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STEEL IMPORTS

STAFF STUDY OF THE

COMMITTEE ON FINANCE

UNITED STATES SENATE

RUSSELL B. LONG, *Chairman*

(NOTE.—This study has not been reviewed by the Committee. It is published only for the information of the public, but does not reflect the approval or disapproval of the Committee or any member thereof.)

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SENATE RESOLUTION 407

Submitted by Mr. Long of Louisiana

IN THE SENATE OF THE UNITED STATES,
Agreed to October 4, 1968.

Resolved, That there be printed as a Senate document, a staff study by the Committee on Finance, United States Senate, dated December 19, 1967, entitled "Steel Imports", and that there be printed one thousand copies for use by this committee.

Attest:

FRANCIS R. VALEO,
Secretary.

LETTER OF SUBMITTAL

U.S. SENATE,
COMMITTEE ON FINANCE,
Washington, D.C., November 10, 1967.

Hon. RUSSELL B. LONG,
Chairman, Committee on Finance,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: On July 28, 1966, the committee instructed the staff to undertake a study of the problems confronting the domestic steel industry as a result of the sharp expansion of imports of steel mill products since 1959. The attached report embodies the staff study.

In the preparation of this report the staff was fortunate to obtain the services of Dr. Robert M. Weidenhammer, professor of economics at the Graduate School of Business, University of Pittsburgh. Dr. Weidenhammer [1] brought to the study an academician's understanding of the intricacies of the worldwide steel industry and a pragmatic awareness of the practical importance of the work the staff was undertaking that was without parallel. He has worked tirelessly for many months drawing together the information and data necessary to make this report a worthwhile contribution to the proper resolution of the issue to which it is directed. If the staff's work should attract a studied consideration by those persons around this earth whose decisions—both political and industrial—direct the destiny of world steel it will have been successful.

There are some observations with respect to steel which I would like to call to the committee's attention. First, the U.S. industry not only has lost a large part of its domestic market to foreign steel, but also it has suffered the loss of most of its commercial export trade as more and more foreign countries have entered the ranks of steel-producing nations. In many instances, U.S. foreign aid helped finance the foreign steel mills which today more than satisfy the steel needs of countries we once looked on as our customers. U.S. exports of steel mill products now are largely tied to our foreign aid grants and loans.

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[1] Dr. Robert M. Weidenhammer, on leave from the Graduate School of Business, University of Pittsburgh, had been in investment banking, and president of a coal mining company until he joined the U.S. Government service in 1941 through 1953. In 1945, at the request of Senator Joseph C. O'Mahoney, chairman of the War Contracts Subcommittee of the Senate Committee on Military Affairs, he prepared a study "War Plants Disposal: Iron and Steel Plants" (Government Printing Office, June 1945). In 1947, 1949, and 1952 he was one of two U.S. Government delegates sent by the U.S. Department of State to attend meetings of the Iron and Steel Committee of the International Labor Office, Geneva, Switzerland.

While at the University of Pittsburgh, he served as a consultant to the U.S. Departments of Commerce and Labor. In 1960, he was responsible for the chapters on "Steel Technology, Markets, and Financial Aspects," of "Collective Bargaining in the Basic Steel Industry," U.S. Department of Labor (Government Printing Office, January 1961). He was a consultant on steel demand in the year 2000 to Resources for the Future, Inc., a subsidiary of the Ford Foundation, and on steel technology to the Patent and Trademark Foundation of George Washington University.

For the academic years 1958–59, and 1962–63, he was awarded Fulbright professorships at the University of Munich, Germany. He lectured at other German, French, Austrian, and Italian universities, and before the German Steel Industry Federation; as a result, he was invited to visit steel plants in Germany, the Netherlands, and Italy, to lecture to groups of company officials.

With the cooperation of Prof. William B. Kania, of the California State College, he has nearly completed a book on the world steel industry to be published by the University of Pittsburgh Press.

It is an ironic twist that this aid program is now used to subsidize steel exports in competition with the products of foreign mills it helped create.

Second, nontariff barriers and regional and preferential trading blocs are being used more and more in different parts of the world to hinder U.S. exports. Cartel-like arrangements in some areas are controlling domestic prices and markets in order to support steel sales abroad—in many instances in the United States—at prices which may not cover costs of production. This country has lagged in its resourcefulness to cope with these unfavorable practices and trends with the result that today our market is perhaps less fettered by nontariff barriers than any major trading nation on earth. To phrase it differently, our trade agreements may have brought less than full reciprocity from other countries for the concessions we granted.

Third, there is little question but that wage disputes contributed to today's trends in steel imports. The 1959 steel strike sparked a rise in foreign participation in the U.S. steel markets—a rise that has accelerated with each subsequent threat of labor-management difficulties. No doubt the great variation in U.S. and foreign wage rates would eventually have led to foreign intervention in American steel markets even if there had been no domestic difficulties, but perhaps it would have begun later and progressed more slowly if the fear of shortages growing out of work stoppages had not stimulated U.S. fabricators to seek alternative sources of supply to satisfy rising demands for their own products.

Fourth, while the study points out that the financial condition of the domestic steel industry is vastly better than that of foreign steel, I should like to stress that steel in large measure is used as an instrument of Government policy in foreign lands. Even if they fail financially there would likely be no cutback in the output of foreign steel—rather, the companies probably would be nationalized or more heavily subsidized by their governments and would continue to export steel to this country at prices far below ours.

I would like to say that in the preparation of this study the committee staff worked with U.S. industry and labor representatives, the U.S. importers of foreign steel mill products, the U.S. independent service centers, the U.S. iron and steel scrap exporters, the U.S. exporters of coal to foreign steel producers, the iron ore exporters, the U.S. and international finance agencies financing new steel industries in developing countries, and the steel industry federations of the United Kingdom, of the six member countries of the Common Market, and of Japan.

In each case the staff exercised its judgment in selection, cross-checking, correcting, and in some cases refusing to use the data presented. If conclusions drawn from such data by the staff differed from those of the interested parties, their contributions were clearly marked as such.

Of the Government agencies which proved to be very helpful in providing material, the Department of Labor and the Department of Commerce should be mentioned initially. Other departments which assisted are the Department of State, the Office of Special Representative for Trade Negotiations, the Office of Emergency Planning, the Department of Defense, and the Department of Justice.

Sincerely,

TOM VAIL,
Chief Counsel.

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GLOSSARY

AISI—American Iron & Steel Institute.
BDSA—Business and Defense Services Administration, U.S. Department of Commerce.
BISF—British Iron and Steel Federation.
BLS—Bureau of Labor Statistics, U.S. Department of Labor.
BOF—Basic oxygen furnace.
CIF—Cost, insurance, freight; cost to buyer at port of entry, but excluding duty.
ECE—United Nations Economic Commission for Europe (Geneva).
ECSC—Europe Coal and Steel Community (Brussels).
EF—Electric furnace.
FAS—Freight alongside ship.
FOB—Free-on-board usually at mill or at port.
FTC—Federal Trade Commission.
GATT—General Agreement on Tariffs and Trade.
Home Scrap—Waste material generated in steel mill operations and returned to furnace.
IADB—Inter-American Development Bank.
IBRD—International Bank for Reconstruction Development.
IFC—International Finance Corporation.
ILO—International Labor Office.
Ingot—Raw steel before finishing operations are begun. The AISI changed this term to "raw steel" in 1967 because, with the advent of continuous casting, ingots no longer constitute the state between hot metal and the finishing process. The ECE uses the term "crude steel" for raw steel.
Metric Tons—2204.6 pounds.
Net Tons—2,000 U.S. pounds.
Obsolete Scrap—Scrap originating from old end-uses; i.e., demolished buildings or wrecked automobiles.
OECD—Organization for Economic Cooperation and Development (Paris).
OH—Open hearth.
Prompt Scrap—Waste steel originating from manufacturing operation of steel-consuming industries.
SEC—Securities and Exchange Commission.
SIC—Standard industrial classification.
Steel Mill Products—Ingot, semifinished (blooms, billets, and slabs) and all rolled and drawn products normally made by steel mills.
Other Steel Products—Fabricated and miscellaneous steel products beyond rolled and drawn products such as, fabricated plates and structural shapes, bolts, nuts, screws, rivets, washers, wire cable, rope, strands, springs, containers, steel castings, forgings, chains, and pipe fittings.
Iron Products and Ferroalloys—Pig iron, iron castings, cast-iron pipe and fittings, and ferroalloys.

EXPLANATION OF STEELMAKING PROCESSES

Steel is made, as shown in figure 1, from scrap and/or hot metal (liquid iron) in either open hearth furnaces (OH), electric furnaces (EF), or the basic oxygen furnace (BOF). The standard ratios of scrap and iron may vary depending on the relative price of scrap or iron, but they are usually 50 percent scrap for the OH, 30 percent for the BOF and 99 percent for the EF. The oldest type of steel furnace is the Bessemer which is now practically extinct in this country, but still much used in Europe.

Iron is made in the blast furnace, which uses iron ore, limestone, and coke as raw materials. It is then transferred to a steel furnace as hot metal, or made into pigs which are sold to foundries which make iron castings.

From the steel furnaces the liquid steel is poured into ingot molds, or if continuous casting is used, directly into shapes for the rolling mills. Because continuous casting is now coming increasingly into use, the AISI decided in 1967 to use the expression "raw steel" instead of "ingots." The top of the ingot, the shearings in the finishing mills, and all rejects, stay in the mill as home scrap to be returned to the steel furnaces. Finished steel mill products leaving the mill, therefore, are only some 68 percent of the ingot tonnage produced. As far as continuous casting is to be used, home scrap from this process would decline to 20–25 percent of raw steel. Figure 2 is a flow chart for 1966 showing the tons of raw materials (coke, iron ore, limestone, home scrap, and purchased scrap) used in producing 134.1 million tons of raw steel. Of this, 46.6 million tons went back to the furnaces as home scrap. Shipments of finished steel mill products were 90 million tons, 1.7 for exports and 88.3 for domestic consumption. Imports were 10.8 million tons, for a total of domestic consumption of 99.1 million tons.

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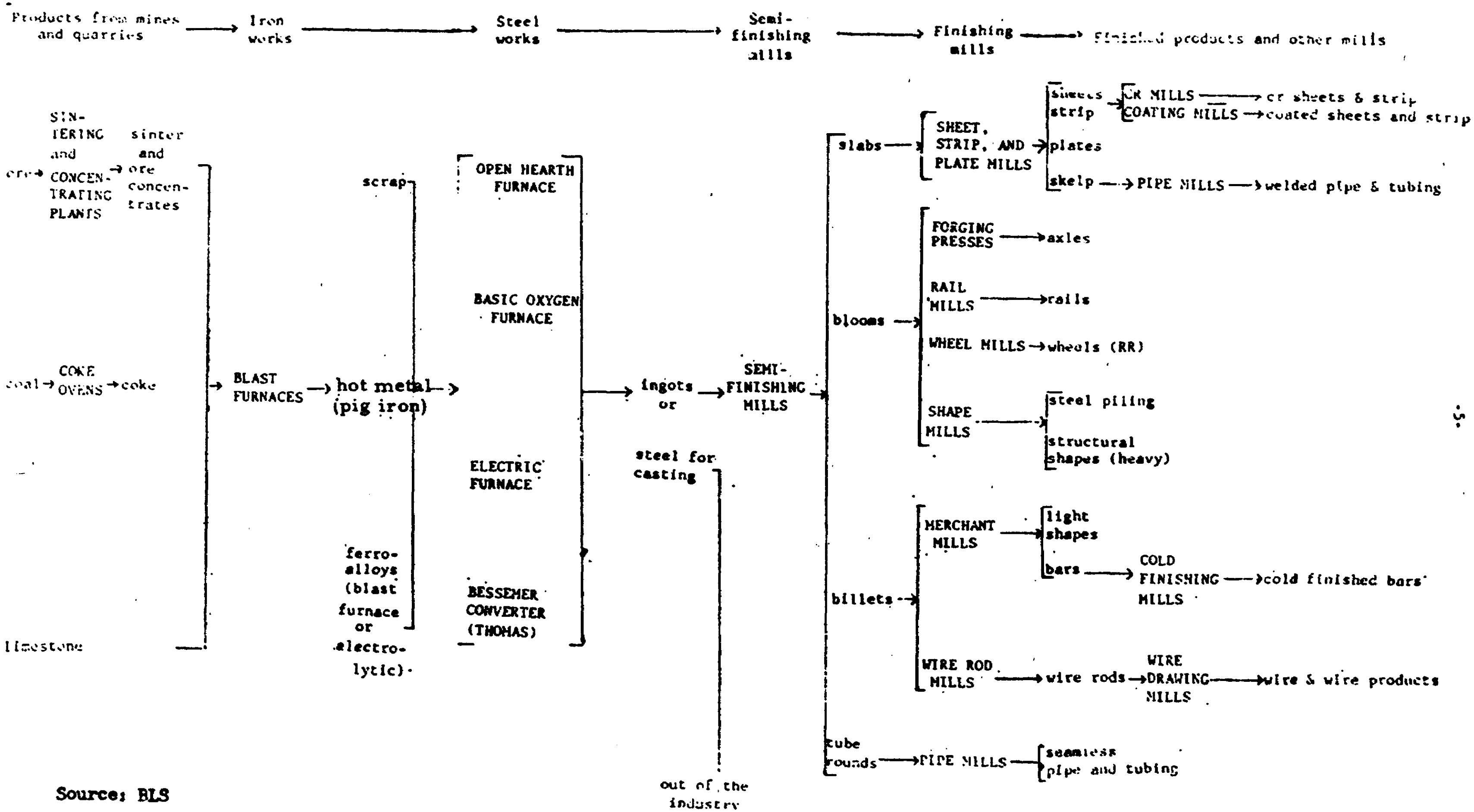

Source: BLS

FIGURE 1.—*Principal processes and products of the steel industry.*

IRON AND STEEL INDUSTRY OF THE U.S.A.

Flow Chart: Raw Material to Finished Product 1966

(All figures in net tons)

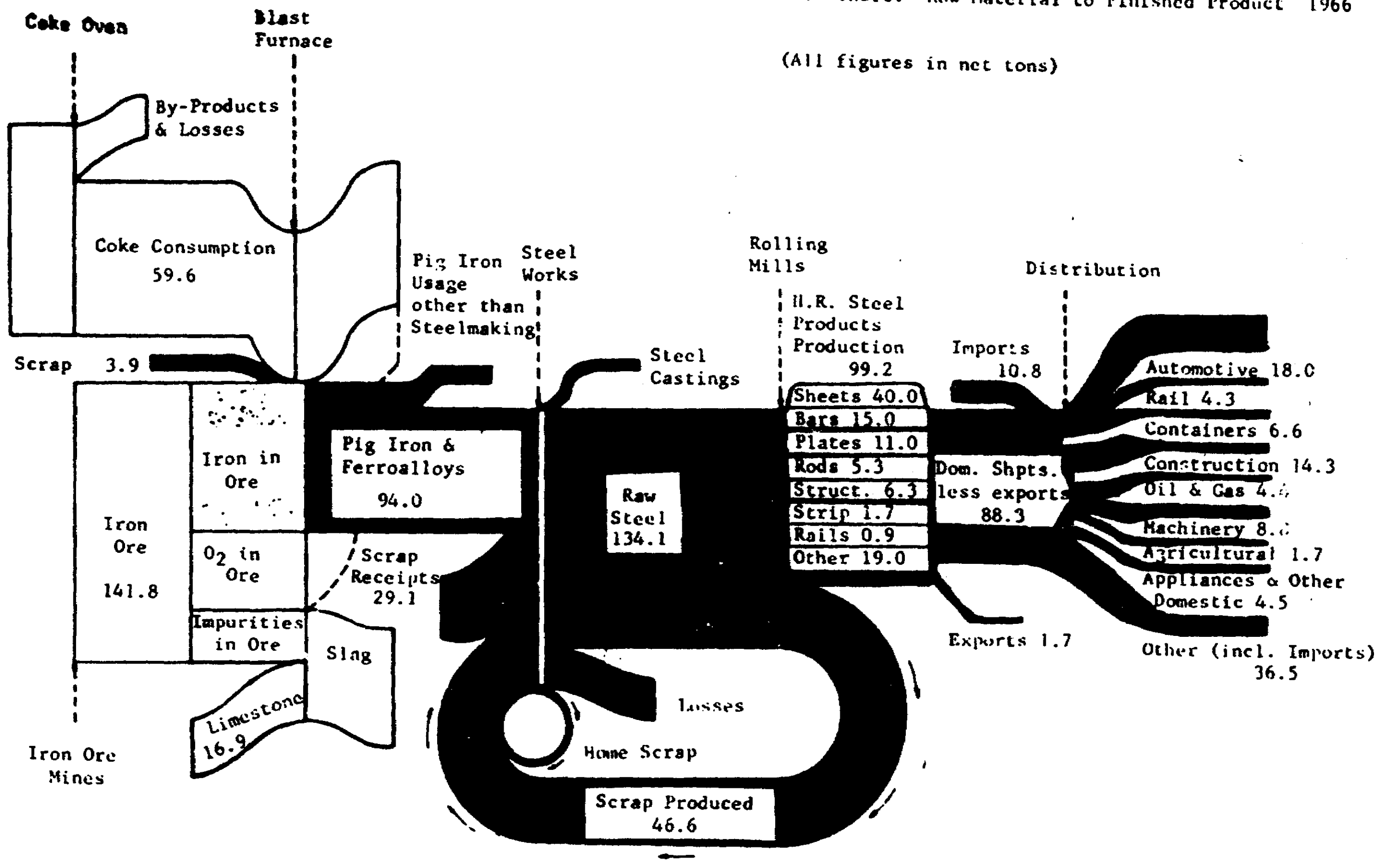

FIGURE 2

INTRODUCTION

The Nation has become accustomed to periodic bouts between major steel producers and the executive branch of the Federal Government. From President Truman's threat in 1949 to expand steel capacity by constructing Government-owned plants to President Kennedy's confrontation with the industry, forcing a price rollback in 1962, we have witnessed numerous charges and countercharges between the two parties. Tempers have been lost on both sides, and emotional statements have added fuel to the fire of the disputes.

Most often the friction has arisen over decisions by the steel industry to raise prices. The Federal Government has been and is concerned with the overall inflationary effect of an increase in the price of "our single most important industrial material." The industry, concerned with maintaining reasonable profits and its need to finance the modernization of facilities in the face of rising costs, has felt justified in its decisions to increase prices.

A relatively new but related problem has arisen for the steel industry—the problem of maintaining competitiveness in the face of a growing volume of imports and substitutes, while at the same time preserving a reasonable profit level. This is the problem to which this study is addressed.

The steel import problem (as it is referred to in this study) is complex, intertwined not only with the economic and technological trends in our own industry and economy, but also with economic, managerial, and sometimes Government-directed political factors abroad. The problem is related to a determination by a host of newly emerging nations to establish steel industries of their own and to policy decisions by aid-giving governments and financial institutions to assist in their establishment. Trade and taxation policies, by other countries, aimed at subsidizing production and exports while restricting imports have also aggravated the steel import problem.

A study of so complex but highly important a subject as this requires an objective analysis of facts—facts on foreign and domestic costs, prices, trade practices, and financial conditions, none of which are easily obtainable. This difficulty was highlighted by Secretary of Commerce Alexander Trowbridge, who testified before the Senate Finance Committee on June 2, 1966, that:

> The hard core of the facts needed to judge this situation—those on foreign and domestic product costs and pricing—are not now available and probably are difficult to obtain. Without, at least, some data of this kind, however, a study would be inconclusive.

After a careful but mostly fruitless investigation of all sources of public information available, it was decided to seek information on worldwide costs and prices from all available private sources and through careful scrutiny of the balance sheets and profit and loss statements of major steel producers at home and abroad. This effort revealed sufficient "bargain basement pricing" by some foreign producers to conclude that comparable costs alone were by no means the basic issue.

World overcapacity of steelmaking facilities has caused some foreign steel industries to unload their surplus production on the U.S. market at prices at or below cost. In some countries they have been abetted by governments through the remission of taxes and through subsidies. In contrast, the U.S. steel industry has been unable to maintain its exports, in part because of a multitude of nontariff barriers encountered abroad, and of the lack of U.S. export incentives.

Unused capacity for steel also exists in this country. The steel industry management argues that such excess capacity is needed to meet cyclical and seasonal peaks of demand, and for national emergencies. It subscribes to the philosophy of adjusting output to demand rather than producing at rates in excess of demand and unloading the surplus on foreign markets.

The U.S. steel industry is concerned about the steadily expanding volume of foreign imports. If foreign steel-producing industries were run like prudent private enterprise in this country, the problem of the U.S. steel industry would be less troublesome. Unfortunately, however, foreign steel industries have thrown steel on the world market, especially the largest and least restricted by nontariff barriers, i.e., the U.S. market. As the High Authority of the European Coal and Steel Commission (ECSC) stated in its official report for 1966:

> The rapid expansion of new world steelmaking capacity and the slow scrapping of older plants caused prices to collapse.

Moreover, as stated in a recent report of the British Government (August 1967):

> Severe competition, induced by the surplus, has weakened prices to the point where much of the international trade is unprofitable and in many cases does not even cover full production costs.

In July 1967, the ECSC published its formal estimate that between 1966 and 1970 world steel capacity would expand by some 33 million tons a year (to 738 million tons by 1970), a figure which substantially exceeds foreseeable world demand. There is, therefore, reason to fear that foreign steel industries will not act prudently and adjust output and prices to levels permitting a reasonable return on sales and investment. The concern is that foreign producers, facing further deterioration of their financial status, will continue to sell increasing quantities of steel in the United States at prices which do not reflect their full direct and indirect costs, with the collaboration of their respective governments.

Forty-two percent of the world's steel capacity is government owned.[1] Moreover, cartel-like associations and subsidies are already at work and full or partial government ownership or control may lurk at the end of the road for many foreign steel industries, as a result of their recent financial difficulties.

It was not until the 1950's that the domestic steel industry faced the competition of substitutes and not until 1959 that imports became a challenge. Generally speaking, the industry, while less dynamic in reacting to shifting trends than some other industries, has been run by prudent management as is evident in its sound financial

[1] In the "free world," not including the United States, 28 percent of steelmaking capacity is government owned.

condition today. It faces no insurmountable problems except for the prospect that continually rising imports from lower cost or subsidized producers abroad could seriously weaken its market position.

A prudent businessman in a good financial position can usually outlast his competitors who sell at or below cost, because their days will be numbered. But no private enterprise industry can, in the long run, survive in competition with foreign industries that have become "instruments of government," unless its own government lends assistance against subsidized imports and against obstacles to exports.

SUMMARY OF CONCLUSIONS

If the trends indicated above persist, the Nation must be prepared to see steel imports ultimately reach such high percentages of the markets for certain steel products as to render them unprofitable for the domestic industry to make.

It would be unrealistic to expect an uninterrupted flow of imports when this country might most need them, i.e., in case of a major national emergency. Even in times of peace, steel imports may be interrupted for any number of reasons. Japan might choose to export only to its Asiatic neighbors, and Western Europe may concentrate on supplying Eastern Europe. It means courting a possible future national ordeal if such a highly strategic industry as steel should be permitted to drift into even partial decay. After all, it is the strategic importance of steel in other countries that has brought about most of the problems that beset our steel industry today.

This study identifies the basic issue of the steel import problem by analyzing it in the framework of the world steel industry where capacity has (and continues to) outrun demand, causing a world steel surplus. In developing countries, new steel industries are being financed through foreign aid often motivated by the political rivalries between the United States and the U.S.S.R. In contrast, the traditional steel-producing countries are installing new capacity precisely because the world surplus of steel has depressed world steel prices. Therefore, the availability of radically new and cost-cutting technology promises relief from low-profit margins or losses, but it also increases still further: debt, fixed charges, and overcapacity; the latter because of a hesitation to scrap facilities still using the old techniques.

At present, the financial structure of the U.S. steel industry is sound relative to that of its major competitors, but recent trends indicate danger ahead.

Aside from the basic issue, the world surplus of steel, the study has analyzed the domestic record of the U.S. steel industry. While finances were prudently managed, the industry's unit labor costs and capital output ratios show trends that compare somewhat unfavorably with other U.S. industries, especially in the last decade. There can be no doubt that the periodical poker game atmosphere preceding wage agreement expiration dates, and the roller-coaster cycle of inventory accumulation and liquidation has damaged the competitive stance of the industry. It has exposed the steel industry to invasion of its markets by imports and substitutes, and has left lasting damages to the industry's output, employment, and profits.

An important managerial problem facing the U.S. steel industry today is how to overcome the lower wage rates abroad, especially in

Japan, by heavy investment in new technology. Aside from the fact that foreign producers are also modernizing their facilities, often with assistance from their governments, these investments are greatly increasing the fixed charges of the domestic industry. Unless the output of the U.S. steel industry increases by some 2 to 2½ percent a year, such fixed charges can only mean higher, rather than reduced, costs per ton of output, and, therefore, smaller rather than higher profits.[1] This would result in less funds being available from retained earnings and the capital market for investment in research and modern facilities.

Specialty steels are constantly being developed through research for national defense and space projects. Quite aside from defense, the viability of the domestic steel industry is a problem of national welfare. Steel is still the backbone of any industrialized economy. In the United States it still accounts for 95 percent of the weight of all metals and the bulk of all processed materials used in manufacturing. If in certain product-lines imports exceed, say, 60 percent of domestic consumption, domestic facilities might be scrapped, and labor shifted to other industries. Any cessation of imports at that stage, for whatever reason, would constitute a major problem to uninterrupted output of the steel-consuming civilian economy.

It is by no means clear, however, whether such specific recommendations as a temporary levy on imports or a rollback quota would, at this time, be in the best long-term interest of the country or even of the industry. However, some responsible, short-term measure along these lines may be the prod needed to cause the steel producing nations of the world to join together in an effort to solve problems of world steel in a manner calculated to serve the best interests of all of them.

The United States singly, or in agreement with the U.S.S.R., might deemphasize the financing of steel-producing facilities in favor of financing steel-consuming industries in developing countries. This would ease the overcapacity problem which contributes to our import difficulties. In addition, a world conference of the governments of major steel-producing countries to discuss common interests in adjusting the pace of steel capacity expansion to the pace of world steel demand would be beneficial. The chances for the lasting success of this conference would be greatly enhanced if the sympathetic interest of the U.S. Government in safeguarding the industry is recognized by the countries now enjoying a market for their steel exports to this country.

A world conference may eventually restore prosperity to the world steel industry and thereby solve the problems that now concern the domestic industry. The U.S. Government should participate in such a conference with a full understanding of all the implications of the somewhat ominous trends that imperil the U.S. steel industry's future.

There is also an urgent need for fairer rules in international steel trade. Today, our steel industry must compete in the face of foreign export subsidies favoring steel imports into this country and nontariff barriers frustrating U.S. steel exports. European and Japanese steel cartels also may be contributing to unfair trade practices abroad. If fair rules of international steel trade can be achieved, the industry should

[1] Evidence of this was provided in the first half of 1967 when a 7-percent decline in shipments was accompanied by a 28-percent drop in profits.

be able to expand both its domestic and foreign markets. Plastics and other substitutes still would be a constant challenge to make better steels at lower costs and to clad them with aluminum or plastic, if feasible. The steel industry's great and fully intact capital resources, its highly trained engineers and labor force, and its competent management and emerging research staffs should be able to preserve and develop further this important and strategic industry.

SUMMARY OF FACTUAL FINDINGS

(1) U.S. steel production has fallen from 61 percent of world output in 1945 to 26 percent in 1966, and will probably drop to 21 percent in 1975. Between 1947 and 1966 Japan's share of world steel output has increased tenfold, Italy's tripled, the U.S.S.R.'s doubled, and Red China produced more steel in 1966 than any country had in 1947, with the exception of the United States and the U.S.S.R.

(2) Annual growth rates of steel production since 1900 have progressively declined in the United States and increased in the rest of the world, as shown below:

[In percent]

Year	United States	Rest of world[1]
1900-18	7.4	4.4
1920-45	3.2	3.7
1950-66	1.4	8.3

(3) World steel capacity on January 1, 1966, has been estimated as 590 to 600 million tons (MT) compared to world output in 1966 of 520 MT, leaving a surplus capacity of 70–80 MT. An official estimate of the ECSC published in June 1967 projects annual increases of 33 MT in world capacity to 1970. This study estimates increases in world demand of only 20–25 MT, indicating a progressive aggravation of the world steel surplus problem.

(4) Because the U.S. steel industry promptly adjusts output to orders and in the Communist countries output and capacity are about equal, the rest of the free world has a surplus capacity of some 45–55 MT.

(5) The Kennedy round will result in a five-stage reduction of U.S. steel tariffs, from a weighted average of 7.44 percent in 1966 to 6.5 percent in 1972. Other major countries reduced their tariffs on steel generally by more than the United States, with the result that steel tariffs are now more closely harmonized among major countries. This does not, however, take into account the very high and rising nontariff barriers, which foreign countries use to their advantage.

(6) In 1966, the balance of trade in steel was:

	Million tons	In billions of dollars
Imports	10.8	1.313
Exports	1.7	.635
Net imports	9.1	.678

Imports were 12 percent of domestic shipments (90 MT) and 10.7 percent of domestic consumption (104.4 MT).

Excluding AID financed exports, the deficit was $899 million. When end-use products (machinery, trucks, etc.) are included, the deficit was reduced to $496 million. Adjusted further to include net trade in steelmaking raw materials (iron ore, coal, scrap) the deficit was $499 million.

(7) Overvaluation of the dollar cannot be considered a cause of increasing steel imports. The general price level between 1957 and 1965 rose faster abroad than in this country.

(8) On the basis of research and development (R. & D.) as a percentage of sales, the steel industry ranked among the lowest of 19 major U.S. industries. The largest export industries, in relation to sales, were shown by those with the highest ratios of R. & D. to sales.

(9) Steel imports are not yet a dominating factor in the regional growth of domestic steel production. Regional population shifts and relative growth rates of steel-consuming industries are more relevant factors at present.

(10) Between 1947 and 1966, the steel industry has decreased somewhat its relative standing among major industries in sales, profits, Federal income taxes, cash dividends, total assets, total employment, and total payroll, but has increased in capital expenditure and value added.

(11) Steel demand actually declined in this country between 1957 and 1963 due to these factors:

(*a*) A shift in GNP from durables to services.

(*b*) Long-term downward trend of certain steel-consuming industries such as railroads and oil-well drilling.

(*c*) Stronger, lighter gage steels and a trend toward lighter functional designs.

(*d*) Corrosion resistant steels increase life expectancy of products made from steel.

(*e*) Increase of competition from substitutes (plastics, aluminum, and other light weight nonferrous metals, etc.).

(12) Steel prices rose between 1946 and 1957 by 132.5 percent compared to 60.8 percent for all industrial commodities. This was caused by managerial decisions to obtain funds internally rather than through the capital markets in order to increase capacity and to find new sources of iron ore. Unfortunately, these higher prices resulted in greater competition from imports and substitutes thus thwarting the objective for which they were imposed. From 1957 to 1966, steel prices rose by 7.7 percent while prices of all industrial commodities rose by an average of 5.5 percent. However, steels were of improved quality by 1966 and the yield of finished steel products from raw steel had declined from 75 (1959) to 67 percent, accounting in part for the steel price increases.

(13) In 1966, the steel industry ranked in 39th place out of 41 major industries in the ratio of net profit after taxes to net worth. As a result, steel equities sold at 81 percent of book value compared to 196 percent for all industries, and at only 9.5 times earnings compared to 15.2 for all industries.

(14) For the years 1956–66, capital expenditures exceeded cash flow (depreciation, depletion, amortization, and retained earnings) by $1.2 billion. As a result, long-term debt as a percentage of net worth and

debt rose from 15 to 24 percent. Interest costs as a percentage of sales rose from 0.4 to 1 percent. Working capital was still satisfactory at 225 percent of current liabilities, but the liquidity of working capital as measured by the percentage of cash and securities had fallen from 72 to 49 percent.

(15) An analysis of the financial statements of U.S. and foreign steel producers shows the following salient facts:

(*a*) *Current ratio.*—Standard U.S. managerial practice requires that current assets should be, at least, double current liabilities. With the exception of the British and Dutch companies, none of the West European or Japanese industries approach this standard. For Japan, current assets are only 117 percent of current liabilities, and for Italy, only 77 percent.

(*b*) *Profits after taxes as a percentage of total assets.*—U.S. profits ranked 39th out of 41 major U.S. industries in 1966, but they were 5.7 percent compared to 0.5 percent for Belgium, 1.5 percent for Germany, 0.3 percent for France, 1 percent for Italy, and 2 percent for Japan.

(*c*) *Total debt as a percentage of total assets.*—For the United States, debt as a percent of total assets was, in 1965, 34 percent as compared to 60 percent for Germany, 65 percent for France, 73 percent for Italy, and 69 percent for Japan. The German steel industry reported that for most producers long-term debt is about 180 percent of equity, which means that creditors own about two-thirds of the German steel producers.

(16) The decline in European profit margins and future profit expectations is clearly reflected in the nearly 50-percent reduction in investment between 1963 and 1965, while the United States showed almost a 50-percent increase. Data for 1966 would show a continuation of these diverse trends.

Annual capital investment per annual tonnage of raw steel output

Year	United States	Japan	ECSC	United Kingdom
1965	$15.2	$12.3	$10.9	$5.1
1964	13.9	11.6	15.9	5.9
1963	10.5	14.6	20.1	9.4

(17) By investing at an annual rate of $2 to $2.5 billion for the next 5 years, the industry expects to lower its cost of making carbon steel by about $5 a ton, assuming other costs remain constant. Even if we assume annual plant and equipment outlays of only $2 billion, depreciation charges alone in 5 years would be higher by $0.4 billion or by about $4 a ton. Unless output increases by at least 2 to 2.5 million tons annually and at prices fully compensating for all cost increases, the industry cannot expect to improve its stance in competition with foreign imports.

(18) The price differential for domestic buyers between domestic steel and imported steel appear to be in a range of $20 to $25.

(19) To gage the present competitive position of U.S. steel products in the home market, an attempt was made to compare domestic prices and average costs with average costs of Japanese and Western European steel producers. Because costs vary greatly between Western

European countries, and in each country between companies and even individual plants of the same companies, and because they depend on accounting practices, it cannot be emphasized too strongly that the data given below are merely for benchmark purposes.

Average cost at mill and delivered to U.S. customer for a ton of carbon steel products

	United States	Japan	Western Europe
Average production costs at mill	$133	$100	$116
Average cost delivered to U.S. customer	163	127	143
Differential between U.S. and foreign delivered costs		36	20

On the basis of the producer's average cost of carbon steel products delivered to U.S. customers and a price differential of $20 to $25, the Europeans appear to sell here at cost or below, while the Japanese steel industry would still make a profit of from $16 to $20 a ton if it sold at a differential of $20 to $25 a ton.

These profit margins still have to be qualified in two ways:

(*a*) While Japanese mill costs are below Western European mill costs, and while cost of entry (transport from mill to port, ocean freight, tariff, and U.S. freight from port of entry to U.S. customer) are roughly equal, the average prices f.o.b. foreign ports in 1966 actually were as follows:

ECSC	$99
Japan	112
United Kingdom	114

The reason is found in the much higher grade product mix (cold-rolled sheet and strip) of Japanese and United Kingdom imports than of ECSC imports. Profit margins, however, would still be determined basically by costs at the mill.

(*b*) Indicated profit margins would exist only insofar as foreign steel mills were to sell directly to U.S. customers. If mills sell through Japanese trading companies, which may charge as high as 30 percent commission, their profit margins would be decreased in proportion. If Western European mills sell through domestic importers, their margins of profit or loss would be changed in proportion to the importers' commission.

(20) Charts (and tables published in the statistical appendix) show imports of foreign steel have been stimulated by the periodical fear of steel shortages resulting from expected or actual steel strikes.

(21) For the years 1947–66 the average annual rate of increase in unit labor costs for all manufacturing industries compared with the steel industry were:

[In percent]

	All manufacturing industries	Steel industry
Output	3.6	1.7
Total compensation per man-hour	5.0	5.7
Output per man-hour	2.9	1.7
Unit labor cost	2.0	3.9

(22) The capital-output ratio measures the dollar amount of capital needed to produce a dollar of value added, and thereby indicates the productivity of the invested capital. When this ratio and the unit labor cost ratio discussed above rise, profits are squeezed; when they fall profits improve. For the domestic steel industry gross (undepreciated), plant and equipment per dollar of value added had doubled between 1947 and 1966 from $1.26 to $2.52, which, compares with a decline from $0.95 to $0.86 for all manufacturing industries (1947–55; 1966 data not yet available). This evidence is probably unexpected because of the new technology, such as the basic oxygen furnance (BOF) and continuous casting, greatly reduce investment per ton of output. Competition on a quality basis, however, has forced the domestic steel industry to invest even more in new, costlier finishing facilities than in cost-saving BOF's.

(23) Hourly steel labor costs in 1966 were $4.63 in this country compared with $1.87 in West Germany, $1.76 in Italy, $1.53 in France, and $1.10 in Japan. It is quite true that between 1960 and 1964 these hourly labor costs had increased by 61.2 percent in Italy, 41.9 percent in Japan, 40 percent in France, and 32.2 percent in West Germany as compared to only by 14.1 percent in the United States. But even if one were to assume that hourly labor costs here and abroad were to rise from 1964 at the same rates as shown above for 1960–64, it would still take the following number of years for foreign wages to catch up with U.S. rates:

	Years		*Years*
Italy	11	Japan	26
France	21	United Kingdom	59
Western Germany	25	Luxembourg	54

It is true that output per man-hour abroad today is still below ours, but it has been rising faster abroad. According to an official but unpublished British calculation, output per man-hour in the United States increased by 15 percent for all employees and by 20 percent for production workers between 1955 and 1965, while Japan (for all employees) it increased 250 percent.

(24) Seven domestic steel facilities have been dismantled or idled as a result of rising imports. The impact on employment is difficult to gage, however, because during the years 1964–66 the United States experienced increased domestic production of steel despite sharply rising imports.

(25) Despite higher prices, Federal income taxes paid by steel companies in years 1958–66 average less than 70 percent of those paid in 1951 and 1955–57, due primarily to lower profits.

(26) Steel imports during the first half of 1967 approached 13 percent of domestic shipments and were over 40 percent for certain specific products.

(27) The adverse effects of a reduction in output by 7 percent on costs per ton, caused in part by heavy fixed costs (depreciation, maintenance, interest, and property taxes), were again shown in the first half of 1967 when, compared to the first half of 1966, profits declined by 28 percent. During the comparable periods, imports had risen from 4.6 million tons to 5.2 million tons.

CHAPTER I

THE WORLD STEEL INDUSTRY: PAST, PRESENT, AND PROSPECTS

Steel's Role in the Emergence of U.S. Industrial Supremacy

The history of world steel production has been characterized by important shifts in the relative positions of the foremost steel producing countries. During most of the 19th century, the United Kingdom ranked as the world's foremost steel producer. Between 1893 and 1913, however, United Kingdom steel production increased by only 136 percent compared with 522 percent in Germany, and 715 percent in the United States. By 1910 the United Kingdom's production was only half that of Germany's and a quarter of U.S. production. These three countries accounted for 77 percent of the world steel production with only France and Russia contributing another 6 percent each, and the remainder widely distributed, as shown on table A-1.[1]

There was only one significant change in relative ranks between the two world wars, namely, the U.S.S.R. rose to third place by outpacing the United Kingdom. In 1966 the United States still ranked first, but its percentage had fallen to 26 percent of world total from 44 percent in 1910, 59 percent in 1920, and 61 percent in 1946. The U.S.S.R. had risen to 21 percent, and the combined Red bloc (U.S.S.R., Eastern Europe, China, North Korea, and North Vietnam) exceeded the United States. The fastest growth, however, had been shown by Japan where production had increased from 2.6 million net tons in 1930 to 8.2 million net tons in 1940, back to 1 million net tons in 1947, and up to 53 million net tons in 1966. (See charts 1, 2, and 3.)

[1] See appendix for all tables prefaced by a letter.

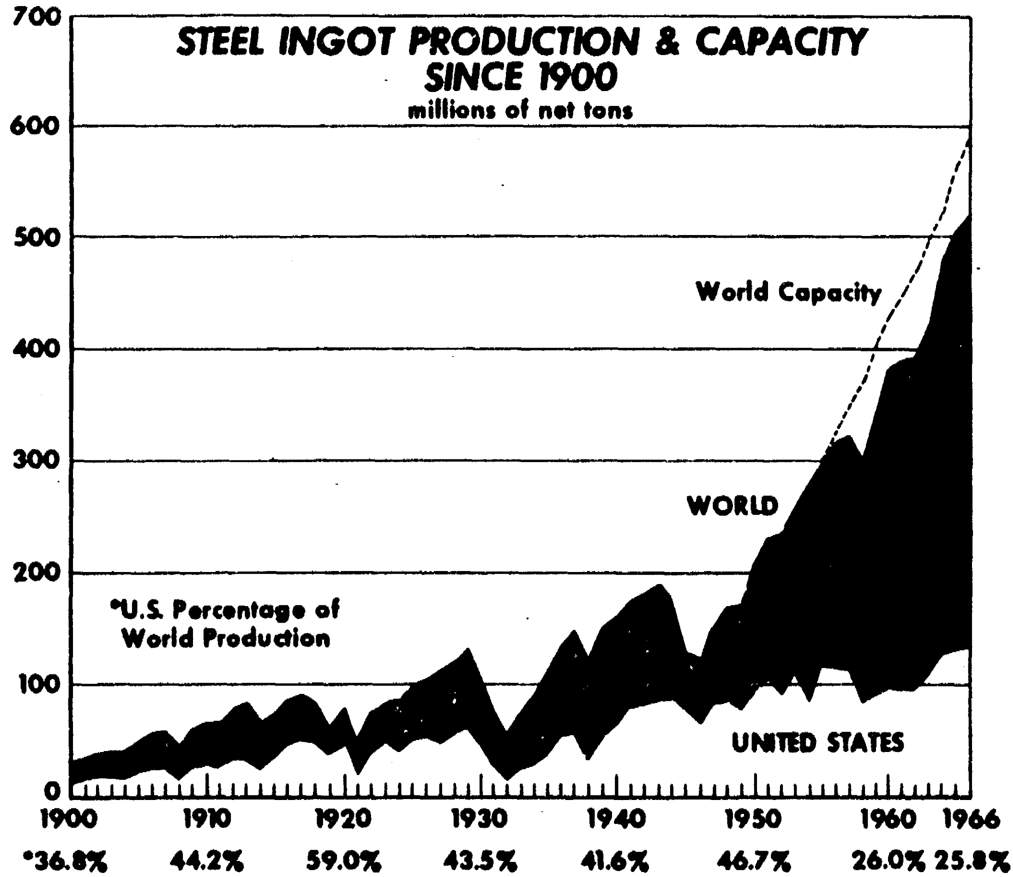

CHART 1

The rapid expansion of the U.S. steel industry between 1890 and 1930, was based on the low-cost, high-quality iron ore deposits of the Mesabi, and the world's best coking coal deposits near Pittsburgh with the waterway of the Great Lakes—an inexpensive means of transportation. These nature-given advantages when added to the entrepreneurial drive of a people having the first continent-size free market and being without traditional bonds of social classes and with a broadly based educational system, was bound to outdistance the standard of living of the Old World. These factors helped attract immigrants, and build an industrial economy without peer. Steel was the foundation of this economy and has remained its backbone. Even today, steel in terms of tonnage accounts for about 95 percent of all metals used in this country.

In this century, the average annual rise in world production and consumption of steel has accelerated rather steadily in the rest of the world. After rising steadily in the United States for most of the first half of the century, U.S. steel production declined between 1957 and 1963, recovering only during the capital goods boom of 1964–66.

About 9 billion tons of steel have been produced worldwide since 1871. It took three-fourths of the time to produce half of this tonnage, the remaining 4½ billion tons were produced three times as fast, with the most rapid expansion occurring during the last two decades.

Popular theories of economic development have stressed industrial investment. It also appears that many people were influenced by the success of the U.S.S.R. in becoming a major economic power in a relatively short time by concentrating on building up its steel and other heavy industries. One ironic result of this concentration on steel rather than on agriculture, education, and the exploitation of domestic raw materials is that the world is now facing a food shortage in Asia and South America, simultaneous with a surplus of steelmaking capacities.

The century old dominance of the United States and northern Europe in the world steel economy was based on the industrial revolution of the 19th century, propinquity to iron ore, coking grade coal, and technical ability of their populations.

The world steel industry today is characterized by the emergence of two new giants, the U.S.S.R. and Japan, and of some 36 new, small steel producing countries. The expected early exhaustion of the high-grade direct shipping iron ore deposits of the Mesabi sent U.S. geologists all over the world in search of other iron ore deposits. The success of these missions, as shown on map 1, led countries like Canada, Mexico, Venezuela, Brazil, and Australia to build up their steel industries using the newly discovered native ores. Furthermore, new low-cost transportation by boats, in the range of 50 to 150,000 tons, combined with lower investment costs for steelmaking facilities, from the use of the basic oxygen converter process and continuous casting, have given other countries the chance to build up their own steelmaking facilities. Some of these new industries have already achieved sizable capacities, such as, Italy (15 million tons) and India (12 million tons), while some 30 others are still too small to operate profitably.

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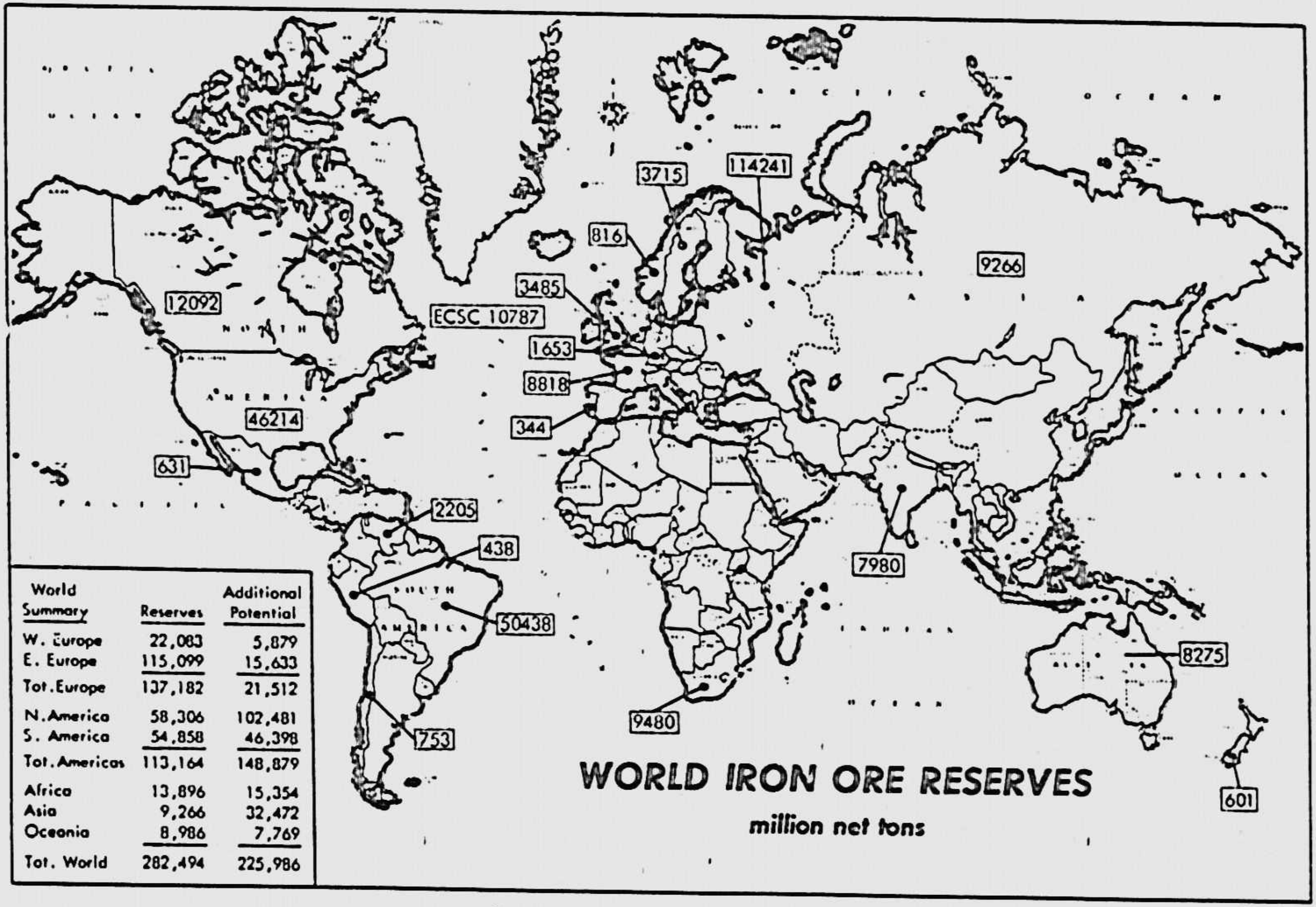


World Summary	Reserves	Additional Potential
W. Europe	22,083	5,879
E. Europe	115,099	15,633
Tot. Europe	137,182	21,512
N. America	58,306	102,481
S. America	54,858	46,398
Tot. Americas	113,164	148,879
Africa	13,896	15,354
Asia	9,266	32,472
Oceania	8,986	7,769
Tot. World	282,494	225,986

WORLD IRON ORE RESERVES

million net tons

The traditional steel exporting countries, the United States and northern Europe, are now faced with the loss of their old export markets in the formerly nonindustrial countries, at the same time when they face overcapacity for two other reasons. One stems from the fact that the cost-reducing new technology is resulting in the rapid construction of new facilities, while the older facilities are not being scrapped because they were built in the fifties and are, therefore, not yet written off the books. The other factor is that in the United States and northern Europe three trends are reducing the demand for steel; namely, the shift, at higher levels of standards of living, from goods to services, the competition from plastics, aluminum, and other substitutes, and modern design, using stronger and, therefore, lighter steels.

