic integrated firms to invest is difficult to explain. The industry cites the constrained financial situation in the late 1970s and its pessimistic view of the future. Since late 1980, however, construction of 13 new large casters has been announced. These will double U.S. casting capacity in about three years.

On balance, it seems that most integrated firms were not as aggressive in adopting continuous casters as they were with basic oxygen furnaces. This reluctance has added to domestic integrated firms' competitive disadvantage.

Environmental Regulations

The domestic industry has spent about 18 percent of recent capital investment on pollution control—more per unit of sales than any other major industry. 16/ However, competitor nations have also invested in pollution control and some evidence suggests that their investment per ton of output may have exceeded that in this country. Estimated expenditures for European environmental requirements are incomplete, but the control strategies in some countries are similar in effect to those of the United States. In Japan, for example, pollution control expenditures have been at least as great as in the United States. In general, environmental regulations appear to have added about 4 to 5 percent ($15 to $20 per ton) to the world price of steel. 17/

Taxes

Before 1981, the industry claimed that domestic tax rates discouraged long-term investment because the depreciation rates were too slow relative to other industries and other nations. 18/ Until the passage of the Economic Recovery Tax Act of 1981 (ERTA), the United States permitted 55 to 60 percent of investment to be recovered in three years. In contrast, Canada, France, Italy, and Great Britain permitted 75 to 109 percent recovery in three years. 19/ Furthermore, several nations, including West Germany, Belgium, France, and Italy, have encouraged exports by rebating taxes on them. This rebate averages 11 to 20 percent of total tax liabilities

in these countries. 20/ Supportive tax treatment is held by many to be a principal cause of the thriving Canadian steel industry. Canadian aggregate corporate steel taxes as a percentage of profits averaged 6.75 percentage points less than U. S. taxes during the mid-1970s. 21/ However, international comparisons of tax treatment are necessarily imprecise because the basic tax structures differ markedly.

The Economic Recovery Tax Act of 1981 changes the domestic situation fundamentally. It shortens depreciation periods and eliminates the linkage between profitability and taxes by allowing certain tax benefits to be sold. This will be an increasingly important benefit to the industry in the future. By the mid-1980s, ERTA may increase cash available for investment by steel firms by $400 to $550 million per year, equivalent to an increase in cash flow of 12 to 17 percent per year. 22/ Whether these funds will be invested in steel operations, however, is open to question.

CURRENT FEDERAL ROLE

The federal role has three components: trade policy, regulations for health/environmental purposes, and social programs designed to deal with problems of transition and adjustment due to unemployment.

Trade Policy. World overcapacity in steel production was a concern by the end of the 1960s. In 1968, the United States negotiated several voluntary limitations with importers (called Voluntary Restraint Agreements) to avoid what was then viewed as a temporary dislocation in markets due to overcapacity and exchange rates. These agreements lasted until 1974, but were not effective after 1972 because of high world demand. In 1974, the Trade Act was passed. It defined dumping as selling below average production cost (and also used the traditional definition of selling exports below the home market price). When the world supply of steel exceeded demand again in 1977-1978, U.S. imports surged to 18 percent of the domestic market. Domestic producers brought suit under the Trade Act of 1974, asserting that certain imports were being sold below production costs. These suits were withdrawn after the creation of the Trigger Price Mechanism (TPM) in 1978. The trigger price, based on Japanese production costs, was intended to be an indicator of the lowest price that would not constitute dumping, or selling below average production cost. The TPM would be a lower bound for price competition and would limit unit losses due to price cutting. The 1978 TPM had no "surge" provision, or constraint on the quantity imported.

The TPM was modestly effective in providing a price floor as long as demand was high, but when demand declined in 1980, and again in 1981,

importers found that they lost markets. As a result, prices for imported steel--and to a lesser extent, domestic steel--drifted below the trigger price. Because the TPM is easily circumvented, it became ineffective and was abandoned.

Domestic producers brought suit in 1981 under the Tariff Act of 1930. They have sought administrative relief through countervailing duties and anti-dumping duties to compensate for foreign subsidies and sales below production costs. These suits are being processed by the Department of Commerce (DOC) and the International Trade Commission (ITC). The DOC is responsible for finding whether or not steel has been sold below production cost or subsidized, and the ITC for assessing whether material injury has occurred. These procedures are lengthy and very complex. Furthermore, duties are limited to the period after a preliminary finding of dumping or subsidies.