During the transition period before underdeveloped nations enter a period of industrialization, the world growth rate of demand for steel may decline to somewhat less than the 5.7 percent annual gains experienced so far in the 1960's. This is because the mature economies appear to have entered a period of slower annual growth in steel demand.

World production of raw steel has increased more than 17 times since the turn of the century. The rate of growth for the world steel production was 3.6 percent annually, which, if growth had been even, would have doubled output every 20 years. The growth rates for the United States alone, and for the rest of the world, were 3 percent and 4.4 percent, respectively. Growth rates of raw steel production during selected periods (1900–66) were as follows:

Growth rates of raw steel production,[1] selected periods, 1900–66

[In percent]

Year	United States	Rest of world
1900–18	7.4	4.4
1920–45	3.2	3.7
1950–66	1.4	8.3

[1] The least squares technique, which averages out the actual volume figures in a given period, indicates the trend or direction of growth fitted to a straight line. The least squares method normalizes the abnormal fluctuations.

Some 80 percent of the steel produced in the world is used by only 30 percent of the population. Steel consumption in 1964 was 1,353 pounds per capita in the United States, compared to 1,273 in West Germany; 932 in East Germany; 783 in France; 963 in the United Kingdom; 35 in India; and four in Indonesia. Japan had 712, Italy 486, Mexico 143, Brazil 94, U.S.S.R. 781, and China 39.

Many underdeveloped nations struggling to take their first steps toward industrialization, or to expand existing industries, appear to be afire with the belief that the basis for a machine economy is the manufacture of one's own iron and steel. In this respect, although they may possess adequate iron ore deposits and other raw materials to support a local steel industry, they may be putting the cart before the horse. Industrialization, even on a small scale, requires diversified steel products; such as, plates, sheets, pipes, tubes, bars, rods, girders, and wire not only for a manufacturing plant and the products it makes but also for other buildings, roads, bridges, pipes, and conduits for various purposes including auxiliary structures and equipment. The demand for these products, in a nation of small industries, is only for small quantities, and it is not economical to produce them in such quantities. Efficient production requires a sufficiently large domestic market which does not as yet exist in many underdeveloped countries.

Other obstacles to the growth of an iron and steel industry in underdeveloped nations are:

(1) The absence in some countries of iron ore or of coal suitable for coking;

(2) The lack of trained personnel on both the managerial and plant levels; and

(3) The lack of capital and foreign exchange.

In spite of these disadvantages, many underdeveloped nations are progressing in setting up their own iron and steel works. Their efforts have been aided through technical knowledge imparted by experts from the United States, Europe, Japan, or the U.S.S.R., and through various forms of educational and especially financial assistance, as shown in chapter III.

Table A-2 and charts 2 and 3 show raw steel production of major steel producing countries for selected years. 1910-66. A comparison between 1947 and 1966 highlights the reasons for the decline in the percentage of U.S. production of world total output. Japan's percentage had increased tenfold; Italy's had tripled; and "all others" had doubled; U.S.S.R. had nearly doubled; and Red China produced more steel than any country had in 1947, with the exception of only the United States and U.S.S.R.

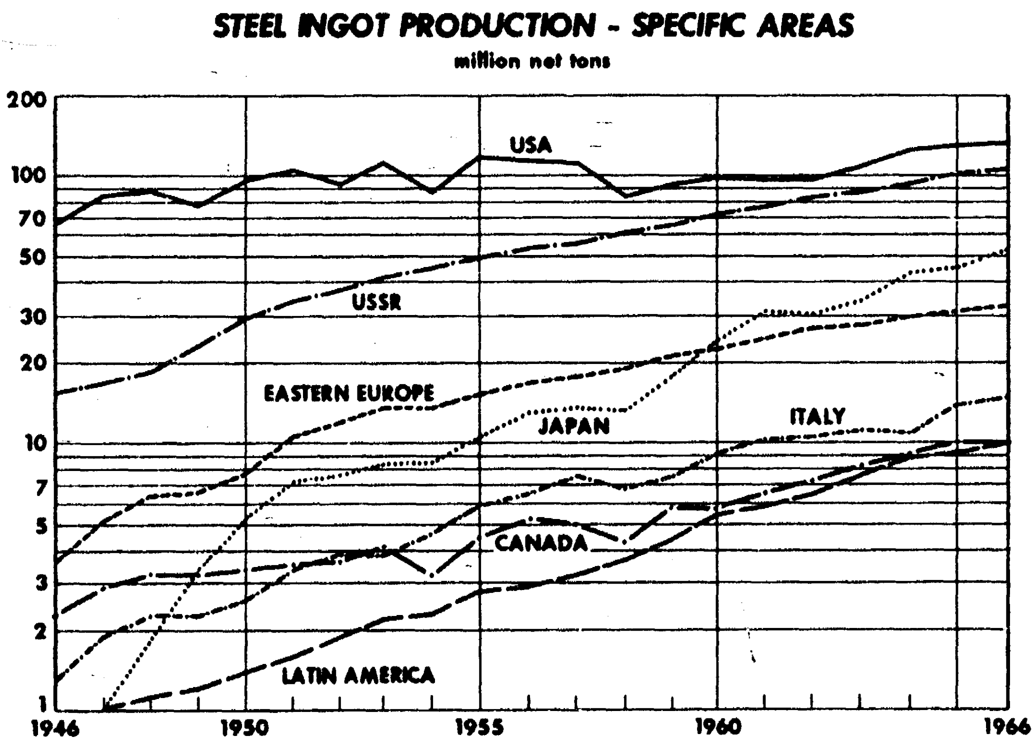


CHART 2

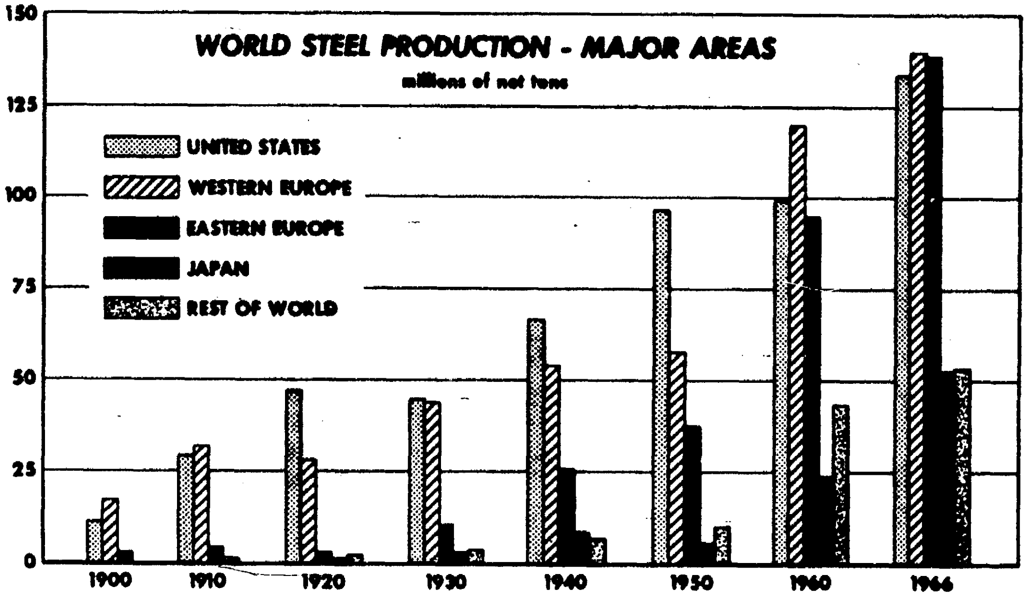


CHART 3

The U.S. share of world raw steel production was 37 percent in 1900, as shown in table A-1 and chart 3, and reached a peak of 61 percent in 1945. In 1966 this had fallen to 26 percent, and it is expected to fall to 21 percent in 1975 (chart 5).[1]

In the output of the principal steelmaking raw materials in 1965, the U.S.S.R. produced nearly double the tonnage of iron ore (measured by Fe; i.e., iron content of iron ore) than the United States, and nearly as much coal.

TABLE 4.—*World output of iron ore and coal, 1965 versus 1936-38*

[Percentage]

	1965		1936-38	
	Iron ore [1]	Coal	Iron ore	Coal
U.S.S.R.	28.3	19.7	18.2	8.7
Western Europe	16.2	19.7	34.7	38.1
European Coal and Steel Community only	7.3	10.1	18.4	18.6
United States, Canada, and Latin America	33.3	22.3	34.2	34.6
United States only	16.2	21.5	31.7	33.3
Asia	11.9	27.0	6.4	9.4
Africa	7.5	2.5	3.7	1.4
Australia	1.3	1.4	1.5	1.0
Others	1.5	7.4	1.3	6.8

[1] Fe content.

Source: Eisen und Stahlstatisk, Statische Bundesamt, Dusseldorf.

[1] The estimate for 1975 was made by H. S. Harrison, president of Cleveland Cliffs Iron Co., in "Mining Congress Journal," December 1965.

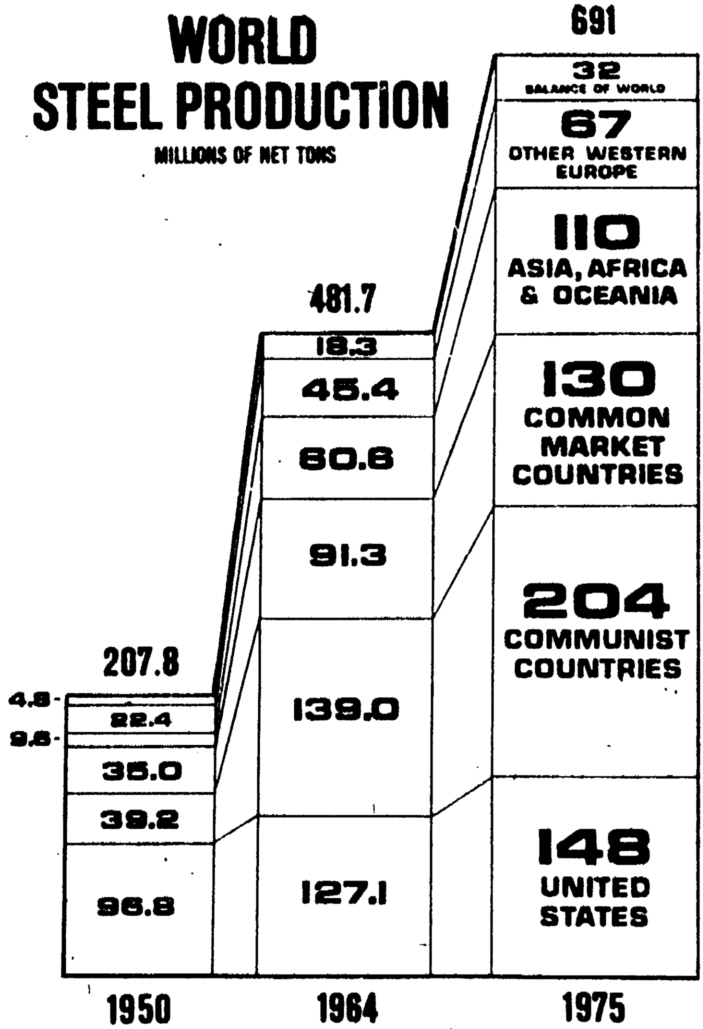


CHART 5

During the post-World War II period, the number of steel producing countries increased from 30 to 66, as listed in the appendix.

Together, these 36 postwar newcomers produced 5.9 million tons of raw steel in 1966 or about 1 percent of total world steel production. The impact of these newcomers is greater than the percentage indicates, however, as many of them, unable to consume their total output, are from time to time exporting their surplus steel into world markets, including significant tonnages to the United States.

World Production Trends

World production of raw steel has shown remarkable growth in the 66 years since the turn of the century, having increased more than seventeenfold by the end of 1966 to a record 520 million tons. The rate of growth over this entire period was 3.6 percent annually, resulting in a doubling of steel production every 20 years, on the average.

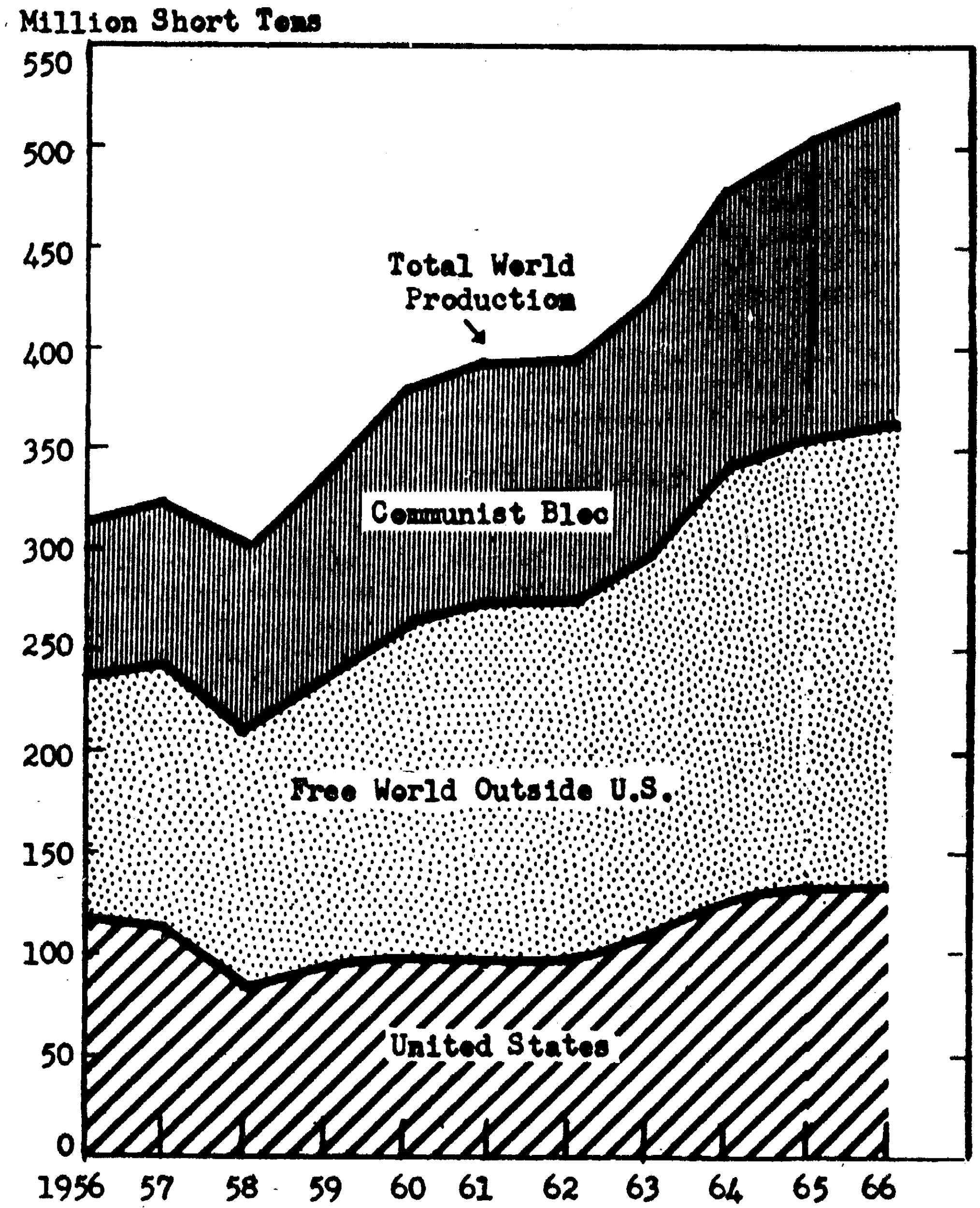
It is evident that starting from 1950, when the reconstruction phase in the steel industries of Europe and Japan had been about completed, world steel production has grown at an unusually fast rate.

U.S. production of raw steel has, likewise, shown considerable growth since 1900, but at a lesser rate. As a result, the position of the

United States as a steel producer has deteriorated compared to the rest of the world—from a share of the world total of some 40 to 50 percent in the earlier years of the century, to only 26 percent in recent years.

The gains in world steel production that have occurred over the past 36 years have been shared by each of the economic blocs, regions, and, for that matter, all of the countries in the world, as is indicated in the tables A-3, A-4, A-5 and chart 6.

U.S. AND WORLD RAW STEEL PRODUCTION



SOURCE: American Iron and Steel Institute
U.S. Department of Commerce, Office of Business Economics

CHART 6

Of the five broad economic blocs, the largest relative increase in production between 1950 and 1966 was experienced by the less developed countries, whose total production increased 6.3 times in the 15-year period. The production increases in the other blocs over this period were, as follows: Red bloc (4 times), free world excluding the United States (3.2 times), the developed areas (3.1 times), and the United States (1.4 times).

The relative position of each of these blocs in total world steel production also underwent substantial change over the 16 years. The Red bloc accounted for 30 percent of world steel production in 1966, compared with only 19 percent in 1950, with the free world's share dropping commensurately. From 47 percent of the world total in 1950, the U.S. share dropped to 26 percent—the only one of the blocs showing a drop in position. The developed areas advanced from 33 percent of the total to 41 percent, the less developed areas from 2 to 4 percent.

Of the major steel producing regions, Japan unquestionably, among the major producers, registered the largest relative gain in output between 1950 and 1966. Japanese output expanded almost 10 times, more than twice as much as any other major producing region. Significant increases were also recorded by Latin America (7.2 times), Red China (14 times), India (4.6 times), South Africa and other Eastern Europe (4.3 times each), other Western Europe (4.2 times). Smallest relative gains in output occurred in the developed areas in the West, although the absolute gains were, of course, larger.

World Steel Export Trends

World steel exports, as illustrated in chart 7 and table A-7, have also shown substantial growth during this century, although not as much as raw steel production. Exports have increased about fivefold—from 13 million tons in 1913 to 65 million tons in 1965 and an estimated 62 million tons in 1966. It will be noted that most of the expansion has occurred since 1950, due, in no small measure, to the phenomenal growth in trade between the members of the European Coal and Steel Community, and, though to a lesser extent, the members of the European Red bloc. Even excluding such intrabloc trade, however, the increase in world exports since 1950 has about tripled.

The U.S. participation in total world steel exports, whether including or excluding intrabloc trade, has declined drastically in the past 16 years, from 16 percent in 1950 to 3 percent in 1966 of total world exports, from 20 to 4 percent of world exports excluding intrabloc trade.

Former U.S. steel export markets in Canada, Mexico, Brazil, and other Western Hemisphere countries have been displaced by native steel production. Likewise, the former Northern European steel centers are now facing competition in the world market, and even in their domestic markets from such newcomers as Italy and the Netherlands, both enjoying the great advantage of tidewater locations, which allow for direct unloading of imported iron ore, scrap, and coking coal as well as the loading of steel for exports.

The pressure to export in the other Common Market countries, such as Belgium, Luxembourg, France, and West Germany, which, for a century, had been the main contributors of steel exports to the world market, has been aggravated by managerial policies opposed to prompt adjustments of output to demand, by government full employment policies, a desire to obtain foreign exchange, and by the rising imports into these countries of the Communist-bloc nations, and from Japan, Austria, Sweden, Spain, and Yugoslavia.

Ironically enough, the construction of the St. Lawrence Seaway, by making the industrial heartland of the United States adjacent to the Great Lakes available to ocean traffic, appears to have fostered steel imports rather than steel exports.

The Red bloc and the free world outside the United States accounted for all the increase in world steel exports, whether starting with 1929 or 1950 as a base. U.S. exports in 1965 were less than in 1950 and about on a par with 1929. (See table A-8.)

In the process, the U.S. share of world steel exports declined from 16 percent in 1950 to 4 percent in 1965, while the share of the rest of the free world rose from 77 to 80 percent, and of the Red bloc from 7 to 16 percent. (See table A-7.)

From the regional view, we find that Japan is the leader in export growth as it is in output expansion. Japanese exports advanced from some 600,000 tons in 1950 to 10.7 million tons in 1965. (See table A-9.)

ECSC exports have also advanced sharply, from 9.6 million tons in 1950 to 33 million tons in 1965, including intracommunity trade. Among the other major exporting regions—the U.S.S.R., the United Kingdom, other Eastern Europe, and other Western Europe—export expansion was considerable, roughly eight times for the U.S.S.R., 10 times for other Eastern and Western Europe, and 1½ times for the United Kingdom.

Of the regions shown, only the United States, the United Kingdom, and the ECSC have lost position in world exports since 1950. The ECSC share of world exports dropped the least—from 55 to 50 percent; the United Kingdom from 15 to 7 percent. The Japanese share increased from 3 to 16 percent, the Eastern Europe share from 7 to 16 percent. (See table A-9 for the world steel exports by major producing countries since 1929 and chart 8.)

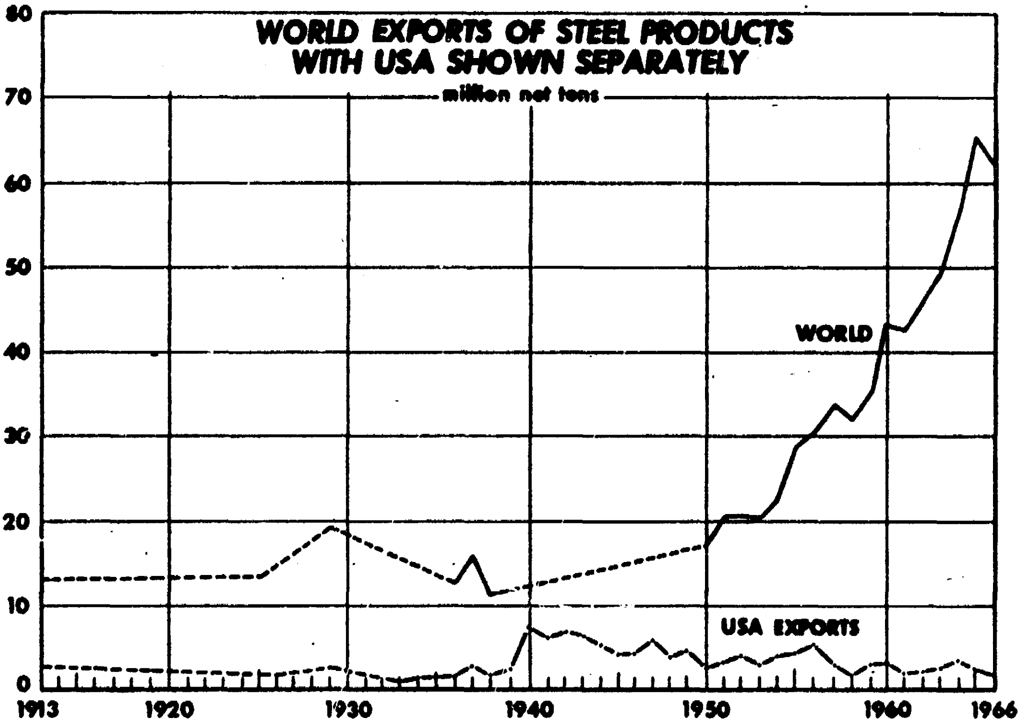


CHART 7

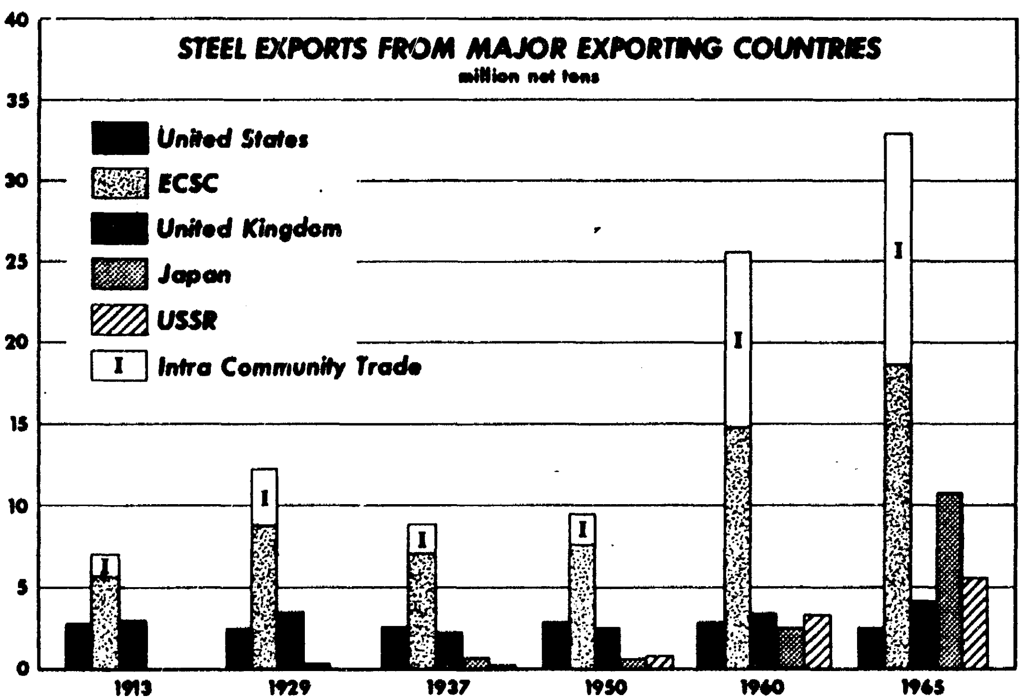


CHART 8

World Steel Import Trends

Since world steel exports and imports are synonymous, the comments relative to the trends in overall world export trade are applicable for total imports as well.

Note should be taken, however, of the unusually large increase in the amount of steel moving in world trade that is absorbed by the U.S. market. The U.S. absorption rate (i.e., the U.S. share of total world imports) has advanced from 1 percent in 1913, to 7 percent in 1950 and 17 percent in 1966—inclusive of intrabloc trade. Exclusive of intrabloc trade, the U.S. absorption rate increased from 9 percent in 1950 to 26 percent in 1966— giving the United States the unenviable position of being the largest single steel importing nation in the world. (See table A–11.)

The bulk of world steel imports is absorbed by the free world—85 percent of the world total in 1965 versus 15 percent by the Red bloc. (See table A–12.) This compares with the free world's share of world production of 71 percent versus 29 percent for the Red bloc.

The United States absorbed in 1965, 18 percent of total free world imports, compared with 58 percent by the other developed countries and 24 percent by the less developed countries. The growth in U.S. imports between 1950 and 1965 was ninefold. Imports into the other developed areas increased by four times and imports into the less developed areas by about two times.

The developed regions—United States, ECSC, other Western Europe, Canada—accounted for close to two-thirds of the total increase in world imports between 1950 and 1965. Excluding intra-ECSC trade, the United States absorbed about one-quarter of the increase. (See table A–13.)

Imports into the less developed regions show a surprisingly low rate of increase compared to the developed areas, which substantiates the growing impact of interpenetration of markets within the developed regions. (See table A–14.)

Trade between the United States, Japan, the ECSC and the United Kingdom—principal free world steel producers—has, in fact, grown in importance in recent years. It accounted for 16 percent of total world trade in 1965, compared with only around 10 percent in 1950, 1955 and 1960. As will be seen in table A–14, the United States has suffered the brunt of this interpenetration trade, absorbing 89 percent of the total of such steel shipments in 1965, compared with 58 percent in 1960, and 23 percent in 1955. The Japanese were the least affected by such trade.

For selected years between 1913 and 1965, chart 9 compares, in terms of tons of steel, imports into major importing areas. Between 1960 and 1965, imports into the U.S. (solid black column) increased from 2.7 to 10.2 million tons, while the imports into Western Europe rose only from 9.8 to 14 million tons, provided intracommunity trade is excluded.

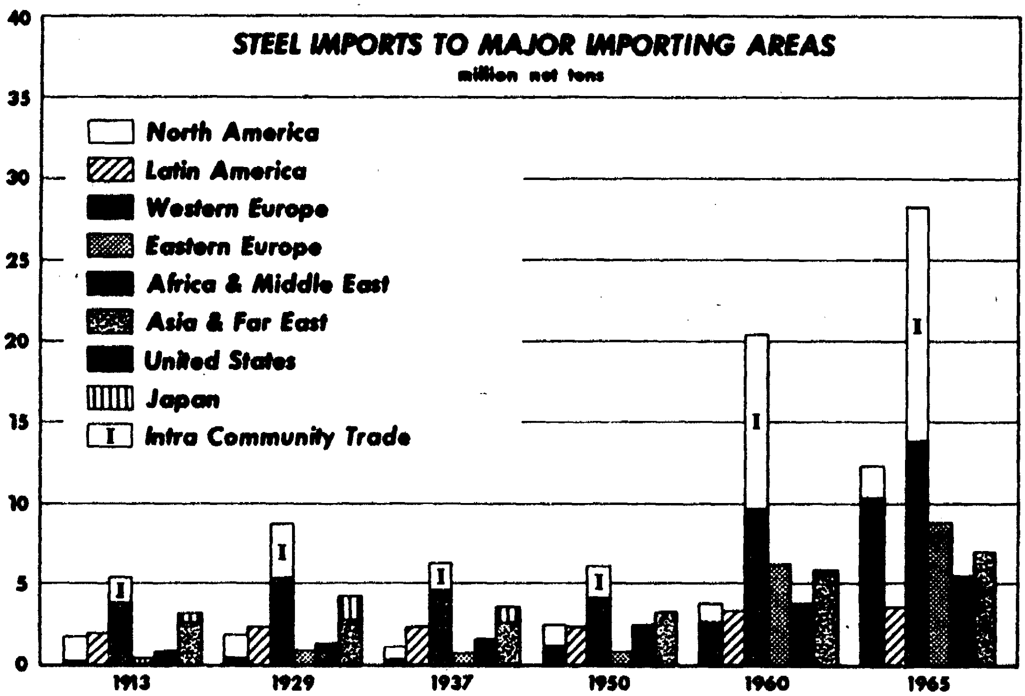


CHART 9

World Steel Consumption

The apparent consumption of raw steel in the world, in the United States, and U.S. consumption as a percentage of world consumption, is shown in table A-15. The peak year for the United States was 1925, and the low years were 1958 and 1960. The long upward trend in the business cycle in the United States since 1961 has improved the percentage of world consumption from 25 percent to 28 percent, but a part of this growing U.S. demand has been supplied by imports.

As in the case of production, the Red bloc has advanced its position as a steel consumer at the expense of the free world, due principally to the declining position of the United States, as shown in table A-16 and table A-17.

The rest of the free world has gained in position—about eight points (to 43 percent of the world total in 1965), of which six by the developed areas, two by the less-developed areas.

The greatest relative increase in consumption between 1950 and 1965 occurred in the Asia/Far East region—a more than fivefold increase, derived primarily from the great growth in steel consumption by Japan and also by the Asiatic Red bloc nations.

Consumption about tripled in this period in Canada, Latin America, the ECSC, the U.S.S.R. and increased between three and four times in other Eastern and other Western Europe, South Africa, India and other Asia/Far East.

Lowest growth rates (less than threefold increase), were experienced by the United States, the United Kingdom, other Africa/Middle East, and Australia.

Summary

The United States share of world steel production has fallen from 61 percent in 1945 to 26 percent in 1966, and is expected to fall further to 21 percent in 1975. Today, the traditional steel exporting countries, United States and Northern Europe, are not only faced with the loss of their former export markets, but also with overcapacity problems. This is due to three basic reasons: (1) New steel producing countries, Japan, Italy, The Netherlands, and even some of the underdeveloped countries, are exporting into the traditional steel producing countries. (2) The competition from plastics, aluminum, and other substitutes as well as modern design, using stronger but thinner gage steel, reduces the domestic demand for steel. (3) The resulting cutthroat competition and the reduced rate of use of capacity have caused profits of North European steel producers to decline to the vanishing point, and this in turn makes investment in new cost-reducing technology look attractive, even if the older facilities are not being scrapped because they are not yet written off.

CHAPTER II

WORLD EXCESS CAPACITY

There are two basic causes for the rising tide of net steel imports into the United States. One cause relates to lower wage rates, export incentives, subsidies, and nontariff barriers abroad, all of which are dealt with in the study. The other relates to excess world steel capacity, in comparison with world steel demand, combined with foreign price policies to sell steel at lower prices abroad than in the home market. Foreign pricing practices, whether by cartels or by individual companies, often have been satisfied with the recovery of variable costs, and with only partial recovery of fixed charges. Such selling at, or below, cost is bound to result ultimately in financial trouble for foreign producers, but foreign governments have viewed their steel industries as "instruments of government" which must be assisted even at the taxpayers' expense.

A discussion of steel capacity, United States as well as world, is relevant to the steel import problem for these reasons:

(1) World capacity versus world steel demand provides a measure of world steel surplus. Assuming that the United States is not subject to the questionable managerial decision to throw such surplus on the world market, and since the published capacity data for the Red bloc are the same as its production, it is more accurate to define world steel surplus as the difference between world capacity and world demand by excluding the Red bloc and the United States.

(2) U.S. capacity in recent years has been sufficient compared to U.S. demand to make it obvious that the steel import problem is not due to the lack of capacity of the U.S. steel industry to supply any and all steel products required, except perhaps during strikes or periods of frantic inventory buying by steel-consuming industries in periods preceding strikes.

(3) If imports, especially of certain specific steel products, continue to expand and thereby to aggravate their adverse effect on U.S. steel industry profits, the industry may be forced to dismantle the capacity to produce certain kinds of steel products. If at a later date imports should cease, workers formerly employed in such finishing operations as well as the specialized equipment would then no longer be available. Such cessation of imports might be due to demand abroad reaching capacity, strikes, realinement of commercial relations; e.g., Japan with China or West Europe with the Red bloc, or interference with ocean traffic by hostile countries. In each case, an emergency would ensue until production could come on stream with new capacity and newly trained workers.

Capacity Estimates

Raw steel capacity has traditionally been measured in tons of the output capabilities of furnaces after allowance for necessary maintenance and repairs.

A detailed study of world capacity for 1965 and 1970 published by ECSC on June 1, 1967, gave these estimates: 1965, 573 million net tons; 1970, 738 million net tons.

Steel capacity outside of the United States, in the postwar period, increased 3.7 times in the Communist bloc compared to 3.4 times in the free world. For the developing countries, there was a sixfold increase compared to only a 3.3 fold increase for the developed countries.

In 1965, the Red bloc owned 36 percent of world (excluding United States) steel capacity; the free world (excluding United States) owned 64 percent. This compares with 34 percent and 66 percent, respectively, in 1950.

Among major producing regions, Japan led the way in capacity growth—from 7.7 million tons in 1950 to 55.1 million in 1965. ECSC capacity tripled, U.S.S.R. capacity increased 3¼ times, United Kingdom capacity 1.8 times.

Among smaller producing regions, significant growth occurred in Latin America, other Western Europe, other Eastern Europe, India, Australia, and Canada.

While official data for 1966 are not yet available, the total world steel capacity in short tons for the years 1955–66 has been estimated as follows:

Year:	*World steel capacity*	Year—Continued	*World steel capacity*
1966	589.7	1960	431.4
1965	566.4	1959	401.7
1964	522.5	1958	473.6
1963	497.1	1957	350.0
1962	470.9	1956	326.4
1961	452.9	1955	299.4

Source: Economic Commission for Europe (ECE).

During the early postwar period the U.S. delegates to international conferences of the ECE, ILO, and other international agencies had urged other countries to compile annual raw steel capacity data for their respective steel industries. With the growing use of oxygen and for other reasons, however, the AISI decided in 1960 to discontinue the compilation of annual capacity data. Since that date, the U.S. steel industry has consistently refused to acknowledge the possibility of making capacity estimates. Nevertheless, the ECE has compiled such data for every year since 1960 for the world; obviously they used a capacity figure for the United States based on their best estimates, which is shown in the table below.

TABLE 10.—*U.S. steel industry raw steel capacity estimates*

[In millions of net tons]

Year beginning Jan. 1—	AISI	ECE [1]	ECSC	Iron Age	Wall Street Journal
1960	148.6				
1961		148.8			150
1962		149.4			157
1963		151.0			162
1964		153.8			165
1965		156.5	162.8		168
1966					174
1967				155	184
1970			178.2		

[1] Source: Estimates of the U.N., ECE annual steel market reviews.

Chart 11 and table B-1[1] on capacity, use of capacity, and net annual changes in capacity supplied for the committee's staff by OBE, U.S. Department of Commerce, are based on "Wall Street Journal" estimates, which the U.S. steel industry regards as too high.

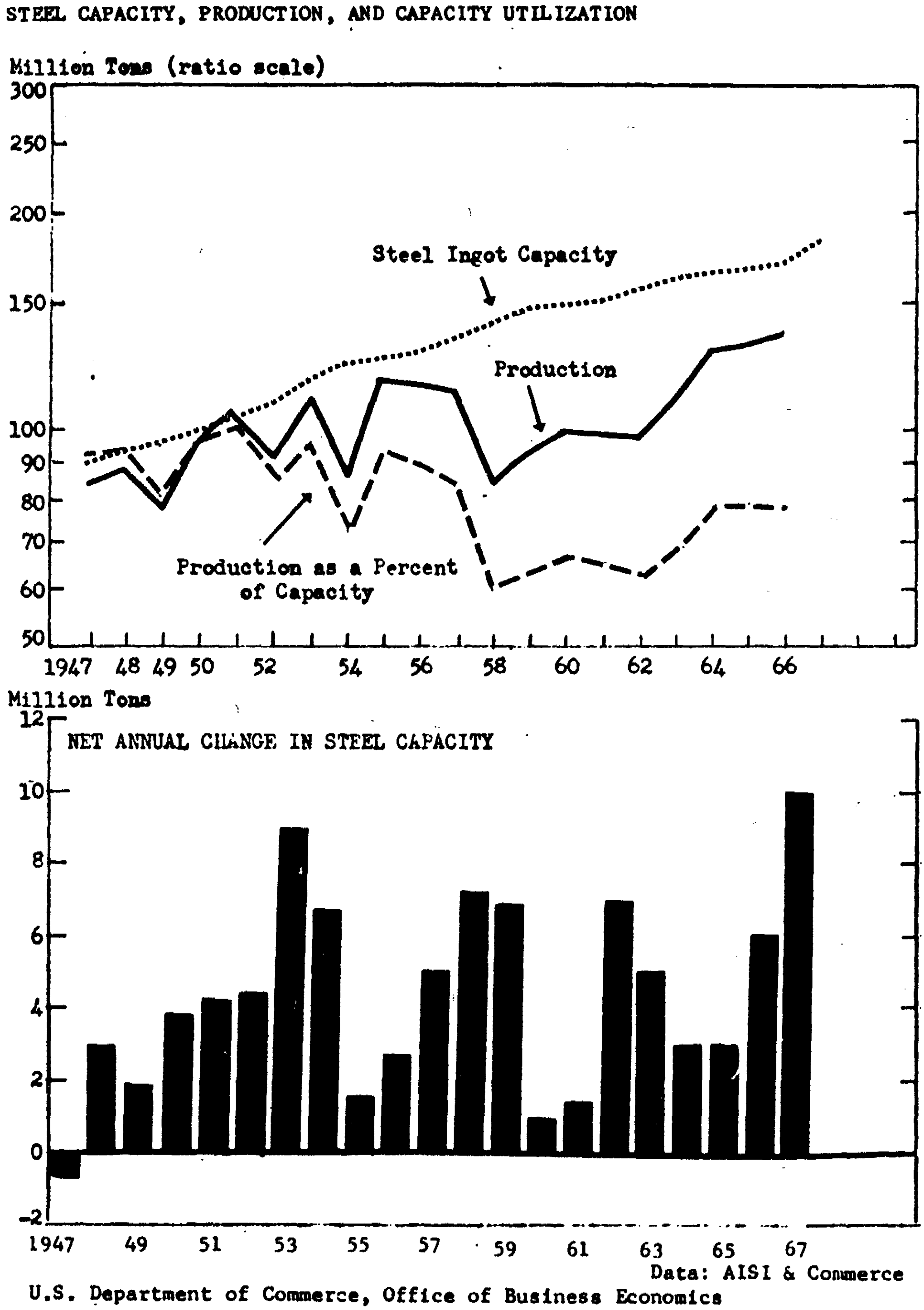


CHART 11

[1] See appendix for all tables prefaced by a letter.

The BOF (basic oxygen furnace) constitutes the outstanding example of new cost-saving technology in a century of steelmaking, saving more than half of the investment cost and about half of the operating cost. The U.S. industry has been accused of having been slow in adopting this process; reasons explaining the industry's attitude are given in chapter VIII. Table 12 gives the record of BOF production in the United States, 1955–66, and table 13 shows the major steelmaking processes in the 6 leading steel producing countries.

TABLE 12.—*Total production of raw steel versus basic oxygen furnace production in the United States, 1955–66*

[In millions of net tons]

Year	Total	BOF	BOF as a percent of total
1966	134.1	33.9	25.3
1965	131.5	22.9	17.4
1964	127.1	15.4	12.1
1963	109.3	8.5	7.8
1962	98.3	5.6	5.7
1961	98.0	4.0	4.1
1960	99.3	3.3	3.3
1959	93.4	1.9	2.0
1958	85.3	1.3	1.5
1957	112.7	.6	.5
1956	115.2	.5	.4
1955	117.0	.3	.3

Source: AISI annual statistical reports.

TABLE 13.—*Raw steel production by process used in 1966*

[In percent of total output]

	Open hearth	Bessemer	Electric furnace	BOF
United States	63.4		11.1	25.3
Japan	18.0		19.3	62.7
France	22.9	52.4	8.5	14.4
Germany	39.2	27.8	8.7	24.3
United Kingdom	59.1	5.3	13.8	21.9
U.S.S.R	84.3		9.2	3.8

Table B–2 shows the world's largest BOF installations.

Total finishing capacity estimates have always been much more difficult, if not impossible, to make because the capacity to make rails cannot be added to the capacity to make sheet; it all depends on the product mix of any given period.

The only method by which total finishing capacity can be estimated is by taking recent quarterly peak of shipments. According to table 14 "Shipments of Steel Products" by quarters, 1950–66, the two recent quarterly records were the second quarter of 1959 and the second quarter of 1965.

TABLE 14.—*Shipments of steel products*

[In millions of tons]

1950:	
I	16. 34
II	18. 22
III	18. 15
IV	18. 98
Year	72. 23
1951:	
I	19. 79
II	20. 22
III	18. 96
IV	19. 76
Year	78. 93
1952:	
I	19. 84
II	13. 12
III	14. 26
IV	20. 92
Year	68. 00
1953:	
I	21. 04
II	21. 32
III	19. 48
IV	18. 31
Year	80. 15
1954:	
I	16. 67
II	16. 60
III	14. 17
IV	15. 73
Year	63. 15
1955:	
I	19. 40
II	22. 59
III	20. 68
IV	22. 05
Year	84. 72
1956:	
I	23. 32
II	23. 62
III	13. 89
IV	22. 42
Year	83. 25
1957:	
I	22. 70
II	21. 60
III	18. 28
IV	17. 25
Year	79. 89
1958:	
I	13. 93
II	14. 77
1958—Continued	
III	14. 31
IV	16. 92
Year	59. 91
1959:	
I	20. 83
II	27. 05
III	6. 75 (28)
IV	14. 47 (61)
Year	69. 38
1960:	
I	23. 98 (100)
II	18. 93 (79)
III	14. 76 (62)
IV	13. 58 (57)
Year	71. 15
1961:	
I	13. 94 (58)
II	17. 31 (72)
III	17. 32 (72)
IV	17. 63 (72)
Year	66. 13
1962:	
I	21. 21 (89)
II	18. 33 (77)
III	15. 03 (63)
IV	16. 08 (67)
Year	70. 55
1963:	
I	18. 02 (75)
II	22. 74 (95)
III	17. 81 (75)
IV	17. 08 (71)
Year	75. 56
1964:	
I	19. 84 (83)
II	21. 69 (91)
III	21. 20 (89)
IV	22. 35 (94)
Year	84. 94
1965:	
I	25. 44
II	25. 82
III	22. 99 (89)
IV	18. 42 (71)
Year	92. 67
1966:	
I	21. 59 (83)
II	24. 40 (95)
III	22. 64 (88)
IV	21. 36 (83)
Year	90. 00

NOTE.—Figures in parentheses are percentages of peak quarterly shipments: successive peaks are underlined.

Size of Plants and Companies

The fiercely growing competition between world steel producers is being carried on in the frontline on the basis of prices, quality, credit, and promptness of delivery. This frontline battle is being backed up by large capital expenditures for the installation of the newest available technology, by the trend toward concentration of production in fewer large plants, by mergers, and by the organization of sales-cartels.

The advantages of size apply to both the individual steel works; i.e., production units, as well as to the size of companies, i.e., the commercial-financial units. Large blast furnaces, triple tandem large BOF's and large rolling mills benefit from the increased productivity of mere size of facilities, while large multiplant companies enjoy such cost savings as scheduling orders for long production runs and the ability to offer to customers a full line of products.

Foes of bigness in business and advocates of advantages of small steel plants for geographical regions at great distances from major steel centers, and for the developing countries, have greeted with enthusiasm any new technology encouraging small scale steel production. The new spray steelmaking process now in experimental use in the United Kingdom may appear, at first glance, to offer another step toward small scale-wide proliferation of steel output. But the optimum size of steel works is set by the minimum effective size of the largest indivisible unit anywhere along the chain of production, with all else being balanced up to it. Thus, even if a small spray steelmaking unit were to displace a BOF, the optimum size of the whole plant would still be determined by whatever is the next largest indivisible unit of plant, such as, the most efficient size rolling mill.

A study made by the British Iron and Steel Federation and published in Steel Review, October 1966, shows for the: United Kingdom, ECSC, United States, and Japan, in tables 15 and 16 the number of works of various sizes, and the percentage of capacity in works of various sizes. Tables 17 and 18 give the number of companies of various sizes, and the percentage of capacity in companies of various sizes. These tables clearly illustrate the advantages enjoyed by the American steel industry in relation to both size of companies and size of individual steel works. While the Department of Justice did not permit the merger of Bethlehem and Youngstown in the fifties, there seems to be no objection to the ultimate merger of Pittsburgh Steel and Wheeling Steel, and even of these two with a third company. Meanwhile the unsatisfactory financial position of steel companies in Europe has been a spur to achieve higher productivity through mergers, or through a return to cartel-like organizations.

TABLE 15.—*Number of works of various sizes*

	Over 4,000,000 tons	4,000,000 to 3,000,000 tons	3,000,000 to 2,000,000 tons	2,000,000 to 1,000,000 tons	1,000,000 to 500,000 tons	Below 500,000 tons	Total
United Kingdom	----------	1	2	9	9	20	41
European Coal and Steel Community	1	1	11	16	31	46	106
United States	7	7	16	17	15	32	94
Japan	2	3	2	7	4	31	49

TABLE 16.—*Percent of national capacity in works of various sizes*

	Over 4,000,000 tons	4,000,000 to 3,000,000 tons	3,000,000 to 2,000,000 tons	2,000,000 to 1,000,000 tons	1,000,000 to 500,000 tons	Below 500,000 tons
United Kingdom	----------	10	14	40	19.7	21.0
European Coal and Steel Community	5	4	24	21	21.2	23.1
United States	23	11	14	19	7.2	8.4
Japan	11	15	16	17	6.5	14.7

TABLE 17.—*Number of companies of various sizes*

	Over 4,000,000 tons	4,000,000 to 3,000,000 tons	3,000,000 to 2,000,000 tons	2,000,000 to 1,000,000 tons	1,000,000 to 500,000 tons	Below 500,000 tons	Total
United Kingdom		4	4	3	3	6	20
ECSC	4	3	10	10	15	21	63
United States	8	2	4	8	9	22	53
Japan	5		1	1	4	20	31

TABLE 18.—*Percent of national capacity in companies of various sizes*

	Over 4,000,000 tons	4,000,000 to 3,000,000 tons	3,000,000 to 2,000,000 tons	2,000,000 to 1,000,000 tons	1,000,000 to 500,000 tons	Below 500,000 tons
United Kingdom		44.3	28.4	12.9	7.1	7.3
European Coal and Steel Community	26.0	10.2	24.8	14.1	10.2	14.7
United States	72.2	4.3	6.0	6.5	4.5	6.5
Japan	74.8		6.0	2.3	6.2	10.7

A list of steel company mergers within the Common Market authorized by the High Authority during the years 1962–65 is provided in the appendix. It was in 1966, however, that the really important mergers took place; Arbed acquired Pont-a-Mousson, Thyssen merged with Phoenix-Rheinrohr, and Hoesch merged with the Dortmund-Horder-Huttenunion. The latter had been controlled financially by the Koninklijke Nederlandse Hoogovens which heretofore never had interfered with the production program of Dortmund-Horder, until they worked out a long-range plan whereby the Dutch company would concentrate on ingots and semifinished products, while the two German producers would emphasize the finishing operations.

Later in 1966, Lorraine-Escaut—Usinor et Longwy—Denain Nord-Est merged and Thyssen acquired Stahlwerke Bochum.

Aside from these mergers the German steel industry decided to organize itself into four sales agencies (Kontore), to channel orders received by each agency to the steel works best suited for the job; because these agencies are to have additional functions, such as the decision over future plant expansions, they appear to resemble rather closely some types of prewar cartels, even if this description is carefully avoided. Recently, the High Authority has given its approval of the formation of these agencies.

A Note on Production Costs of Foreign Steel Producers

Calculations of the cost of steel production abroad is an extremely difficult job. It will have to be done separately for each country, if possible for the different major companies and for the different kinds of finished steel products that are primarily imported into the United States. Finally, there have been significant changes upward, both in hourly wage rates and in labor productivity in recent years, both rates having risen faster abroad than in the United States.

Costs are traditionally calculated under three classifications; namely, labor, materials, and overhead. Generally speaking, labor costs abroad are lower than in the United States, but raw materials, fuel and electric power are higher.

The BLS indexes of wholesale prices (1957–59 equals 100) for 1966 for U.S. steelmaking raw materials were—

Pig iron and ferroalloys	80. 2
Iron ore	90. 5
Scrap iron and steel	77. 3

Foreign prices of raw materials also had fallen during this period but remained higher than in the United States.

Overhead is higher on account of more debt, higher interest costs and less ability to deduct interest cost from profit taxes paid. On the other hand, overhead is also lower because of less depreciation charges due to lower costs for plant and equipment.

The composite price for a ton of U.S. carbon steel mill products was $152.80 on August 23, 1967, as reported in Steel Magazine dated August 28, 1967. The average delivered price was $163.

The delivered price paid by U.S. customers for imported steel, according to answers to the committee staff's questionnaire, as shown in chapter VII, were lower than domestic delivered prices in a wide range, but most frequently in the $20 to $25 bracket.

The degree of fierce competition, motivated by overcapacity of steelmaking facilities in the world, may be gaged by comparing U.S. steel producer prices and costs with those of Japanese and Western European producers. Because costs vary among individual plants, companies, and countries and accounting practices and procedures differ, the data presented below should be used only for benchmark purposes:

Average cost at mill and delivered price to U.S. customer for a ton of carbon steel products

	United States	Japan	Western Europe
Average cost at mill	$133	$100	$116
U.S. freight average	10	5	5
Ocean freight average		15	15
Tariff average		7	7
Average cost delivered to customer	143	127	143
Average delivered price	163	[1] 143	[1] 143
Pretax profit	20	16	0

[1] The $143 average delivered price is set at $20 below the U.S. delivered price.

The above analysis implies that West European steel producers are selling in the U.S. market at a price equal to costs, or, because we use averages, are often not even fully covering their fixed overhead costs. The Japanese would have a profit margin of $16. If the price differential between domestic and imported steel should be wider than $20, the pretax profit or the loss changes proportionately.

The above-indicated profit margin for Japanese steel sold in the U.S. market requires qualification in two ways:

(1) Even though Japanese mill costs are below West European mill costs, and the cost of entry (transportation from mill to port, ocean freight, tariff, and U.S. freight from port of entry to the customer) are roughly equal, the average declared price per ton (f.o.b. foreign ports) in 1966 was generally higher as reported below:

Belgium-Luxembourg	$96.48
France	100.04
West Germany	100.47
Italy	106.37
Japan	112.29
United Kingdom	114.07
The Netherlands	115.88
European Economic Community	99.27
Average	112.31

The difference between the declared price per ton f.o.b. foreign port and the average cost at the mill presented in the table above is accounted for, in addition to markup, by the product mix. The Japanese and the United Kingdom export a much higher grade of steel (cold rolled sheet and strip) to the United States than the Common Market nations. Profit margins, however, are still determined basically by costs at the mill level.

(2) The indicated profit margin for Japanese steel sold in the United States exist only insofar as the producers sell directly to their U.S. customers. If these producers sell through Japanese trading companies, their profits would decrease by an amount equal to the commission charged.

If West European producers sell through domestic importers, they would incur a loss proportionate to the importers' commissions.

Unused Capacity Exerts Pressure to Export

Because of heavy fixed overhead costs, typical of the steel industry, especially abroad, foreign producers have a tradition of cutting export prices below total costs rather than to restrict operations. Prewar cartels have a long history of this type of managerial policies.

Table 19 gives the percentages of their capacities for which the major steel producing countries were depending on exports in 1965.

TABLE 19.—*Steel exports as percentages of raw steel production*

	Percent
Belgium-Luxembourg	90.0
France	47.0
West Germany	36.1
Japan	32.4
United Kingdom	18.0
United States	2.8

The strain of uncovered fixed costs inherent in unused capacity has caused frantic efforts to increase exports.

Until about a decade ago, the countries having steel capacity in excess of domestic demand exported either to countries with no steel production of their own, or to countries where domestic steel demand exceeded domestic capacity, usually because the country lacked iron ore or coking coal. Italy might have been mentioned as a typical example, having but little and poor grade iron ore and almost no coal. Japan, likewise, was considered as a poor location for a native steel industry, but it had begun to import iron ore and coal from Manchuria, which it controlled until World War II.

The present world trends in steel trade are characterized by the following changes in this tradition: many countries which formerly imported steel because they had no production of their own, have become steel producers, often in excess of their present domestic demands. The number of countries producing their own steel has more than doubled since the end of World War II, having increased from 30 countries to 66 in 1966.

Highly industrialized countries like Italy, Japan, and the Netherlands, which formerly considered themselves poor locations for steel industries, now are among the lowest cost-producers because they import, in large boats, a grade of iron ore and coking coal which is superior and less expensive than most of the iron ore or coking coal domestically available to traditional steel producing countries, such as the United Kingdom, France, Germany, Belgium, and Luxembourg.

Especially disconcerting for the future is a review of the known plans for expanding steel capacity in each country against the estimated future domestic-demand trends, indicating a steadily widening surplus.

The U.S. steel industry had not only always adjusted its output promptly, if domestic demand fell for cyclical reasons, but also it has tried to keep capacity in line with long-term future demand trends by dismantling obsolete facilities if the discrepancy between expected domestic demand and new facilities appeared too wide.

But in many countries, like France and Japan, capacity expansion plans are based on the declared managerial decision of expanding the gap between future capacity and estimated future domestic demand.

An example of how any surplus capacity abroad is not regarded as welcome standby facilities for boom times, but as an obligation to export, is illustrated in the official French document: "The Fifth Plan, 1966–70," where it is stated on page 20: *"In 1970, France will consume 22 million metric tons of steel and produce 24 million;* ***its steel industry must therefore export 2 million tons.*** *To maintain its annual growth target of 4.6 percent, most of the investments for steel—a total of $1.5 billion for the 5 years—will go to raise productivity. Simultaneously, the best equipped mills will be used more extensively and the less competitive ones closed down."* (From pamphlet published by Ambassade de France, Service de Presse et d'Information, 972 Fifth Avenue, New York, N.Y. 10021, April 1967.) (Emphasis added.)

The concern with the apparent trend of the increasing discrepancy between world capacity and demand has caused the High Authority (ECSC) to publish in July 1967 a tabulation of world raw steel capacity for 1965, and expected capacity for 1970. A study of expected world steel demand for 1970 may be compiled at a later date.

The following table shows world capacity for 1965 and expected world capacity in 1970 as well as the expected average annual increases in capacity 1965–70:

TABLE 20.—*World capacity, 1965, and estimated 1970*

[In millions of net tons]

	World capacity		Average annual tonnage increase in capacity 1965–70
	1965	1970	
Common Market	112.2	133.0	4.0
United Kingdom	34.7	40.7	1.2
United States	162.8	178.2	3.1
Japan	50.5	78.1	5.5
Other Western countries [1]	33.3	44.4	2.2
Traditional Western importers [2]	30.8	55.2	5.0
U.S.S.R.	100.1	139.2	7.8
Eastern Europe	31.5	43.0	2.3
Red China, North Korea, North Vietnam	16.8	27.2	2.1
Total, world	573.1	738.1	33.1

[1] Austria, Norway, Sweden, Yugoslavia, Australia, Canada, South Africa.
[2] All other Western countries not included above.

This projection of world capacity expansion by 33 million net tons a year threatens to aggravate the present world surplus capacity which is discussed below.

The Basic Issue: World Steel Surplus Capacity

This study is concerned with the extent and the causes of the steel import problem. It is submitted that one of the most basic causes is the world surplus of steelmaking capacity compared to the world's demand for steel. To measure this world steel surplus the next two tables have been prepared:

TABLE 21.—*World excess capacity including United States and Red bloc*

Year	World capacity available for exports (thousand net tons) (1)	World imports (thousand net tons) (2)	Ratio of col. 1 to col. 2 (3)	Surplus (thousand net tons) (4)
1960	123.6	58.3	2.1:1	65.3
1961	129.1	57.6	2.2:1	71.5
1962	142.7	62.9	2.3:1	79.8
1963	142.1	66.8	2.1:1	75.3
1964	132.7	77.4	1.7:1	55.3
1965	153.7	88.6	1.7:1	65.1
1966	(1)	(1)	(1)	69.9

[1] Not available.

Table 21 shows the world steel surplus calculated by deducting total domestic production plus imports in all countries from world capacity. For the world as a whole total imports equal total exports. The surplus indicates the tonnage of raw steel that is neither consumed at home nor exported, and therefore constitutes at least a potential threat to the world market steel prices.

Because the U.S. steel industry promptly adjusted production to orders that can be obtained at a reasonable profit margin, its gap between capacity and production does not constitute a threat to world market prices. As far as the Red bloc is concerned, their reported capacity is close to output. In table 22, therefore, the world excess capacity is reduced from 70 to 50 million tons, but this 50 MTs represent the potent source of steel sales in the world market at, or below, costs.

TABLE 22.—*World exess capacity, excluding United States and Red bloc*

Year	World capacity available for exports (thousand net tons)	World imports (thousand net tons)	Ratio	Surplus (thousand net tons)
1960	62.7	45.1	1.4:1	17.6
1961	67.9	44.8	1.5:1	23.1
1962	79.1	46.3	1.7:1	32.8
1963	84.9	49.2	1.7:1	35.7
1964	90.2	58.2	1.6:1	32.0
1965	110.6	61.6	1.8:1	49.0
1966	(1)	(1)	(1)	(1)

[1] Not available.

In July 1967, the High Authority (ECSC) published its official estimates of world steel capacity in 1970 as shown in table 20, indicating average annual increases by 33 MT. Because the study assumes increases of world demand only at an annual rate of 20-25 MT, the present world surplus capacity is bound to grow each year.

The figures on unused production capacities should be interpreted with care. It has not been possible to determine the percentage of outdated equipment which still exists. In addition, it should be remembered that a certain surplus is necessary for periods during which steel consumption is above average. However, present unused production capacities are well above this level. The pressure of supply which has been felt since the beginning of the sixties and the low level of prices on the world steel market are clear signs of the existence of too great a supply reserve.

The presently known definite plans for raw steel capacity expansions for the free world, excluding the United States, indicate an increase from 270 million net tons to 348 million net tons. Because it is unlikely that the free world, excluding the United States, demand will increase by 78 million tons between 1966 and 1970, it must be assumed that the pressures on the world steel market will greatly increase during the next 4 years.

Why this uneconomic race to increase capacity? Because, first, new countries that never made steel before are still appearing on the stage. Other steel producing countries are expanding their steel capacities for either of two reasons: (1) they may be overoptimistic in their estimates of future domestic demand and of their export potential; and (2) they may be pessimistic about their ability to compete in the world market or even at home, and this results in frantic efforts to lower costs by building more efficient facilities which are, however, bound to increase capacity further.

In the appendix to this chapter (app. B) there is a compilation of forecasts for the years 1970, 1975, and 1977, differing widely in rates of growth in demand in the United States and the rest of the world. Domestic production will equal domestic demand, minus net imports. This study assumes a rate of growth of U.S. demand for steel by 2 to 2½ percent compounded, and 4 to 5 percent for the rest of the world. It is also assumed that imports into the United States will rise faster than U.S. demand, unless certain factors discussed in the "Introduction" and "Summary of conclusions" differ from the present state of affairs.

Later in the study, it will be shown that for the period 1967–75 due to the "Battle of the Materials" the rate of growth in demand will be as follows for steel, aluminum, and plastics:

	Percent
Steel	17–22
Aluminum	100
Plastics	200

Summary

This section has given a rather wide range of forecasts[1]; it should therefore be reiterated that this study assumes 2–2½ percent compounded for the U.S. and 4–5 percent for the rest of the world.

Note on Steel and Armaments

In estimating the future demand for steel, the role of wars, the arms race, and possible disarmament agreements are bound to be raised.

In the years between the two World Wars there was considerable sentiment that not only had the steel industries profited from World War I, but also that they somehow had been and were still assumed to be "war mongers" to stimulate the demand for steel. The leftish party line implied that armaments meant profit for the capitalists. This opinion is still implied in a recent U.S.S.R. publication, Roitburd, L. N., "Outline of the Economics of Ferrous Metallurgy," Moscow, 1960, page 15:

> During the past 40 years, the leading capitalist countries—the United States of America, England, Germany, France, and Japan—produced approximately 3.5 billion tons of steel. About half of all this huge mass of metal went for military purposes (manufacturing of arms, ammunition construction of military bases). In addition a great deal of the metal was used indirectly for war purposes (building of industrial enterprises, transport facilities for the movement of military personnel, and arms).

The assumption that armaments and wars increase directly the demand for steel hardly holds true today. It is true that in May 1967 the backlog of defense orders for durable goods was $33.3 billion out of total backlog of durable goods orders of $75 billion, but only a small fraction of this was for steel. The steel demand increase since 1964 is more a reflection of the boom in plant and equipment outlays and in sales of consumer durables because of the high rate of employment than it is a result of defense orders.

The end of hostilities and any era of reduction in defense expenditures would mean a substantial increase in steel demand after a brief period of adjustment. This conclusion is based on the fact that modern armaments require less steel per dollar spent.

As discussed later in the concluding chapter, national security requires a viable steel industry which is financially able to support its research into the new types of steel needed for modern weapons. The emphasis on the vital national security aspects of a healthy steel industry is in no way contradicted by the contention made

[1] See app. B.

here, that overall steel requirements would rise if an equal amount of Government spending would be converted from defense to nondefense appropriations.

World defense expenditures today are estimated at over $160 billion annually. World disarmament would not necessarily mean an economic saving of this amount because considerable security expenditures would continue under any conceivable disarmament agreement. These would include expenditures for some defense, inspection, police, and deterrent forces, amounting to perhaps as much as 50 percent of the current total or almost $80 billion annually. However, this would release the other $80 billion, $40 billion in the United States alone, for other uses. These savings in disarmament expenditures could be used in a multitude of ways, mainly in three areas: the reduction of taxes; increases in Government spending for goods and services; and increases in foreign aid with emphasis on the developing nations.

A reduction of taxes would result in an increase in consumer disposable income. It is safe to assume that the consumer will spend a substantial portion of his "windfall," for durable goods made of steel. This increase in consumer demand, even for nondurables and services can be expected, in turn, to call for a higher rate of private investment. In the event that the consumer should temporarily, at least, withhold a large portion of his "windfall" in the form of savings, Government would likely increase its expenditures in order to maintain economic growth until the consumer again fulfills his role as a demand factor.

An increase in nondefense Government expenditures would result in increased demands for steel. The curtailment of armament research and development expenditures would channel these funds to steel-consuming projects such as super highways, slum clearing, hospitals, schools, flood control projects, and other such activity that requires far more steel than armaments in dollars spent.

Increases in the foreign investment and aid programs would perhaps offer the greatest boost to the world steel demand. Assuming that as much as one-third, or one-quarter, of total disarmament savings would be used to increase foreign aid, it becomes apparent that the impact on the steel demand would be substantial. Developing nations are in great need of a wide variety of imported steel products for building up their economic infrastructure—industrial plants, transportation and communication facilities, pipelines, powerplants, etc. In addition, the need for steel in durable goods for consumer consumption is almost unlimited. For example, in 1966 the U.S. consumption was 1,454 pounds per capita of raw steel, while in the rest of the world, excluding the United States, it is estimated at slightly more than 241 pounds per capita.

Any period of lessened tensions, heightened confidence, less defense spending, and more investment and aid for the developing nations would increase demand for steel in a multiplier fashion.

CHAPTER III

AGGRAVATING POLICIES OF GOVERNMENTS

Foreign Aid Increases World Overcapacity

Since World War II, U.S. Government and international agencies[1] have advanced substantial funds for the construction of steel-producing facilities abroad. For the years 1947–66 the total amount has been calculated for this study to have been $2.165 billion. This amount, which includes both grants and loans, is arranged in two tables. Table C-1 gives the amounts for each country by year and table C-2 gives the amounts for each year by country.[2] These outlays do not include counterpart funds generated by these grants which may have been used to finance local currency expenditures.

To these $2.165 billion must be added approximately $900 million supplied by the U.S.S.R. for the construction of steel mills in India, the United Arab Republic, Algeria, Ceylon, and Iran. The U.S.S.R. aid usually calls for repayment over a period of 12 years at 2.5 percent interest, interest and principal payable in local commodities, with payments to begin 1 year after completion of these steel plants. These plants are scheduled for later capacity expansions, as listed below, also to be financed by U.S.S.R. funds: In India, the Bhilai plant with a capacity of 1 million tons of steel annually (an expansion of its capacity to 2.5 million tons per year is currently underway), and a plant in Bokaro with a capacity of 1.5 to 2 million tons per year with a potential expansion of up to 4 million tons annually are prime examples. In the United Arab Republic, a plant at Helwan is being expanded from 300,000 tons to 1.5 million tons of steel per year. In Algeria, a steel plant at Annaba with a capacity of 300,000–350,000 tons of rolled metal per year is in existence. In Ceylon, a plant with a capacity of 60,000 tons of rolled steel per year also has been financed by the Soviets. And in Iran, the first stage of a steel plant with a capacity of 500,000–600,000 tons of steel per year is a Soviet-assisted project.

Some of these funds to build steel mills in less developed countries may have been granted because the requesting country may have stated that the U.S.S.R. might oblige if the United States did not, and vice versa.

The increase in the number of steel-producing countries in the post-war period from 1946 to 1966 is based, in part, on their economic need and aspirations. However, to an even greater extent it is a reflection of the emotional spirit of nationalism in the less developed countries. A national flag, a national anthem, a national airline, and a steel plant—these seem to be among the first fervent aspirations of any nation.

[1] Namely the Eximbank—Export-Import Bank of Washington; IBRD—International Bank for Reconstruction and Development (World Bank); IADB—Inter-American Development Bank; IFC—International Finance Corporation; and AID—Agency for International Development.

[2] See appendix for all tables prefaced by a letter.

This proliferation of steel production, aside from usually being so high cost that the country would be able to import steel much more cheaply rather than to make it, has helped to create a world surplus of capacity. It has also decreased the chances of the traditional steel exporting countries to find markets in the developing countries.

Therefore, future financial, technical, and educational aid should probably be concentrated on assisting these countries to develop their steel-consuming rather than their steel-producing facilities.

U.S. GOVERNMENT AND INTERNATIONAL AGENCY FINANCIAL ASSISTANCE TO FOREIGN STEEL INDUSTRIES

Summary by countries

Country	Millions	Country	Millions
Argentina	$111.26	Pakistan	$0.63
Australia	13.35	Peru	42.00
Austria	56.42	Philippines	67.76
Belgium	20.44	Portugal	.85
Brazil	140.01	Republic of China	.70
Canada	5.70	Spain	126.31
Chile	113.87	Turkey	164.05
Colombia	33.95	United Kingdom	27.22
France	83.74	Uruguay	2.58
Germany	10.00	Venezuela	13.64
India	211.92	Yugoslavia	87.92
Italy	220.48	European Coal and Steel Community	100.00
Jamaica	.50	Latin American Iron and Steel Institute	.05
Japan	294.09		
Korea	2.23		
Liberia	45.63		
Mexico	153.38	Total	2,165.62
Netherlands	14.94		

Summary by years

Year:	Millions	Year—Continued	Millions
1947	$28.29	1958	$120.58
1948	7.20	1959	195.72
1949	203.87	1960	123.66
1950	45.70	1961	175.25
1951	66.07	1962	114.48
1952	42.11	1963	110.21
1953	11.20	1964	192.91
1954	111.59	1965	71.74
1955	88.32	1966	89.19
1956	221.76		
1957	145.79	Total	2,165.62

Government Ownership and Control of Free World Steel Producers

There are at least 84 steel-producing companies of the free world in which the respective governments—national, state, municipal, and entities thereof, such as, banks, institutes, economic commissions, etc., have an equity interest or direct control. These are listed in the appendix which also shows the latest annual raw steel output (generally 1965) of each company, where available, and the percentage that such output represents of total national production.

While the individual companies operating within the European and Asian Red bloc countries are not covered in the survey, they are included *en masse* in the summary table below in order that a measurement of the impact of direct government participation in steel can be made on a worldwide basis.

Major economic areas	1965 raw steel production, million net tons	Production of companies with government interest, million net tons	Ratio (percent)
World	503	209	42
Red bloc	146	146	100
Free world	357	63	18
Free world (excluding the United States)	226	63	28
Developed areas	208	53	25
Less developed areas	17	10	59

A breakdown of the same data by the geographic regions of the free world (excluding the United States and Canada) provides an even more dramatic picture of the impact of government participation.

Regions, free world	1965 raw steel production, thousand net tons	Production of companies with government interest, thousand net tons	Ratio (percent)
Latin America	9,227	6,760	73
Free Europe	142,813	49,790	35
ECSC	94,792	15,050	16
Other free Europe	48,021	34,740	72
Africa	3,961	3,385	85
Middle East	392	372	95
Far East and Pacific	59,283	2,375	4
Japan	45,372		0
Other Far East, Pacific	13,911	2,375	17

Companies in which governments have a direct interest account for a significant share of world steel production. As might be expected, companies with government participation are most important, in terms of relative output, in the Red bloc and less developed countries, but even in developed countries (other than the United States) the share of output accounted for by such companies is not insignificant, particularly when coupled with the fact that governments in these countries often extend substantial direct or indirect assistance of one type or another to their respective steel industries. (Table C–3.) Furthermore, the government ownership and control of large steel-consuming companies, such as of Renault in France, and part of Volkswagen in Germany may result in downward pressures on steel prices.

French and Japanese steel plants are privately owned. The French Government, however, has been advancing funds for expansion at about half the going rate in the open capital market. Little is known about government financial aid to the Japanese steel industry, but it is hard to visualize how the Japanese steel industry's expansion from 1 million tons in 1945 to 65 million tons in 1967 could have been handled without direct or indirect government aid.

The list of companies for the United Kingdom includes not only Richard Thomas & Baldwins, which never was denationalized, but also the 13 other British steel companies which were nationalized on June 28, 1967. This "nationalized" segment will account for over 90 percent of total British steel output and capacity. In other free world countries, a number of new plants are coming into being during 1967.

Government Assistance to Foreign Steel Producers

Most foreign steel producers receive incentives from their Government to increase steel exports. These incentives include such various forms of assistance as tax rebates, subsidies, liberalized depreciation policies, low-interest loans, liberal export credit and government-condoned cartels, to name a few of the more common aids. Inasmuch as the use of these incentives vary widely among countries, this account will be limited to a summary of the major types of government assistance which are available to foreign steel producers.

Tax Rebates

Among the export incentives employed by major exporting countries, particularly with respect to steel exports, the principal form of assistance is the refunding of taxes applicable to home market sales. Tax rebates are permissible under the GATT only if the remissions are made on indirect taxes. Foreign governments maintain that even though indirect taxes are levied for national purposes, they, in turn, place an undue burden on the competitive position of exports in the world market.

One of the most widely used indirect taxes which is rebated on exports is the turnover tax. There are many kinds of turnover taxes which are currently in effect throughout the world, and for purposes of illustration, the turnover tax systems in the European Economic Community will be discussed in detail.

At the present time, Belgium, Germany, Italy, Luxembourg, and the Netherlands use the multistage (cascade) turnover tax system assessed on the full amount of the sale each time a product changes hands, with the exception of intracompany transfers. France employs a single tax system levied on the value added through the wholesale stage. These tax systems are illustrated in the following table:

	Type of tax	Tax base	Nominal rate (percent)	Effective rate (percent)
Belgium	Cascade	Selling price excluding tax	7	7.0
Germany	do	Selling price including tax	4	4.17
Italy	do	Selling price excluding tax	4	4.0
Luxembourg	do	Selling price including tax	3	3.09
Netherlands	do	do	5	5.26
France	Added value	do	20	25.0

Under an agreement reached February 9, 1967, the EEC's Council of Ministers adopted two directives committing the member countries to harmonize their turnover tax systems by not later than January 1, 1970. The first of these directives provides for (1) the replacement of the turnover tax system (cascade system) at present in force in Belgium, Germany, Italy, Luxembourg, and the Netherlands by a common system of taxation on value added (TVA) and (2) the alinement of the added-value tax system already in force in France to the common system. The first directive also defines the essential principles on which this system is to be based and establishes the time table for the next and ultimate step; namely, the harmonization of the turnover tax rates which will ~~be the object~~ of a future directive. Thus, before the end of 1968, the EEC Commission is required to submit to the EEC Council proposals indicating how and by what date this ultimate step is to be achieved and the Council will, if possible, make its decision on these proposals before January 1, 1970.

The second directive spells out the method of applying the common TVA system which each member state is to incorporate into its tax law. Main points of the second directive are: (1) The TVA will be a tax on consumption levied, in principle, at all stages of the economic process and in such a way that it falls only on the value added at each stage (i.e. the taxpayer can deduct from the tax due on the invoiced value the amount of taxes previously paid as invoiced by his suppliers), (2) the TVA applies on merchandise and services supplied within each of the member states and on merchandise imports (but not on exports), (3) the TVA eventually will apply down to the retail level, but until such time as the fiscal frontiers between the six are abolished, member countries are free to limit its application down to and including the wholesale level, and (4) certain transitory provisions are made for the treatment of capital goods with respect to deductions for previous taxes paid.

The action taken by the EEC Council carries both immediate and long-range implications. The near-term consequence deriving from the application of the common TVA system will be to significantly change the applicable turnover tax rates, and hence the border tax barrier upon imports and the tax remission on exports.

Since the six member states, under the agreements of February 9, 1967, have committed themselves, at this time, only to a common TVA system, they remain free to set their own TVA tax rates for an undetermined period. For the five member states that must switch to the TVA system, and for France as well, the determination of new rates poses complex problems as the ultimate harmonized (identical) tax rate level will affect each country's tax structure (by virtue of a shift in incidence between different tax sources).

It is generally assumed that to start with, the five will try to fix their individual TVA rates at a level which will yield about the same revenues as their present turnover tax systems. If each country levies the TVA down through the retail level (which most of them do not at present), the initial rates might range as follows:

	Rate on value, including tax (percent)	Equivalent rate on value excluding tax (percent)
Belgium	11-13	12.4-14.9
Germany	10	11.1
Italy	8-14	8.7-16.3
Luxembourg	6-8	6.4-8.7
Netherlands	7	7.5

The French TVA tax, which is currently fixed at 20 percent on the value including the tax (25 percent on value excluding the tax) is to be

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reduced to 16.66 percent on the value including the tax (20 percent on value excluding the tax) in 1968.

If the sequence of events sketched in the preceding paragraphs actually evolves, border taxes on imports will, in the first stage (1) increase in the case of Belgium, Germany, Italy, and Luxembourg and (2) decline in the case of the Netherlands and France. In the second stage, all of them would rise to the French level which then will be 20 percent on the duty paid border value. As will be noted from the above tabulation, this would represent a significant increase over present rates in all cases except France.

The effect on intracommunity trade will be to neutralize turnover taxes as a competitive factor and remove the trade distortions to which the existing system has given rise. The effect on imports from non-EEC countries would be to significantly increase the cost of access to the EEC market so long as the "destination" principle of taxation remains in effect.

In announcing the introduction of the common TVA system, the official EEC press release terms this action "an essential step toward a Common Market in which tax frontiers will have ceased to exist—in which taxes will not be refunded on exports or imposed on imports," with the result that "there will therefore be no need for the relevant frontier formalities" in respect of trade between the six. But such complete elimination of the turnover tax frontiers among the member states will only be achieved when the ultimate step involving (1) the unification of the tax rates and (2) the assessment of the tax on the country of origin rather than the present country of destination principle has been put into effect.

Neither the level of the harmonized rate nor the effective date of this final step can be predicted. Present guessing is that the final harmonized rate will range between 15 and 20 percent and that the timing of the final harmonization stage will be in the mid-1970's.

This ultimate phase in the EEC turnover tax harmonization project raises a serious question for non-EEC suppliers, namely, whether it is the intention of the EEC to shift the turnover tax assessment to the country of origin principle in trade with the outside world as well, or whether it will apply only on intra-EEC transactions. Should the EEC elect to adopt the former course, it would of course imply a welcome dismantlement of what constitutes a highly protective nontariff trade barrier. If on the other hand, the EEC should choose to consider the matter as a purely internal arrangement, non-EEC suppliers will face an even more formidable hurdle in shipping into the EEC market from without. Presumably, the latter position would not be in violation of the GATT since it is possible to argue nondiscrimination when the EEC is treated as a single bargaining unit.

Currently, with respect to foreign trade, all six member states apply the turnover tax on the country of destination principle. Hence, imports are subjected to a border tax to equalize the turnover tax burden with domestically produced goods and conversely, turnover taxes paid on exported goods are rebated. The tax treatment on steel imports into the EEC is included in the material prepared on tariff and nontariff trade barriers. The rates of tax remission on steel exports from the EEC are described below.

Belgium.—Steel exports are exempt from the turnover tax of 7 percent that is applicable to domestic sales transactions, including imported steel products which are sold to customers in Belgium.

France.—Steel exporters can claim rebate or exemption on exports from the value added tax of 25 percent which is imposed when the steel is sold in a domestic sales transaction. When imported steel is sold in France, the 25 percent tax applies to the full sales price.

Italy.—Steel exports are exempt from the turnover tax of 4 percent that is applicable to a domestic sales transaction. In addition, a refund at the rate of 4.8 percent of the export price is allowed on most exported steel products. (Exceptions include tubes, at the rate of 7.8 percent, and cable wire and nails at the rate of 6.6 percent.) This refund is intended to cover the turnover taxes that presumably were paid on the materials purchased for use in the manufacture of the exported steel product. In addition to the 4 percent turnover, steel imports are also subject to an additional so-called equalization tax ranging from 1 to 5 percent of the sale price.

Refund of duty and indirect taxes is granted on exports of the products of the metals-mechanical industry (the steel fabricators) of Italy, at rates ranging from $21.77 to $29.03 per net ton on exports to non-ECSC countries and from $4.35 to $5.81 per net ton on exports to ECSC.

Italy contends that the refund of turnover tax does not exceed the taxes actually paid. While this may be true in some instances, in most cases the refund appears to be somewhat excessive. As to the refund of duty and other indirect taxes, there is little question that subsidy. A recent decision (May 17, 1967) by the Treasury Department on transmission towers illustrates this point:

TREASURY ANNOUNCES COUNTERVAILING DUTY ORDER ON STRUCTURAL STEEL UNITS FROM ITALY FOR ELECTRICAL TRANSMISSION TOWERS

The Treasury Department announced today that it has sent to the Federal Register for publication a notification of countervailing duties to be imposed on importations from Italy of steel units for electrical transmission towers.

The countervailing duties will be assessed on all importations of these steel units entered following 30 days after publication of the notification in the Federal Register. These duties are intended to counteract subsidies paid by the Government of Italy on exports to the United States of the steel units in question.

The amount of the countervailing duties will be equal to the amount of the subsidy. This was declared in the Treasury Department's notification to be 13.67 lira per kilo. At the current exchange rate of the lira, this is equivalent to $22.40 per long ton (2,240 pounds).

The countervailing duty action is the result of an extensive investigation conducted by the Bureau of Customs following a complaint of subsidization submitted by an ad hoc committee of galvanized transmission tower fabricators. The committee's complaint was filed pursuant to section 303 of the Tariff Act of 1930 (19 U.S.C. 1303).

Luxembourg.—Exports are exempt from the turnover tax of 3 percent that is applicable to domestic sales transactions including the sale of imported products. In addition, a refund at the rate of 1 percent of the export border value is allowed on all steel products. This refund is intended to cover turnover taxes previously paid on the materials purchased for use in the manufacture of the exported product.

West Germany.—A 4-percent turnover tax is refunded at the rate of 4 percent of the exporter's price plus 0.5 to 4 percent, depending on the steel product, to cover material purchased for use in the manufacture of such product. A so-called compensating tax of 2 to 9½ percent is assessed on the sale in West Germany of imported steel products.

United Kingdom.—Another example of a different approach to rebating indirect taxes is found in the British export rebate scheme.

The United Kingdom export rebate was implemented January 20, 1965, under the Customs and Excise Export Rebates Order 1965. To qualify for the rebate, goods must have at least 20 percent of their cost of manufacture attributable to United Kingdom expenditure. Such costs (incurred before goods are despatched in their final or finished state) include: cost of materials (less the amount of any customs or excise duty or surcharge or levy subsequently refunded on the export of the goods); direct labor costs; overhead costs of premises, land, machinery, etc. (including fuel, etc., costs); the costs, in the course of production, of an independent contractor; and normal packing costs. Excluded are manufacturer or exporter's profit, carriage or freight on the goods in their final state—and the rebate itself. The rates of rebate on steel exports are 2¾ or 3 percent of the free on board export value.

The official purposes of this program are to enable British firms to keep their prices competitive, to promote overseas marketing, and to increase the profitability of exporting.

Japan.—In the case of Japan, no provision has been made for refund of, or exemption from, excise taxes in favor of steel exporters, but other incentives such as liberalized depreciation allowances and export cartels come into play.

The U.S. industry is at a disadvantage compared to European steel producers because taxes that cannot be repaid are 80.5 percent of total taxes compared to only some 48.5 percent for Italy, 48.8 percent for France, and 65.7 percent for Germany.[1]

The principal form of taxation on persons and corporations in the United States is direct taxes in contrast to the EEC countries, Canada and the United Kingdom, all of which collect taxes to a much larger extent through indirect taxes (sales, excise, turnover or value added). U.S. exporters have to pay these indirect taxes at the border, while U.S. importers do not face such levies. Foreign countries rebate their own indirect taxes to their exporters, but the United States does not refund to domestic corporations the portion of direct corporate taxes that have been levied on profits originating from exports. International comparisons of tax burden are difficult to calculate, but the table below shows clearly that U.S. corporations pay from three to six times higher direct taxes than do corporations in other countries:

Direct corporate taxes as a percent of GNP in selected industrial countries, 1965

	Percent		Percent
United States	13.77	France	2.12
United Kingdom	1.90	Germany	2.47
Japan	3.96	Italy	(1)
Belgium	1.91	The Netherlands	3.96
Canada	4.19		

[1] Not available.

Source: Office of the Secretary of the Treasury, Office of Tax Analysis.
From: National Accounts Statistics, 1956–65, OECD, 1967.

Subsidies and Other Forms of Assistance, Including Measures Not Directly Related to Exports

Foreign government subsidies and other forms of assistance to the steel industry or to closely related industries bear directly on the com-

[1] Source: OECD, factfinding report on border tax adjustments, applied by member countries to exports and imports, Paris, October 1964, p. 29.

petitive position of steel exports in the world market. Even though most forms of assistance are granted primarily for domestic economic reasons, they do relieve the product from the full burden of costs which would have been incurred without this aid. In the world market, a product which has been directly or indirectly subsidized may have a more favorable competitive position than a directly competitive product from another country which does not receive similar forms of government assistance.

An example of direct government subsidization is the new European Coal and Steel Community compensation scheme for coke and coking coal within the ECSC announced February 22, 1967.

By the terms of the decision, member governments are authorized:

To provide subsidies to coal producers of their country so as to help bring the price of Community coking coal and coke used in steelmaking down toward the price of imports: the subsidy may be at a flat rate of $1.70 per ton or at a varied rate averaging $1.70 per ton with a maximum $2.20 per ton;

To introduce a joint financing system up to a maximum value of $22 million to cover the cost of subsidies for coke and coking coal delivered from one member country to another.

The price reduction made possible by the new subsidy must be made on the basis of list prices as published on January 1, 1967. The price reduction can in no case be more than the difference between these list prices and the delivered price of imported coke and coking coal. The subsidy is given on condition that the entire amount is passed on in the form of a rebate to the Community steelmaking industry.

The joint financing system for subsidies to intra-Community trade in coke and coking coal provides for a 40 percent contribution by the coal exporting country and 60 percent by the six member countries jointly, in the following ratio: Germany and France, 28 percent; Italy, 14 percent; Belgium, 11 percent; Netherlands, 10 percent; and Luxembourg 9 percent.

Also by way of example, in Belgium, direct cash grants are made to companies locating in specified development regions. These grants range from up to 20 percent of the cost of buildings (30 percent during period of recession) and 7.5 percent of the cost of equipment (10 percent during recession periods). Because of the high percentage of exports, these grants represent considerable aid to the producer willing to locate in a development region.

Two organizations which are financed from public and private funds have been created by government departments and private banks to make credit finance readily available to exporters. The office of National du Ducroire, a government agency, issues credit insurance on exports to the United States.

In France, exporters are allowed to set aside, free from profit tax, a bad debt reserve that amounts to 5 percent of the medium- and long-term credit extended to customers in export markets. In addition, special measures are arranged by government-owned banks to enable exporters to obtain credit to finance overseas business.

French exporters can obtain insurance through a semipublicly owned firm called COFACE for business involving certain risks which a commercial bank could not accept, and government loans for new facilities are made available to the industry at special low rates of interest.

In Italy, insurance of export credits is provided by the Instituto Nazionale delle Assicurazione (INA). Coverage is limited to 85 percent of the credit given by the exporter to his foreign customer. The state railway tariffs also allow reduced transport rates for export goods on that part of the journey taking place in Italy.

In Luxembourg the steel industry previously had no access to any form of waterway. In 1965, the Government of Luxembourg contributed extensively toward building a freight-handling yard and the port of Mertert on the Moselle. As a result the steel industry now has direct canal links with the major steel markets of Europe. Since Belgium steel producers must still ship by rail to Mertert, the industry has negotiated special rates with the Luxembourg State Railway, for the alinement of rail tariffs with comparable canal tariffs. This results in a significant concession in freight charges for steel, particularly since the normal rail tariffs in Luxembourg are the highest in Europe.

In the case of the United Kingdom, in May 1966 the Government introduced a selective employment tax aimed at subsidizing the cost of labor in the manufacturing sector of the economy. Under this law, steel producers are refunded the full amount of the tax paid by them plus a rebate of 30 percent of their total tax paid.

In Japan, exporters are permitted to establish a tax-free reserve of up to 1.5 percent of the income from overseas trading for foreign market development.

Low-Interest Loans

Until a year ago interest rates on bank loans or industrial bond issues were substantially higher abroad than in the United States. However, many foreign steel industries have received government loans at significantly reduced interest rates. Loans granted by the French Government to the French steel industry serve as a case in point.

At the end of 1965, the French Government granted a 300 million franc equipment loan to the French steel industry. For the first 5 years no annual repayment will be required and no interest will be payable during this period. After the first 5 years, the rate of interest will be 4 percent. In 1967 the French Government advanced another loan of 3 billion francs to the steel industry at 3 percent, a rate of interest less than one-half of what might have been charged in the open market—if available at any terms.

Corporate Tax Rates, Depreciation Allowances, and Investment Incentives, Abroad

It is often stated that in foreign countries steel producers benefit from lower corporate tax rates, or more favorable depreciation allowances, than available to U.S. steel producers. The U.S. Treasury was requested to compile a survey of corporate tax rates and depreciation allowances abroad.

OFFICE OF THE SECRETARY OF THE TREASURY,
Washington, D.C.

Prof. ROBERT M. WEIDENHAMMER,
Care of Senate Finance Committee,
U.S. Senate, Washington, D.C.

DEAR PROFESSOR WEIDENHAMMER: This is in further response to your letter of February 23 to Mr. Hendrick.

The information relating to corporate tax rates and depreciation allowances abroad that you requested has been summarized and is attached. As you know the income tax laws of various countries are constantly changing and we are not always certain that we have received the latest information. We believe the material on all but France to be up to date. Certain changes recently made in the French law are not yet available to us and have not been included.

Concerning provisions similar to our investment credit, you will be interested to know that taxpayers in Great Britain were, until recently, given investment allowances for new capital expenditures, but this has been changed so that with respect to certain expenditures British taxpayers are now given cash grants. Taxpayers are thus given relief whether or not their enterprise is successful, while in case of a tax credit the relief is granted only if the investment proves profitable.

The Japanese Government recently adopted new tax legislation—1966 special taxation measures law—which allows, among other things, tax credits to companies with capital in excess of 100 million yen ($278,000), which retire obsolete equipment. The tax credit allowance is 10 percent of the cost of the equipment replaced. None of the other countries mentioned in your letter has provisions similar to our investment credit; most of them do have incentives in the form of "special depreciation allowances."

I trust the information supplied is of assistance to you.

Sincerely yours,

NATHAN N. GORDON,
Director for International Tax Affairs.

INCOME TAX LAWS OF DIFFERENT COUNTRIES

The information presented in the attached sheets has been subdivided into three parts:

1. Corporation tax rates;
2. Depreciation allowances for industrial buildings and facilities (excluding capital equipment); and
3. Investment incentives. Special depreciation allowances and tax credits for investments and other measures used to accelerate economic or industrial development and growth.

For the sake of simplicity, exhaustive details have been deliberately omitted.

1. CORPORATION TAX RATES

Belgium

The rate of corporate income tax varies from 25 percent to 35 percent. The standard rate is 30 percent but is increased to 35 percent for that part of undistributed profits exceeding 5 million francs ($100,000), or is reduced to 25 percent for that part of undistributed profits not exceeding 1 million francs.

France

The standard rate of corporate income tax is at present 50 percent of net profits including capital gains.

Germany

The tax rate for undistributed profits is 51 percent for corporations with unlimited tax liability and 49 percent for corporations with limited tax liability. Distributed profits of corporations with unlimited tax liability are taxed at a rate of 15 percent. Since income used to pay tax is treated as undistributed income the minimum tax rate comes to 23 percent. (If either a corporation's seat or its management is located in Germany it has an unlimited tax liability. If, on the other hand, a corporation is not located or managed in Germany, only its income derived from German sources is taxable.)

The Berlin Assistance Law provides a reduction of 20 percent in the corporation tax and an additional 3.2 percent reduction on income earned in West Berlin.

Italy

Both an income tax and company tax are imposed on corporations. Income tax rates vary depending on size of income, as follows:

Income up to 4,000,000 lire ($6,540)	About 29 percent.
Income from 4,000,000 to 10,000,000 lire	About 31 percent.
Income from 10,000,000 to 50,000,000 lire	About 34 percent.
Income from 50,000,000 to 100,000,000 lire	About 35 percent.
Income over 100,000,000 lire	About 36 percent.

Company taxes are charged on those profits which exceed 6 percent of the net worth of the company. The present rate of tax is 17.56 percent.

Japan

The corporation tax rates vary from 22 to 35 percent depending on the total income of the corporation and the disposition to be made of profits. The current rates, effective April 1, 1966, are as below:

[In percent

	Income declared as dividends		Income retained in business	
	Company capitalized at 100,000,000 yen ($278,000) or less	Company capitalized at more than 100,000,000 yen	Company capitalized at 100,000,000 yen or less	Company capitalized at more than 100,000,000 yen
Taxable income up to 3,000,000 yen ($8,300)	22	26	28	35
Taxable income over 3,000,000 yen per year	26	26	35	35

Luxembourg

Income tax rates for corporations vary depending upon the total profits. The current rates are:

On profits not exceeding Fr400,000 ($8,000)	20 percent.
Over Fr400,000 but not over Fr600,000	50 percent + Fr80,000.
Over Fr600,000 but not over Fr1,000,000	30 percent + Fr180,000.
Over Fr1,000,000 but not over Fr1,312,400	72 percent + Fr300,000.
On profits exceeding Fr1,312,400	40 percent.

Netherlands

The company profits tax imposes the following rates of tax on aggregate profits.

	Percent
If profits do not exceed 50,000 florins ($14,000)	42
If profits exceed 50,000 florins	45

But a supplementary tax of 15 percent is imposed on profits between 40,000 and 50,000 florins in order to provide a smooth transition in the effective rate for companies with income of 50,000 florins and those with less.

United Kingdom

The latest revision of the British tax laws established a corporation profits tax at the rate of 40 percent.

United States

The corporate income tax rates in the United States are as follows:

	Percent
Normal tax on total income	22
Surtax on income exceeding $25,000	26

II. DEPRECIATION ALLOWANCES

The information presented below relates only to normal depreciation allowance by various countries. Special allowances and deductions granted are discussed in part III.

1. Belgium

The rate for depreciation in principle is decided by the tax authorities for each company individually. The law permits the tax department to grant, with respect to certain fixed assets acquired as of January 1, 1963, higher depreciation in the first year of acquisition (declining balance method). In the case of accounting periods other than the calendar year or after the first day of the accounting period ending in 1964, a company can adopt the declining balance method of depreciation. In this case the deduction must not exceed twice the deduction for the straight-line method or 20 percent.

The current straight-line rate for industrial buildings is 3 percent per annum.

France

Generally, the straight-line method of depreciation is allowed but in certain cases, especially in case of new industrial buildings of light construction (those with an anticipated useful life of 15 years or less), declining method of depreciation is permitted.

For straight-line depreciation, the allowable rates vary from 5 percent to 33 percent, depending on the nature of property involved. The rate for industrial buildings is 5 percent per annum. However, under various decrees issued by the Ministry of Finance, special depreciation allowances are granted to different kinds of industries and different types of assets.

West Germany

The tax laws with respect to depreciation are flexible and the allowances vary from 1.5 percent to 20 percent.

The accounting methods allowed differ for different kinds of assets, e.g., buildings can be depreciated only under straight-line method but movable capital assets can be depreciated by declining-balance method only.

Where the declining-balance method is adopted, the allowance is restricted to double the amount which would be allowed under the straight-line method and must not exceed 20 percent.

Industrial buildings can be depreciated at a maximum rate of 3.5 percent.

Italy

Depreciation allowances differ for different types of equipment and range from 3 percent to 20 percent. The accounting method allowed is straight-line method of depreciation.

The lowest rate of depreciation allowance—about 5 percent—is for industrial buildings. For machinery the rates are 12 percent.

Japan

Companies operating in Japan can elect straight-line or declining-balance method of depreciation.

Useful lives of fixed assets are determined by the Ministry of Finance but legitimate protests for shortened useful lives are often recognized and approved.

For industrial buildings the rate of depreciation allowed differs from 2 to 20 percent, depending upon the location of the building, nature of the building, and size of the enterprise.

Luxembourg

Generally the straight-line method of depreciation is permitted but in certain cases the declining-balance method may be adopted.

The depreciation allowances for various categories of capital goods differ from a minimum of 2 percent to a maximum of 16 percent.

Industrial buildings can be depreciated at a rate of 3 percent while general plant and equipment can be depreciated at a rate of 16 percent per annum.

Netherlands

All methods of depreciation are authorized and recognized by law but the accounting must be consistent and systematic. A change of method can only be made in special circumstances and with the approval of the tax authorities.

Generally, industrial buildings can be depreciated at a rate of 2 to 4 percent while plant and equipment can be depreciated at a rate of 7 to 10 percent.

United Kingdom

For industrial buildings the rate of depreciation allowed is 4 percent per annum. All industrial buildings, however, receive an initial (first year) allowance of 15 percent; afterward, they can be depreciated either on a straight-line or a declining-balance method.

For new plant and machinery acquired after November 5, 1962, accelerated depreciation deductions are allowed.

United States

Depreciation may be computed under any of the following four methods:

(A) Straight-line method.
(B) Declining-balance method, at a rate up to 200 percent of straight-line.
(C) Sum of the years-digits method.
(D) Any other "consistent method" if total allowances in the first two-thirds of useful life do not exceed the allowances under the declining-balance method.

Industrial buildings and facilities can be depreciated at a rate of 2.2 percent.

III. INVESTMENT INCENTIVES

Belgium

Industrial buildings, valued at less than BF2,500,000 ($50,000) are exempt from real estate taxes for 5 years.

France

In case of iron and steel industries, depreciation may be accelerated in relation to the value of the production of such steel or mining enterprises. The regulations permit the optional writing off of additional depreciation.

(In principle these allowances do not apply to assets acquired or manufactured since Jan. 1, 1960. Their application has, however, been provisionally extended at the taxpayer's option, in place of declining-balance method to assets acquired or manufactured between Jan. 1, 1960, and Jan. 1, 1965.)

Italy

For extensions, renewals, construction, or reconstruction work undertaken since January 1, 1964, 40 percent of the cost of the new installations may be spread over the first 4 years and added to the normal rate of depreciation. However, aggregate depreciation may not exceed 100 percent of the value of such new installations, nor 15 percent per annum.

Japan

There are two types of investment incentives granted by Japanese tax laws: (1) Investment credit, and (2) income adjustment allowances.

1. Investment credit.—This concept was introduced in 1966 when corporations with capital in excess of 100 million yen ($278,000) were granted investment credit for replacement of existing but obsolete equipment. The rate of this credit is—

> Ten percent of the cost of machinery or equipment so scrapped with a limit of 10 percent of the overall tax liability of the corporation.

In addition to above, income from manufacture of "new important products" is exempt from tax for 3 years after the start of operation.

2. Income adjustment allowances.—

1. Special depreciation, in addition to ordinary depreciation, is allowed during the first year of use for the following:

(A) Plants and equipment used by the important industries specified by law and designated as urgently needed to modernize such industries (e.g., blast furnaces used by the steel industry): One-fourth of acquisition cost.

(B) Plants and equipment of small enterprises (with capital stock of less than 100 million yen) designated as urgently needed to improve their business: One-third of acquisition cost.

(C) Large-scale plants or equipment produced for the first time in Japan and which require a high degree of technology for manufacture and have a high unit cost (100 million yen or more per machine or set of machines): One-third of acquisition cost.

(D) Acquisition or establishment of plants or machinery used in underdeveloped areas: One-third of acquisition cost.

(E) New machinery for use in research and development: 95 percent of acquisition cost.

2. Special depreciation amounting to one-third above the usual depreciation allowance is granted for the following assets:

(a) Machinery, equipment, buildings for factories, warehouses, and so forth, owned by small- or medium-sized companies.

(b) Warehouses owned by wholesalers, and so forth, designated by Minister of International Trade and Industry as contributing to the development of distribution system.

Luxembourg

New capital expenditure on plant and productive material can be deducted in the taxable year as follows:

Thirty percent for the first slice of expenditure not exceeding 2 million francs.

Twenty percent for the second slice of expenditure exceeding 2 million but not exceeding 250 million francs.

Ten percent for the third slice of expenditures exceeding 250 million francs.

These deductions are allowed in addition to the normal depreciation allowances.

United Kingdom

Until 1965, taxpayers in the United Kingdom were given an investment allowance for new capital expenditures but, according to the latest revisions, the nature of such benefits has been changed and expanded.

1. Investment grants of 20 percent are given on new machinery used for certain qualifying process, i.e., manufacturing, computers, construction, etc. These grants, which are given quite separately from the taxation system, are treated as reducing the capital cost of the assets for the purpose of capital allowances.

Firms making new investments in development areas are entitled to grants of 45 percent on machinery used for qualifying processes specified by law.

The rates of investment grants have been temporarily increased in respect of expenditure incurred between January 1, 1967, and December 31, 1968.