No suit involving major steel products has yet run its full course. At the present time, suits involving several Western European countries, Romania, and Brazil are being investigated by DOC and ITC.

Regulatory Policy. Because the steel industry is inherently dirty, noisy, and dangerous, there have been many efforts to improve conditions through regulation. These have imposed financial and operational burdens on the producers. In 1981, Congress passed the Steel Industry Compliance Extension Act, designed to relieve part of the burden if the producers used available funds for investment in modernization. Similarly, administrative changes have reduced some of the health and safety requirements.

Transition and Adjustment. Trade readjustment allowances are intended to ease the transition of certain laid-off workers to new employment. In 1980, 690,000 applications were filed that gave competition from imports as a primary cause of unemployment--of which about 130,000 were from former steel industry employees.

Until fiscal year 1982, workers displaced by imports could receive supplemental compensation through trade adjustment assistance at the same time that they received the normal unemployment insurance benefits. Together these could amount to about 70 percent of previous wages for up to 52 weeks of unemployment. This was changed in 1982 so that workers first receive their unemployment insurance for 26 weeks--equivalent roughly to 40 percent of previous wages--followed by an equal amount of supplemental trade readjustment allowance for another 26 weeks.

The readjustment program also includes services such as job placement, retraining, relocation allowances, counseling, and testing.

OUTLOOK FOR THE FUTURE: STEEL IN THE 1980s

The outlook given below for integrated steelmaking in the 1980s is not intended as a forecast. Rather, it is a projection of the outcomes associated with current federal policies and industry conditions. It is meant to serve as a point of departure for assessing whether alternative federal policies are worth considering and, if so, which are likely to be most helpful. The outlook is based on a set of projections of world steel demand, U.S. steel demand, and the market share that the domestic industry will achieve. The consequences in terms of employment, investment, and capital stock in the steel industry can then be estimated.

World Demand for Steel. World overcapacity in steelmaking is likely to persist, although current conditions will almost certainly improve. In 1981, the non-Communist sector operated at 68 percent of capacity. This projection suggests that the 1985-1990 operating rate will average between 70 and 77 percent, the same range that prevailed during the 1970s. As a result, competitive pressures in world steel markets will abate somewhat but nevertheless remain intense.

Many forecasters are optimistic that domestic steel demand will surge through 1984, because they expect a recovery in the economy. They differ as to whether demand after 1984 will continue to grow or will return to the stagnant conditions of the 1970s. This variance could result in the two scenarios for 1990 steel demand shown in Table 6. Under one assumption, steel consumption increases in 1983 and 1984 and then continues on its 1950-1981 trend line. Less optimistic assumptions about demand, and about penetrations of imports into new markets, could result in the lower scenario. 23/

Net imports are projected to increase over the decade because of continued overcapacity in the major steelmaking nations. Under the high projections, demand in home markets could reduce the need for many steel exporters to cut prices in order to sell in U.S. markets. Thus net U.S. imports are less in the high case than in the low case. Furthermore, in the low case, lack of investment would forfeit more new markets to importers than in the high case. Shipments of steel by domestic producers in 1990 remain within the range of recent experience under both cases, but the share of domestic production taken by the nonintegrated producers increases markedly. As a result, the market share of integrated producers falls from its 1981 level of 72 percent of the domestic market to between 61 and 66 percent by 1990.

TABLE 6. PROJECTIONS OF DOMESTIC CONSUMPTION AND SHIPMENTS OF STEEL (In millions of tons per year)

	1979	1980	1981	1982	1990 Low	1990 High
Domestic Demand	115	95	105	105	118	127
Net Imports into U.S.	15	11	17	14	26	22
Domestic Shipments	100	84	88	91	92	105
Shipments from Integrated Producers	89	72	76	78	72	84
Shipments from Nonintegrated Firms	11	12	12	13	20	21

SOURCE: Data in 1979 and 1980 are from AISI. Data for other years are CBO estimates.

Effects of Alternative 1990 Projections

Each of the 1990 projections carries with it different implications for investment and employment in the steel industry (see Table 7). Under the high scenario, the steel industry would probably invest roughly $30-37 billion (in 1980 dollars) in steel operations over the coming decade. This is more than the $19-26 billion that would be invested under the low scenario because higher margins would provide a greater incentive for investment.

The work force of the integrated producers would decline from its 1981 strength of 390,000 in both cases. In the high case, the labor force would decline to the range of 320,000-350,000 workers as productivity improvements offset the higher demand for steel. In the low case, the labor force would decline to the 275,000-305,000 range. By contrast, employment in the nonintegrated firms would rise from 30,000 in 1981 to around 50,000 in both 1990 projections.

A final concern--the ability of the integrated steelmakers to compete in new, fast-growing markets--is less subject to quantitative estimates. As the economy evolves, it demands increasingly sophisticated products from the steel industry. Among these are coated sheet steel, seemless alloy pipes, corrosion-resistant plates, and wide-diameter pipes. Domestic producers have been unable to provide a number of new products in recent years and do not seem to be investing to provide them in the future. In time, the nation may become more dependent on imports for high-quality products, so that foreign industries that embody high-quality steel in their products might gain an advantage over domestic industries.

TABLE 7. PROJECTIONS OF OUTPUT, INVESTMENT, AND EMPLOYMENT FOR INTEGRATED PRODUCERS

	1981	1990 Low Demand	1990 High Demand
Output of Integrated Firms in 1990 (millions of tons)	76	72	84
Cumulative Capital Investment 1981-1990 (billions of 1980 dollars)	---	19-26	30-37
Investment in 1985 (billions of 1980 dollars)	---	2.2-2.7	3.2-4.0
Average Age of Facilities (years)	18.0	21.1	16.6
Employment (in thousands)	390	275-305	320-350

SOURCE: CBO estimates.

BRIEFING PAPER FOOTNOTES

1/ Joseph Wyman, Steel Mini Mills (Shearson Loeb Rhoades, November 20, 1980), p. 1.

2/ Standard and Poor's Industry Surveys, Steel-Coal, Basic Analysis (October 30, 1980), p. S 69.

3/ Standard and Poor's Industry Surveys, Steel-Coal Current Analysis (June 5, 1980), p. S-37.

4/ American Iron and Steel Institute, Steel at the Crossroads (January 1980), pp. 21 and 38.

5/ Peter Marcus, The Steel Strategist #5 (Paine, Webber, Mitchell, and Hutchins, Inc., February 1982), p. 13.

6/ The Official Journal of the European Communities reports on member government activities to promote steel, including use of subsidies. For example: "Medium-term Orientation for Steel Research" (May 2, 1981) and "State Aids" (November 9, 1981, and April 12, 1981).

7/ Dieter Spethman, Chairman of the Board of Thyssen (West Germany's largest steelmaker), in the Wall Street Journal (February 6, 1981).

8/ American Metal Market (Washington, D.C., March 18, 1981).

9/ Joseph Wyman, Steel Mini-Mills (Shearson Loeb Rhoades, Inc., November 20, 1980), p.1.

10/ Joel Hirschhorn, Continuing Success for United States Mini-Mills (draft), Office of Technology Assessment, no date, p. 5. Joseph Wyman, Shearson American Express, personal conversation on February 17, 1982, and Peter Marcus, World Steel Dynamics; Core Q (Paine, Webber, Mitchell, and Hutchins, Inc., September 1981), p. 1-6. Comparable estimates for Japan and West Germany are 9.6 and 11.0 man-hours per ton respectively.

11/ Joseph Wyman, Steel Mini-Mills.

12/ Beatrice Vaccara and Patrick MacAuley, "Evaluating Economic Performance of U.S. Manufacturing Industries," Industrial Economics Review (Department of Commerce, Summer 1980), p. 17.

13/ Peter Marcus, World Steel Dynamics: Core Q (Paine, Webber, Mitchell, and Hutchins, Inc., September 1981).

14/ Donald Barnett, "Labor Productivity Trends in the U.S. Steel Industry," Economic Papers (American Iron and Steel Institute, October 29, 1980).

15/ Office of Technology Assessment, Technology and Steel Industry Competitiviness (1980), p. 286. Walter Adams and Joel Dirlam, "Big Steel, Invention and Innovation," Quarterly Journal of Economics (May 1966), pp. 168-189.

16/ American Iron and Steel Institute, Annual Statistical Report (1980), p. 10. The petroleum and electrical utility industries have invested more in the aggregate, but not per unit of sales (Bureau of Economic Analysis, Department of Commerce).

17/ Robert Crandall, The U.S. Steel Industry in Recurrent Crisis (Brookings, 1981), p. 39.