Machinery grants: Standard rate 25 percent; development area rate 45 percent.

2. Initial depreciation allowance of 30 percent is given in respect of machinery which does not qualify for investment grants. All industrial buildings receive an initial allowance of 15 percent.

3. Annual depreciation allowances set the maximum percentage of the value of the asset that may be deducted each year until the complete cost has been deducted in initial and annual allowances. The annual depreciation allowance for buildings is 4 percent and the standard rate for industrial machinery is normally 15 percent, but some kinds may be written off at 20 percent per annum and others at 25 percent.

4. Balancing allowances and charges. When an asset is disposed of an allowance or charge is made to adjust the aggregate initial and annual depreciation allowances to an amount equal to the original cost of the asset less any money recovered from the disposal.

United States

Taxpayers are allowed a tax credit equal to 7 percent of the value of new property erected, constructed, or reconstructed after December

31, 1961, on new property acquired after the same date and first used by the taxpayer after such date. The credit may offset tax liability in full up to $25,000, and up to 25 percent [1] of the tax liability above $25,000. Any unused credit can be carried back (3 years) or forward (5 years).[2]

The credit was temporarily suspended, with certain exceptions, for property acquired or constructed from October 10, 1966, through March 9, 1967. (The tax measure has not been adopted as yet, but action is expected by Apr. 15, 1967.)

SOURCES

(1) British Information Services press release I D-729 of January 1967.
(2) Federation of British Industries: "Taxation in Western Europe, 1964." London, United Kingdom 1964.
(3) Harvard Law School: "World Tax Series," various countries. Commerce Clearing House, Chicago, Ill.
(4) High Authority, European Coal & Steel Community: "Taxation of Companies," and "Fiscal Depreciation Allowances," both fourth editions. Luxembourg, Luxembourg, October 1966.
(5) Tax Bureau, Ministry of Finance: "An Outline of Japanese Taxes, 1966." Tokyo, Japan.
(6) U.S. Department of Commerce: "Overseas Business Reports."
(7) CCH, Standard Federal Tax Reporter.
(8) Japanese Embassy in Washington, D.C. (information regarding depreciation allowance for industrial buildings, etc., obtained over telephone.)

Tariff and Nontariff Trade Barriers

Tariff and nontariff trade barriers have had a significant and deleterious impact on world trade in steel. Their widespread usage has made it increasingly more difficult for American as well as foreign exporters of steel to penetrate world steel markets on a competitive basis. It is a natural consequence under these circumstances, that the world surplus of steel will find its way into the American market, since it is the largest and relatively freest in the world.

The following table, "Steel Sector Tariffs" is a very condensed survey of weighted average levies on steel imports by selected countries:

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[1] Existing legislation will raise this figure to 50 percent for periods subsequent to a date to be determined by pending legislation.
[2] The pending legislation will change this figure to 7 years subsequent to a date to be determined in the legislation.

Steel sector tariffs

[In percent]

	United States	ECSC/EEC	ECSC	EEC	United Kingdom	Japan	Austria	Sweden
Pre-Kennedy round, unweighted average	9.9	9.1	8.5	9.9	11.3	14.6	11.5	4.9
Pre-Kennedy round, weighted average [1]	7.4	8.3	7.5	11.4	14.5	10.3	11.7	5.2
Kennedy round, weighted depth of cut	7.5	[2] 28.1	([3])	([3])	15.4	44.2	28.9	0
Post-Kennedy round, final weighted average rate [4]	6.8	6.4	([3])	([3])	12.3	6.8	8.3	5.2

[1] The weighted averages were calculated on the basis of 1964 imports.
[2] The weighted depth of cut, if measured from the lower rates (average 7.2 percent) existing prior to February 1964, when they were raised to their present level, is 10.2 percent.
[3] Not available.
[4] Final unweighted rates not yet available. Final rates are those resulting after all Kennedy round concessions have been made, and will be effective Jan. 1, 1972, after having been reduced by equal stages over a 5-year period.

NOTE.—Tariff positions considered as belonging in the steel sector cover basic mill products, such as blooms, billets and slabs, plate and sheet, and basic fabricated products, such as angles, shapes and sections, wire rod, bars, etc. They do not cover the more highly fabricated steel products, such as chain, nails, wire, etc.

Before the Kennedy Round reductions, U.S. steel tariffs, on a weighted average basis, were about 1 percentage point below the combined ECSC–EEC average but 3 percentage points below Japan's tariff and 7.1 below that in the United Kingdom.

In the Kennedy Round the United States reduced its tariffs by an average of 7 percent on 1964 imports. The ECSC adopted a unified tariff and agreed to reduce rates to an arithmetic average of 5.7 percent. The EEC agreed to reduce rates within its jurisdiction correspondingly so that a tariff relationship would be maintained between more highly fabricated EEC items, and primary and less fabricated ECSC items. The ECSC–EEC tariff reductions average 23 percent from existing rates.

The United Kingdom reduced most of its rates by 20 percent, and Japan by 50 percent, except for a few alloy steel items.

An analysis of the effect of the Kennedy Round on steel tariffs as calculated by Mr. Meyer Bernstein of the United Steel Workers of America will be found in appendix C.

NONTARIFF BARRIERS

A nontariff trade barrier may be either a law, policy, regulation or practice other than an import duty proper, imposed by a government, which has a restrictive impact on exports to that country. The following is an illustrative list of trade regulations and practices which may be designed and administered to hamper trade and as such would be considered as nontariff trade barriers:

A. CUSTOMS LAW

1. Regulations governing the right to import (e.g., licensing).
2. Valuation and appraisement of imported goods.
3. Classification of goods for customs purposes.

4. Marking, labeling and packaging requirements.
5. Documentary requirements (including consular invoices).
6. Measures to counteract disruptive marketing practices, e.g., antidumping and countervailing duties.
7. Penalties (for example, fees charged for mistakes on documents).
8. Fees assessed at customs to cover cost of processing (handling) goods.
9. Administrative exemptions (for example, administrative authority to permit duty-free entry of goods for certain purposes).
10. Treatment of samples and advertising material.
11. Prohibited and restricted imports (embargoes and quotas).
12. Administration of customs law provisions (delay in processing goods, inadequate or delayed publication of customs information).

B. OTHER LEGISLATION SPECIFICALLY APPLICABLE TO IMPORTS

1. Taxes (e.g., excise, turnover).
2. Restrictions imposed to protect individual industries (e.g., quotas).
3. Exchange controls: Foreign exchange may be allocated only for imports for certain types of merchandise.
4. Restrictions applied for national security reasons (other than under customs law).
5. State trading (or the operation of enterprises granted exclusive or special import privileges).
6. Sanitary regulations (other than under customs law).
7. Food, drug, cosmetic and pharmaceutical regulations.
8. Patent, trademark and copyright regulations.
9. Shipping and insurance regulations.

C. OTHER LEGISLATIVE AND ADMINISTRATIVE TRADE BARRIERS

1. Government purchasing regulations and practices.
2. Domestic price control regulations.
3. Restrictions on the internal sale, distribution, and use of products.
4. Screen quotas and other restrictions affecting motion picture film and TV program material.
5. Specifications, standards, and safety requirements affecting such products as electrical equipment, machinery, and automobiles.
6. Internal taxes that bear more heavily on U.S. goods than on domestic products (for example, automobile taxes in Europe based on horsepower rating).
7. Restrictions on advertising of goods.
8. Restrictions on display of goods at trade fairs and exhibitions.

This is indeed a formidable list. Some items, it is true, have chiefly nuisance value to our export trade, even granting that no deliberate aforethought pertains to their enforcement at times. In this category are items C–7 and C–8, for example. Others, chiefly items A–1, A–6, A–11, and B–1, B–2, B–3 and B–5 are reason enough for serious examination of ways to lessen their considerable burden on export efforts.

While there are many factors contributing to the problems of steel imports in the United States, the significance of these barriers on world trade in steel and the backlash effect they produce on the American market are essential to an understanding of this problem.

Furthermore, when placed in context with the increasing number of countries which are becoming self-sufficient in meeting their own steel requirements combined with the chronic world surplus of steel-producing capacity, the problem of nontariff trade barriers has direct bearing on the competitive position of American steel producers at home and abroad.

The tables in the appendix provide a cross section of the kinds of formal trade regulations in selected countries which affect the flow of foreign steel into these regions. The point at which a trade regulation becomes a tariff or nontariff trade barrier is often a matter of semantics. But generally speaking, this occurs when either singly, or in combination with other trade regulations, the net result of these regulations is to significantly retard the free flow of steel into the importing country.

Many of these regulations are specific charges or costs which are levied against all imports and are, therefore, assumed to apply to direct exports of American steel mill products. In those cases where trade regulations apply only to selected products, i.e., quotas, etc., these regulations have been specifically checked for their applicability to steel.

In an effort to condense the numerous trade regulations of any given country into manageable form which will show the scope of tariff and nontariff trade barriers, only those major requirements affecting the cost of entry have been listed. Many additional charges and fees which are nominal have been omitted, such as sundry administrative fees and wharfage and handling charges. Regulations involving administrative procedures; i.e., import licenses and exchange controls, etc., have been included only if in practice these regulations are used in such a way as to impede the free flow of imports into the recipient country. With respect to tariff policy, only the major basis on which tariff rates are assessed has been cited unless otherwise noted. These qualifiers explain the seeming contradictions in the tables and answer the question why a particular regulation is considered to be a nontariff trade barrier in one country but not in another.

To illustrate the magnitude of tariff and nontariff trade barriers on steel trade, the specific charges which are levied on steel imports have been included in the table for the countries in the European Economic Community. Immediately following is another table which translates these charges into the terms of a comparative market transaction, thus showing the significant difference in the cost of entry for the same steel product exported to the United States and to the EEC.

It must be stressed that these tables by themselves do not begin to tell the whole story of the effect of tariff and nontariff trade barriers on steel trade. It is not the number of regulations or the type of regulation which impairs the entry of steel imports into the recipient country, rather it is the degree of punitive intent inherent in these regulations. For example, a country may place only a duty assessment on imports, but the rates of duty may be prohibitively high, thus discouraging the importation of unwanted products. Or a country may boast of a liberal tariff policy but in practice it acts to curtail competitive imports through licensing and exchange controls or direct prohibition. There are some countries which maintain a nonpunitive import trade policy on the basis of formal trade laws and regulations. However, in practice they successfully discriminate against steel imports through other direct and indirect devices—not listed in these tables—such as delays in processing import documents or granting clearance for entry, horrendous paperwork, excessive commission charges, government designation of qualified importers, discriminatory freight rates, extensive buy-national regulations, etc. There are also countries which maintain a formal and complex system of import controls. Finally, there are countries whose import trade policy does not affect the flow of steel into their markets.

The variances in the use of trade regulations to control imports are so great among countries and even among major geographic regions that in order to fully appreciate the problem confronting American steel exporters it is necessary to look at each country individually. The following descriptions of the trade policies are offered as cases in point:

THE EUROPEAN ECONOMIC COMMUNITY

The European steel markets have always been less open than the U.S. market because of higher costs of entry due principally to the so-called "border taxes," higher tariffs and other restrictions that reflect close cooperation between the industries and the governments of these countries. Within the European Economic Community, for example, each country levies duties on steel imports on a cost, insurance, and freight basis. In addition, West Germany applies a 2-percent to 9.5-percent turnover equalization tax on the duty-paid value of the imported product; and most steel imports fall into the 7.5-percent to 9.5-percent range. Belgium levies a 7-percent to 19-percent transmission tax on the duty-paid value of steel imports (most fall into the 7-percent category); Italy charges a 4-percent sales tax on the duty-paid value, a 4.8-percent or a 7.8-percent compensatory import tax on the duty-paid value, plus a 0.5-percent administrative fee on the cost, insurance, and freight value alone; the Netherlands applies a turnover tax of up to 11 percent of the duty-paid value of imports; France charges a 25-percent sales tax on duty-paid value and a 2-percent customs stamp tax on duty alone; and Luxembourg levies a 3-percent turnover tax on duty-paid—cost, insurance, and freight—value plus a 3-percent import tax on duty-paid value (f.o.b. Luxembourg)[1]. The net effect of these charges is a significant increase in the cost of entry which must be borne by imported steel mill products before they can be sold in the markets of these respective countries (see accompanying tables).

JAPAN

Japan discriminates against competitive imports through a system of import licenses and exchange controls. In addition, Japan has comprehensive buy-national requirements which act as an effective nontariff trade barrier to imports. Duties are levied on a cost, insurance, and freight basis as opposed to the free on board customs valuation used by the United States. Based on the experience of an American steel company, the Japanese trading houses have indicated that the commission for handling imported steel ranges as high as 30 percent.

[1] Information received from the Department of Commerce and other sources differs as to whether there are two separate taxes of 3 percent each applicable to imports into Luxembourg or whether there is only one tax of 3 percent. This question has not been resolved as yet.

MEXICO

Mexico's trade policy directly reflects the country's goal for economic development. The major economic objective in recent years has been to broaden the industrial base in Mexico, and the Mexican trade policy is designed to encourage industrialization. Its industries and consumer markets are protected by high tariffs and by import controls.

American steel exporters, in order to sell in Mexico, must obtain an import permit before placing firm orders with customers. Applications for import permits are referred to special committees which are called Comités Asesores de Importaciones. These committees are composed chiefly of members from industry and business associations and a limited number of Government representatives, and it is their responsibility to determine whether the steel mill product import is "essential" or whether satisfactory local substitutes are available. Import licenses are not readily granted if the same steel product is produced or about to be produced in Mexico or if a locally produced product can be substituted. The processing of import applications takes approximately 30 days, unless the product is needed immediately.

Obtaining an import license is the essential criterion for exporting steel to Mexico. Because of restrictions on competitive products, it is very difficult for an American steel producer, for instance, to operate a warehouse or service center in Mexico from which to supply various American-made steel mill products to the Mexican market. It is also difficult for the American supplier to establish a broad customer base or to compete freely for a share of the growing demand for steel in Mexico. Yet, Mexico steel producers are at liberty to compete freely with American steel producers in the American market.

Another barrier to steel imports is the Mexican tariff policy. The tariffs are complex. Duties are composed of a specific rate, based on weight or quantity, plus an ad valorem duty. The latter is assessed on either the "official" valuation or on the invoice value, whichever is higher. Rates of duty are high on products which compete with domestic industries. Inasmuch as the United States does not have a bilateral trade agreement with Mexico, allowable American steel mill products receive no tariff preferences in that market and must compete against steel products from other countries which do.

In addition, Mexico, as a member of the Latin American Free Trade Association, grants preferential customs treatment (tariff and otherwise) to steel imports from the associated member countries. These policies, in effect, discriminate against American steel products by creating additional competitive disparities among those imports which are permitted.

Steel imports are also subject to a gross receipts tax of 3 percent on sales. This sales tax is levied against Mexican steel mill products as well.

From a political point of view, the Mexican trade policy unequivocally supports the economic development goals of the nation. However, from a commercial point of view, this policy discriminates against competitive imports. Ten years ago, American steel exports to Mexico accounted for 15 percent of the Mexican market for steel. Today, this figure is estimated at 4 percent. Mexico has the second largest market for steel in Latin America, but American steel producers are unable to compete freely for this market because of Mexico protecting its infant steel industry.

TURKEY

The trade policy of Turkey illustrates another way tariff and non-tariff trade barriers effectively discriminate against steel imports. Turkey's major national goals with respect to trade are economic development and support of the country's balance-of-payments position. The import program is based on the conservation of scarce foreign exchange reserves for the importation of capital goods and raw materials essential for economic growth. Imports of less essential goods, commodities in adequate supply, or commodities which are produced domestically are limited or prohibited.

The major features of the Turkish trade policy include: tariffs, licensing and exchange controls, prior deposits, and selected taxes. The tariff system consists of ad valorem duties levied on a cost, insurance, and freight basis. Since Turkey is a member of the General Agreement on Tariffs and Trade, exports of steel mill products from the United States are accorded most-favored-nation treatment and benefit from any concessions granted under the GATT. Nevertheless, import duties on steel are high. Turkey employs tariffs not only to curtail imports but also to earn revenue for the Government.

The Turkish Government determines the import status of steel mill products. They are placed on a liberalized list or a quota list or else prohibited. In general, steel mill products are fairly evenly distributed among the three categories. Import licenses are required for all imports. They are granted automatically for steel products on the liberalized list. Licenses for items on the quota list, however, are issued for specific amounts according to the global quota for the product. No application may be made for more than 20 percent of the total value of the quota for any steel product.

Prior deposits must accompany all import licenses. The rates for steel products on the liberalized list range from 50 to 70 percent of the amount of the foreign exchange allocation. The rates vary for items on the quota list according to the market destination of the import.

An application for foreign exchange must also be filed for all imports. The requirements for obtaining a letter of foreign exchange allocation are complex and costly. They also vary according to the import status of the steel product and whether the item is a direct export or AID-financed.

Once the steel import hurdles the tariff, licensing, and exchange requirements, it is then subject to a series of taxes. These include: (1) a customs surtax of 15 percent of the duty; (2) a stamp tax of 5 percent of the declared value of the goods; (3) customs clearing tax of varying rates; (4) a port tax of 2.5 percent of the sum of the duty-paid value plus all the foregoing charges; and (5) a production tax of 12½ or 20 percent on the duty-paid value plus all the foregoing charges with the exception of the stamp tax.

The impact of the high cost of entry on the exports of American steel mill products to Turkey is best illustrated in the relationship of these exports to total steel exports to Turkey. From 1958 to 1964, total steel exports to Turkey rose from 91,500 metric tons to 307,600 metric tons in 1964, while steel exports from the United States advanced from 7,600 metric tons to 71,700 metric tons for the same period. However, the increase in shipments from the United States is largely attributable to AID-financing and does not reflect significant improvement in direct sales of American steel mill products in the Turkish market.

Also, it is to be expected that the country's trade policy will continue to safeguard domestic industries from competitive imports. The Turkish steel industry is expanding rapidly to meet the country's growing demand for steel. The extent to which Turkey becomes self-sufficient in steel production will determine the import status of current allowable imports.

In summary, the high cost of entry combined with limitations or prohibitions on steel imports have a distinct and negative impact on the ability of American and other steel producers to supply steel mill products to Turkey on a competitive basis.

The import trade policies of the foregoing countries are typical examples of the situation confronting American steel producers abroad. "Import substitution" policies adopted by less-developed countries have been encouraged by United States and other aid-giving agencies. At issue here is not the economic development efforts of such policies but their effort on U.S. trade. The specific provisions regulating the flow of steel imports and the punitive intent inherent in these provisions may vary among countries, but the discriminatory effect on these imports is the same. In addition, however, to such trade barriers, there are several general aspects to the problem which must be considered on a comparative basis in order to fully appreciate the effect these trade barriers have on exports of American steel mill products as well as the import backlash produced in the American market.

Comparative tariff rate structures.—U.S. rates of duty on steel mill products are not only among the lowest of all U.S. tariffs on industrial goods, but also they are among the lowest rates of duty on steel mill products anywhere in the world. This is true not only of the specific duties but also of the ad valorem duties. ***The problem for American steel producers both on outgoing and on incoming steel mill products is not the level of effective tariff protection inherent in the rates per se.***

Most foreign ad valorem duties on steel are levied on the c.i.f. (cost, insurance, and freight) value of the product rather than the f.o.b. value at the port of shipment, as is the case in the United States. This difference in procedure alone means that countries which levy duties on a c.i.f. basis increase their effective tariff protection by as much as 15 percent.

In addition, the rise of regional trading blocs and the carryover from the colonial empires have resulted in a vast system of preferential customs treatment for imports of steel mill products from the associated countries. Customs treatment of imports is significantly liberalized for the associated countries. Inasmuch as the United States is not affiliated with a regional trading area, American exports of steel mill products do not receive this preferential treatment and are at a competitive disadvantage against a foreign steel product which does.

In general, these taxes have an inequitable impact on trade between a country levying them and one like the United States which does not apply them. In other words, U.S. products, fully taxed, compete with products from countries which exempt exports from some part of their equal burden of taxation. American steel products entering the French market, for instance, already carry their full share of the burden of U.S. taxes. But they are then liable for the French duty plus a 25-percent transaction tax on the c.i.f. duty-paid value and a customs stamp tax of 2 percent on the amount of the duty. Conversely, French exports of steel mill products competing with American steel in the world market are exempt from previously paid transaction tax.

FRANCE—GENERAL

French turnover, or sales, taxes are generally grouped in the category of "Taxes sur le Chiffre d'Affaires (TCA)." Included within this category are the Tax on Value Added (TVA), which is levied primarily on goods. In the case of the TVA, export transactions may be exempted, and imports are taxed.

Rates: Standard rate is 20 percent. Since the rates are levied on price, including the tax itself, the effective rates as a percentage of the tax-free price is 25 percent.

Applicability: In principle the tax is levied on transactions arising out of industrial or trading activity which take place in France. However, exports, even if delivery is taken in France, are exempt, while imports bear the tax. The tax is levied on the "value added" in each stage of the production cycle up to and including the final stage. If at the final stage the product is sold at retail, rather than at wholesale, the local tax (2.75 percent) is due in addition to the TVA.

Treatment of exports: Exports are completely free of the TVA. Generally, materials destined for export may, upon certification, be purchased free of tax in the first instance. Where this is not practicable, provision is made for a credit against transactions subject to the tax. As indicated above, a pro rata share of the TVA levied against capital assets and general operating expenses which may be ascribed to exports is exempt from the tax, but the share attributable to domestic sales is also recoverable by the domestic seller.

Treatment of imports: All goods originating in foreign countries and imported into Metropolitan France, Corsica, and Monaco are also subject to the TVA. The tax is levied on the c.i.f. duty-paid value of the commodity.

GERMANY—GENERAL

The German turnover tax is levied at every stage of production wherever a genuine sale takes place. It does not apply in the case of book transactions between two subdivisions of the same company. The standard rate is 4 percent; a rate of 1 percent applies to wholesalers where no processing is involved.

Treatment of exports: Apart from exemption of the final stage turnover tax, exports also benefit from lump sum rebates to compensate for the cumulative burden of the multistage German turnover tax. There are two types of rebate: (A) general export rebate (ausfuhrverguetung) granted on every export sale; (B) export dealers' rebate (ausfuhrhaendlerverguetung) granted only on exports by dealers who perform no processing. Export dealers receive both types of rebate—the dealer rebate to compensate for the 4 percent tax paid by manufacturers and the general rebate to compensate for prior stage taxes. Rates for the general export rebate range between 0.5 and 3.0 percent F.O.B. price, with the bulk of commodities closer to 3 percent. The dealers' rebate, which is applied against 92 percent of F.O.B. price, is 4 percent, with a few exceptions at 3 percent. Rebates are considered inadequate in some cases. At the request of the Bundestag, the Government is now considering possible increases.

All export sales are exempt from excise taxes. There are no other tax benefits for exports.

Treatment of imports: A turnover compensation or equalization tax with a separate schedule of rates is levied against all imports except certain important raw materials. These rates are based on estimates of the level of turnover tax affecting the corresponding domestically produced item. These rates are applied against dutiable value plus duties, plus excise tax. The normal rate is 4 percent. There are also reduced rates of 1½ and 3 percent for some agricultural products and higher rate of 6 percent for a large number of finished products. The Germans claim, however, that in most cases the equalization tax has been set somewhat below the average level of turnover taxes. These average rates are estimated to vary in the 8–15 percent range.

THE ITALIAN TURNOVER AND COMPENSATORY IMPORT TAXES

Rates: Turnover tax (called IGE)—the standard rate is 3.3 percent, but there are a number of other rates.

Applicability: The IGE is collected and paid by the seller who adds it directly to the price of his product. Thus the tax accumulates on goods that pass through several transactions on their way to the final purchasers.

Treatment of exports: Export transactions are exempt from the tax and an estimate for IGE paid in previous stages of production is refunded. Refunds range from 1.0 to 6.5 percent, depending on the nature and stage of manufacture of the exported products. If exported products contain imported materials which have been exempted from the IGE and the compensatory import tax, their value is subtracted from the allowable rebate.

Treatment of imports: The IGE is levied on most imports. This is equivalent to the final stage of the IGE levied on domestically produced goods. In addition most imports bear a compensatory import tax ranging from 1 to 6.5 percent. This is equivalent to the IGE collected on prior stages in the manufacture of domestically produced goods. Both taxes are levied on the duty-paid value.

THE UNITED KINGDOM

The British purchase tax is an ad valorem tax generally collected at the wholesale stage in the distribution of goods.

The tax was first imposed in 1940 over a wide range of consumer goods with a view both to reducing consumption so as to release resources for war purposes and to providing additional revenue for the prosecution of the war. In the immediate postwar period the restraint of consumption remained important, but the tax is nowadays regarded as essentially a source of revenue.

Liability for the purchase tax arises as a rule when goods pass from a registered manufacturer or wholesaler to an unregistered retailer or to a consumer, as the case may be. Goods may pass from one registered trader to another without attracting tax and, in particular, a registered manufacturer may buy taxable goods and use them as materials in manufacture without attracting tax. Otherwise, liability to tax arises on goods transferred by a registered manufacturer or wholesaler to his own use or to his own retail department at the time when the transfer is made.

The rate of tax is the same whether goods are produced in the United Kingdom or imported from abroad. However, registered traders may import goods free of tax, tax being payable in that case when the goods are subsequently sold to an unregistered customer or transferred to a taxable purpose. Registered traders may export goods free of tax, and there is, in addition, a personal export scheme under which overseas visitors to the United Kingdom may make certain retail purchases and export them tax free as passengers' baggage.

The amount of the tax is a simple percentage of the statutory wholesale value of the goods, which is, briefly, the price (exclusive of tax) which the goods would fetch on a sale made at the time when the tax becomes due.

The prejudicial effects of national and internal taxation policies on American steel exports are difficult to overcome on a competitive basis. Furthermore, these trade barriers are integrally related to the political and economic requirements of each nation as well as to their domestic body of laws, thus, having made them difficult subjects to date for negotiation at trade conferences.

The competitive impact of licensing and exchange controls on imports.—The granting of import licenses and the control of the outflow of foreign exchange are simple and effective devices for regulating the amount and kinds of steel mill products which will be imported. In many instances, these controls are invoked to prohibit the entry of imports. The use of these trade barriers is prevalent among the developing nations of the world. However, Japan, the third largest steel producer in the world, relies on licensing and exchange controls, in part, to safeguard its domestic steel industry from widespread import competition.

The absence of free trade in steel and its effect on the American steel industry.—***The innumerable trade regulations throughout the world which directly or indirectly adversely affect the natural flow of steel trade belie the commonly held opinions that (1) free trade in steel is widespread among the nations of the world; (2) significant liberalization of nontariff barriers is realistically feasible in the short term; and (3) the markets of other major-steel-producing nations are as open to import competition as the American market.*** The absence of free trade and the punitive effect of nontariff trade barriers on world trade in steel place the "open" American market in an extremely vulnerable position to excessive import competition, as the world steel glut seeks an outlet in any available export market. Foreign steel-producing nations expect unlimited access to the American market for their steel product exports, but they freely discriminate against competitive imports in their home markets. A listing of the comparative tariff and other costs of entry per $100 of steel products is provided in C–4 of the appendix.

Buy American Legislation

It is only fair to point out that nontariff barriers are also to be found in this country and have recently shown an increasing rate of adoption by State legislatures.

The "Buy American" Act of 1933 (41 U.S.C. 10 a–d) and Executive Order No. 10582 which implements the act, govern Federal procurement. Additional provisions are found in the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 251 et seq.) and chapter 137 of title 10 of the United States Code.

Regarding procurement by the States, a survey was published in December 1965 by the United States-Japan Trade Council, entitled "State Buy American Restrictions." Since that date "Buy American" bills have been introduced in the Legislatures of Massachusetts, Pennsylvania, Texas, and Washington. The Governor of Pennsylvania vetoed his legislators' bill on August 11, 1967.

Steel Cartels

The cartel mentality was strongly developed in the prewar period in Germany, France, and Japan. After World War I, Europe had to contend with a sluggish demand for steel once war damages had been repaired. Faced with a good deal of excess steel capacity, a combination of heavy overhead costs, and inelastic demand, national and international steel cartels were formed with the passive blessing, or active support of governments. Steel was imported only if a real shortage of certain shapes occurred in any country, and exports were allocated on the basis of preestablished quotas. Prices were maintained in the home market and export prices were cut. Chart 23 "Domestic and Export Prices for Bars in Units of Local Currency Per Metric Ton" and chart 24 "Domestic and Export Prices for Heavy Plates in Units of Local Currency Per Metric Ton" are based on official records (Internationale Eisen-Und Stahlkartelle, by Gunther Kiersch, Rheinisch-Westfalisches Institut Fur Wirtschaftsforschung, Essen, 1954, pp. 193–224) and show, during the great depression from 1920–36, how prices of steel exported from Germany and France fell drastically while domestic prices were held relatively firm.

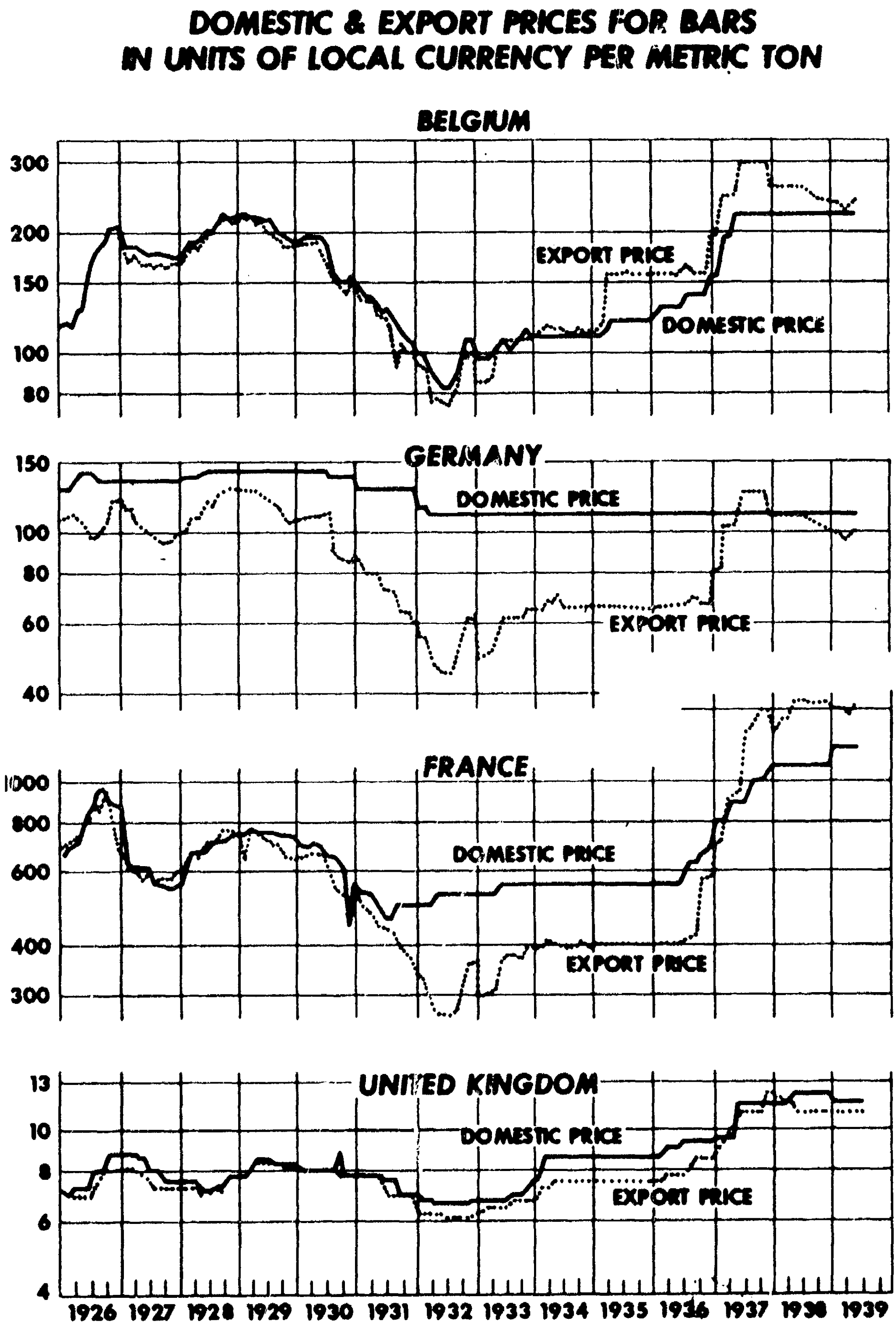

DOMESTIC & EXPORT PRICES FOR BARS
IN UNITS OF LOCAL CURRENCY PER METRIC TON
BELGIUM
300
200
150
100
80
EXPORT PRICE
DOMESTIC PRICE
GERMANY
150
100
80
60
40
DOMESTIC PRICE
EXPORT PRICE
FRANCE
1000
800
600
400
300
DOMESTIC PRICE
EXPORT PRICE
UNITED KINGDOM
13
10
8
6
4
DOMESTIC PRICE
EXPORT PRICE
1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939

CHART 23

DOMESTIC & EXPORT PRICES FOR HEAVY PLATES IN UNITS OF LOCAL CURRENCY PER METRIC TON

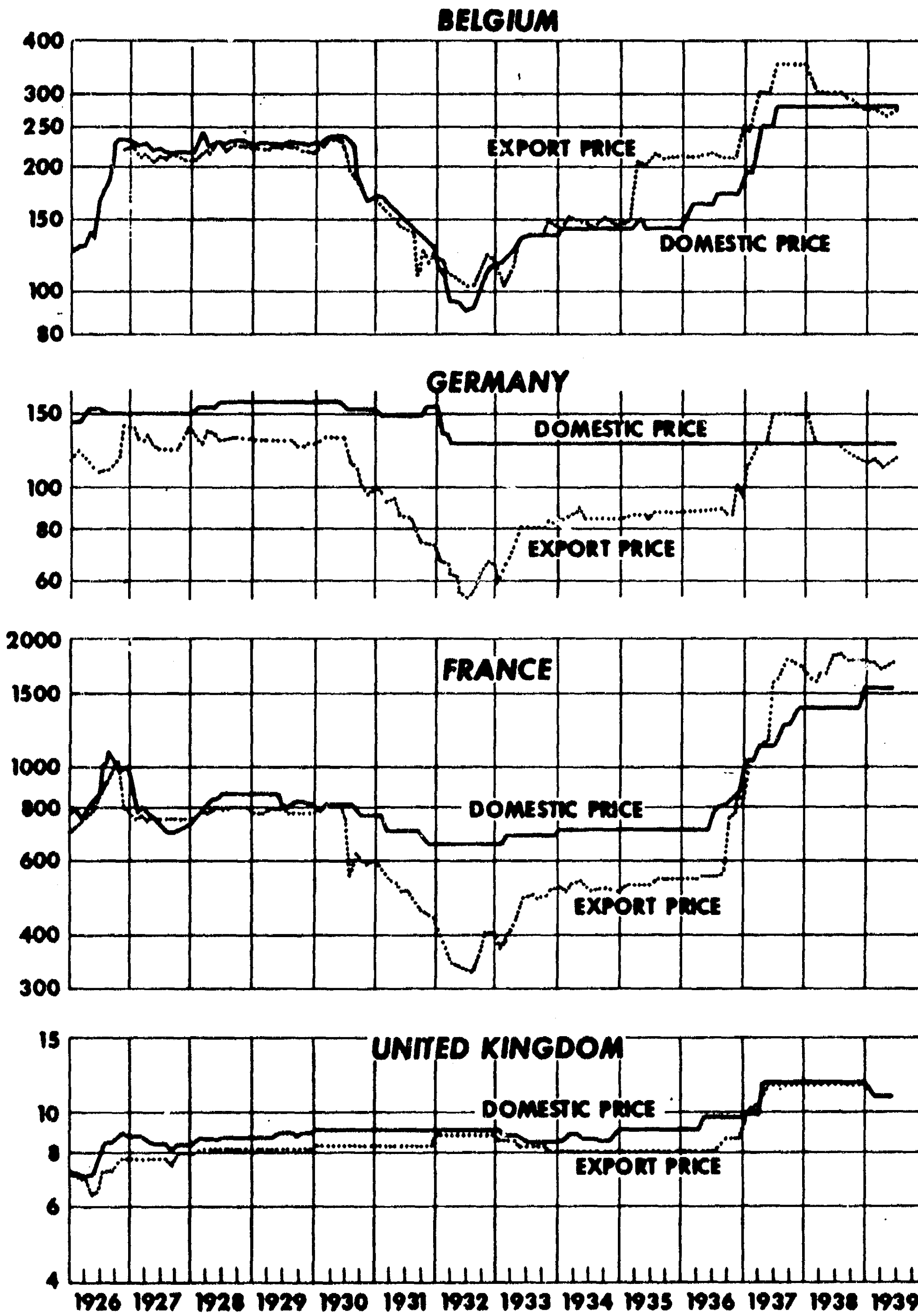


CHART 24

After World War II, coal and steel were bottlenecks to the achievement of full employment. Former export countries favored home demand above export requests, both in allocation of filling orders and in price. The U.S. international trade policy expressed a national credo in favor of free competition and against tariffs, quotas, and cartels. The economic interests of most U.S. industries supported this drive just as in the North during the War Between the States, ideology and economic interests were bedfellows. The bitterness felt against Germany and Japan as aggressor nations, made cartels regarded as an expression of a somewhat sinister German and Japanese business mentality.

Military occupation authorities in Germany and Japan decreed the end of cartels and forced the dissolution of monopolistic mergers. The Common Market in the Treaty of Rome adopted this economic philosophy by expressly forbidding cartels and provided that mergers had to be approved by the High Authority.

The present time appears to be characterized by conflicting trends. On the one hand, the conclusion of the "Kennedy Round" in June 1967, was a further step toward free trade. But the glut in European steel capacity since 1960 appears to have caused a revival of cartels, or at least, cartel-like combinations of steel companies. It is true that the major alleged purpose of these cartels is the distribution of incoming orders to the most efficient facilities of the cartel members, but it remains to be seen to what extent these cartels eventually return to prewar practices; namely, to control prices in the domestic market, and to dump abroad the output of the capacity not used at home.

The recent organization of the German steel industry allocated the sales of all producers to four sales "Kontor."

GERMAN STEEL PRODUCERS ORGANIZED IN FOUR SALES CARTELS (KONTOR)

Kontor Northwest:
- Klockner.
- Salzgitter.
- Peine.
- HW Oberhausen.

Kontor West:
- Thyssen.
- Mannesmann.
- Stw. Bochum } Otto Wolff
- Rasselstein } Otto Wolff
- Wuppermann.
- Krupp.
- Ohle.
- Neviges.
- Eschweiler.
- Felten & Guilleaume.
- Rotzel.
- Ibach.
- Laucherthal.

Kontor East:
- Hoesch.
- DHHU.
- Rheinstahl.
- Witten.
- Einsal.
- SAG.
- Arnold Georg.

Kontor South:
- Neunkirchen.
- Volklingen.
- Dillingen.
- Burbach.
- St. Ingbert.
- Wasseralfingen.

This study addressed itself to the question to what extent cartels are again at work, or at least aimed for in Europe and Japan. The evidence is contradictory as shown in three attached items in the appendix: A letter from Donald F. Turner, Assistant Attorney General; a letter from Marion W. Worthing, Department of State; and a report from Business Week, September 3, 1966.

It is clear that cartels are, perforce, created for purposes of bolstering prices and dividing up markets. National cartels tend to become international to the detriment of U.S. commerce.

CHAPTER IV

STEEL TRADE IN THE U.S. BALANCE OF PAYMENTS

One of the causes of the Revolutionary War was the insistence of the mother country that the Colonies import rather than make their own iron products despite the fact the Colonies enjoyed natural advantages. During most of the second half of the 19th and certainly throughout the 20th century until 1959, the United States had been a net exporter of steel. The role of the 116-day steel strike of that year in stimulating steel imports, discussed in chapter X, changed that situation.

This chapter is concerned with the U.S. foreign trade in steel in terms of dollars. It appraises the unfavorable impact of the reversal of U.S. trade in steel from net exports to net imports since 1959 on the U.S. balance of payments. Charts 25 and 26 show exports and imports of steel mill products in tons and in dollars.

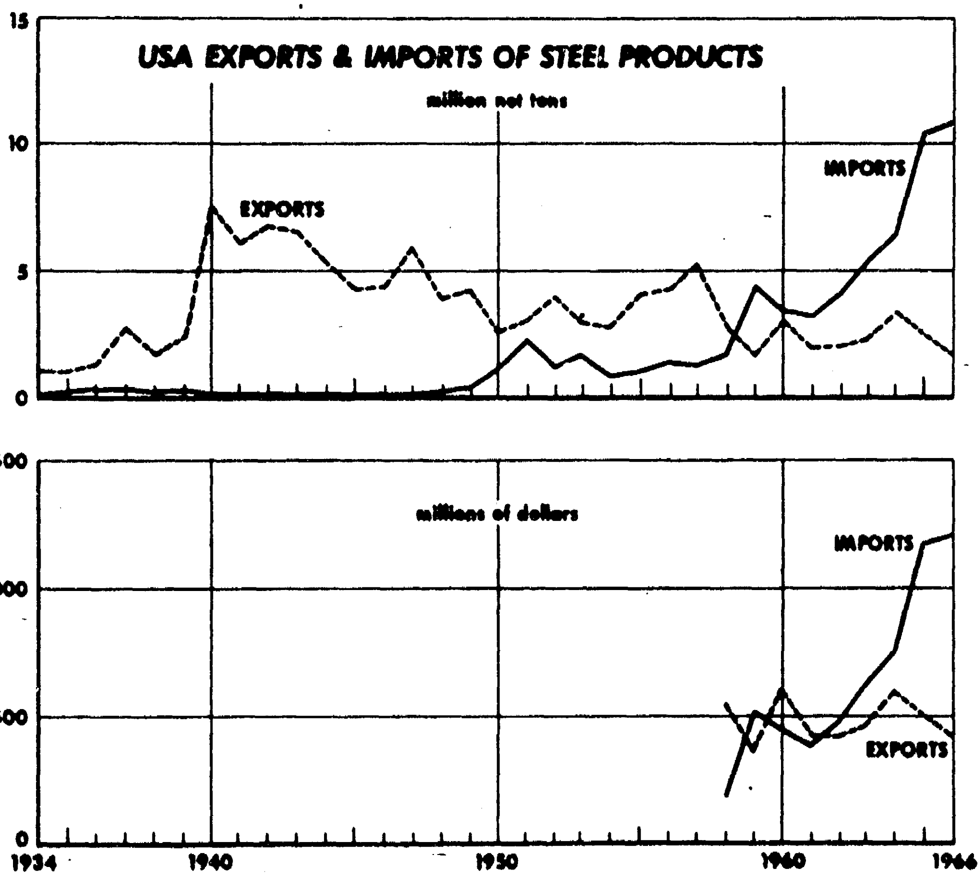
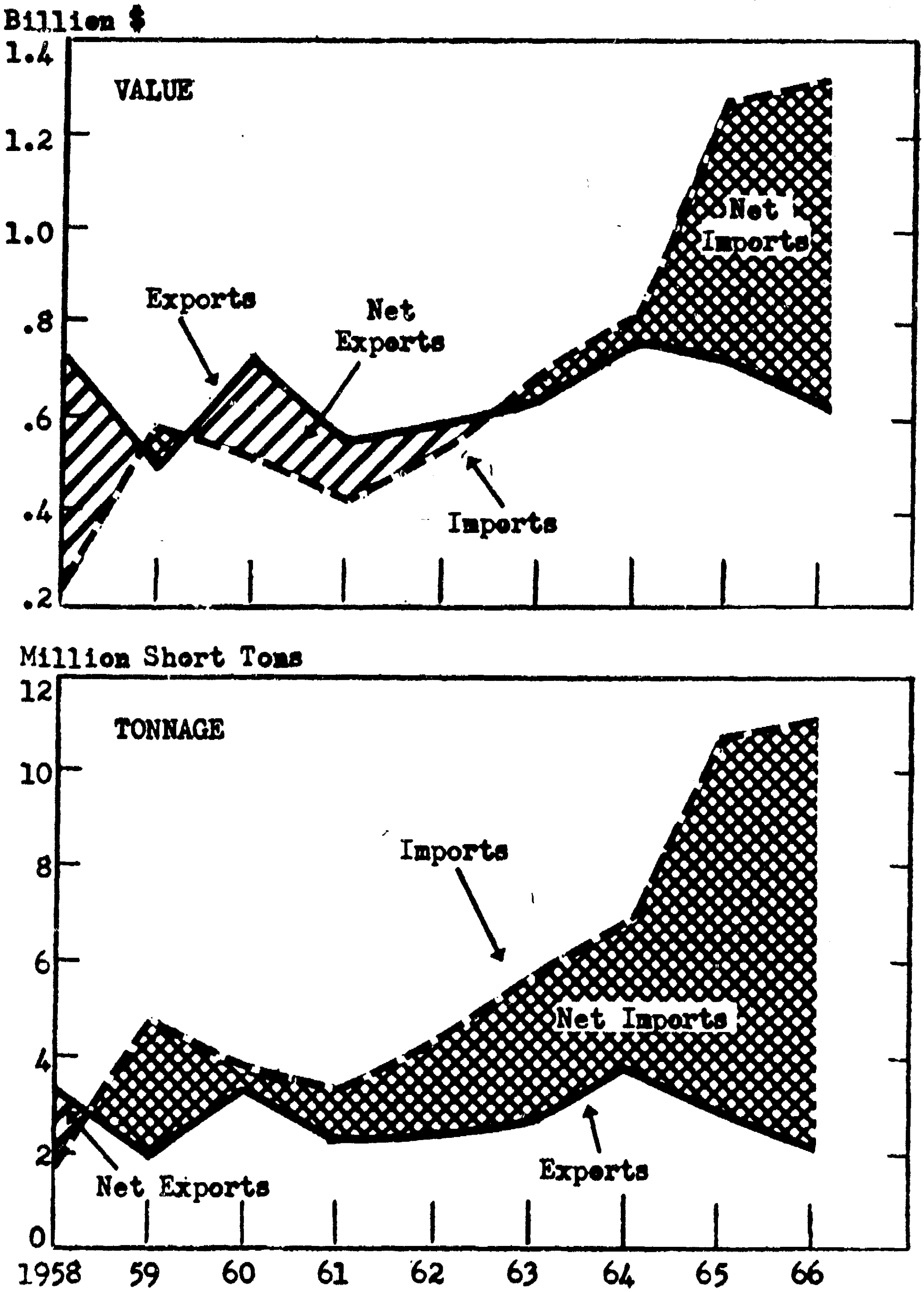


CHART 25

STEEL TRADE OF THE UNITED STATES



SOURCE: Basic data, Bureau of Census
U.S. Department of Commerce, Office of Business Economics

CHART 26

TABLE 27.—*U.S. total exports and imports of steel products* [1]

	Value (millions of dollars)		
	Exports	Imports	Balance
1957	1,170	212	+958
1958	718	230	+488
1959	485	578	−93
1960	717	506	+211
1961	541	[2] 421	+120
1962	561	[2] 534	+27
1963	629	684	−55
1964	781	815	−34
1965	721	1,268	−547
1966	635	1,313	−678

[1] Steel mill products plus other steel products as defined by AISI.
[2] Revised.

Source: AISI.

TABLE 28.—*Share of steel trade in total U.S. merchandise trade*

[In millions of dollars]

	1957	1958	1959	1960	1961
EXPORTS					
Total merchandise exports [1] except military aid	[2] $19,495	[2] $16,367	[2] $16,407	[2] $19,629	[2] $20,188
Exports of steel products	$1,170	$718	$485	$717	$541
Share of total exports (percent)	6	4.4	3	3.7	2.7
Exports of end-use items containing steel	$6,743	$6,140	$6,155	$6,853	$7,501
Share of total exports (percent)	34.6	37.5	37.5	34.9	37.2
IMPORTS					
Total merchandise imports	$13,255	$13,255	$15,627	$15,017	[2] $14,714
Imports of steel products	$212	$230	$578	$506	$421
Share of total imports (percent)	1.6	1.7	3.7	3.4	2.9
Imports of end-use items containing steel	$1,292	$1,543	$2,170	$2,081	$1,892
Share of total imports (percent)	9.7	11.6	13.9	13.9	12.9

	1962	1963	1964	1965	1966
EXPORTS					
Total merchandise exports [1] except military aid	[2] $20,973	$22,427	$25,671	$26,700	$29,396
Exports of steel products	$561	$629	$781	$721	$635
Share of total exports (percent)	2.7	2.8	3	2.7	2.2
Exports of end-use items containing steel	$8,443	$8,760	$9,900	$10,885	$12,070
Share of total exports (percent)	40.3	39.1	38.6	40.8	41.1
IMPORTS					
Total merchandise imports	[2] $16,380	$17,138	$18,684	$21,366	$25,550
Imports of steel products	$534	$684	$815	$1,268	$1,313
Share of total imports (percent)	3.3	4	4.4	5.9	5.1
Imports of end-use items containing steel	$2,346	$2,581	$3,113	$4,000	$5,803
Share of total imports (percent)	14.3	15.1	16.7	18.7	22.7

[1] Excluding military grant-aid shipments.
[2] Revised.

Source: OBE, USDC, from basic data of Bureau of the Census.

Exports of steel products have been halved since 1957, and as a percent of total exports they have declined from 6 to 2.2 percent. Imports of steel products have grown by sixfold, now constitute 5.1 percent of total U.S. imports, having risen from 1.6 percent in 1957. These data are shown in table 28. In 1966, total U.S. exports of nonmilitary merchandise increased by 11 percent to an annual total of $29.4 billion. In the same period, gross national product—in current dollars—increased by 8.6 percent. On the surface, it would appear that our export growth was more than keeping pace; shipments to Canada, Japan, and the less-developed countries were strong throughout the year. But the picture changes substantially when net exports—exports minus imports—are analyzed. Total imports into the United States increased by nearly 19 percent last year, and as a result, the net export balance dropped from $4.8 billion in 1965 to $3.8 billion—the smallest trade surplus in 7 years. Several adverse factors were involved. The boom in the U.S. domestic economy during much of 1966 and rising income caused imports to climb at everfaster rates in the first three quarters of the year. At the same time, domestic demands on the Nation's productive capacity tended to absorb some of the goods that might have been exported. Toward the end of the year, U.S. business conditions began to cool off, but so did the economies of some of our largest trading partners in Western Europe, thus tending to hold down foreign demand for U.S. products. Furthermore, with steel capacities used at lower rates abroad, the drive to export the "gaps" between capacities and domestic demands increased greatly and caused further declines in the export prices for foreign steel products. In past discussions concerning the reversal of steel net exports into steel net imports, and its effect on the U.S. balance of trade and balance of payments, a rather wide variety of different data has been used.

Steel Mill Products and Other Steel Products Trade

In table 29,[1] two adjustments have been made:

1. The import value of steel products is increased by 10 percent to adjust from an f.o.b. to a c.i.f. basis; and
2. The value of exports is decreased by the exclusion of AID-financed shipments because they do not constitute any inflow of foreign exchange. On this adjusted basis, the dollar deficit in 1966 was $899 million.

AID expenditures for iron and steel mill products for fiscal years 1963–66 are shown in table 30.

Steel importers and international trade economists point out that the U.S. balance of trade and balance of payments was also a result of the exports and imports of end-use items containing steel, and that such exports would benefit the U.S. steel industry just as imports would hurt it. Finally, the United States is a large net exporter of coal and scrap for the steel industry of other countries, but a net importer of iron ore, and the study concludes that U.S. exports and imports of steelmaking raw materials should also be included. It stands to reason that if the United States should import less foreign steel the countries now importing coal and scrap from the United States for steelmaking purposes would produce less steel and therefore need less scrap and coal. They would also have fewer dollars to buy them. On the other hand scrap and coal requirement of the U.S. steel industry would also be higher if it were not for the growing steel imports.

[1] For comments on tables 29 and 31 see app. D.

TABLE 29.—*Value of direct steel imports and exports and their effect on U.S. balance of payments*

[In millions of dollars]

	Steel imports [1]			Steel exports					Trade balance				
	Steel mill products	Other steel products [3]	Total	Steel mill products	AID-financed exports	Other steel products	Total steel products	Net exports (total less AID)	Steel mill products	Other steel products	Total steel products [2]	AID-financed exports	Net balance adjusted by AID exports [2]
1957 [3]	190	45	235	750	33	260	1,010	977	560	215	775	33	742
1958	213	39	252	564	20	189	753	733	351	150	501	20	481
1959	569	70	639	365	13	133	498	485	−204	63	−141	13	−154
1960	494	58	552	601	16	126	727	711	107	68	175	16	159
1961	420	42	462	423	44	124	547	503	3	82	85	44	41
1962	532	54	586	424	122	141	565	443	−108	87	−21	122	−143
1963	696	56	752	470	179	157	627	448	−226	101	−125	179	−304
1964	824	73	897	622	197	158	780	583	−202	85	−117	197	−314
1965	1,295	100	1,395	507	168	214	721	553	−788	114	−674	168	−842
1966	1,328	116	1,444	420	90	215	635	545	−908	99	−809	90	−899

[1] Import values of steel products increased by 10 percent to adjust from f.o.b. to c.i.f. basis in accordance with the Tariff Commission's study.

[2] Balance, including AID-financed exports.

[3] "Other steel products" are fabricated items made and sold by steel producers, such as: fabricated structural shapes; sashes and frames; fence or sign posts; wire, nonmetallic covered; wire rope; wire strand; welded wire mesh; other nails and staples; cotton ties and other ties; bolts, nuts, and rivets; grinding balls; blanks, nonrectangular flat rolled; rigid conduit; pipe and tube fittings.

Source: AIS, Imports 1; AIS, Exports 1; AISI Foreign Trade Trends Quarterly; AID operations reports.

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TABLE 30.—*AID expenditures for iron and steel mill products, fiscal years ending June 30, 1963 through 1966*

[Dollar amounts in millions]

	Fiscal year			
	1963	1964	1965	1966
Total AID expenditures for iron and steel mill products	$182.0	$181.4	$232.8	$162.7
Purchased in United States	$160.9	$156.5	$215.7	$133.2
Percent of AID total	88%	86%	93%	82%
Purchased in 19 developed countries	$8.4	$1.6	$1.2	$0.5
Percent of AID total	5%	1%	1%	[1]
Purchased in developing countries	$12.7	$23.3	$15.9	$29.0
Percent of AID total	7%	13%	6%	18%
AID PURCHASES IN UNITED STATES FOR INDIA AND PAKISTAN				
Total for India and Pakistan	$139.9	$116.0	$170.1	$81.2
India	48.9	49.3	41.7	32.1
Pakistan	81.0	66.7	128.4	49.1

[1] Less than 0.5 percent.

Indirect (End-Use) Trade

A further adjustment is made in table 31 by including the value of steel exported and imported in the form of end-use items; that is automobiles or machinery. Trade in steel mill products, which are usually sold on a price per unit of weight basis, is quite easily measured in tons. However, such direct trade in steel is not the only way in which steel enters into international trade. Steel demand also results from international trade in vehicles, machinery and other equipment manufactured from steel, a trade that is large and growing on a world-wide basis as shown in chart 32. A calculation of the dollar value of the indirect (end use) steel trade was made for the study by AISI, as shown in table 31. A few comments on the practical problem of measuring the steel content of such trade is in order.

First, the shipping weights of such items are not representative of steel content (an automobile contains hundreds of pounds of cast iron, rubber, glass, etc.). Even for an item completely fabricated of steel, the shipping weight does not represent the true equivalent of steel required for manufacture since there are scrappage losses. Furthermore, the data on foreign trade are not well adapted to the job of estimating steel content; there are vast categories of machinery and equipment items represented only by value data and with no corresponding unit figures. Even if unit data were available, the average steel content is unknown without a bill of materials for each type of machinery.

TABLE 31.—*Value of direct and indirect (end-use) steel imports and exports and their effect on U.S. balance of payments*

[In millions of dollars]

	Imports [1]			Exports			Trade balance, total exports less imports
	Steel products (direct imports)	End-use items [2] (indirect imports)	Total (direct plus indirect)	Steel products [3] (direct exports)	End-use items [4] (indirect exports)	Total (direct plus indirect)	
1957 [5]	235	109	344	977	510	1,487	+1,143
1958	252	110	362	733	435	1,168	+806
1959	639	171	810	485	450	935	+125
1960	552	145	697	711	480	1,191	+494
1961	462	102	564	503	480	983	+419
1962	586	129	715	443	495	938	+223
1963	752	127	879	448	525	973	+94
1964	897	154	1,051	583	615	1,198	+147
1965	1,395	193	1,588	553	645	1,198	−390
1966	1,444	257	1,701	545	660	1,205	−496

[1] Values increased by 10 percent to adjust from FOB to CIF basis.
[2] Values calculated by multiplying estimated net tons of indirect imports times the average CIF landed value per net ton of imported steel mill products plus 10 percent to adjust from FOB to CIF basis.
[3] Values represent steel product exports less AID-financed exports.
[4] Values calculated by multiplying estimated net tons by an average price of $150 for finished carbon steel in the domestic market, which during this period ranged from $149 to $158.
[5] The value of "other steel products" component of the steel product direct imports and exports estimated.

NOTE.—For comments by AISI on this table see appendix.

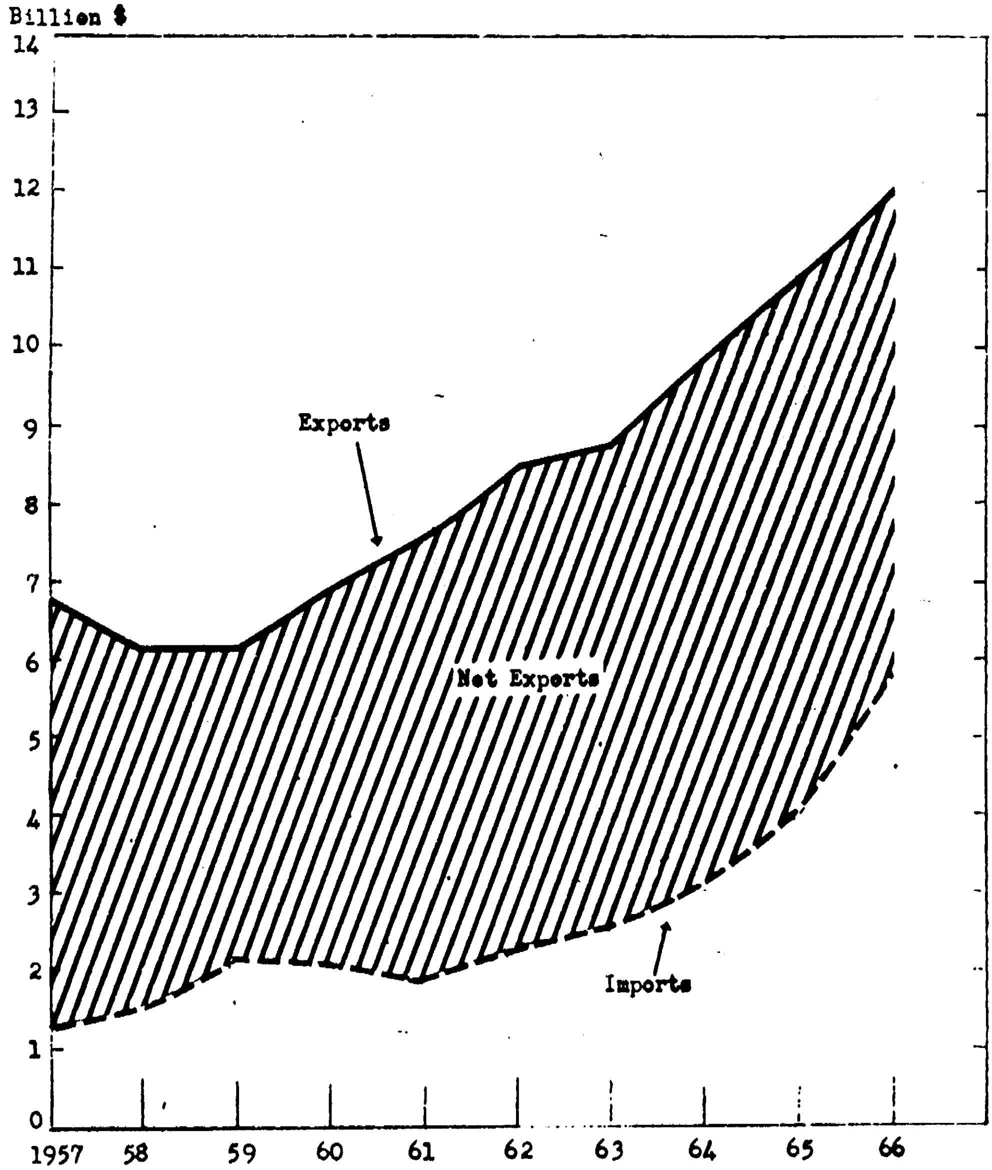
Source: AISI, Foreign Trade Trends Quarterly; AIS, Imports 1; AIS, Exports1; USDC, Overseas Business Reports.

Not reflected in the figures for end-use items are the amounts that are spent by U.S. corporations for the construction of ships built abroad, especially in Japan. Ships are produced and exported in a sense, but the ownership ties to particular nations are tenuous. As a result, ships have been left out of official estimates of indirect steel trade in spite of large steel tonnages involved in their construction. This development constitutes a further drain on the U.S. balance of payments; it also deprives the U.S. steel producers of part of their traditional market for steel, especially plate. If ships built in Japan and bought by U.S. corporations do not constitute imports of steel into the United States, tney certainly represent additional exports of steel from Japan.

Japan accounts for almost 35 percent of new merchant-ship construction; Sweden, Germany, and the United Kingdom follow with about 10 percent each, and then in 14th place is the United States with less than 2 percent. In terms of annual tonnage, Japan builds 4–5 million tons; Swedish, British, and German yards 1 million tons each, and the United States less than 500,000 tons.

Japan can offer a price as low as $100 per ton of ship as against $175 for European yards, and $270 for U.S. yards. Chart 33 shows tonnage launched from 1955 to 1964 in various shipbuilding countries.

Value of U. S. Foreign Trade in End-Use Items Containing Steel, 1957-1966



SOURCE: Basic data, Bureau of Census
U.S. Department of Commerce, Office of Business Economics

CHART 32

On this basis the steel balance of trade would have been favorable until 1964 instead of 1959, if end-use items are included. In 1965 and 1966 the value of steel in imports of end-use items increased to cause an unfavorable balance of trade in steel of $390 and $496 million, respectively. Chart 32 shows "Value of U.S. Foreign Trade in End-Use Items Containing Steel, 1957–66."

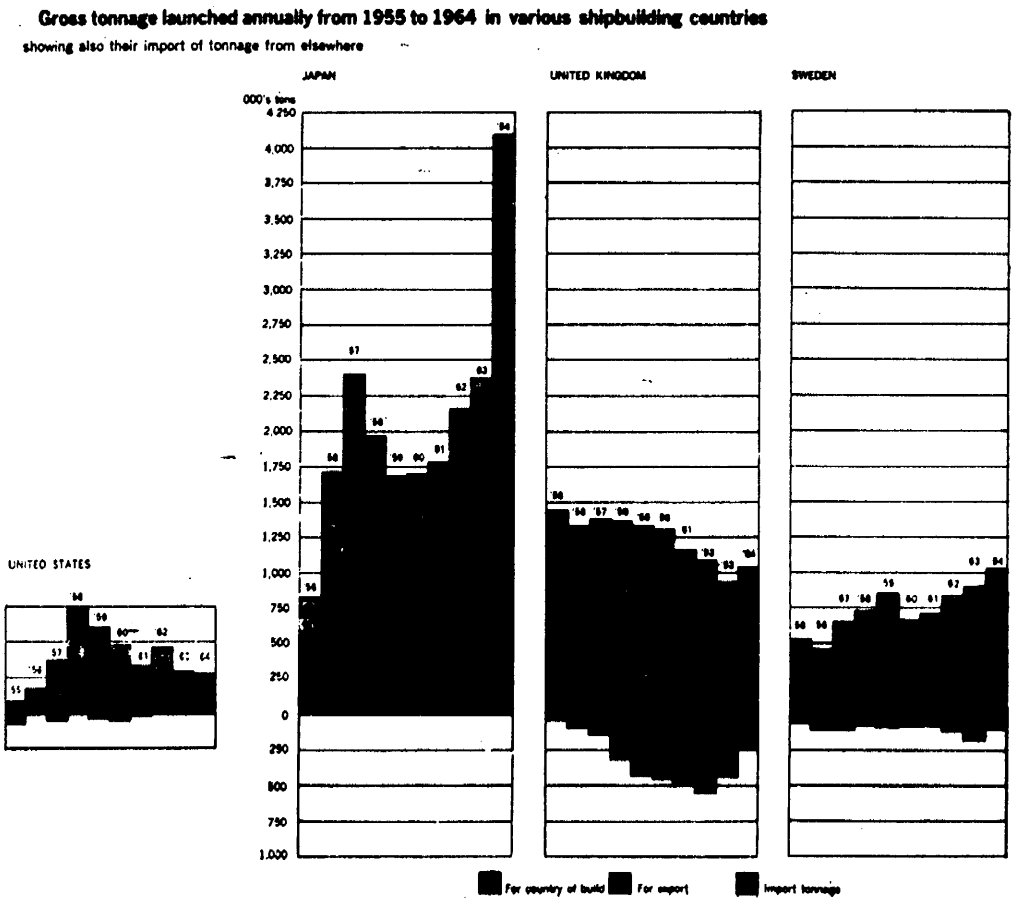


CHART 33

Steelmaking Raw Materials Trade

A final adjustment is made in table 34 to account for the U.S. trade in steelmaking raw materials; namely, iron ore, scrap, coal and coke, manganese, pig iron, and ferroalloys. With this adjustment, the balance-of-trade deficit increased for 1966 by $3 million to $499 million.[1]

A discussion of the trade in coal and scrap is found in Chapters XIV and XV. As for iron ore, it should be pointed out that the United States probably has considerable benefits for its balance of payments as profits are repatriated from the operations by U.S. iron ore or steel companies of iron ore mines which are located abroad and which export iron ore to foreign steel-producing countries.

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[1] Table D-1 of appendix gives a breakdown for 1965 of the raw materials trade by countries and materials. In table 34 in which raw materials are added to the direct and indirect steel products, the data are confined to the years 1963–66. The problems incurred in developing this data for the 1957–62 period arises from changes in tariff classifications and product groups which make it virtually impossible to attain precise comparability. See appendix for all tables prefaced by a letter.

TABLE 34.—*Value of imports and exports of steel products, steel content in end-use items, and steelmaking raw materials, 1963–66, and their effect on the U.S. balance of payments*

[Data for 1963-66 only. Changes in tariff classifications and product groupings prohibit development of comparable raw materials data for 1957-62. In millions of dollars]

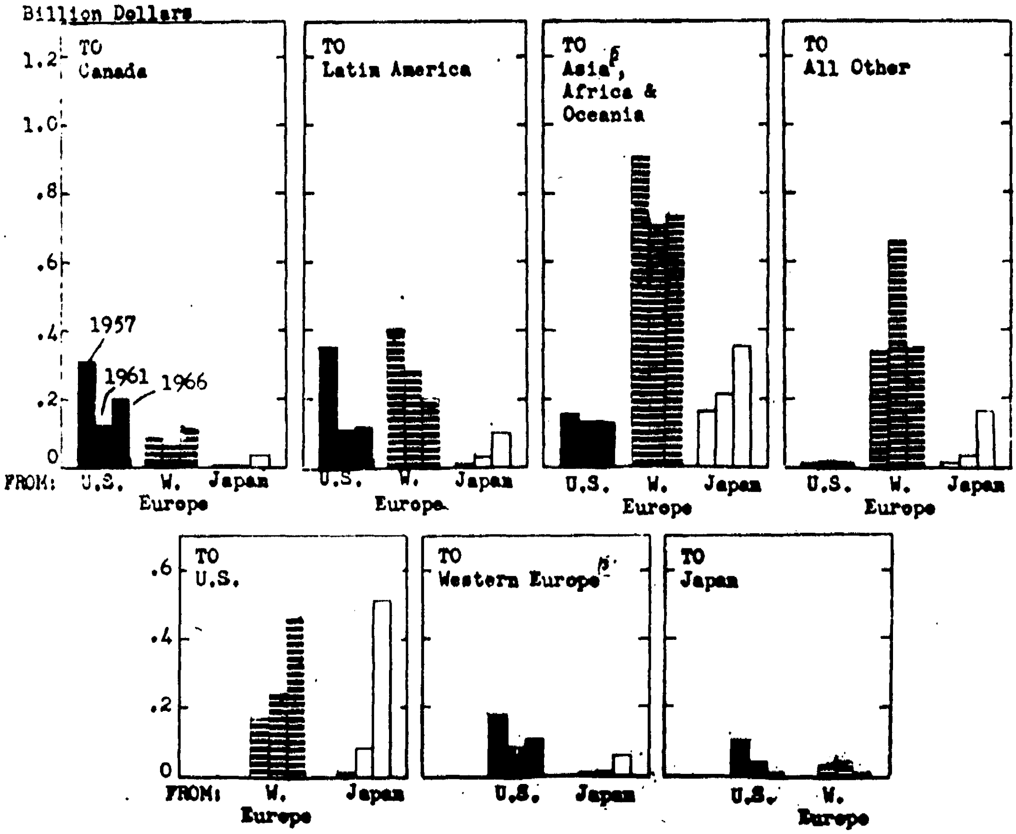
	Imports				Exports				Balance			
	Steel products (direct imports)	End-use items (indirect imports)	Steel-making raw materials	Total	Steel products (direct exports)	End-use items (indirect exports)	Steel-making raw materials	Total	Steel products	End-use items	Steel-making raw materials	Total
1963	752	127	481	1,360	448	525	739	1,712	−304	+398	+258	+352
1964	897	154	639	1,690	583	615	819	2,017	−314	+461	+180	+327
1965	1,395	193	725	2,313	553	645	791	1,989	−842	+452	+66	−324
1966	1,444	257	757	2,458	545	660	754	1,959	−889	+403	−3	−499

NOTE.—Import values of steel products, end-use items, and steelmaking raw materials increased by 10 percent to adjust from f.o.b. to c.i.f. basis. Export values of steel products reduced by the value of AID-financed exports. No adjustments have been made for steel content in AID-financed exports of end-use items due to inadequacy of data. Steelmaking raw materials include: Iron ore and concentrates (SITC Code 281); iron and steel scrap (SITC Code 282); Manganese ore and concentrates (SITC Code 283.7); Coal and coke (SITC Codes 321.3, 321.4 and 321.8); Iron products: Pig iron and ferroalloys.

Source: AIS, Imports 1; AIS, Exports 1; AISI, Foreign Trade Trends; AID, operations reports; U.S. Department of Commerce: Repts. FT-125 and FT-410.

Chart 35 shows in billions of dollars the exports of steel from the United States, West Europe, and Japan to major destinations. In 1957 the United States bought practically all of its steel mill products from Europe, with Belgium-Luxembourg the major supplier. In 1966 imports from Japan, in terms of value, exceeded imports from all other countries. Japan sent to the United States the largest percentage of hot- and cold-rolled steel sheets of total sheets imported, as shown in table 36.

STEEL EXPORTS FROM UNITED STATES, WESTERN EUROPE, AND JAPAN TO MAJOR WORLD DESTINATIONS; 1957, 1961, and 1966*



1. Represents OECD Europe less Ireland, Iceland, Switzerland, and Spain.
2. Excluding Japan. 3. Represents W. Europe, excluding Finland and Yugoslavia.
SOURCE: 1957 and 1966, Office of Business Economics, U.S. Department of Commerce, based on OECD data; 1961, International Trade Analysis Division, Bureaus of International Commerce, U.S. Department of Commerce, based on U.N. data. U.S. Department of Commerce, Office of Business Economics

* January–June at annual rates

CHART 35

TABLE 36.—*Imports of steel sheets, 1961–66, hot and cold rolled*

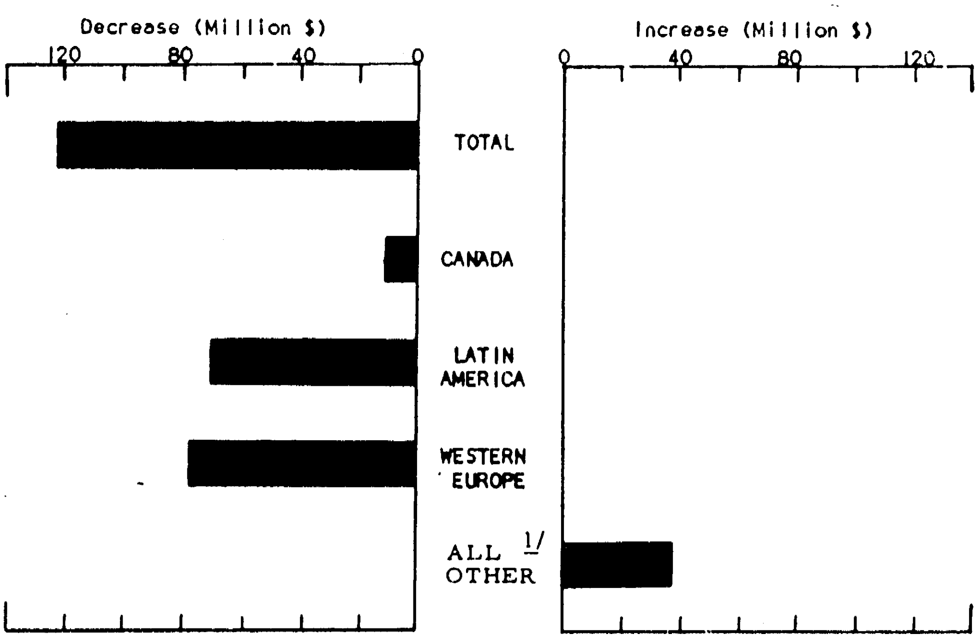
[In thousands of net tons]

Source	1961	1962	1963	1964	1965	1966
All countries	58	173	528	933	3,057	3,118
Japan	10	89	254	493	1,472	1,755
West Germany	2	5	30	146	420	429
United Kingdom	----	----	19	37	384	407
Canada	33	65	167	195	231	235
France	1	2	4	30	279	167
Belgium-Luxembourg	9	3	2	14	179	25
All other	3	9	52	18	92	100

Source: American Iron and Steel Institute, "Annual Statistical Reports, 1957-65." Data for 1966 were furnished through U.S. Department of Commerce, Business and Defense Services Administration.

Chart 37 shows in millions of dollars changes in U.S. steel exports total and to major destinations. Chart 38 and table 39 shows for west Europe for 1956–66, the trend of industrial production and steel output, reflecting some of the same influences that retarded demand for steel in this country from 1957–62. The same table also shows the United States trade in steel with west Europe for 1956–66. Tables 40, 41, and D–2 in appendix provide tonnage summaries of the United States Steel foreign trade, 1955–66.

CHANGES IN U.S. EXPORTS OF STEEL, BY DESTINATION
From 1954-56 Average to 1966

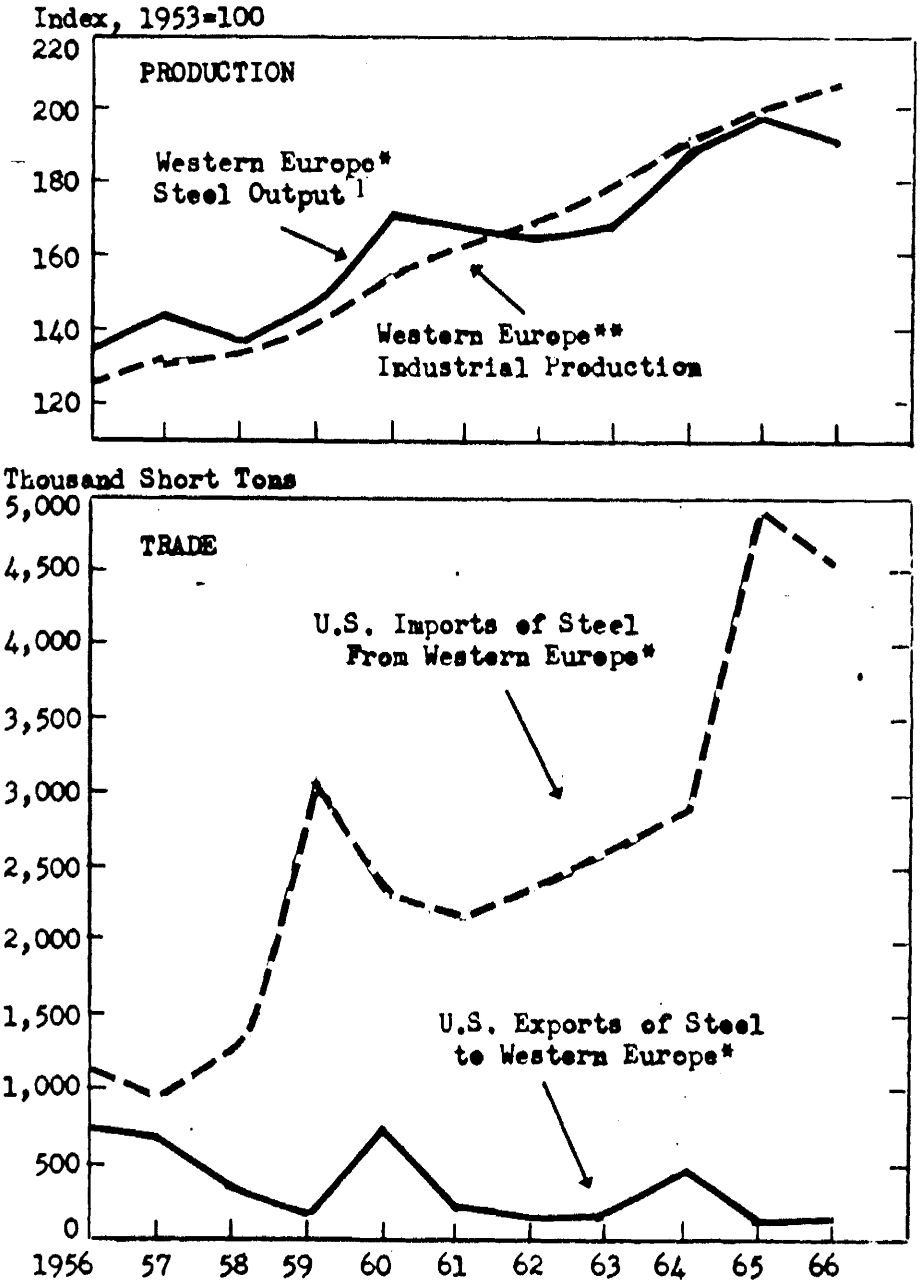


SOURCE: International Trade Analysis Division, U.S. Department of Commerce based on Census Bureau data.
U.S. Department of Commerce, Office of Business Economics

1/ Especially to India and Pakistan.

CHART 37

WESTERN EUROPE—Industrial Production, Steel Output, and Steel Trade With United States



*Common Market & U.K.

**Western Europe excluding Finland and Yugoslavia

1.Production of ingots and castings

SOURCE: Production—American Iron and Steel Institute, OECD Statistics; Trade—American Iron and Steel Institute

U.S. Department of Commerce, Office of Business Economics

CHART 38

TABLE 39.—*Western Europe—Industrial production, steel output, and steel trade with the United States*

[Index numbers, 1953=100]

	Western Europe production		U.S. production		U.S. trade in steel with Western Europe [1]	
	Steel ingots and castings [2]	Total industrial production [3]	Steel ingots and castings	Total industrial production	Exports to	Imports from
1960	170	155	....	....	....	....
1961	167	162	....	....	....	....
1962	164	170	87	129	51	175
1963	167	178	98	136	54	195
1964	190	192	113	145	171	215
1965	197	199	119	157	38	369
1966	191	206	122	171	41	345

[1] Steel production and trade based on tonnage figures.
[2] Common Market and United Kingdom.
[3] OECD, Europe.
Sources: OBE, U.S. Department of Commerce, based on data from FRB, Bureau of Census, OECD and AISI.

TABLE 40.—*Percentage distribution of steel imports by country of origin, 1957–66*

[In percent [1]]

Country	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Total imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
European Coal and Steel Community (ECSC)	77.1	70.5	65.9	62.4	61.7	50.9	41.2	40.1	40.4	35.7
Belgium-Luxembourg	41.5	45.7	32.7	29.6	33.2	30.4	23.5	21.5	16.9	15.0
France	15.5	9.4	13.3	10.3	10.1	7.3	6.6	6.8	8.3	7.1
West Germany	16.4	11.8	16.5	17.6	15.8	11.2	9.9	10.5	11.3	11.3
Other ECSC [2]	3.7	3.6	3.4	4.9	2.5	2.0	1.2	1.3	3.9	2.3
United Kingdom	5.0	5.0	4.9	6.3	5.2	6.1	6.4	4.4	6.9	7.0
Japan	2.7	14.7	14.2	17.9	18.9	26.1	33.2	38.0	42.6	45.1
Canada	4.5	2.7	8.6	6.3	9.6	9.0	10.7	10.7	6.2	6.4
All other countries	10.7	7.1	6.4	7.1	4.6	7.9	8.5	6.8	3.9	5.8

[1] Based on tons.
[2] Italy and Netherlands.
Source: U.S. Department of Commerce.

TABLE 41.—*Exports and imports of steel mill products, 1955–66*

Year	Millions of dollars			Thousands of tons			Imports as percent of U.S. market [1]	Exports as percent of industry shipment
	Exports	Imports	Trade balance	Exports	Imports	Trade balance		
1955	633	107	526	4,061	973	3,088	1.2	4.8
1956	759	174	585	4,348	1,341	3,007	1.7	5.2
1957	997	171	825	5,348	1,155	4,193	1.5	6.7
1958	564	192	372	2,823	1,707	1,116	2.9	4.7
1959	363	516	−154	1,677	4,396	−2,719	6.1	2.4
1960	601	449	152	2,977	3,359	−382	4.7	4.2
1961	423	382	41	1,990	3,163	−1,173	4.7	3.0
1962	424	484	−60	2,013	4,100	−2,087	5.6	2.9
1963	465	633	−168	2,180	5,452	−3,272	6.9	2.9
1964	622	749	−127	3,435	6,440	−3,005	7.3	4.0
1965	508	1,177	−669	2,496	10,383	−7,887	10.3	2.7
1966	420	1,208	−788	1,724	10,753	−9,029	10.9	1.9

[1] Based on data in tons. U.S. market is industry shipments, plus imports, minus exports.

NOTE.—Export value is value at U.S. port. Import value is value at foreign port and excludes freight, insurance, and duty. The data in millions of dollars have been matched with the data in thousands of tons, which are as published by the American Iron & Steel Institute and may differ slightly from data subsequently revised by the Department of Commerce, Bureau of the Census.

Source: U.S. Department of Commerce.

Tables D–3, D–4, and D–5 provide a breakdown of the trend of steel mill products by types and illustrates the relative increase in the more high-priced types of products. It is, therefore, most remarkable that table 44 indicates that the average value per ton of imported steel in 1966 was the lowest since 1961, a result of the constant deterioration of world steel export prices since 1961. The fact that U.S. steel export values were double the import prices reflect the higher proportions of specialty steels exported from the United States.

The penetration of the domestic market in case of more specific product classification, especially for wire rods, wire nails and staples, barbed wire and woven wire fence, is shown in table 42, while table 43 shows the trend of imports by products by giving 1966 as a multiple of 1957:

TABLE 42.—*Market penetration of imported steel mill products, 1957–66*

Product category	Imports as percent of apparent domestic consumption [1]									
	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Wire rods	5.4	17.1	31.5	31.0	32.7	39.2	42.7	45.1	49.3	45.9
Other semifinished	.4	1.3	4.7	3.7	11.1	10.5	13.2	13.8	10.1	9.6
Structural shapes and piling	3.7	3.6	10.8	6.0	6.1	7.6	9.8	9.9	12.4	12.5
Plates	.3	.4	4.8	3.4	.6	2.4	3.7	5.3	7.4	9.5
Reinforcing bars	6.8	19.0	28.3	19.0	19.4	20.4	17.1	11.5	15.1	17.2
Other bars and tool steel	1.1	2.6	5.5	3.8	4.1	4.4	5.7	7.2	8.7	8.6
Pipe and tubing	1.9	3.2	6.4	6.5	7.1	8.7	10.3	9.1	9.9	10.6
Drawn wire	3.2	6.0	9.1	8.6	7.5	9.7	11.1	13.5	13.0	13.9
Wire nails and staples	23.4	32.3	44.0	42.3	42.8	46.1	48.9	48.8	50.0	45.8
Barbed wire	52.2	51.9	61.9	52.8	53.0	47.7	50.7	47.9	41.6	31.4
Woven wire fence	8.2	12.8	24.2	21.4	20.5	26.9	30.1	27.9	27.4	29.8
Sheets and strip	.2	.2	1.4	1.5	.7	1.4	2.7	3.4	8.9	9.5
Rails and accessories (including wheels and axles)	.3	.6	.9	.9	3.0	1.3	1.1	1.0	1.6	1.5
Tin mill products	(2)	(2)	1.2	.7	.3	1.0	1.7	1.5	2.2	2.4
All steel mill products	1.5	2.9	6.1	4.7	4.7	5.6	6.9	7.3	10.3	10.9

[1] Apparent domestic consumption = Shipments by U.S. mills + Imports-exports.
[2] Less than 1/10 of 1 percent.

TABLE 43.—*U.S. Imports of steel mill products, 1957–66*

[Thousand net tons]

Product category	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1966 as multiple of 1957 [1]
Wire rods	54	181	448	408	451	645	801	953	1,284	1,150	21
Other semifinished	8	18	92	68	180	174	265	345	283	224	28
Structural shapes and piling	268	151	507	317	293	374	558	638	929	947	3½
Plates	22	20	291	212	37	150	275	462	774	951	43
Reinforcing bars	160	473	852	516	583	607	545	411	568	673	4
Other bars and tool steel	103	176	487	325	324	388	535	762	1,074	1,045	10
Pipe and tubing	191	200	553	480	521	655	778	790	930	1,058	5½
Drawn wire	85	153	276	235	203	275	317	397	437	458	5½
Wire nails and staples	135	197	306	232	245	271	298	297	314	275	2
Barbed wire	63	59	78	53	82	67	90	72	75	77	1
Woven wire fence	18	23	45	28	31	42	51	43	41	53	3
Sheet and strip	41	50	386	436	171	383	827	1,167	3,507	3,682	90
Rails and accessories (including wheels and axles)	5	5	10	10	23	12	12	14	24	26	5
Tin mill products	(2)	(2)	67	39	19	56	94	88	145	134	1,268
All steel mill products [3]	1,155	1,707	4,396	3,359	3,164	4,100	5,446	6,440	10,383	10,753	9½

[1] Rounded to nearest ½.
[2] 106 tons in 1957 and 183 tons in 1958.
[3] Detail may not add exactly to totals because of rounding.

TABLE 44.—*Average value per ton of U.S. exports and imports of steel mill products*

	Exports [1]	Imports
1961	$207.65	$127.14
1962	206.35	124.83
1963	206.68	121.60
1964	178.02	121.91
1965	198.45	118.12
1966	235.62	117.89

[1] These averages reflect the higher proportion of high-priced specialty steel and more highly finished steel products.

Source: OBE, USDC, from basic data of Bureau of Census.

The following tables show steel imports by quarters, first in thousands of tons and second in terms of an index with the first quarters as 100. Because there seems to exist a seasonal trend in which the first quarter, with only one exception, namely, 1960 was the lowest, it may be assumed that total 1967 imports will exceed 1966 imports by roughly the percentage by which first quarter 1967 was higher than first quarter 1966, even if first quarter 1967 was lower than the last three quarters of 1966. The seasonal trend is probably due to the freezing of the Great Lakes, but other factors such as U.S. domestic demand and domestic demand in major steel exporting countries will play their role.

U.S. imports of steel mill products, 1958–67, by quarter

[Thousand short tons]

	1st quarter	2d quarter	3d quarter	4th quarter	Annual total[1]
1958	231	358	508	607	1,707
1959	758	1,155	1,120	1,363	4,396
1960	1,400	817	568	568	3,359
1961	512	788	879	984	3,163
1962	953	1,102	1,056	989	4,100
1963	961	1,408	1,617	1,471	5,446
1964	1,384	1,644	1,600	1,812	6,440
1965	1,824	3,114	2,942	2,503	10,383
1966	1,982	2,648	3,261	2,862	10,753
1967	2,408	....	....	....	....

[1] Do not necessarily equal quarterly totals, because of revisions.

Source: U.S. Bureau of the Census.

[Indexes, 1st quarter=100]

	1st quarter	2d quarter	3d quarter	4th quarter
1958	100	155	220	263
1959	100	152	148	180
1960	100	58	41	41
1961	100	154	172	192
1962	100	116	111	104
1963	100	147	168	153
1964	100	119	116	131
1965	100	171	161	137
1966	100	134	165	144
1967	100	....	....	....

Steel and the U.S. Balance of Payments

Table 45 shows the balance of payments for 1966 in detail. Both analytical methods for measuring the degree of deficit or surplus—liquidity and official settlements—are shown. The net balance column shows the source and overall size of the "real" deficit or surplus, while the financing column shows how the deficit is financed or the surplus disposed.

The major difference between these two measures is in the way foreign holdings of U.S. liabilities are handled. The underlying assumption about economic behavior in the liquidity balance is that all foreign holdings of dollar liabilities which mature in less than 1 year—liquid liabilities—are a real claim on the U.S. gold stock. As such, the liquidity balance measures the actual decline in the U.S. gold stock—and other reserve assets of the U.S. Government—and increases in all U.S. liquid liabilities to foreigners.

The underlying economic rationale behind the official settlements balance is that only foreign official holdings of dollars represent a real claim on the gold stock. Foreign private holders and international organizations have a demand for dollar balances as an international currency in the same way as they would have a demand for any U.S. service. Thus, an increase in such foreign holdings of dollars is treated in a manner similar to that of service exports—in the net balance column rather than in the financing column. The official settlements balance measures only the increase in foreign official holdings of dollars. In 1966 foreign official holdings of dollar liabilities with maturity of less than 1 year decreased $1.6 billion while holdings of dollar liabilities with a maturity of more than 1 year—nonliquid—increased

$0.8 billion. The large difference between the liquidity balance and the official settlements balance in 1966 was due to high interest rates and tight money in the United States. This encouraged foreign private persons to temporarily increase holdings of liquid dollar assets by $2.9 billion.

TABLE 45.—*U.S. Balance of payments, 1966*

[In billions of dollars]

Transactions	Balance-of-payments accounts			Balance-of-payments measures			
				Liquidity balance		Official settlements balance	
	Receipts	Payments	Balance	Net balance	Financing of net balance	Net balance	Financing of net balance
I. Goods and services	43.0	37.9	+5.1	+5.1	-------	+5.1	-------
1. Merchandise trade (goods)	29.2	25.5	+3.7	-------	-------	-------	-------
2. Services	13.8	12.4	+1.4	-------	-------	-------	-------
(a) Military	.8	3.7	−2.9	-------	-------	-------	-------
(b) Investment income	6.2	2.1	+4.1	-------	-------	-------	-------
(c) Travel	1.6	2.7	−1.1	-------	-------	-------	-------
(d) Other	5.2	3.9	+1.3	-------	-------	-------	-------
II. Private capital	2.5	4.1	−1.6	−1.6	-------	−2.4	+0.8
1. Long term	2.2	3.8	−1.6	-------	-------	-------	-------
(a) Direct investment	−.1	3.5	−3.4	-------	-------	-------	-------
(b) Portfolio investment	.9	.5	+.4	-------	-------	-------	-------
(c) Bank and other loans (net)	1.2	−.2	+1.4	-------	-------	-------	-------
2. Short term	.3	.3	0	-------	-------	-------	-------
III. Government	1.2	5.1	−3.9	−3.9	-------	−3.9	-------
1. Loans	1.2	2.8	−1.6	-------	-------	-------	-------
2. Grants and transfers	-------	2.3	−2.3	-------	-------	-------	-------
IV. Other							
1. Private transfers	-------	.6	−.6	−.6	-------	−.6	-------
2. Errors and omissions	-------	.4	−.4	−.4	-------	−.4	-------
3. Changes in U.S. reserve assets	1.1	.5	+.6	-------	-------	-------	-------
(a) Gold (outflow is receipt)	.6	-------	+.6	-------	+0.6	-------	+.6
(b) Convertible currencies	-------	.5	−.5	-------	−.5	-------	−.5
(c) IMF gold tranche	.5	-------	+.5	-------	+.5	-------	+.5
4. Changes in U.S. liquid liabilities	3.4	2.6	+.8	-------	-------	-------	-------
(a) Foreign official holders	.3	1.9	−1.6	-------	−1.6	-------	−1.6
(b) Foreign private holders	3.0	.1	+2.9	-------	+2.9	+2.9	-------
(c) International organizations other than IMF	.1	.6	−.5	-------	−.5	−.5	-------
Total	51.2	51.2	0.0	−1.4	+1.4	+.2	−.2

NOTE.—Figures may not add because of rounding.

The growing dollar deficit in the balance of trade in steel products not only has had an adverse effect on the total merchandise balance of trade but also has contributed increasingly to the persistent deficit in our balance of payments.

As a matter of fact, the Chairman of the President's Council of Economic Advisers, Gardner Ackley, put the problem in historical context January 3, 1966, by saying:

Overall steel imports in the first 11 months of 1965 were up to 9.7 million tons, worth $1,096 million. The value of steel exports was down to $460 million, producing an 11-month steel deficit of $636 million, perhaps $700 million for the full year. In 1955-57 we had an average steel export surplus of $645 million. Thus the deterioration of our balance of payments due to steel over the last decade is $1.3 billion, probably as large as our entire balance-of-payments deficit in 1965.

Finally, tables D-7 and D-8 are tabulations of the U.S. balance of payments, 1947-66, providing a historical comparison of the U.S. deficit in the balance of payments and in foreign steel trade since

1957 and 1963, respectively. *It must be emphasized though, that from this comparison of the deficit in the U.S. balance of payments and of steel trade, the conclusion cannot be drawn that the steel deficit is directly responsible, or that if it were to be stopped, the U.S. balance of payments would be so much further in balance.*

Just as the steel industry is likely to blame the balance-of-payments deficit on net imports of steel so the owners of domestic resorts might blame it on the "tourist gap" or others on the "foreign aid gap" or even the "widget gap."

The United States should strive to overcome the balance-of-payments deficit, but its merchandise trade has been favorable in every year and every quarter since 1947. *A restoration of a net export balance in steel trade would be desirable from the point of view of the U.S. balance of payments, but it would not help either the balance of trade or the balance of payments, if a sharp cut-back in the current level of steel imports would result in an equivalent dollar amount of other U.S. merchandise exports being lost because of retaliation.*

Summary

The U.S. balance of payments has been in deficit since 1950, with the exception of 1957, and the foreign trade in steel mill products has become an increasingly adverse factor. In 1966, the total deficit of the balance of payments was $2 billion and $0.9 billion was the dollar amount of the trade deficit in steel products.

Obviously, any increase in U.S. steel exports and any decrease in U.S. steel imports would be a greatly desirable help toward the balancing of the U.S. balance of payments. But, it must also be recognized that the U.S. balance of trade was favorable by $3.7 billion in 1966 and that any quota measure sufficient to keep out steel imports might cause a corresponding decrease in U.S. exports, either because of retaliatory quota actions by the countries prevented from selling steel products to the United States or simply because these countries now have ceased to earn the dollar with which to import U.S. goods.

There are further qualifications to be considered. Foreign steel producers are buying steelmaking raw material such as, iron ore, scrap, and metallurgical grade coal from the United States and any reduction in foreign steel output would be bound to be reflected in lower demand for steelmaking raw materials exported to them from the United States.

Finally, the United States is exporting substantial tonnages of steel in the form of end-use items, especially vehicles and machinery, and the trend of the United States balance of trade in this field will have to be considered.

Technical Note: Prices and Research as Factors in U.S. Export Performance

The disappointing trends of recent U.S. steel exports and imports have been blamed in part on noneconomic factors, i.e., the government-determined status of tariff and nontariff trade barriers, export incentives and subsidies abroad. Obviously, only governments can negotiate about the establishment of "fair rules of the game."

Regarding the purely economic factors determining export performance, two major views are held. The more traditional view emphasizes price competition only. An alternative view, which may well be especially applicable to U.S. exports, emphasizes research and development, the so-called "technological gap." It enables U.S. industry to export to the rest of the world the more sophisticated products that are coming in a steady stream out of the research laboratories of U.S. corporations and testify to the renowned reputation of large-scale production know-how of this country.

Not surprisingly, both views shed light on the recent unfavorable record of U.S. steel exports and imports. The following two tables are quoted from R. N. Cooper's "Are Americans Competing in World Markets" in the June 1967 issue of the Manufacturers Hanover Trust Co.'s monthly publication.

The first table compares the changes during 1960–1966 in export prices of manufactured goods from major industrial countries to the countries' respective shares in world trade and gives evidence to the high inverse correlation between changes in export prices and export shares, thereby supporting the view that prices are the deciding factor in world exports.

TABLE 46.—*Export performance in manufactures, 1961–66* [1] *(percentage change)*

	Export prices	Export share [2]
United Kingdom	14	−14
France	8	−15
Germany	5	−7
United States	4	−3
Netherlands	3	----------
Belgium	2	−9
Canada	2	+15
Italy	1	+15
Japan	−8	+52

[1] 1966 partially estimated.
[2] Excluding growth in intra-EEC and intra-EFTA trade.

When growth in demand slackens abroad, many foreign firms find themselves with excess capacity. To a far greater extent than American firms, the European and Japanese manufacturers turn to foreign markets to hold up output, trimming prices if necessary. Thus, some foreign products, potential imports, go begging for markets, and the American trade position, both imports and exports, may suffer accordingly. The world steel glut of the past 6 years illustrates this phenomenon.

At the same time, it is clear that other factors also influence exports. Recent research at Columbia, Harvard, and Massachusetts Institute of Technology has shown that U.S. export performance is strongest in those industries in which research and development expenditures are concentrated. This work shows that the U.S. share of manufactured exports is very highly correlated, industry by industry, with research and development expenditures as a percentage of sales. At one extreme, the U.S. aircraft industry, with R. & D. expenditures equal to 22 percent of sales, accounted for about 60 percent of world commercial aircraft exports in 1962. At the other extreme, these studies indicate that in 1962 the iron and steel industry, with R. & D. expenditures equal to less than 1 percent of sales, accounted for less than 10 percent of world exports of iron and steel products.

Table 47 clearly proves that high R. & D. industries account for a larger share of world trade and also tend to export a higher share of their own productions. R. & D. expenditures are more closely correlated to export performance than either scale of output or degree of capitalization. R. & D. under military or general Government contracts may play a role, but the drug industry's high export performance is mostly based on company-financed research. To the extent that steel plays an important role in national defense, the steel industry might have been expected to benefit to a greater extent from military research contracts.

TABLE 47.—*Relationship between exports and R. & D.*

	Total R. & D. expenditure as a percentage of sales, 1960	U.S. share of exports from 10 major exporting nations, 1962 (percent)	Exports as a percentage of sales, 1962
Aircraft	22.5	60	8.4
Scientific and mechanical measuring equipment	11.8	37	6.7
Electrical equipment	10.9	27	4.1
Other instruments	6.5	22	(1)
Drugs	4.8	33	6.0
Machinery (nonelectrical)	4.3	42	13.3
Chemicals except drugs	4.1	27	6.2
Motor vehicles and other transport equipment	3.1	23	4.2
Rubber products	2.1	23	2.0
Fabricated metal products	1.5	20	2.1
Petroleum refining	1.1	21	1.2
Nonferrous metals	1.1	18	4.2
Papers and allied products	.7	16	2.1
Lumber, wood products, and furniture	.6	12	2.0
Textiles and apparel	.6	10	4.1
Primary ferrous metals	.6	9	2.5

[1] Included in scientific and mechanical measuring equipment.