Analysis of Economic Effects of Environmental Regulations on the Iron and Steel Industry (Temple Barker and Sloane, for EPA, July 1977).

Environmental Policy for the 1980s (Arthur D. Little, Inc., for American Iron and Steel Institute, 1981).

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Impact of New Source Review Policy on Capacity Expansion (Pedco Environmental, Inc., for EPA, October 1979).

18/ Steel at the Crossroads.

19/ Technology and Steel Industry Competitiveness, p. 59.

20/ Technology and Steel Industry Competitiveness.

21/ Statistics Canada, National Income and Expenditure Accounts, 1972-1977. U.S. Department of Treasury, Internal Revenue Service, Corporation Income Tax Returns, 1972-1977.

22/ Letter to Honorable Joseph Gaydos from Jane Gravelle, Congressional Research Service, Library of Congress (February 10, 1982), and discussion with author on March 3, 1982.

23/ Steel consumption as a function of real GNP has declined since 1970. Before that time, however, it had a steady relationship. If it continues its post-1970 behavior, future demand will fall at or below the 1965-1981 trend line.

APPENDIX: ADDITIONAL EXPLANATORY TABLES AND FIGURE.

TABLE A-1. FINANCIAL COMPARISONS OF NONINTEGRATED WITH INTEGRATED FIRMS SINCE 1974 (In percents)

	Pretax Profit Margin	Net Return on Assets	Net Return on Equity
NonIntegrated Firms	10.0	8.5	14.9
Large Integrated Firms	3.2	3.1	5.9

SOURCE: Joseph Wyman, Steel Mini-Mills (Shearson Loeb Rhoades, Inc., November 20, 1980), p.4.

The integrated firms included U.S. Steel, Inland, Bethlehem, National, Republic, and Armco. The comparison would have been worse for the integrated producers if the smaller integrated firms were included or if income from non-steel operations were excluded.

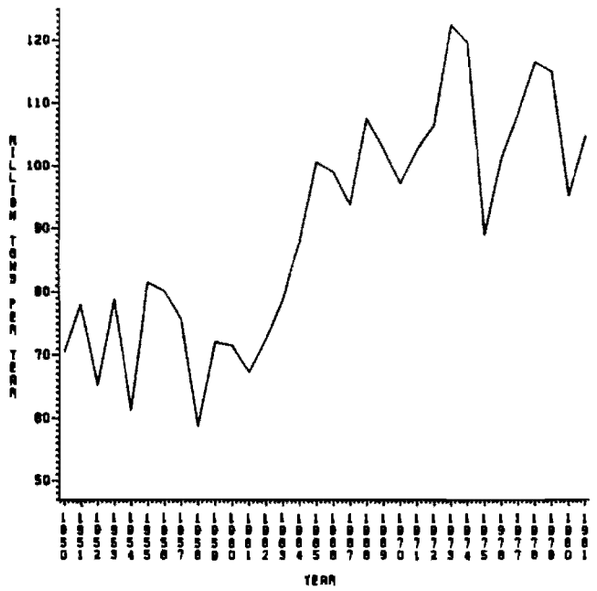
Nonintegrated firms were Athlone, Florida, Lukens, Northwestern, Nucor, Roblin, and Union.

TABLE A-2. PROJECTED CONSUMPTION OF STEEL PRODUCTS (Millions of tons per year)

	1979 Actual	1981 Estimated	1985 Mid-Range	1990 Low	1990 High
Automotive	20.8	15.4	18.3	17.8	19.4
Construction	17.6	14.4	18.1	18.6	21.4
Rail Transportation	6.5	6.1	6.5	6.5	6.8
Oil and Gas Industry	5.4	7.2	8.6	8.1	8.4
Machinery	11.0	9.9	11.7	12.6	13.6
Electrical Utilities	3.5	3.3	4.0	4.7	4.9
Domestic Appliances	5.3	4.6	5.9	6.1	6.7
Containers	6.9	6.4	7.1	7.1	7.3
Service Centers and Others	77.6	34.5	36.8	36.5	38.5
Inventory Changes	0.3	2.8	0.0	0.0	0.0
Total	114.9	104.6	113.0	118.0	127.0

SOURCES: Data Resources, Inc., for 1979; CBO for 1981, 1985, and 1990.

FIGURE A-1. UNITED STATES CONSUMPTION OF STEEL PRODUCTS, 1950-1981



SOURCE: American Iron and Steel Institute, Annual Statistical Reports.