Source: D. B. Keesing and Gruber, Mehta & Vernon, Journal of Political Economy, February 1967.

This table is based on 1960 data on R. & D. and the U.S. steel industry has recently advertised its research mindedness. The following attempts, therefore, to bring the record up to date.

The U.S. steel industry has been accused by some critics of having neglected the field of R. & D. The industry has contended that is has greatly expanded its efforts in recent years.

It must be recognized that R. & D. expenditures are less important a criterion of an industry's success in this field than the results achieved. It is also a fact that few industries are in the process of changing their technology as drastically as steel production, and the new technology results in better products and drastic reduction in the cost of the new plant and equipment needed to achieve the same tonnage of output. Additionally, there are substantial savings in operating costs.

It may be agreed that only the continuous rolling mill was invented in this country (in the twenties) and that the BOF and continuous casting were invented in Europe, but the U.S. industry is using these processes now on a larger scale than the countries where they were originally invented.

Only after having stated these qualifications a comparison of R. & D. expenditures by the steel industry and by all industries as reported by McGraw-Hill on May 12, 1967, is given below:

R. & D. expenditures

[In millions of dollars]

	1965	1966	1967	1970
Iron and steel	131	136	146	174
All industries	14, 197	15, 457	16, 605	20, 792

This indicates that in 1966 the U.S. steel industry's R. & D. expenditures were only 0.9 percent of those of all industries.

Even smaller percentages would result under these two additional R. & D. outlay comparisons:

1. How much of the R. & D. performed by industry was federally financed in 1966?

	Millions of dollars
Iron and steel	0. 5
All industries	8, 408. 2

2. How much R. & D. did industry subcontract to other organizations in 1966?

	Millions of dollars
Iron and steel	0. 4
All industries	501. 2

This note on determinants of export performance has focused on just two factors in international trade; namely, price differentials, and the role of research outlays as a percentage of sales. Such quantitative analysis attracts econometrically inclined economists like a powerful magnet at the expense of their ignoring the often more pertinent factors that defy neat quantitative analysis. Such factors are border taxes, tax remissions on exports, subsidies, "buy national" laws, import licenses, quotas, dumping, opportunistic pricing, and secret discounts which are discussed elsewhere in this study.

Technical Note: A Comparison of Steel Imports by Major Customs Areas to Growth Rates of Steel Output in the Respective Districts

Chart 48, "U.S. Imports of Steel by Major Customs Areas, 1956, 1962, and 1965," shows the relative ranks of certain harbors and of parts of the Canadian border as "invasion routes" for foreign steel. It shows that Michigan with 14.7 percent, Texas gulf ports with 12.2 percent, and Los Angeles with 11 percent, received the relative largest inflow of imports in 1966.

Chart 49, "Steel Ingot Production, U.S. and Major Geographic Centers," may not be exactly comparable to the major points of entry, but it shows the greatest average annual rate of growth for the Detroit district, namely, 5.6 percent compared with 1.5 percent for the United States as a whole. This highest growth rate of any district compares with the largest percentage of imports, 14.7 percent for Michigan.

The second fastest growth of steel production has been experienced by the St. Louis district which may be related to imports through gulf ports. Finally, the Los Angeles port might be related to the western district, which has an average growth rate of 2.6 percent.

These comparisons of the ranking of ports of entry with steel-producing districts indicate that between 1947 and 1966 regional population shifts and relative growth rates of steel-consuming industries proved to be stimulating on a regional basis both to domestic production and to imports.

Tables D-9, D-10, and D-11 provide the basic data for the charts.

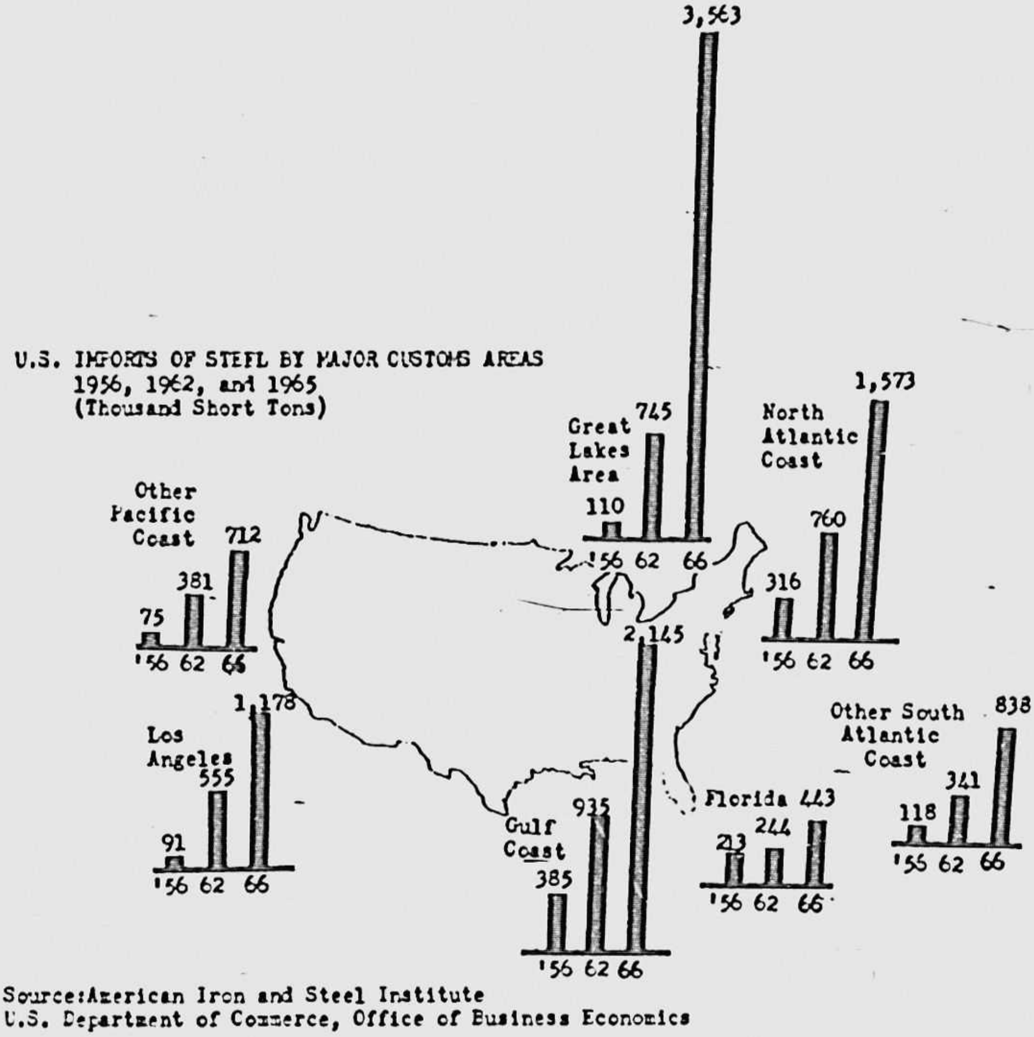
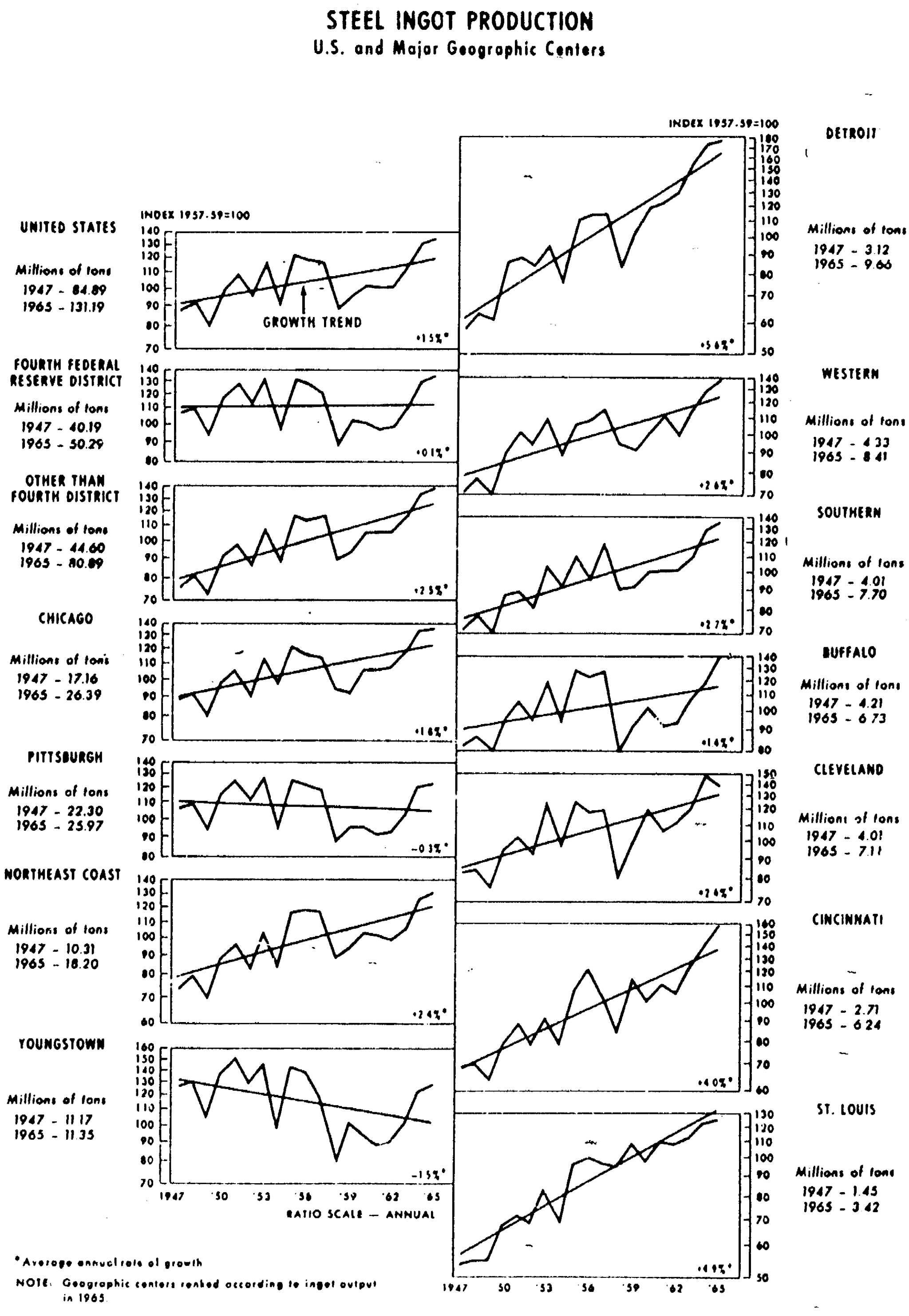


CHART 48



Sources of data: American Iron and Steel Institute and Federal Reserve Bank of Cleveland

CHART 49

Technical Note: Is Overvaluation of the Dollar Responsible for the Net Steel Imports?

One all-too-simplified diagnosis and prescription for a solution of the steel import problem has been advanced by Prof. Procter Thompson of Claremont Men's College, Pomona, Calif. He blames the "steel import problem" on the overvaluation of the dollar which cannot be cured by "voluntary restraints" on U.S. bank lending abroad and on investment of U.S. corporations abroad. Neither are solutions to be found in the taxation of the purchase of foreign bonds or stocks, in "gentlemen's agreements" such as quotas on the importation of Japanese textiles nor in the increase of tariffs against steel imports.

His prescription recommends devaluation of the dollar or flexible (market determined) exchange rates:

> The international money market can easily solve the problem of finding the price that equalizes the value of what we want to buy with the value of what we are able to sell. The forces of the market govern the price of nearly every other commodity in a modern economy, and the exceptions—farm products plus certain raw materials covered by international agreements—create more problems than they solve.
>
> The market solves the problem at a cost, of course, in the form of fluctuating rates. But this cost is surely smaller than the embarrassment and the agonies we face with a fixed rate that gets more and more out of plumb with the basic levels of market forces. Chief among the disadvantages of the present system is the restraints we have begun to place on the free flow of goods and services across our boundaries in an effort to cut back the deficit in our balance of payments. The so-called voluntary restraints on U.S. investment abroad represent an acceleration of this unwholesome trend. (Ironically, these restraints may do more harm than good even in terms of their limited pupose of discouraging the drain on our reserves because, once the investment is in place, it commences to return a stream of foreign payments to its American owners.)
>
> The present overvalued exchange rate artificially cheapens foreign goods in the American market and handicaps U.S. products in the foreign market. It thus damages domestic industries suffering from vigorous foreign competition and penalizes export industries trying to penetrate offshore territories. The steel industry, it need hardly be pointed out, offers a prime candidate for both categories. While other causes no doubt contribute to the rise in steel imports from about 2 to about 10 percent (by volume rather than value) of U.S. consumption during the last decade and while other influences doubtless add leverage to the fall in steel exports, the overvalued dollar helped set the stage for the play. The moral of this drama is clear: If, for some reason, maintaining the present exchange rate is somehow necessary to "the prestige of this country," if (unwisely) it is a prime objective of U.S. monetary policy plus a secondary objective of our general foreign policy, the costs of this scheme fall in part upon steel and other industries. To carry this moral further, steel complains of "unfair" Japanese competition because the wily orientals dump steel on American docks at prices which allegedly reflect a foreign subsidy. Steel's complaints should be lodged closer to home; their own government is doing them in.
>
> Lowering, or allowing the market to reduce, this overvalued rate represents a uniform tariff on all imports combined with a uniform subsidy to all exports. At the new equilibrium terms of trade, therefore, imports fall off and exports increase. The steel industry finds this prospect understandably attractive and, by a fortunate coincidence, it also serves the national economic interest.[1]

Professor Thompson's hypothesis appears to be contradicted by the trend of steel imports and the relative value of the dollar during the period 1957–66.

The best analysis of the recent trend of the overvaluation and undervaluation of currencies and their effect on international competitiveness has been published in 1967 under the title: "A Note on International Competitiveness" by C. A. van den Beld and D. van der

[1] From an unpublished paper read at a steel industry seminar, Chicago, August 1966.

Werf, Central Planning Bureau, The Hague, 1967." On page 9, the following table compares the overvaluation of the dollar in terms of other currencies for the years 1957, 1960, 1963, and 1965. The table indicates that the dollar was overvalued in 1957 in all countries but France which subsequently devalued its currency.

In 1965, due to the price index in the United States (1960=100) having risen to only 104 compared to much greater price increases abroad, the dollar was overvalued only in terms of cost of production in Japan, The Netherlands, Belgium, and France, but was undervalued in terms of the competitive costs of West Germany, United Kingdom, Denmark, and Norway.

Available data appear to indicate that production costs during 1966 and the first half of 1967 advanced faster in the Netherlands than in the United States, and it might therefore be assumed that the dollar today is undervalued also in terms of Dutch production costs.

Overvaluation of the dollar in terms of currencies of steel exporting countries, 1957–65 (on the basis of purchasing power parities for GNP, exclusive of services)

[Percentages]

–	1957	1960	1963	1965
Japan	....	20	16	7
United Kingdom	3	5	2	−3
France	−6	13	4	4
West Germany	10	9	−2	−4
Belgium	11	14	9	1
Italy	14	18	8	1
Netherlands	20	21	13	9

In the light of this evidence and because steel imports into the United States since 1957 have steadily increased while steel exports from the United States have fallen, the conclusion must be drawn that forces other than an alleged overvaluation of the dollar have been responsible. Purchasing power parity, as shown in the table above, has been determined on the basis of the prices of commodities consumed, ignoring the prices of services most of which do not enter into international trade.

CHAPTER V

THE IMPORTANCE OF THE STEEL INDUSTRY IN THE U.S. ECONOMY

The role of steel can be measured and compared to other industries in terms of tonnages of basic processed materials produced, value added by manufacture, assets, sales, employment, total payroll, wages, capital expenditures, net profits, and Federal income taxes paid. Trend comparisons can be made with gross national product and Federal Reserve Board index of production of durables.

Steel as the Major Raw Material of the U.S. Industrial Economy

At the beginning of the post-World War II period, steel accounted by weight for 85 percent of all processed materials. According to a study made in 1944, approximately 110 million tons of processed metallic and nonmetallic basic materials were used by all manufacturing industries in the United States. Of these materials, iron and steel accounted for about 85 percent.

	Percent
Iron and steel	85.0
Glass	7.5
Lead and zinc	1.8
Copper	1.3
Aluminum and magnesium	1.3
Plywood	1.0
Synthetic rubber	1.0
All other	1.1

The postwar period has witnessed a relative decline in steel's role in the economy. Plastics, aluminum, and concrete invaded steel's traditional markets, but steel still accounts for 94–95 percent of all metals used in this country.

In regard to plastics, it has been claimed in a 1966 congressional hearing that they have begun to equal steel's use in the United States, not only in cubic feet but also in weight.[1]

[1] If the role of materials is estimated not in terms of weight but in terms of cubic feet, it has been alleged by Guy Suits, retired vice president for research of General Electric Co., in testimony before the U.S., House Committee on Science and Astronautics, January, 1966, and published under the title, "Government Science and Public Policy," pp. 56–57, "For perspective, I need to take a slight detour into polymer history. These materials used to be called 'plastics,' and they deserved to be. They had miserable mechanical and chemical properties, and they were likely to melt, or fall apart in your hands. For years they were just barely equal to the mechanical demands of the application to toothbrush handles. This chemical material had a bad start in industrial life principally because its molecules consisted of long chains of atoms poorly adapted to orderly atomic arrangements, which are a fundamental requirement for mechanical and chemical integrity. The polymer chemist has had a long uphill fight to bring order out of this atomic chaos, but he has succeeded in achieving the result that these substances are becoming bona fide structural materials of real consequence. They are already replacing many metals in consumer products, to such a degree that in American industry as a whole the volume of polymers used in manufactured products already exceeds the volume of steel.

"This statement takes advantage of the fact that there is a density difference averaging about seven times in favor of polymers. But relative growth-rate of usage is such that polymers will soon overtake steel—even on a weight basis—and they may have already done so.

"We are certain, because of the existence of the diamond, that nonmetallic substances may match—even exceed the strength of metals. It is difficult to escape the conclusion that polymers will, in the future, become the basic structural materials of our civilization."

Lest this apprently overwhelming growth of plastics is overrated in terms of competition with steel, it should be pointed out that most plastic uses are in applications where steel had not and would never have been considered.

Definition of the Steel Industry

From the point of view of steel integration a definition of the industry would include the following:

(1) The raw materials used, such as iron ore, coking coal, limestone, and ferromanganese.

(2) The transportation of these materials from the mines to the coke ovens, blast furnaces, and steel furnaces; including ore boats, railroads, and loading facilities.

(3) The coke ovens and byproduct plants.

(4) The blast furnace.

(5) The scrap industry (collecting and processing).

(6) The foundry industry (some 3,400 gray iron or malleable iron foundries).

(7) Steel furnaces.

(8) Rolling mills.

(9) The retailing of steel products through company-owned or independent steel service centers.

(10) The retailing of oil field materials through oil country supply stores.

(11) The manufacture of such products as drums, pails, pumps, axels, wheels, and gas bottles.

(12) The construction of ships, barges, bridges, and structural parts of buildings.

Activities, such as 11 and 12 above mentioned, are carried on by only a few of the major steel producers.

Data for the steel industry are reported by the Government on an establishment basis for information regarding employment and on the basis of consolidated corporate reports on all dollar items such as sales, assets, profits, dividends, and so forth. The data used in this study are either Government data (Census or SEC–FTC) or AISI.

Government data for primary iron and steel include SIC 331, 332, and part of 339; that is, coke ovens, blast furnaces, steelworks, rolling mills, foundries, forgeshops, electrical metallurgical plants and independent wire drawers, cold finishing mills, and pipe and tube producers, a definition of the steel industry comprising some $24 billion of sales. The AISI definition is narrower and confined to companies reporting to AISI, with sales of some $18 billion. On the basis of AISI data, other significant parameters of the industry for the year ending December 31, 1966, were:

[Dollars in millions]

Number of stockholders	1, 196, 204
Number of employees	542, 047
Current assets	$7, 285
Current liabilities	3, 252
Undepreciated fixed assets	24, 671
Depreciated fixed assets	10, 680
Profits (net income)	1, 076
Federal income taxes	690
State, local, and miscellaneous taxes	349
Capital expenditures	1, 953
Dividends	484
Stockholders equity	12, 052
Market value of equity	8, 700
Total payroll	4, 502

Comparison of Steel Industry Trends to Other Major Industries, 1947–66: Sales, Employment, Payroll, Profits, Federal Income Taxes, Cash Dividends, Total Assets, Capital Expenditures, Value Added by Manufacture

A comparison to all manufacturing industries for 1947 and 1965 indicates that the steel industry has somewhat decreased its relative standing in sales, net profits after taxes, Federal income taxes, cash dividends, total assets, total employment, and total payroll, but has somewhat increased in its capital expenditures and value added by manufacturers. It should be pointed out that the data used are the ones reported by the SEC and FTC, as shown on chart 50.

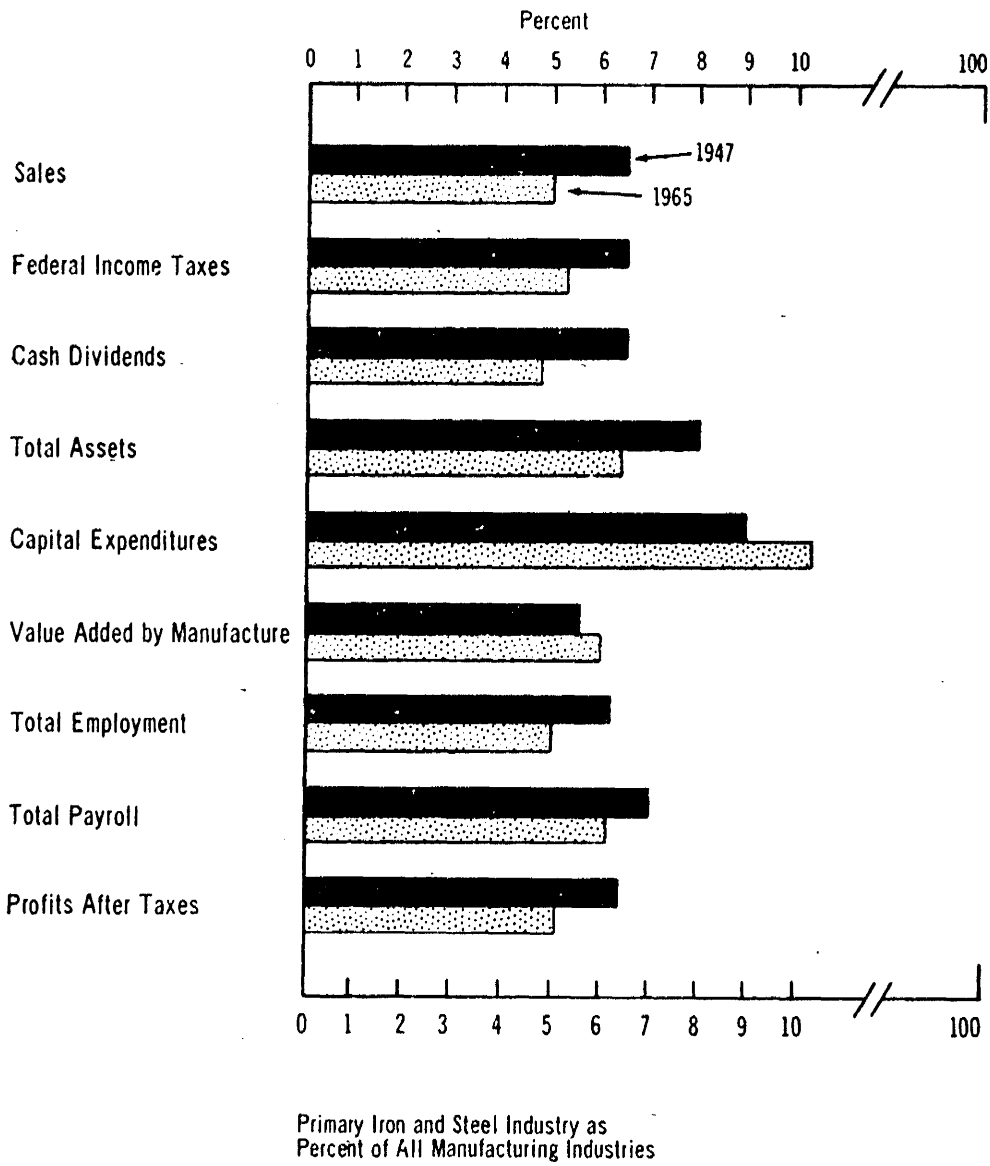
Primary iron and steel industry related to all manufacturing industries, 1947 and 1965

[In percent]

	1947	1965
Sales	6. 5	5. 0
Profits after taxes	6. 5	5. 1
Federal income taxes	6. 5	5. 3
Cash dividends	6. 5	4. 8
Total assets	8. 0	6. 4
Capital expenditures	9. 0	10. 3
Value added by manufacture	5. 6	6. 0
Total employment	6. 2	5. 0
Total payroll	7. 0	6. 1

Source: Bureau of the Census, SEC, and FTC.

Primary Iron and Steel Industry Related to All Manufacturing Industries, 1947 and 1965



Source: Bureau of the Census, and Securities and Exchange Commission, and Federal Trade Commission.

CHART 50

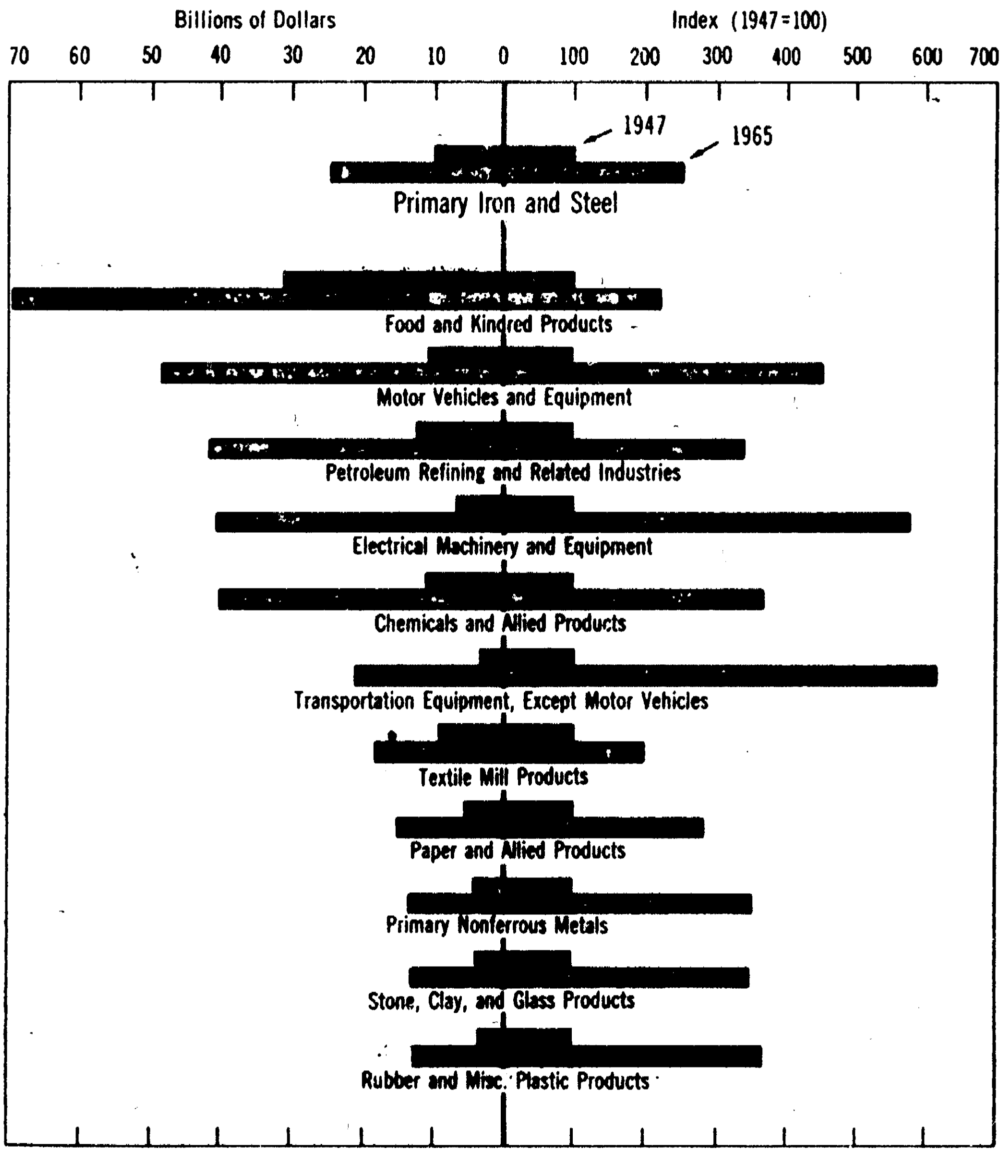
The following charts compare with other major industries, in terms of actual dollars (left side of chart) and percentage index (right side of chart), the sales, profits after taxes, Federal income taxes, cash dividends, total assets, capital expenditures, value added by manufacture, total employment, and total payroll of the steel industry.

Sales: Steel showed an increase of 150 percent compared with 518 percent for transportation equipment (airplanes), and 479 percent for electrical machinery and equipment; only textile mill products and food showed a smaller increase than steel

Comparison of Iron and Steel Industry With Other Industries

A. Sales

1947 and 1965



Source: Securities and Exchange Commission and Federal Trade Commission

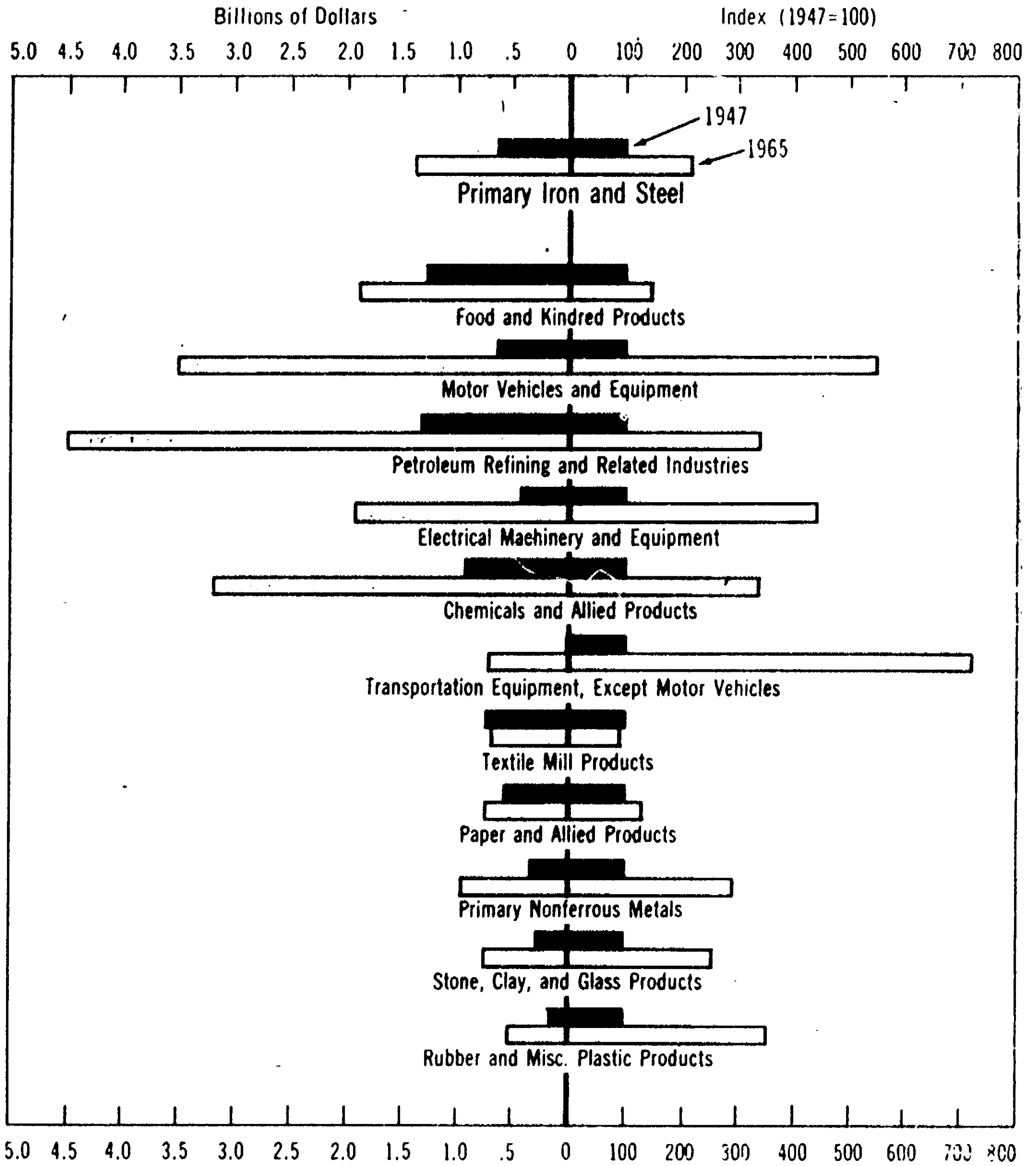
CHART 51

Profits after taxes: Steel showed an increase of 115 percent compared with 720 percent for transportation equipment (airplanes), 447 percent for motor vehicles, 339 percent for electrical machinery, 253 percent for rubber, 238 percent for petroleum, 236 percent for chemicals, and 194 percent for nonferrous metals; only textiles, food, and paper showed smaller increases

Comparison of Iron and Steel Industry With Other Industries

I. Profits After Taxes

1947 and 1965



Source: Securities and Exchange Commission and Federal Trade Commission

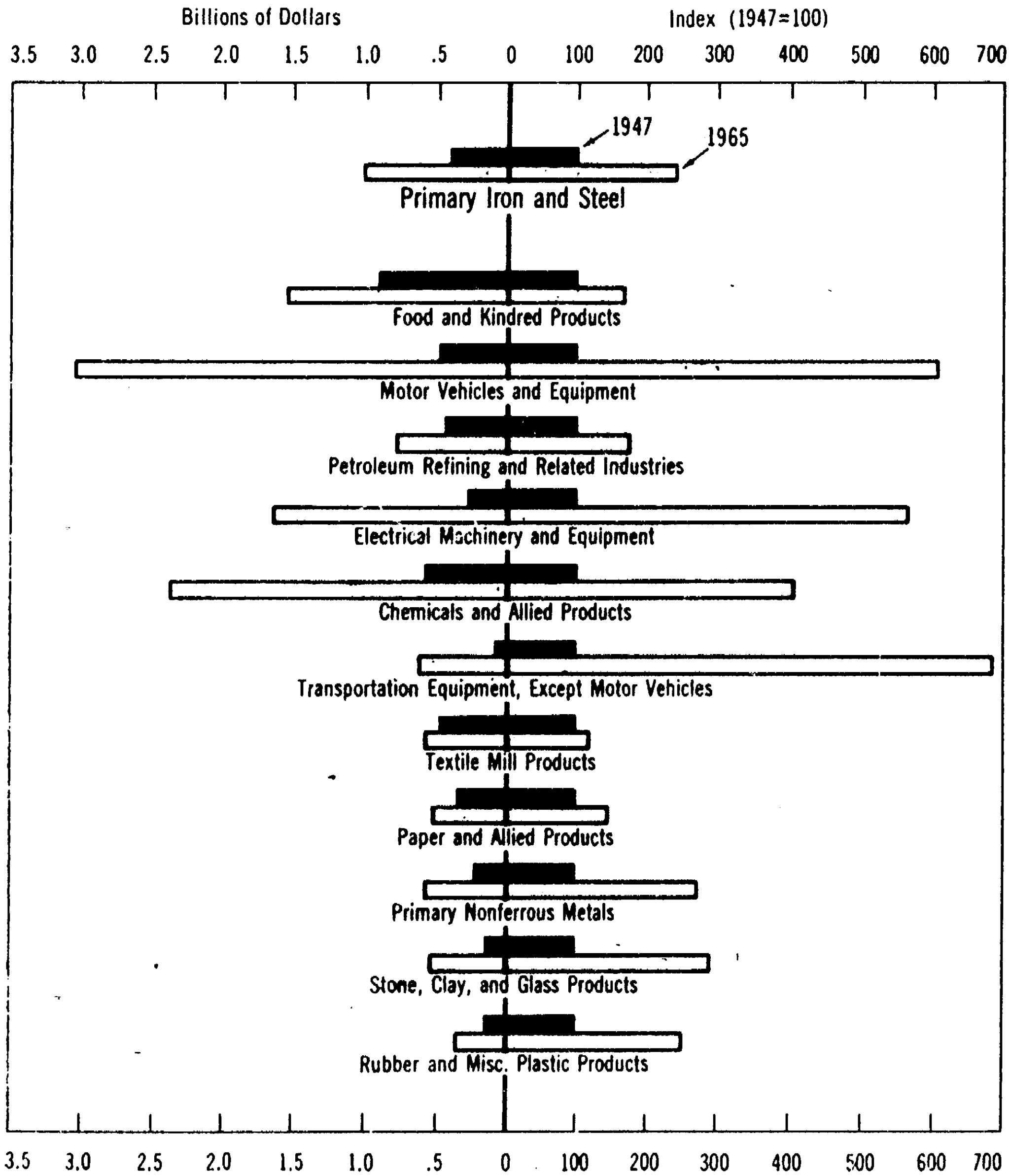
CHART 52

Federal income taxes paid: Steel showed an increase of 140 percent, while all other industries showed higher increases, except food, textiles, paper, and petroleum

Comparison of Iron and Steel Industry With Other Industries

B. Federal Income Taxes

1947 and 1965



Source: Securities and Exchange Commission and Federal Trade Commission

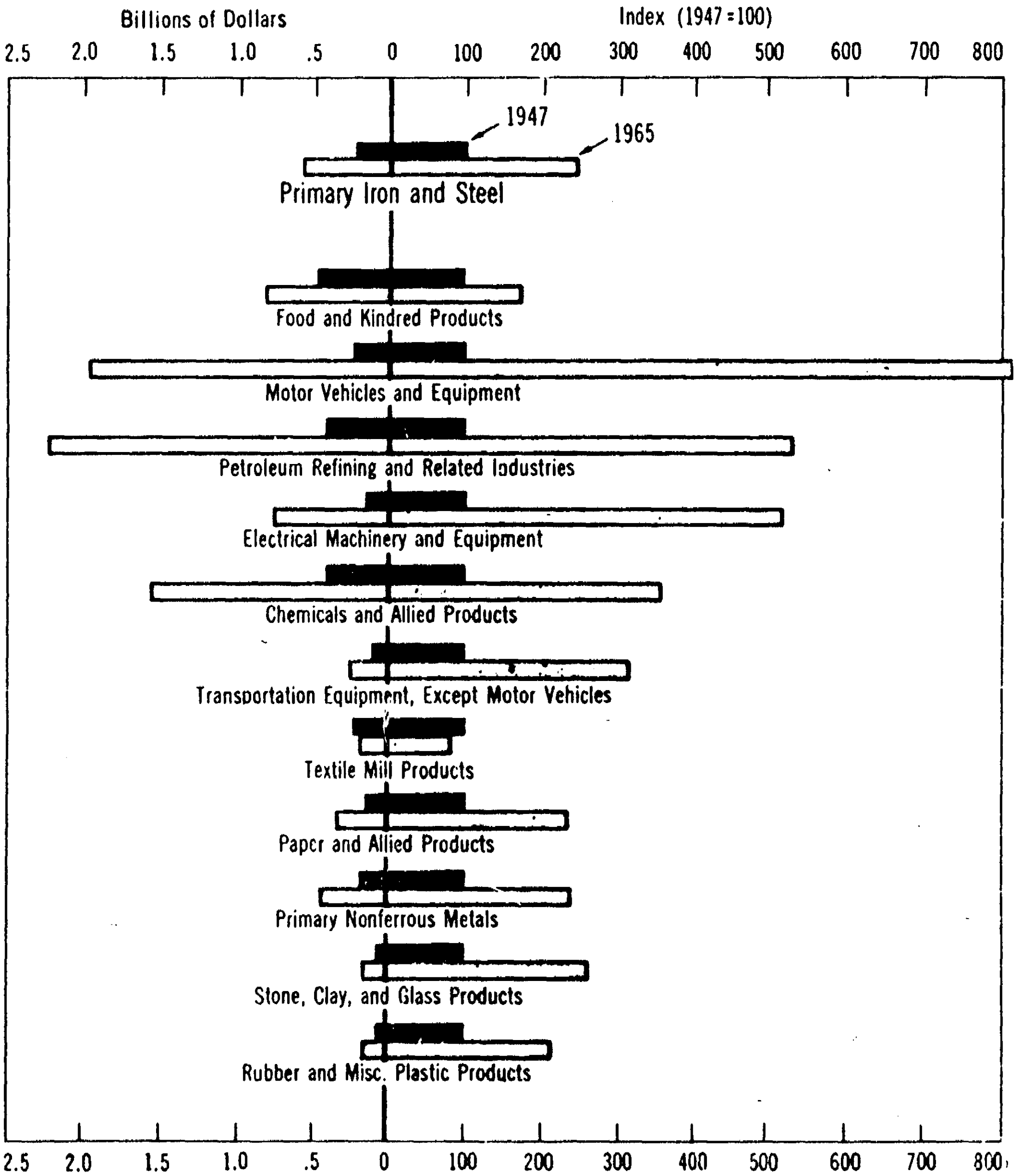
CHART 53

Cash dividends: Steel showed an increase of 142 percent, or less than other industries, except food, textiles, paper, nonferrous metals, and rubber

Comparison of Iron and Steel Industry With Other Industries

C. Cash Dividends

1947 and 1965



Source: Securities and Exchange Commission and Federal Trade Commission

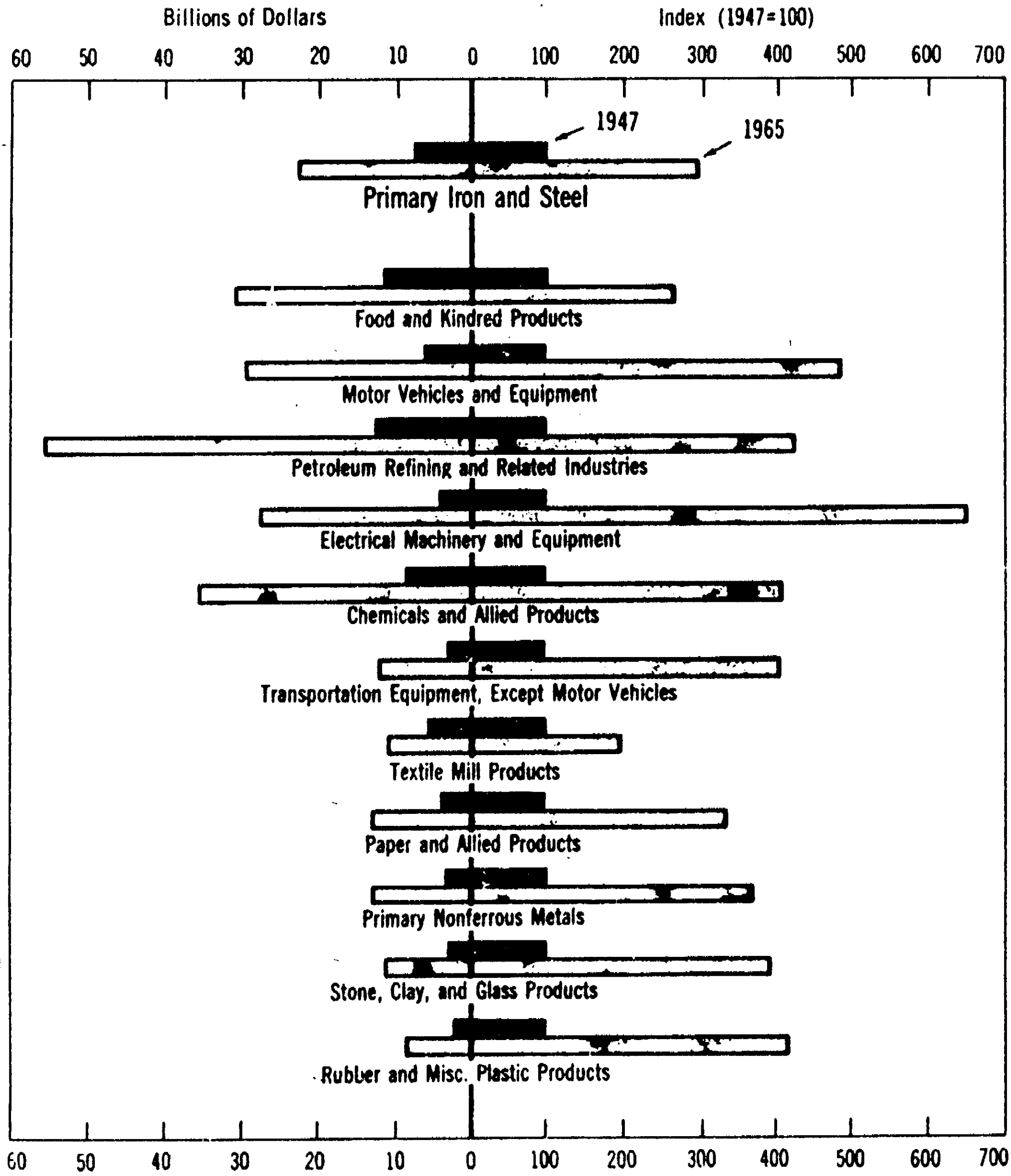
CHART 54

Total assets: All industries exceeded steel except textiles and food

Comparison of Iron and Steel Industry With Other Industries

D. Total Assets

1947 and 1965



Source: Securities and Exchange Commission and Federal Trade Commission

CHART 55

Capital expenditures: Steel was exceeded only by electrical machinery, chemicals, transportation equipment, paper, and rubber

Comparison of Iron and Steel Industry With Other Industries

E. Capital Expenditures

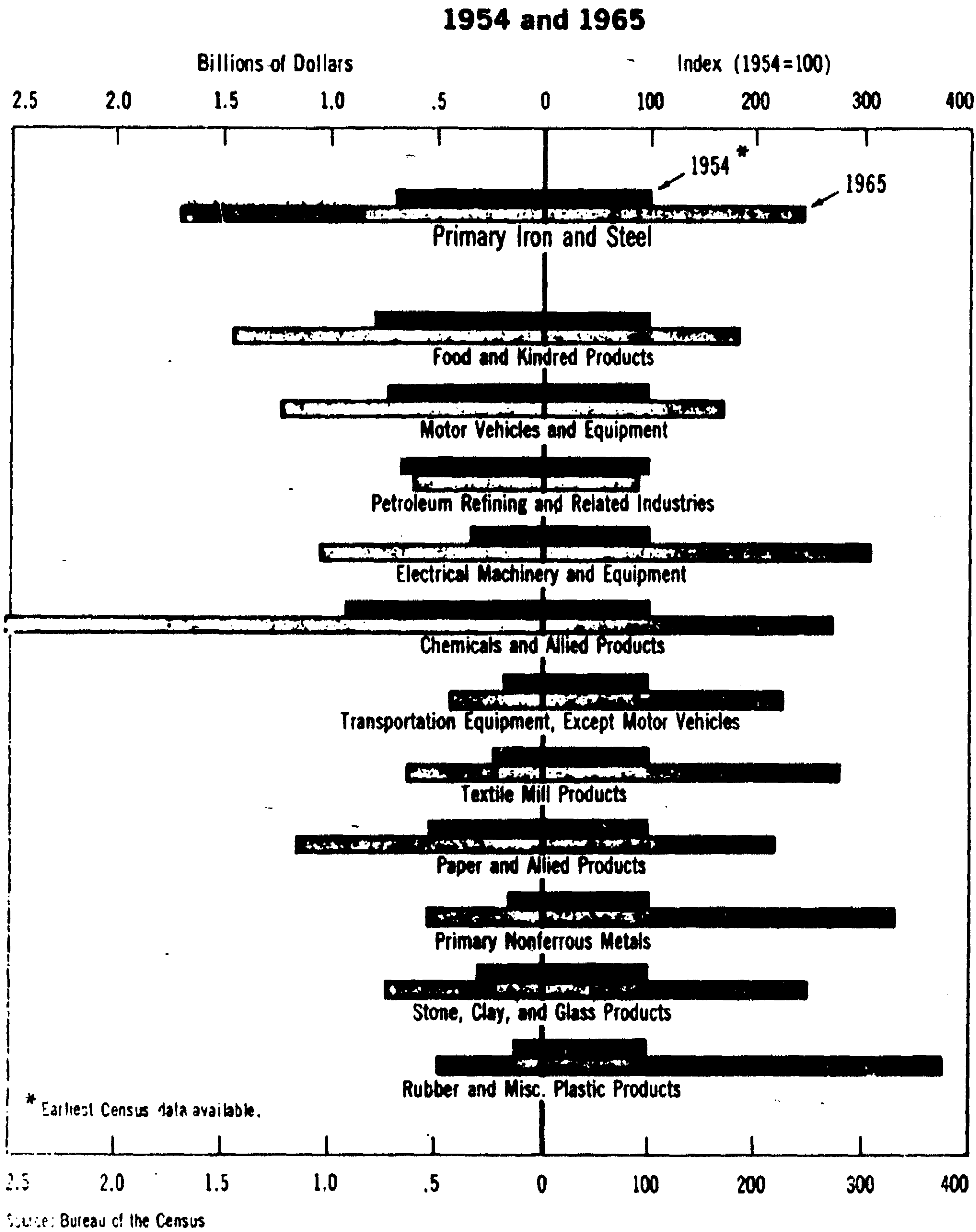
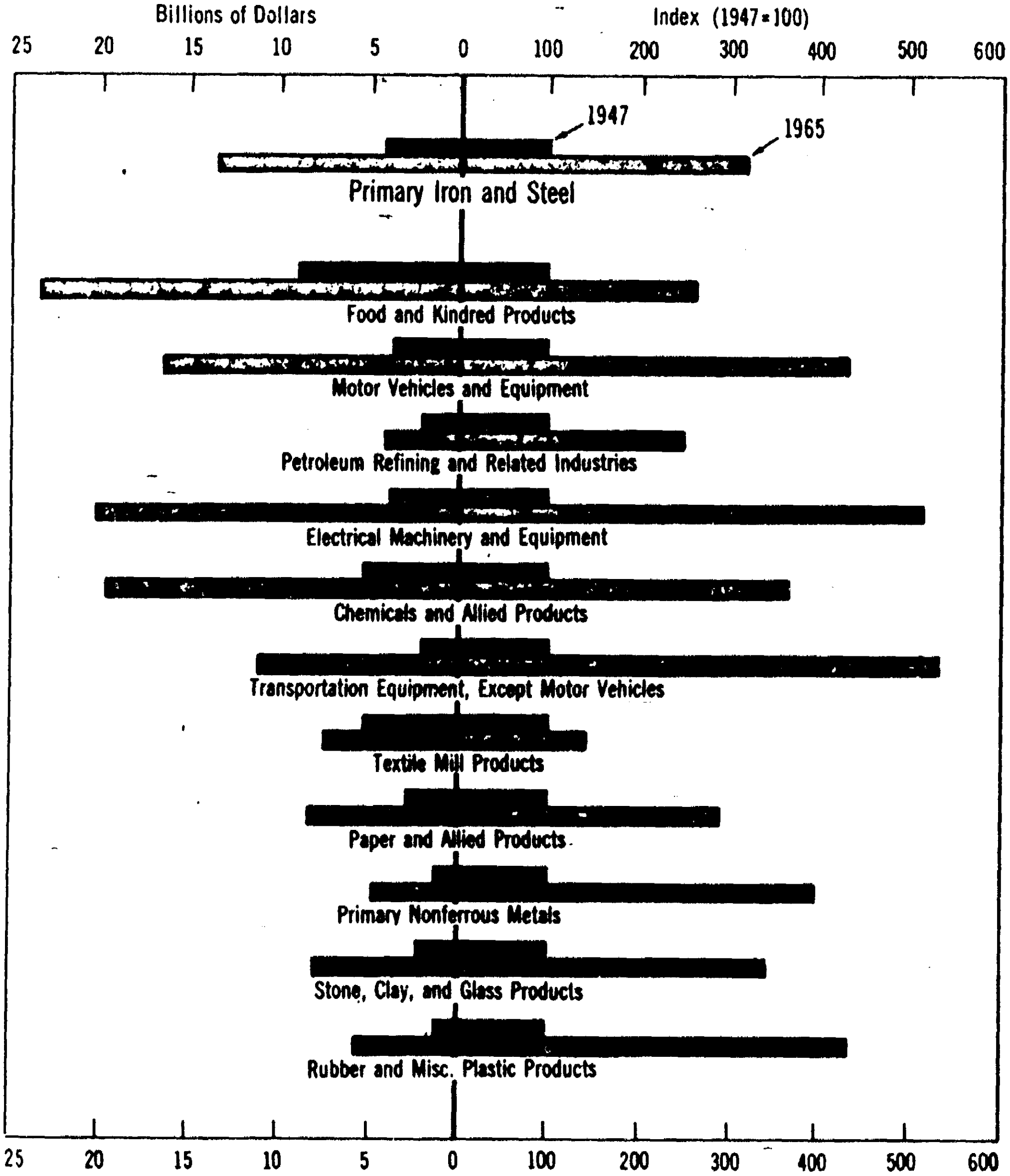


CHART 56

Value added by manufacture: Steel increased by 216 percent due to the growing role played by cold-rolled, stainless, alloy, and other more sophisticated types of steel products; steel's increase was exceeded by motor vehicles, electrical machinery, chemicals, transportation equipment, nonferrous metals, stone, clay, and glass, and rubber and plastics

Comparison of Iron and Steel Industry With Other Industries
F. Value Added by Manufacture

1947 and 1965



Source: Bureau of the Census

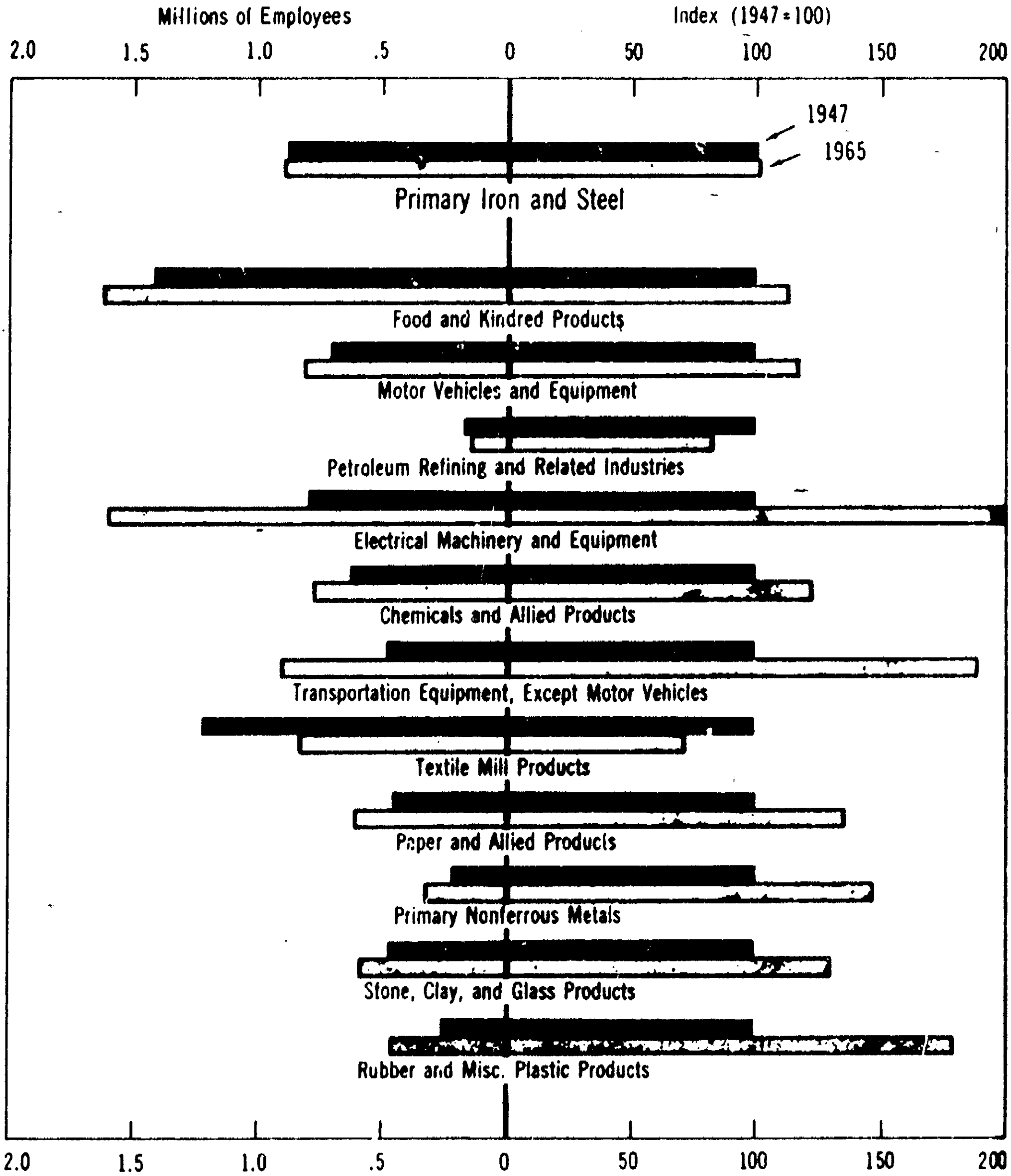
CHART 57

Total employment: Steel increased employment by only 1 percent, while textiles and petroleum refining (automation) showed actual decreases, but electrical equipment registered 100-percent increase, chemicals 89 percent, and rubber 78 percent

Comparison of Iron and Steel Industry With Other Industries

G. Total Employment

1947 and 1965



Source: Bureau of the Census

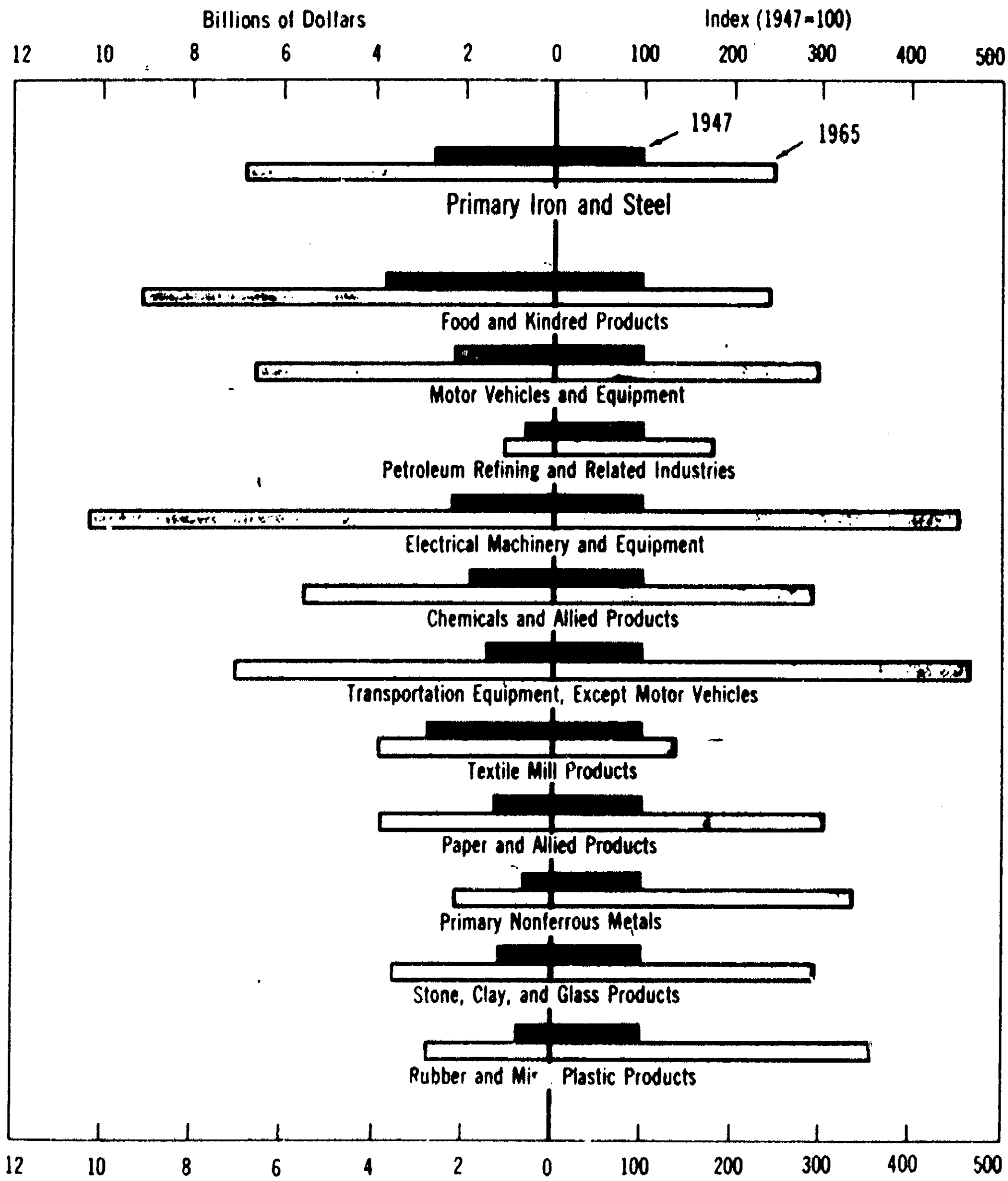
CHART 58

Total payroll: Steel increased its payroll by 145 percent, while food, textiles, and petroleum refining showed smaller increases

Comparison of Iron and Steel Industry With Other Industries

H. Total Payroll

1947 and 1965



Source: Bureau of the Census

CHART 59

These relative changes in major U.S. industries are illustrated on the charts. The underlying data are shown in the appendix. See appendix for all tables prefaced by a letter.

Market Appraisal of Investment in U.S. Steel Industry

All these data have compared 1965 with 1947. In order to get a focus on a more current appraisal of the steel industry's current and probable future earning power, the market value as of December 31, 1966, of all steel stocks listed on the New York Stock Exchange is compared to their book value and to the market value of other industries and of certain specific companies as of that date. Without disregarding the fact that there are many amateurs gambling today in "swinging" stocks of "science" industries, the investment appraisal of the steel industry reflects the viewpoint of the highly trained security analysts in the trust department of banks and the portfolio managers of insurance companies, endowment funds of universities and colleges; of pension funds and of mutual investment trusts, especially those emphasizing income rather than capital gains. The number of individual stockholders of steel companies on December 31, 1966, was 1,196,204.

Based on an analysis of data published by Standard & Poor's, steel shares are held by investment trusts as follows:

	Number of funds holding steel shares	Market value of steel shares held (millions)	Number of shareholders represented	Shares held (thousands)
Closed end funds (20)	6	$7.2	104,574	180
Open end funds (80)	38	448.9	4,508,907	12,608
Total	44	456.1	4,613,481	12,788

Such information is not available from private sources for pension trust funds. Reports filed with the Government by pensions trustees or managers do not require a segregated or classification of investments which would enable one to develop or obtain this information.

It may be of interest that the pension fund of the International Monetary Fund as of April 30, 1967, had 6.36 percent of the market value of its portfolio in steel stocks. The pension fund of the Federal Reserve System also held stocks in the steel industry.

The 1967 Fact Book of the New York Stock Exchange shows on page 222 that the market value of the common and preferred stocks of 40 steel companies listed on the exchange on December 31, 1966, was $8.7 billion. The fact that these 40 companies in 1966 paid $500.5 million in cash dividends as compared to $483.8 million in cash dividends shown by AISI for all reporting companies for this period proves that these 40 companies account for close to the total of the industry in financial standing, at least.

Two comparisons appear to be significant. The market value of $8.7 billion as of December 31, 1966, compared to total stockholders equity as reported by AISI for that date of $12 billion. This means that as of that date the market appraisal of the steel industry was only 72 percent of the depreciated book value of its equity, a rather unfavorable appraisal and one preventing the steel industry from financing the installation of the new technology by issuing stock. Only cash flow and going into debt are alternative means of financing plant and equipment.

A second comparison would relate the market appraisal of the industry at $8.7 billion to the appraisal on the same date of other industries or of individual companies:

	Billions
All stocks	$482.5
Industrials only	359.9
Petroleum	70.1
Chemicals	51.8
Electronics and electrical	50.9
Automobile	27.9
Drugs and cosmetics	20.8
Foods	20.5
A.T. & T.	29.7
IBM	20.2
GM	18.9
Standard Oil (N.J.)	13.8
Eastman Kodak	10.3
Texaco	9.8

Total dividends paid by the steel industry in 1966 were 3 percent of all dividends paid by stocks listed on the NYSE in that year.

Cause of Relative Decline of Steel Demand, 1955–1963

Comparing steel ingot production for the years 1919–55 with the growth of GNP in constant dollars, we find that steel output increased by 307.2 percent compared to a growth in GNP of 296.2 percent. It is after 1955 that the demand for steel actually declined to a lower level, as follows:

Year:	Million net tons
1955	117.0
1956	115.2
1957	112.7
1958	85.3
1959	93.4
1960	99.3
1961	98.0
1962	98.3
1963	109.3

It was only in 1964–66 that ingot production again exceeded 1955 with 127.0, 131.5, and 134.1 million net tons, respectively.

Any appraisal of the present and possible future impact of steel imports on the employment opportunities and the profits which the industry will be able to offer its workers and stockholders, has to be preceded by an analysis of recent demand trends for steel.

Charts 60 and 61 (the basic data are shown in tables E–10 and E–11) show that per capita steel consumption in 1951 was 0.504 tons, and in 1966, 0.503 tons; GNP per capita in constant (1958) dollars was $2,475 and had increased to $3,212 in 1966.

USA APPARENT STEEL CONSUMPTION, POPULATION & GNP

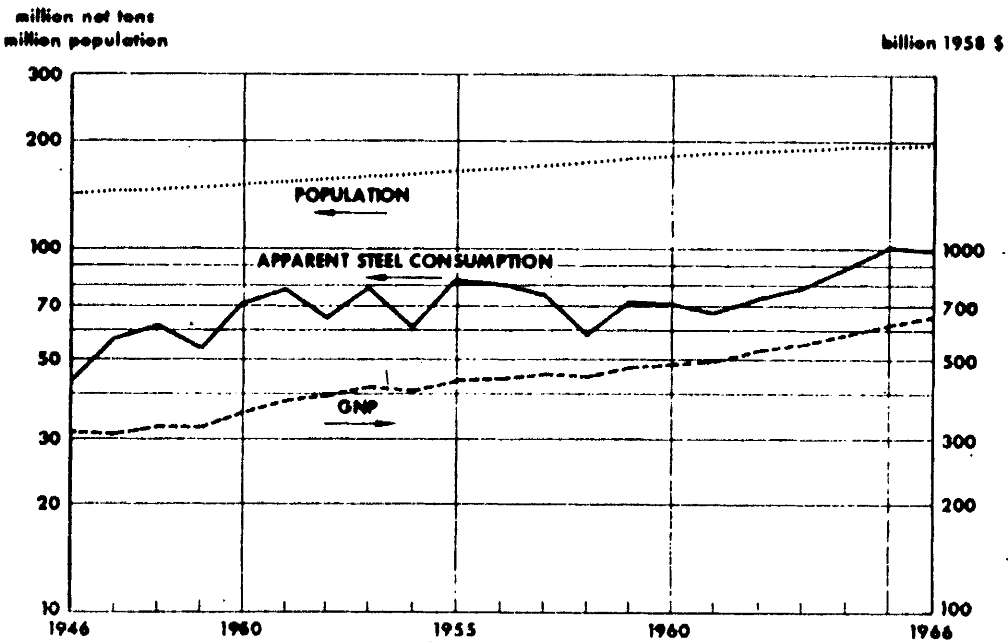


CHART 60

USA STEEL CONSUMPTION & GNP PER CAPITA

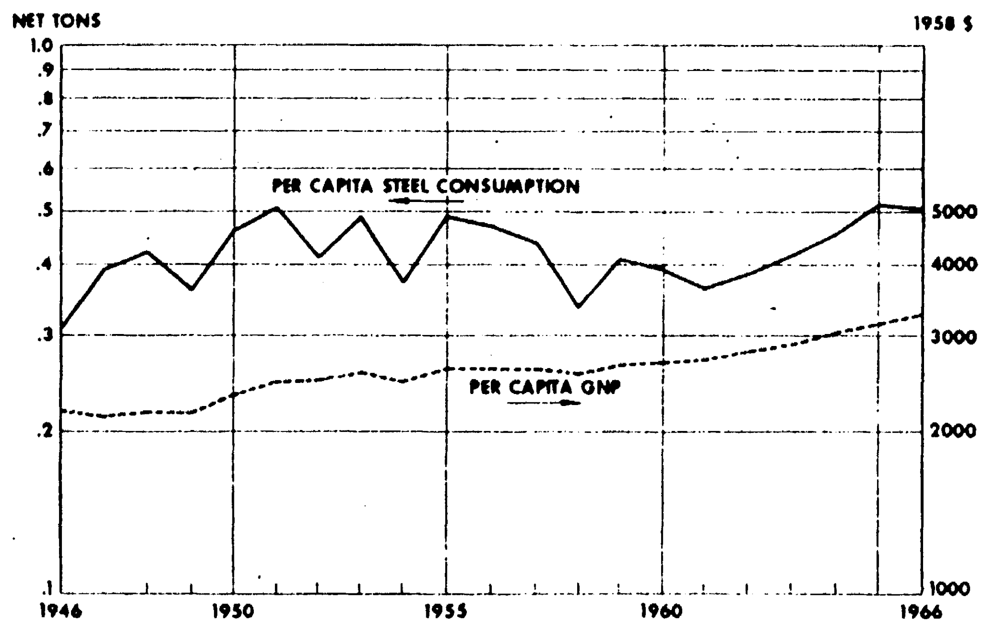


CHART 61

To assess the meaning of this failure of per capita steel consumption to rise at all during a period in which per capita GNP in constant dollars advanced by 33 percent, a comparison of steel mill shipments (millions of tons) was made to the durable goods production index of the FRB index (1957–59=100) shown in chart 62 for the years 1947–66. This comparison indicates that steel shipments on the average have declined at a rate of 4 percent a year compared to the FRB durable goods index.

As shown in the lower half of chart 62, this steady annual downward trend of 4 percent was interrupted temporarily only three times; namely, during 1947–51, 1955–57, and 1963–64, all three periods being characterized by capital goods booms.

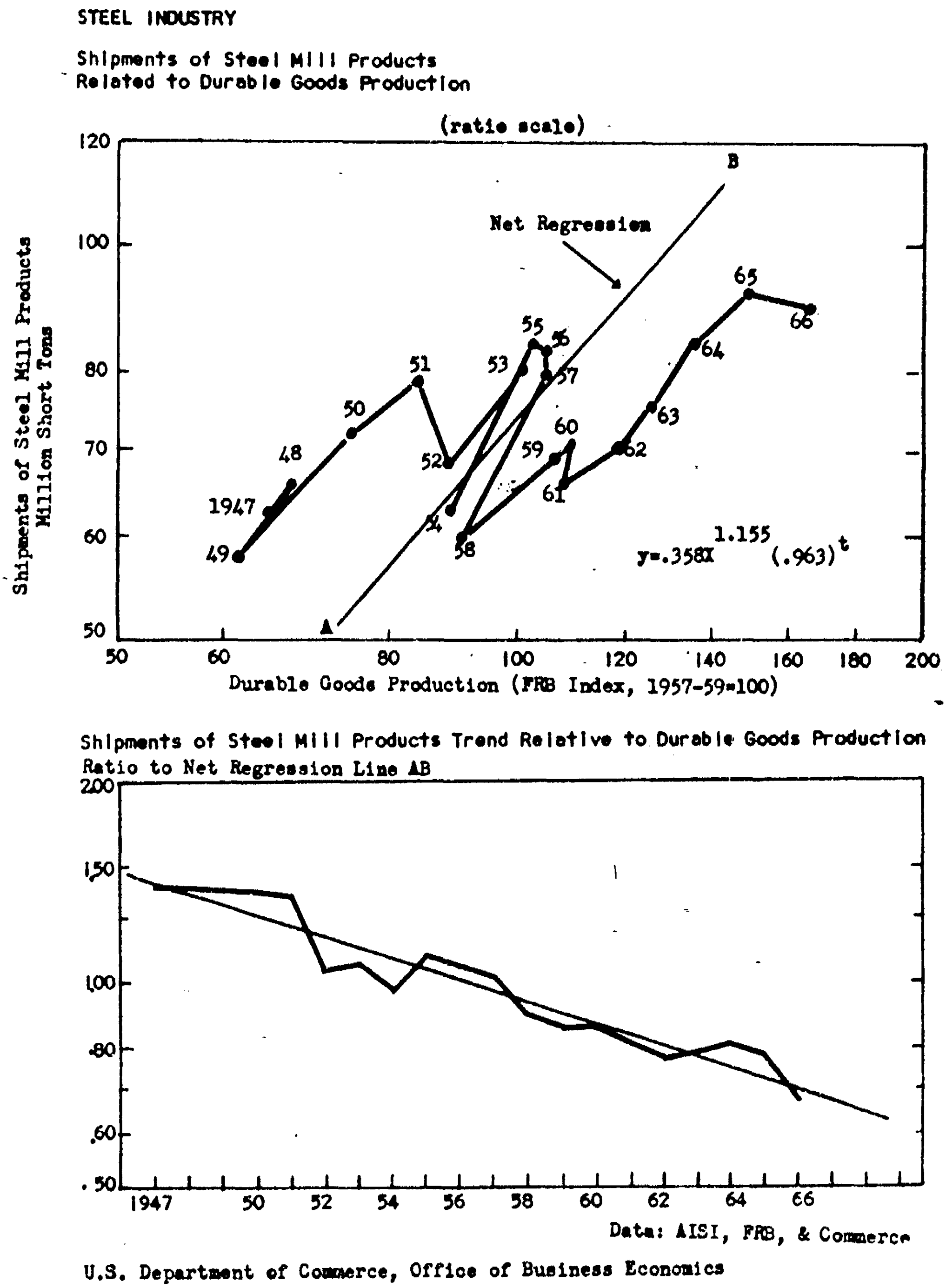
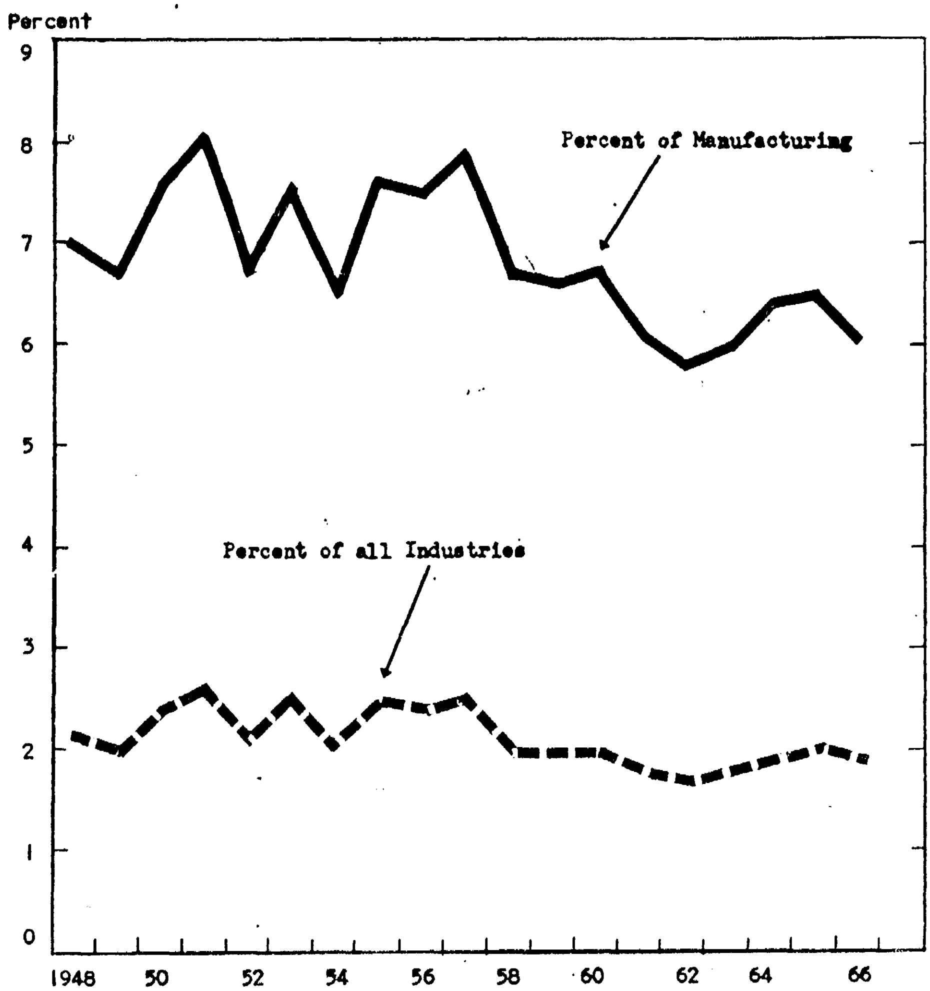


CHART 62

Another illustration of the declining role of steel in the U.S. economy is given in chart 63, table E–12, which compares national income originating in the steel industry to total manufacturing and to all industries. National income originating from the steel industry as a percentage of total manufacturing was 7 percent in 1948 and as high as 8.1 percent in 1951, but only 6.1 percent in 1966. For a comparison with all industries, the percentage for the steel industry was 2.2 percent in 1948, 2.6 percent in 1951, but only 1.9 percent in 1966.

National Income Originating In the Iron and Steel Industry as a Percent of National Income Originating In Total Manufacturing and In All Industries



U.S. Department of Commerce, Office of Business Economics

CHART 63

Before exploring the reasons for this failure of steel demand to keep pace with GNP and the Federal Reserve Board index it should be recalled that of the 99 million net tons apparent domestic steel products consumption, 10.8 million tons were imported while in 1957 the United States had still been a net exporter of steel.

Among the causes for the 1955–63 decline in steel output other than the 1957–59 and 1960–61 recessions were:

(1) Shift in GNP from durables to services, aside from the role of producer durables which use about 65 percent of all steel used but which still shift primarily with the business cycle. The 35 percent of steel used normally in consumer durables were reflected in consumer expenditures in these two postwar periods, as measured in average annual changes, as follows:

[In percent]

	1948-55	1955-61
Consumer durables	+8.3	+1.7
Automobiles	+13.8	−1.0
Consumer nondurables	+3.4	+3.7
Consumer services	+3.4	+7.3

Between 1948–55 consumers spent heavily on durables which had not been produced for civilian use during the war or which they had not been able to buy during the long depression of 1930–41. The great upswing of 1961–66 was to see another upsurge in the demand for durables, especially cars, even if the outlays for leisure time, education, and medical services were to continue their long-term upward trend.

(2) Certain specific industries were in a long-term downward trend as steel customers. The railroads, in the first half of the twenties used to buy 25 percent of all steel products shipped. They still bought 6 percent in 1955, but less than 3 percent in 1961. The number of oil wells drilled in this country fell sharply because of rising imports of crude oil and changes in technological factors. Defense expenditures showed a steady downward bias for the ratio of steel required per dollar spent.

(3) Better; i.e., stronger steels, and a trend toward lighter functional designs meant less steel per unit of use. Compact cars introduced after 1955 required only two-thirds as much steel as former models. Tin cans were offered in a 27-percent lighter gage, and in construction lighter beams of more tensile strength were introduced. Oil and gas pipelines, drill pipe, and casing have shown a trend to thinner gages, and further steel savings were achieved through welding instead of sleeves or couplings.

(4) Research into new methods of combating corrosion has so much prolonged the life expectency of many manufactured products made from steel that it is bound to greatly reduce replacement demand. Oil and gas pipelines used to be vulnerable to corrosion because of the sulphur content of the hydrocarbons they transported, and had to be replaced after a certain number of years. In the fifties they began to be protected against corrosion by coatings (inside and outside plastic skins) and by electric currents. Car bodies began to have longer life due to the use of galvanized sheet for better rustproofing.

(5) The generally accepted statement that the demand for steel is price-inelastic in the short run means that price cuts will not increase the demand for steel in a recession. But since 1955, the domestic steel industry has learned that in the long run increasing differentials between domestic steel prices and the prices of substitutes (aluminum, plastic, and cement) and of imported steel do cause substantial losses in its traditional markets. It is difficult to quantify the relative roles that may have been played by increasing price differentials, by specific weight differentials, degree of resistance to corrosion, by

greater ease of machining, or by the increasing aggressiveness of the sales engineers pushing their respective materials.

(6) Price differentials, availability of delivery in periods of relative shortages, and protection between time of order and delivery against price changes began to increase competition from abroad. Exports fell and imports rose, and to this was added an unfavorable trend in exports and imports of manufactured products containing steel, such as automobiles.

It is difficult to document the loss of domestic steel use in specific products, but table 64 compares for the years 1955–66 steel shipments to the automotive industry with motor vehicle production and gives tons of steel shipped per vehicle produced. The evident decline in steel shipped per vehicle in any given year could be the result of steel inventory liquidation by the automotive industry, but the downward trend over the whole period must be due to the combined impact of imports and use of substitutes (aluminum, plastics) unless it could be partly explained by the lower weight of "compact" cars.

TABLE 64.—*Steel consumption per motor vehicle, 1955–66*

Year	Automotive steel shipments (thousand net tons)	Motor vehicle production [1] (thousand units)	Tons of steel shipped per vehicle produced
1966	18,003	10,329.5	1.74
1965	20,123	11,057.4	1.82
1964	18,387	9,292.3	1.98
1963	16,889	9,100.8	1.86
1962	15,181	8,173.4	1.86
1961	12,594	6,676.5	1.89
1960	14,610	7,869.3	1.86
1959	14,214	6,728.7	2.11
1958	10,125	5,135.1	1.97
1957	14,227	7,220.5	1.97
1956	14,142	6,920.6	2.04
1955	18,722	9,169.3	2.04

[1] Factory sales: includes cars, trucks, and buses (factory sales and actual production are closely comparable).

Source: American Iron & Steel Institute, Automobile Manufacturers Association, and Burnham & Co.

Any explanation of these historical changes in total demand for U.S. steel and any projections of future demand trends will profit by an analysis of the relative growth rates of the major steel consuming industries. The method of redistributing steel shipments to ultimate consuming industries from the data published by AISI in monthly and more detailed quarterly and annual reports, was originally developed by the Commercial Research Department of the United States Steel Corp. for the hearings of the "Temporary National Economic Committee" (TNEC), volume I, Economic and Related Studies, 1940, page 327, and has been brought up to date. The table attempts to identify the ultimate steel consumers by redistributing among them shipments reported by AISI under the following classifications:

Steel for converting and processing
Forgings (other than automotive)
Bolts, nuts, rivets, screws
Warehouses and distributors
Contractors' products
Nonclassified shipments.

The trend of shipments for the years 1923–66 reveal some major changes in the U.S. economy. While railroads accounted for 25 percent of all steel used in the period 1923–25, it had fallen to 2.8 percent in 1961 but recovered to 5.7 percent in 1966. Steel for cars and trucks had doubled and "machinery and tools" had increased from 3.1 to 11.5 percent. Containers had increased from 3.6 to 8.1 percent but this was a decided decline from the 11.1 percent in 1961, reflecting the new competition from substitute materials, the introduction of thin tinplate and the stability of containers as a market in a capital boom period. Exports had started with 5.1 percent, had reached a peak of 16.5 percent in 1941 (lend-lease) and a postwar peak of 7.5 percent in 1947 (Marshall plan) and reached an alltime low of 1.9 percent in 1966. (See table E–13.)

The Battle of the Materials

The following discussion of "the battle of the materials" may, at first glance, appear not to be relevant to an analysis of the import problem. Nothing could be further from the truth for these reasons:

(1) The "battle of the materials" has been one of the reasons why foreign steel-producing countries are faced with overcapacity and are trying to sell their surplus output in the world market at "bargain basement prices."

(2) The goal of the U.S. steel industry at this time is to lower its costs of production to that of other countries and "fair rules of the game" be able to increase exports and challenge imports. Cost reduction is only possible through very high investments in new technology. The increase in overhead charges resulting from such investments, as shown at the end of chapter VIII can only be met if output in future years increases by an average of at least 2 million net tons each year.

(3) The future price policies of the U.S. steel industry may have to include selected price increases on products that are not competitive with imports, but such price increases would also have to consider the competition from substitutes.

The first half of the last decade witnessed the invasion of steel's traditional markets by other materials; the record of the second half appears to indicate the relative success of steel's endeavor to fight back.

The future will see a seesaw between the competing materials, with combinations used in many applications. Aluminum and plastic-coated steels (clad-steels) are already in wide use.

There appears to be no reason whatever why the steel industry cannot, through intensified research, maintain or even improve its position in this battle of the materials. On the other hand, if future increases in imports should make such efforts at steady modernization of production technology and of products unprofitable, the steel industry's decline might well endanger our national security.

"The Competitive Challenge to Steel," a 100-page analysis published by AISI in December 1961 was the industry's first statement that it was facing competition other than from among its own members. Competition was making inroads into the U.S. steel industry's traditional markets, both at home and abroad. The report stated on page 8:

For the first time in more than a half century, the United States became a net importer of steel in 1959. There has also been a marked rise of imports of steel related products, i.e., products made largely of steel.

A second type of competition had arisen from "alternates" or "substitutes" such as aluminum, plastics, timber, glass, cement, paper, and paper board and plywood. The above quoted AISI report stated on page 6:

During recent years there has been considerable growth in the markets for some of the materials which can be used as alternates for steel, in certain uses. The steel tonnage at stake in the area of competitive materials is substantial. AISI and other sources estimated that nearly 2 million tons per year can be identified as having shifted, at least temporarily, to other materials in use which can be measured with reasonable accuracy.

Construction and durable goods industries, as shown in table E-14, regained their 1955 level of activity by 1961 and then grew by 42.5 percent in the 1961-66 period. Steel shipments declined 22 percent between 1955 and 1961 before advancing by only 6.2 percent in 1966 above 1955. If durable goods and construction would have increased their steel purchases as much as their own output, steel shipments would have been over 20 million tons higher.

Part of this relative decline of steel, of course, was due to better steels of lighter gages doing the job heavier gage steels had previously done.

To pinpoint the causes and degrees of the relative decline of demand for steel by U.S. industries, chart 65 shows the trend of prices for steel and competing substitutes for the period 1955-66. Chart 66 shows for the same period, the output of six major steel consuming industries: automotive, construction, metal cans, machinery and equipment, railroad equipment, and appliances. The widening divergence of the indices for the output of each of these six industries and their consumption of steel highlights the continuing relative decline in steel tonnage demand, due to either the use of substitutes or the use of stronger but lighter gage steels.

Chart 67 shows the percentage changes in output for steel and competitive materials for the period 1955-66.

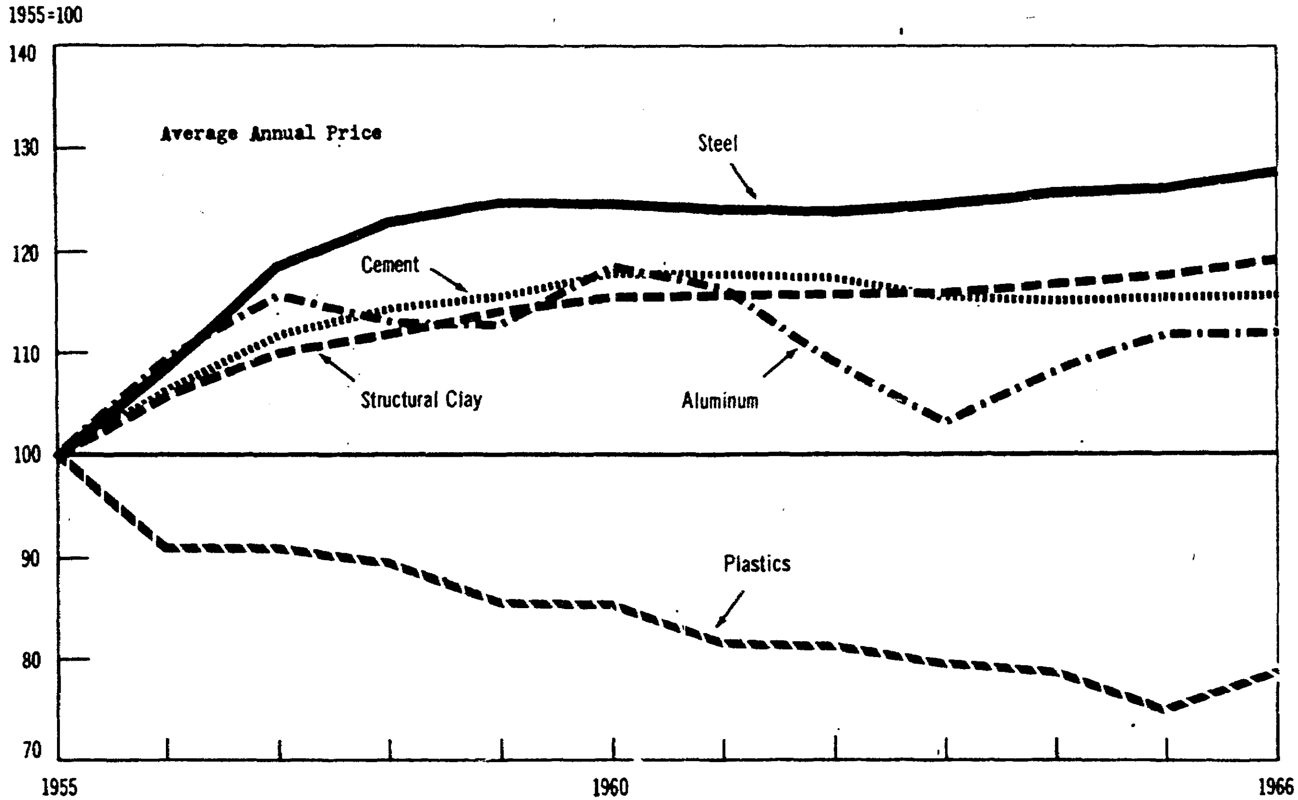
The AISI has not published any analysis of the markets lost to steel because of substitutes since 1961. The loss is probably somewhat higher now, but that the rate of displacement has undoubtedly been slowed significantly by a variety of actions taken by the steel industry to counter the continuing threat from competitive materials. Another estimate of the replacement of steel appeared in a 121-page study published by the United Nations in 1966: "Aspects of Competition Between Steel and Other Materials," Committee of the Economic Commission for Europe (ECE) and carried out under its auspices. This study, which is based on data for periods ending with 1964, states on page 121:

The proportion of total iron and steel use replaced is estimated to be of the order of 5 percent. This is a gross figure, i.e., it does not take account of the advances made by iron and steel at the expense of other materials.

Although the overall degree of present replacement would thus appear to be moderate, the analysis has confirmed that in some sectors of the economy, particularly in packaging and in use of tubes, competition between iron and steel products and other materials is already much stronger and the degree of replacement considerably higher. An intensification of competition in other sectors of the steel market is possible, since, for instance, the improvement of the properties of some of the competing materials (particularly reinforced plastics) is rapid,

(Chart 65)

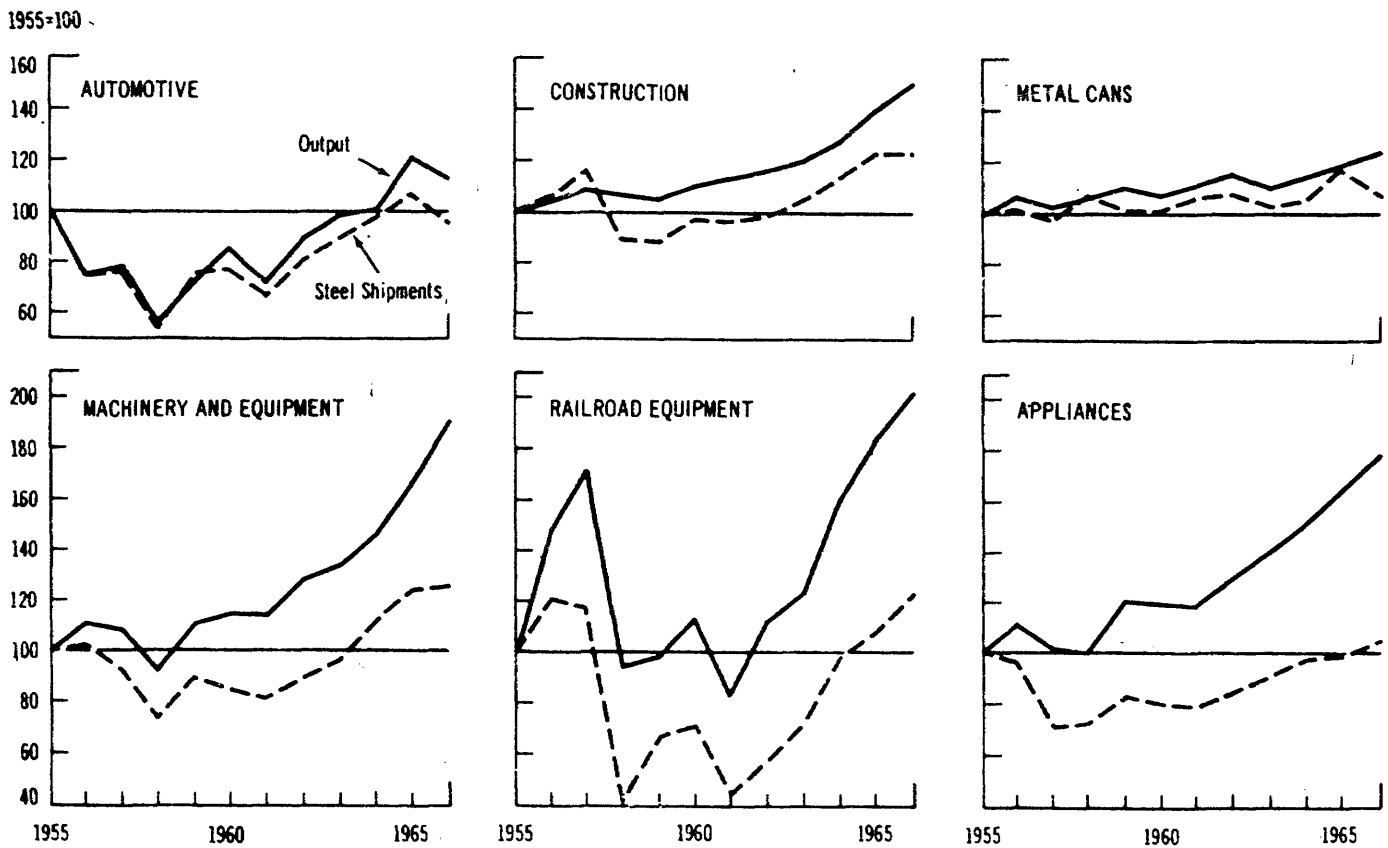
Prices of Steel and Competitive Materials 1955-1966



Source: U.S. Department of Labor; Federal Reserve Board.

CHART 66

Output of and Steel Shipments to Major Steel Consuming Industries
1955-1965



Source: U.S. Department of Commerce; Federal Reserve Board; American Iron and Steel Institute; Automotive News

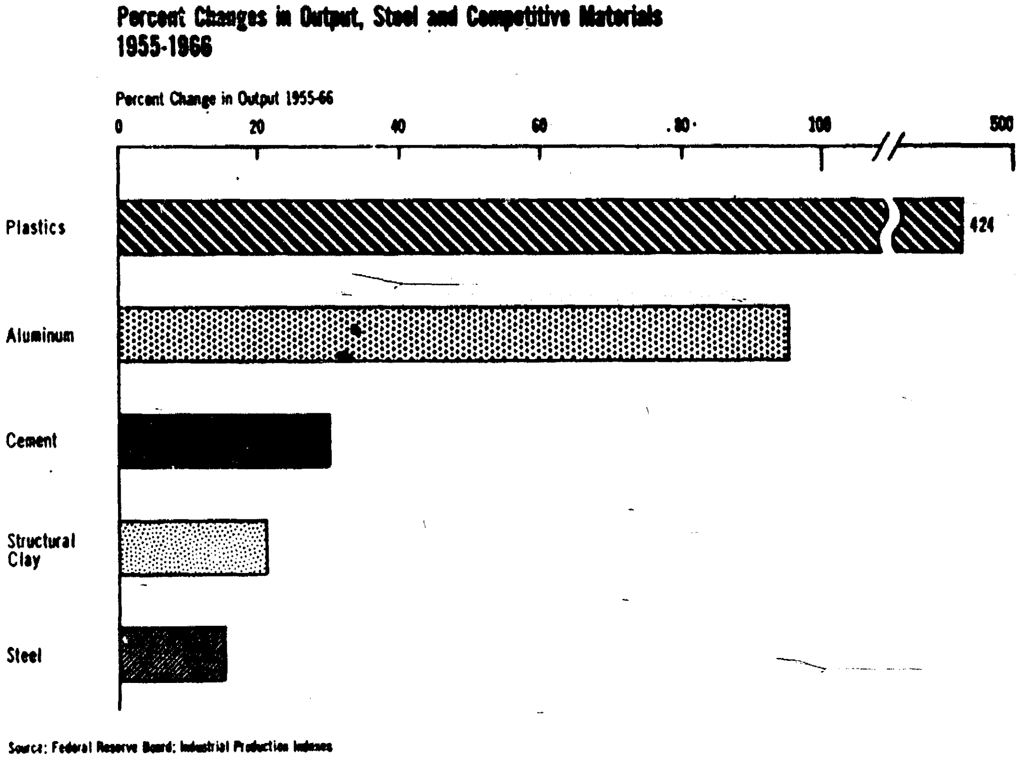


CHART 67

and their prices are becoming increasingly competitive. It is estimated (in chapter III) that, even under present economic and technical conditions, the total gross replacement of iron and steel could rise from 5 percent to perhaps 7½ percent. In the longer term there could be radical changes in these conditions, leading to substantial changes in the balance of competition. In the United States, competition between iron and steel products and other materials is considerably more severe than in Europe. This is due partly to factors peculiar to the U.S. economy, but partly also to developments which are likely to spread to Europe.

Because this United Nations report is based on worldwide data, it stands to reason that the above statement, "In the United States, competition between iron and steel products and other materials is considerably more severe than in Europe" must imply that the replacement of steel by substitutes in the United States should in 1964 have exceeded the gross figure of 5 percent. Indications of the growing use of plastics and aluminum in the automotive industry and others appear to support this.

The report gives the trend (compound rates) in the production of plastics for certain countries based on the years 1955–63:

	Percent		*Percent*
United States	10.0	Italy	26.2
West Germany	18.6	U.S.S.R.	16.2
Japan	55.9	France	22.2
United Kingdom	12.3	World	15.4

The loss of traditional steel markets to competing materials—plastics, aluminum, glass, paper, wood, and concrete—is difficult to estimate but exceeds 2 million net tons of steel products, or nearly 3 million net tons of ingots a year. In West Germany this displacement of steel has been estimated at 4 percent of which 2.5 percent is attributed to plastics and 1.5 percent to aluminum. Additionally, this competition has forced the industry to promote new, stronger, and/or lighter steels, and, thereby, lose tonnage output, often without compensating price increases for improved steel.

In some fields steel has been able to fight the competition of other materials to a standstill, but in the case of automobiles, the 1967 models are using 57 pounds of plastics instead of 35 pounds in the 1966 models, and early 1970 models are expected to use about 100 pounds.

Because the weight ratio of steel to plastics is 6 or 7 to 1, one might jump to the conclusion that the use of 100 pounds of plastics replaces 600 to 700 pounds of steel, but this would be erroneous for two reasons. In the first place, when plastics replaces steel it usually has to be of double or triple gage, or reinforced with wire (birdcage construction). In the second place, some of the additional uses of plastics replace aluminum or zinc diecastings, or are for new items not previously manufactured as part of the vehicles. As a general rule, new uses of plastics in vehicles may therefore replace steel closer to a pound for pound basis.

The Future Use of Plastics Versus Steel in the Automobile Industry [1]

Estimates for passenger car production in 1985 range from 14 to 20 million. Unit consumption of steel per car is estimated to decline from 2,600 pounds in 1966 to 2,200 in 1985. In case of a possible technical breakthrough in the case of plastic forming, the use of steel might drop to 1,500 pounds.

In 1966 plastics accounted for only 1.3 percent of the weight of steel in a car. In 1985 plastics would be 150 to 200 pounds per car, with 500 pounds likely if a breakthrough in the forming of plastics is achieved. But even in this most adverse estimate, steel would still supply three times as much by weight than plastics, or 1,500 pounds, and total steel use in passenger cars could run to 30 million tons a year compared to 23 to 24 million tons in 1966.

A reference had been made earlier to the testimony by Dr. Guy Suits, vice president of the General Electric Corp., concerning the fact that the use of plastics may already have surpassed the use of steel, not only in cubic feet but also in pounds. In 1963, Dr. Suits had presented charts 68 and 68a before the annual meeting of AISI. Because these charts [2] are misleading, chart 69 was made to give a better visual presentation of the present competitive status between steel, cement, plastics, and aluminum.

[1] Based on a paper presented to the Chemical Marketing and Economics Division, American Chemical Society meeting, Miami Beach, Apr. 10, 1967, by Sumner B. Twiss, president, Chemical Division, Chrysler Corp., Trenton, Mich.

[2] Chart 68 is in pounds, chart 68A in cubic feet.

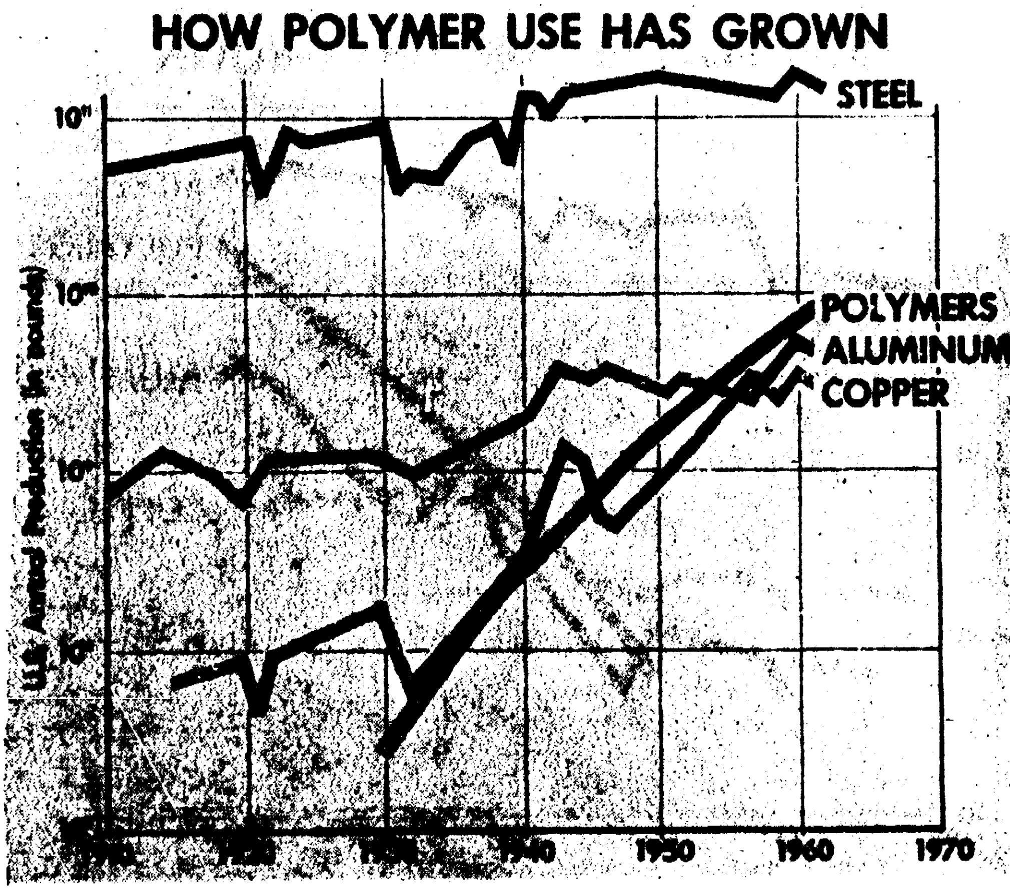


CHART 68

Summary

The steel industry began to realize in the second half of the fifties, that its markets were being invaded by substitutes. Aluminum and plastics enjoyed the advantage of lighter weight and of corrosion resistance. Concrete competed on a price basis, and glass for containers on the basis of transparency. The steel industry has fought back through the development of stronger, lighter gage steels, or by cladding, i.e., the combination of steel with aluminum or plastic outside skins, thereby combining the strength of steel with the corrosion resistance or decorative effects of the substitutes.

Taking into consideration all of the factors discussed in this chapter, the conclusion is reached that during the 8-year period, 1967–75, the demand for plastics [1] will increase by 200 percent, for aluminum by 100 percent, and for steel by 17 to 22 percent.

[1] For the future role of plastics and "high performance composites" see testimony of Stephen W. Tsai and William T. Cruse, at hearings on new technologies and concentration, Senate Antitrust and Monopoly Subcommittee, Washington, D.C., Sept. 20, 1967.

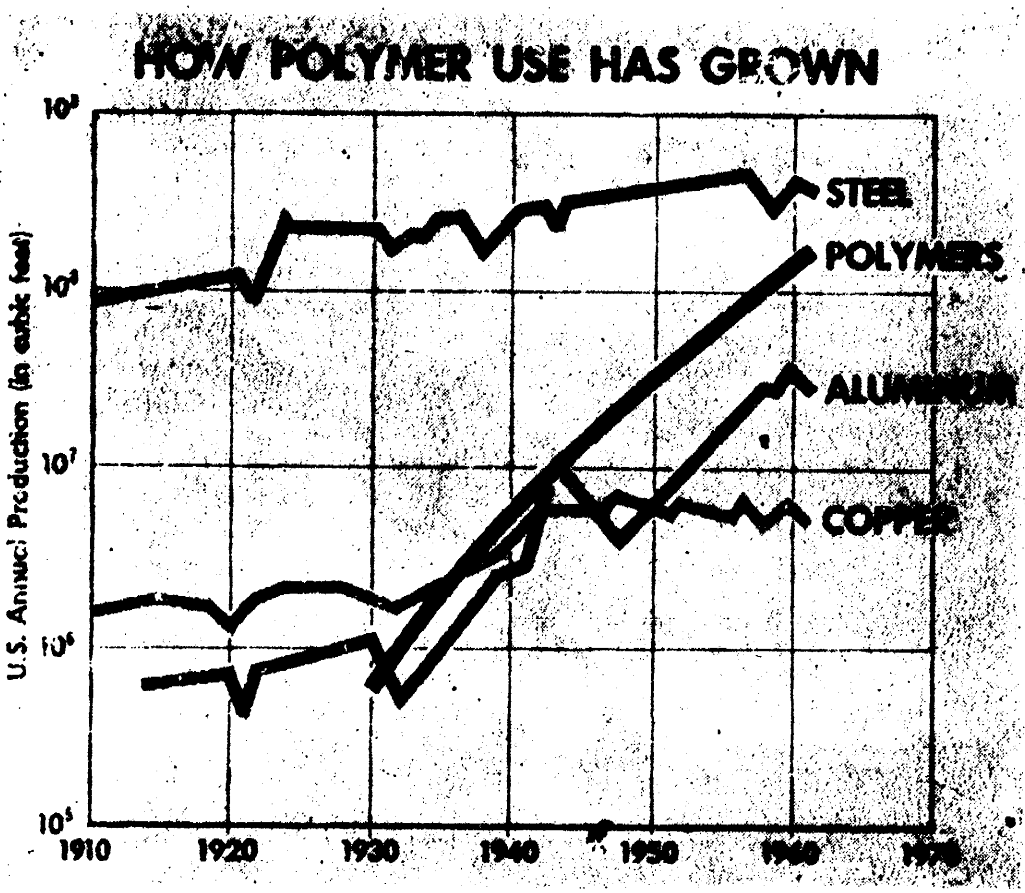
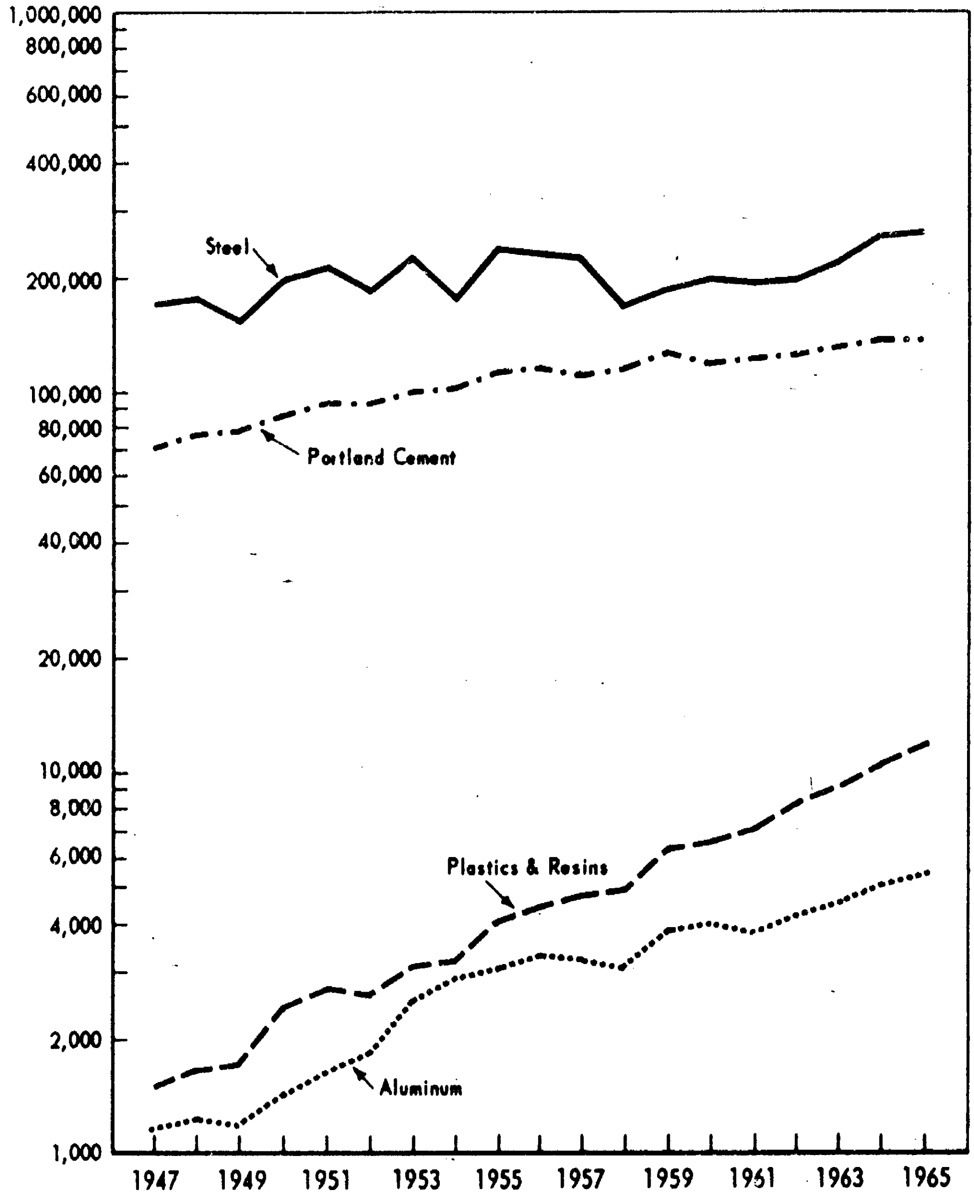

HOW POLYMER USE HAS GROWN
U.S. Annual Production (in cubic feet)
STEEL
POLYMERS
ALUMINUM
COPPER
1910
1920
1930
1940
1950
1960

CHART 68A

COMPARISON OF STEEL INGOT PRODUCTION WITH PRODUCTION OF MAJOR COMPETING MATERIALS
1947-65 – Millions of Pounds
Ratio Scale



SOURCES:

Steel – American Iron and Steel Institute, AIS-7
Portland Cement – U. S. Bureau of Mines
Plastics & Resins – Multiple Primary Sources as quoted in Chemical Economics Handbook – Stanford Research Institute
Aluminum – U. S. Bureau of Mines

CHART 69

CHAPTER VI

STEEL PRICE TRENDS: UNITED STATES AND WORLD

The following section discusses first the record of steel prices in the United States, 1946–66, and then the trend of prices in other countries and in the world market.

Any discussion of steel prices must start out with a warning against the validity of published prices.

Extras Versus Secret Discounts

The composite finished steel price as published by Steel magazine is indicative only as a base price. Steel is produced in tens of thousands of combinations of size, shape, chemical analysis, and metallurgical properties, and extras are always charged for any deviation from certain norms as well as for orders below a certain tonnage. The price of steel calculated by the BLS is higher than the Steel magazine price because the former attempts to include these extras.

When a buyer's market exists competition results in "unpublished discounts" or freight absorption for customers that are located closer to competing steel plants, or whose purchases are considered strategic and who can afford to bargain.

To illustrate that in foreign countries listed prices apparently mean even less than in the United States, the following item on Japanese price information was furnished on behalf of the "Japan Iron and Steel Export Association," the "Japan Wire Products Export Association" and the "Japan Galvanized Iron Sheet Export Association."

Japanese Price Information

Domestic selling prices are negotiated case by case. In other words, there are no price lists for steel products sold at home. Steelmakers sell the same kind of products at different prices from time to time, according to the subject matter of the transactions or according to the purchasers.

Though industry-published prices (known as open market selling prices) for some types of ordinary steel exist, they are only nominal and therefore unrepresentative. The so-called market prices shown in some newspapers and magazines are of the nature of trade prices which reflect the speculation of terminal distributors. These prices differ from publication to publication and practically never represent the actual selling prices of the steelmakers.

Just as domestic prices, export prices to the United States are determined case by case.

Actual mill prices to individual purchasers, whether domestic or export, are considered top secret. Mills do not inform other mills or the association of their prices. Even the Japanese Government does not have access to such information. Therefore, we cannot provide actual product prices because of lack of knowledge.

Steel Prices and Stability of Output

After the great merger movement of the 1898–1901 period, U.S. steel price fluctuations decreased while fluctuations in output correspondingly increased. The price of rails was unchanged at $28 a ton from 1901 to 1916 and again at $43 from 1922 to 1932. During the Great

Depression, the composite finished steel price published by the magazine Steel fell by only 15.4 percent as compared with 23.4 percent of the wholesale price index of all commodities except farm products and foods.[1]

In defense against the charge of having hampered business recovery by failing to cut prices to meet the reduced purchasing power of their customers, the United States Steel Corp. presented the economic analysis quoted below and which Simon N. Whitney evidently endorses because he states that it has become "a minor classic for the authority and clarity of its presentation." [2]

> 1. Steel is used primarily in the manufacture of capital goods and consumer durable goods. The demand for both of these groups is subject to occasional sharp slumps.
>
> 2. The total demand for steel is inelastic—that is, a price reduction will do little to restore it once it has dropped. For example, a railroad with no prospect of good traffic will hardly buy locomotives just because their prices are reduced. Consumers who have stopped buying cars because their incomes have been cut or because they fear unemployment will hardly resume such buying if a 20 percent reduction in steel prices is carried through to the automobile and brings its price down 2½ percent.
>
> 3. Steel is so nearly uniform in quality among producers that a price cut by any one will draw customers from others.
>
> 4. There are so few important producers that each will feel this loss of customers and will have to meet the price cut at once.

This emphasis on competitive price cutting is typical of the policies of foreign steel industries when exporting. In the United States the practice has still been—with the exceptions, such as, unpublished discounts and freight absorption—to maintain prices and to adjust output to demand.

In chapter V it was discussed why, due to the "battle of the materials" and the challenge from imports, the total demand for domestically produced steel is no longer inelastic. But it is still the primary policy of the U.S. steel companies to adjust output to demand rather than to attempt to maintain output by cutting prices all along the line.

The basic difference in United States versus Continental European steel pricing policies is highlighted in chart 70 which shows the steady increase in U.S. prices for either domestic or export steel sales versus the opportunistic export pricing policies of the ECSC countries.

Charts 71 and 72 show the European and French price policies in greater detail, reflecting the increase by 30 percent during the 116-day steel strike in the United States, and the subsequent decline due to world overproduction of steel below the level which had prevailed in 1958 and early 1959.

[1] According to Simon N. Whitney, "Anti Trust Policies" (New York, 1958, p. 309).
[2] Ibid, p. 309.

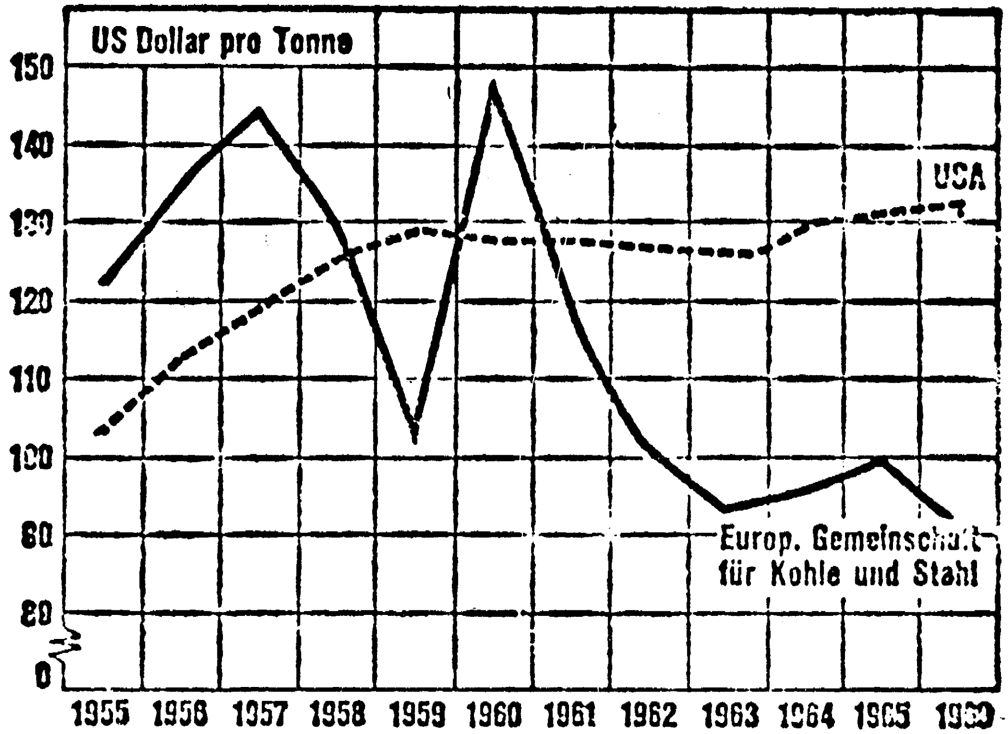
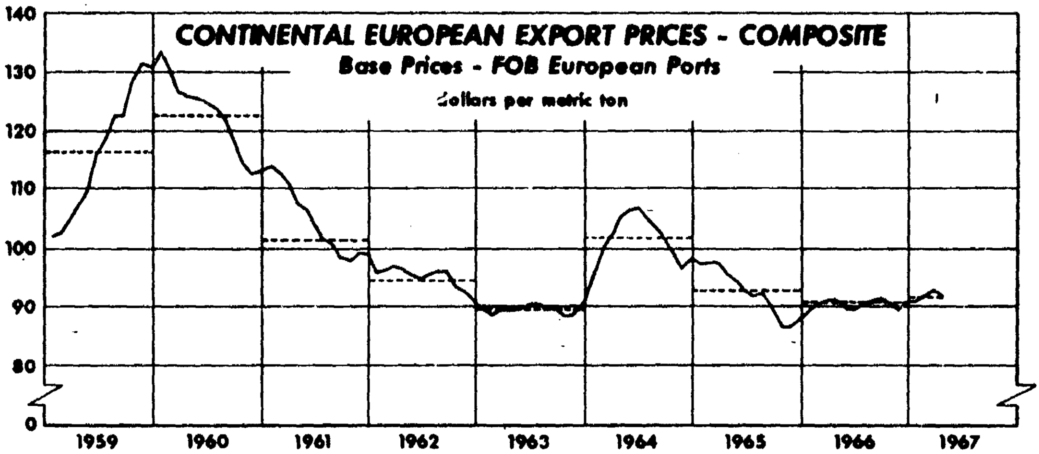


CHART 70.—*U.S. Industry versus ECSC export prices, 1955–66*

Table F–1 compares, for the period 1951–66, steel prices of the United States, Belgium, France, Germany, and the United Kingdom, as collected by the BLS, but the BLS has its doubts as to comparability of these data.[1] They are, nevertheless, given because they provide evidence of the sharp decline in Japanese steel prices, reflecting perhaps, in part, the improved productivity of Japanese steel mills, but certainly the efforts of Japanese steel exporters to find markets abroad.

Tables F–6 and F–7 give more up-to-date price data furnished by British sources.

[1] See appendix for all tables prefaced by a letter.



PRICE DATA

Month	1959	1960	1961	1962	1963	1964	1965	1966	1967
January	102.10	133.21	113.75	95.92	89.65	95.25	97.33	89.79	90.71
February	102.89	130.10	112.58	96.20	88.68	100.25	97.39	90.49	91.56
March	104.59	126.48	110.43	96.97	89.58	102.45	97.39	91.15	92.81
April	107.36	125.88	107.32	96.26	89.52	105.37	95.86	91.15	91.88
May	109.83	125.35	106.71	95.25	89.71	106.23	94.22	89.99	
June	116.00	124.92	104.01	94.94	90.16	106.76	92.70	89.78	
July	118.87	123.69	101.93	95.65	90.24	104.65	91.93	90.28	
August	122.52	122.07	100.98	95.97	89.94	103.37	91.99	91.01	
September	122.60	118.52	98.69	96.04	89.61	101.80	89.96	91.29	
October	128.28	114.35	98.05	93.25	88.30	99.19	86.82	90.52	
November	131.19	112.10	99.25	92.13	88.71	96.71	86.82	89.60	
December	130.56	112.83	99.19	89.43	90.68	98.10	88.03	90.45	
Average	116.40	122.46	104.41	94.92	89.57	101.68	92.54	90.46	91.74

NOTE: The composite prices indicated in the chart and table represent weighted averages for a basket comprising merchant bars, concrete reinforcing bars, wire rods, hot rolled strip, plates, hot rolled sheets, cold rolled sheets and galvanized sheets. They are derived from base prices, F.O.B. European port, for Commercial Quality Thomas Steel, as published by the Metal Bulletin, London.

CHART 71

Nonprice Factors in International Steel Competition

The domestic steel plants are located with a view to serve their respective domestic markets, and they have been protected from foreign competition by the tariff and by transportation advantages. Therefore, up to the sixties, neither foreign steel producers nor domestic importers had developed the marketing facilities to respond quickly to large domestic demands for steel products, which often must conform to precise specifications to be acceptable to the specific needs of the consuming industries.

Most steel mill products are produced to scheduled orders for delivery. Orders for steel used in heavy construction are usually placed only after the construction contracts have been let. For machinery and vehicles, orders are usually placed only after estimates of production schedules for these fabricated products have been formulated.

Promptness of delivery and the familiarity of domestic producers with the specific requirements of domestic customers as well as the familiarity of the latter with the services and products of the former,

TREND OF FRENCH EXPORT PRICES
OF SELECTED STEEL PRODUCTS
1958 - 1965

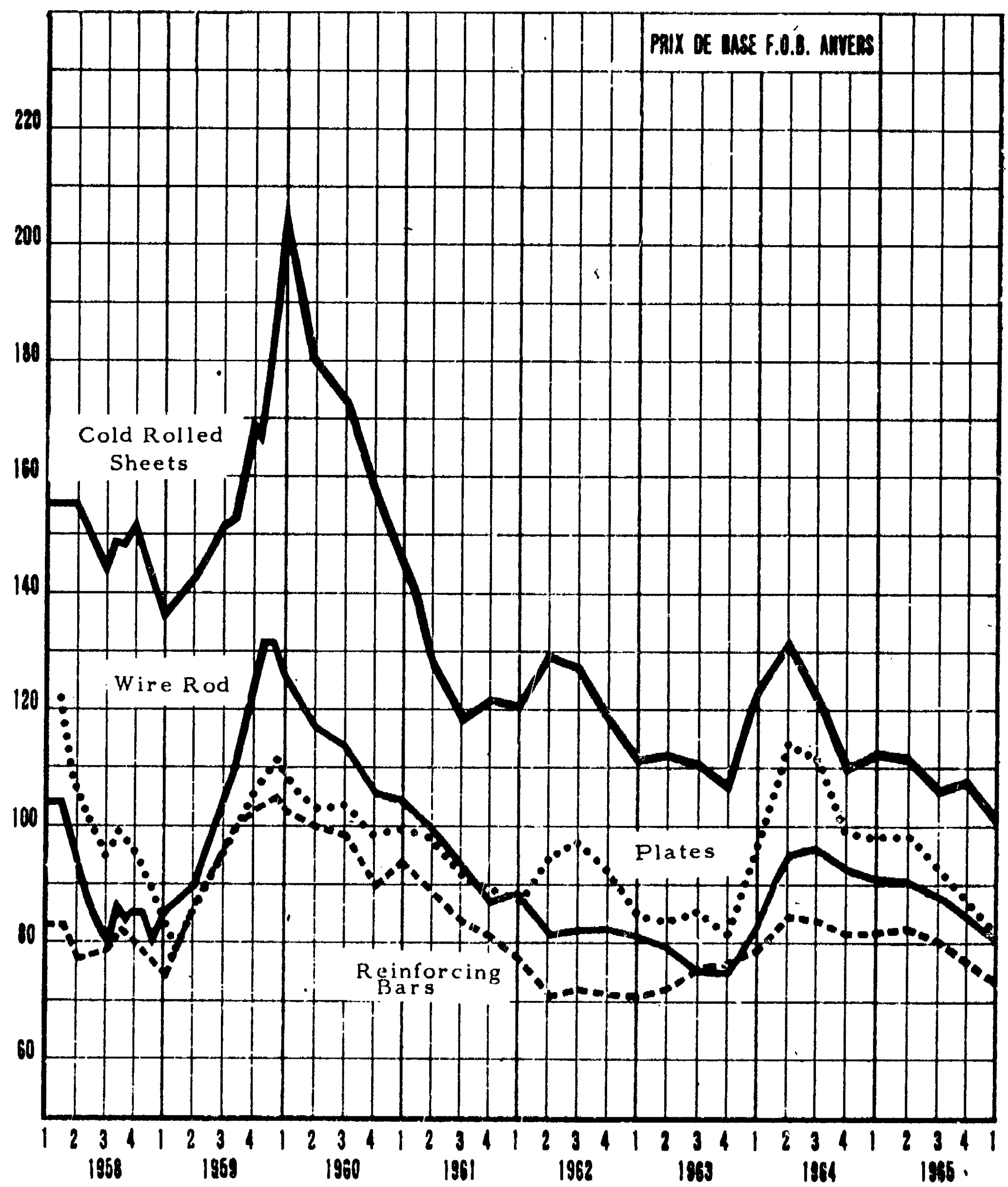


CHART 72

made price differentials offered by importers or foreign steel salesmen a rather minor inducement to switch.

The first real chance for foreign steel products to penetrate the U.S. market was in product lines, such as, barbed wire and nails, small structural shapes and bars of common grade steel which are sold through warehouses and jobbers to many small customers where conformity to precise and diverse specifications is not a factor, and therefore large inventories can be stocked.

It was probably in the period preceding strikes, or threatened strikes, when large users of other types of steel were attempting to increase their inventories in order to be protected against a long strike that foreign producers got a foothold in the market for quality steels. Once a close relationship had been established between the foreign producer and the domestic importer or consumer, price differentials became more essential.

The fact that foreign steel salesmen now can fly to this country in a matter of hours, rather than by boat in a matter of days or weeks as formerly, undoubtedly played its role as has the advent of low cost instantaneous inter-continental communications. Once contracts, and, at least, relative promptness of delivery had been established, and quality had been tested, imports were bound to increase as long as a price differential existed.

Steel Price Trends

Table F-2 compares the Bureau of Labor Statistics industrial commodities price index and the all-commodities price index with the finished steel product price index, 1946–66. The comparison clearly indicates that the steel industry had more than doubled the price of finished steel products between 1946 and 1957, from 112.1 to 260.6 (1940=100) an increase of 132.5 percent, in contrast to the industrial commodities index change from 131.8 to 212, an increase of 60.8 percent and all-commodities index change from 153.7 to 230.2, an increase of 49.8 percent. The more rapid rise in steel prices was the result of the need to cover rising production costs and to generate sufficient cash flow to develop new iron ore supplies and to increase capacity, as discussed in Chapter VIII of this study.

These managerial decisions to raise prices were apparently remunerative because the industry succeeded in locating and developing new iron ore reserves in the form of direct shipping ores and taconite deposits. However, during the period 1957–63 the more than proportional price increase that occurred in finished steel products must be recognized at least in part as being responsible for the invasion of the industry's markets by substitutes and imports. These competitive factors, leading to decreased demand for steel, caused prices of steel products to advance far less rapidly in the period 1957–66. From 1957 to 1966 steel prices rose by only 7.7 percent from 260.6 to 280.7 (compared with 132.5 percent in the 1946–57 period) while the industrial commodities price index was increasing from 212 to 223.7, a change of 5.5 percent. Even more significantly however, is the period 1959–66 when steel prices moved from 274.3 to 280.7 (1940=100) representing a change of 2.3 percent while the industrial commodities index was increasing from 216.5 to 223.7, a change of 3.3 percent. This latter period clearly reflects the pressure placed on steel prices by market conditions, substitutes, and imports.

Table F-3 compares finished steel mill product prices with the Office of Business Economics gross national product deflator and the Bureau of Labor Statistics consumer and wholesale price indexes. The comparisons indicate that during the first half of the period, 1946–66, steel prices moved much more rapidly than the three compared. Steel prices from 1946 to 1957 increased by 132.5 percent while the consumer price index was increasing by 44.1 percent and the wholesale price index was increasing by 49.8 percent. The reasons for the more rapid rise in steel prices will be discussed in Chapter VIII.

After 1957 finished steel mill product prices rose less rapidly than both total consumer prices and wholesale prices. Using 1957–59 as equal to 100, steel prices in 1966 stood at 104.7 while the consumer price index had risen to 113.1 and the wholesale price index to 105.8.

The average price of carbon steel mill products today is $152.80 a ton. A composite price for all kinds of steel mill products, including alloy, tool, and stainless is calculated under the definition of "Average per ton sales realization" shown below:

Composite price: Steel mill products

[Dollars per short ton]

	Average per ton sales realization [1]	Bureau of Labor Statistics index, steel mill products (1957–59 = 100)
1964	$170.11	102.8
1965	174.94	103.3
1966	177.32	104.7
1967	178.84	[2] 105.6

[1] Average dollar per ton sales realization: Calculated from data of Bureau of Census (Current Industrial Report, Steel Mill Products) showing industry shipments by quantity and value, f.o.b. plant for 1964 and 1965. Average sales realization data for 1966 and 1967 estimated using 1965 as base and applying change in Bureau of Labor Statistics Wholesale Price Index.

[2] Average, January–April.

The U.S. steel industry claims with good cause that the increase in steel prices since 1959 has not resulted in any real improvement in sales revenues per ton of raw steel produced.

Table F–4 shows the constant drive for quality improvement which includes a higher percent of steel rejected during the finishing processes and returned to the furnaces as home scrap. During the years 1947–50 the yield of raw steel to finished products averaged 74.50 percent, which meant that 25.50 percent of the raw steel went back to the furnaces as home scrap. During the first 3 months of 1967 the yield had fallen to 68.48 percent, which meant that 31.52 percent of raw steel ended as home scrap.

Raw Steel Yield and Finished Steel Prices

Raw steel yield is a measure of the finished steel obtainable from raw steel and it is usually expressed in percentage terms. Raw or unadjusted raw steel yields calculated from AISI raw steel production and finished steel shipment data reflect a combination of the physical or technological factors which determine yield as well as mill inventory fluctuations. The latter very often dominate and distort changes in yield, particularly over shorter periods of up to a year. It is possible, however, to remove mill inventory distortions, leaving a yield figure which reflects longer term changes in the industry's product mix, the development of new steel products and improved steel quality.

The 1959–67 decline in adjusted yields from 71.07 percent to 68.48 percent is largely due to improved steel quality and further product developments that provide steels more closely tailored to customer needs. A few examples of the latter are continuing improvements in lighter, stronger structurals, thin tinplate, lighter wall pipe, etc. Of greater importance, however, in reducing raw steel yield is the fact that commodity grades of steel are being more rigidly inspected and controlled as to gage, size, surface quality, and other characteristics at every stage of the steelmaking process.

Such improved steels are the result of research, heavy capital outlay in new equipment, and increased emphasis on quality control. To the customer they represent cost savings at least equal to and possibly exceeding the 3.8 percent decline in raw steel yields since 1959. Cost savings from better steels go well beyond the initial cost of the steel itself as examples from the automotive and appliance industries illustrate.

A steel sheet that is partly or entirely fabricated into an automobile fender or a refrigerator door that must be scrapped or otherwise reprocessed represents a loss considerably in excess of the cost of the steel sheet alone. All the labor cost up to the point of rejection or the cost of eliminating defects is also lost. In furnishing higher quality steels, that reduce scrappage and reworking of material in user's plants, the steel industry is creating additional value in the form of cost savings. Such savings have helped steel's customers to maintain or widen profit margins without raising, and in some cases, even reducing their own prices.

U.S. Steel Industry Export Price Policies

U.S. steel exports are primarily of two kinds. Standard steel products are mostly exported to countries like India, Pakistan, and Vietnam and are largely financed by the AID program. Steel specialties are exported to countries which do not produce them or because the United States offers higher quality than the domestic industries and other exporting competitors.

U.S. steel producers compete in the domestic market not by selling below list prices but by absorbing freight if a steel mill ships outside its own market sphere. Because for exports, freight is a substantial percentage of delivered price, freight absorption constitutes price cutting without, however, being likely to be held as violating the Robinson-Patman Act, or to cause retaliatory pricing by competing steel producers.

In export policy, U.S. steel producers appear to be using the same price policies as in the domestic market. Sales of U.S. steel products financed by the AID program are priced at U.S. list prices f.o.b. producing mill or service centers, and freight costs are added. U.S. exports other than under AID are also priced like domestic sales, if there is little foreign competition striving to or being able to invade that specific market. Freight absorption may be accepted if a particular market appears worth fighting for, but generally no attempt is made to align export pricing on the substantially lower prices quoted in third markets by the European or Japanese steel producers. In recent years, these price policies have meant that the U.S. producers withdraw from exporting other than under AID or specialty lines, and U.S. competition in standard steel products with foreign producers has become increasingly concentrated in the domestic market.

The price differentials between U.S. domestic list prices and prices paid by U.S. importers will be discussed in detail in Chapter VII. It must be remembered that depending on distance from the U.S. mill, the price actually received by the U.S. mill, i.e., the transaction price rather than the list price, must be compared to transaction prices of foreign exports into the U.S. market as well as with list prices and transaction prices in Europe and Japan. The evidence appears to indicate that some prices paid by U.S. importers are below even the transaction price paid by European and Japanese domestic customers in spite of the freight and duty that is incurred, but others are higher, even if substantially below U.S. list prices.

CHAPTER VII

DIFFERENTIALS BETWEEN DELIVERED PRICE FOR DOMESTIC AND IMPORTED STEEL MILL PRODUCTS

It is evident that one of the key facts heretofore missing has been the differential between the prices of steel offered by domestic and foreign producers in the U.S. market. Other important and related issues concern the degree to which price differentials determine the elasticity of demand for either domestic or foreign steel, or for substitute materials. Such information is essential to determine the degree of foreign price competition and the prospects for meeting the challenge of imports on the basis of reduction in costs and prices by the domestic industry.

The BLS was requested to investigate these issues, but they replied that it would take over a year to come up with meaningful results. Therefore, for this study, the testing of demand-elasticity had to be foregone, but a survey of the price differentials was made through a questionnaire.

These questionnaires were sent to the major domestic steel companies and the answers received were evaluated, in part, with the help of the BLS. In interpreting the data, it must be kept in mind that this sample of comparable domestic and foreign prices was taken from the invoices of domestic customers, who, in some instances, may have understated the foreign prices in order to bargain with the domestic steel mill or warehouse, and that the domestic prices quoted were not actual transactions but only indications of what the domestic price for comparable steel products would have been.

To determine the most typical price differentials, scatter diagrams were made for each type of steel product, in terms of the differentials between the prices of domestic and foreign steel offered to U.S. buyers. These differentials are shown both in terms of percentages and dollar amounts. To illustrate the statistical technique used: for "Hot Rolled Carbon Steel Sheets" chart 73 shows the differential of the domestic steel mill price above the import price in dollar amounts. Chart 74 shows the differential as a percentage of the domestic price.[1]

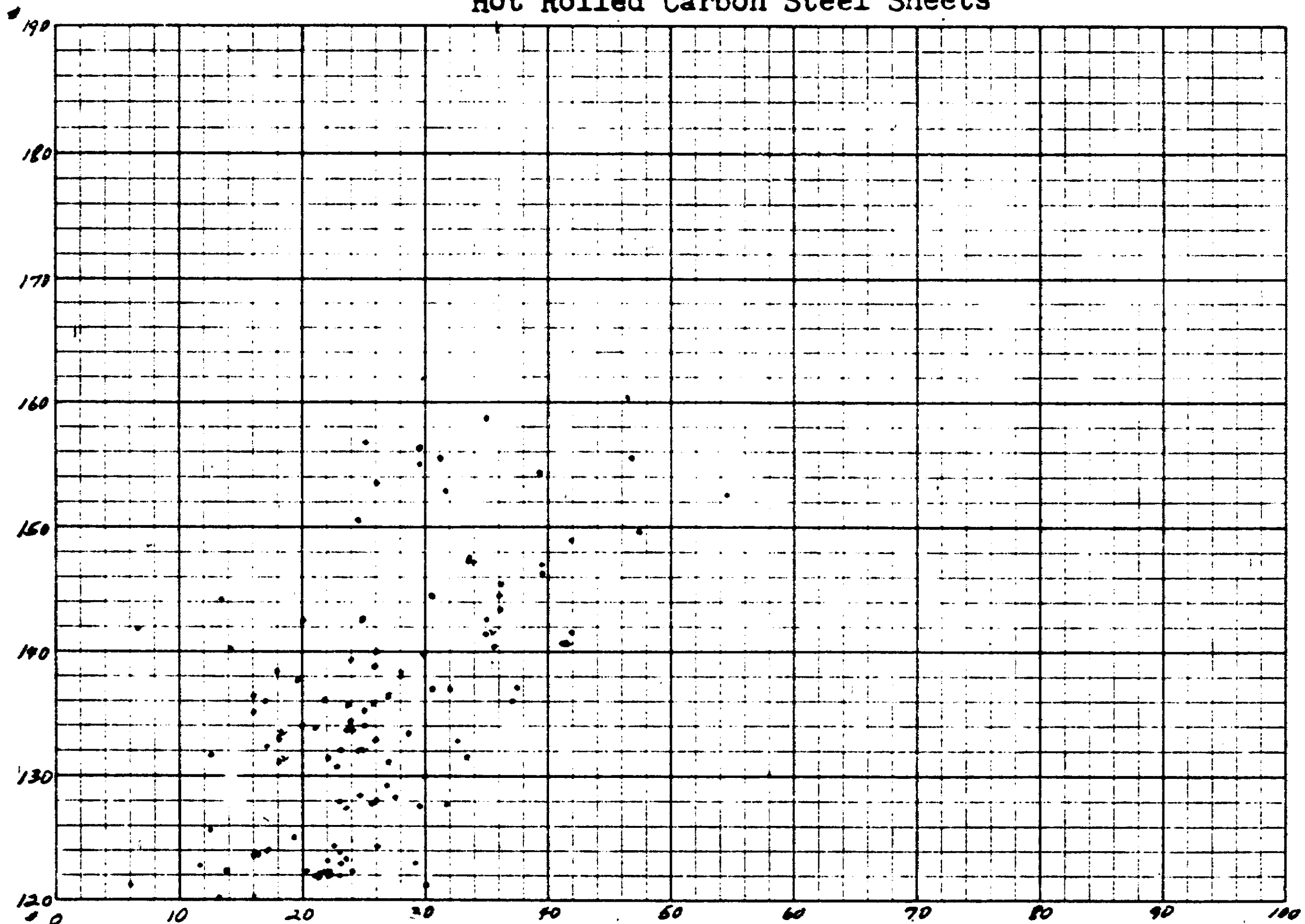
Finally, in order to prepare a summary-chart for all steel products, bar chart 75 "Distribution of Delivered Price Percent Differentials, Domestic versus Imported for Major Steel Mill Products" was prepared as well as bar charts G–40, 41, and 42 to show the price differentials of major product types. (See appendix.[2])

This chapter concludes that U.S. steel consumers can buy from foreign suppliers specific types of carbon steel products at prices most frequently $20 to $25 below domestic steel prices for products of the same type and quality.

[1] See appendix G for table G-2 providing the data for charts 73 and 74, as well as charts and supporting tables for other steel mill products.
[2] A discussion of ocean freight rate differentials is also included in the appendix.

Chart 1.

Hot Rolled Carbon Steel Sheets



Differential above import price

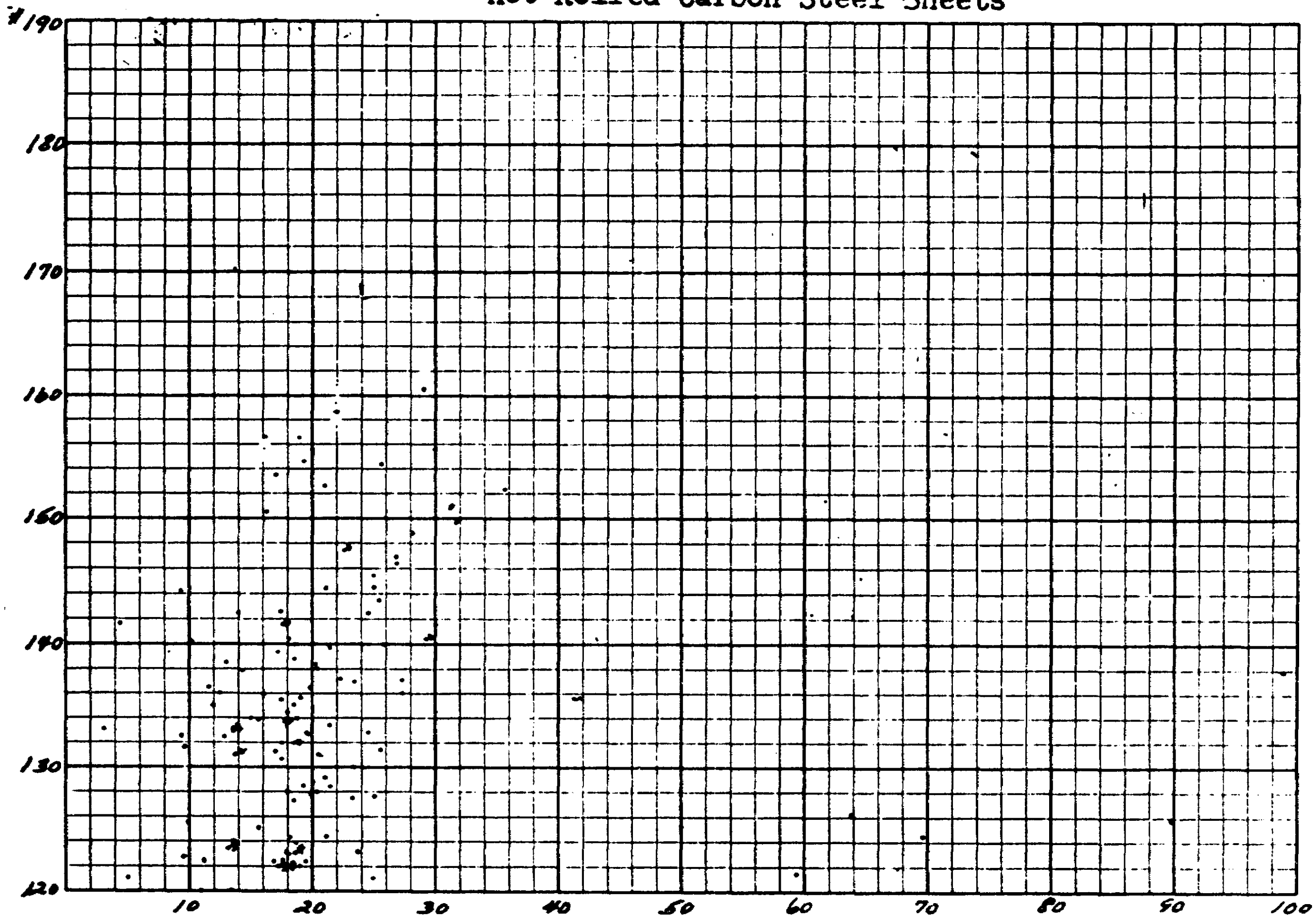
Domestic price N. T.

CHART 73

CHART 74

Chart 1A

Hot Rolled Carbon Steel Sheets



DISTRIBUTION OF DELIVERED PRICE PERCENT
DIFFERENTIALS, DOMESTIC VS. IMPORTED
FOR MAJOR STEEL MILL PRODUCTS

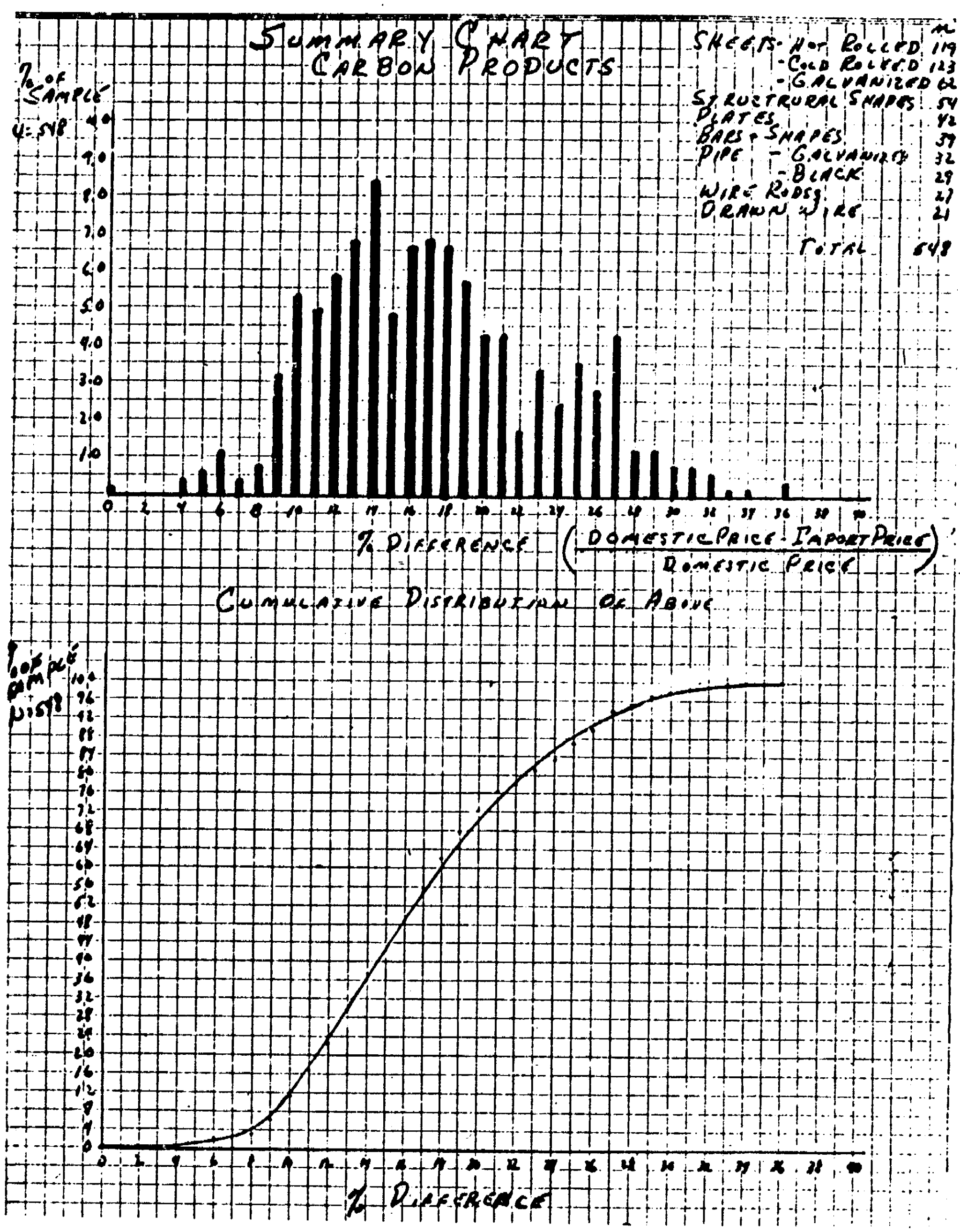


CHART 75

CHAPTER VIII

THE FINANCIAL STATUS AND POLICIES OF THE U.S. STEEL INDUSTRY, 1946–66

During the decade of the thirties, demand for steel had averaged only 48 percent of the industry's capacity and losses had been shown by the industry in 5 out of the 10 years. Nevertheless, the industry continued to modernize, especially by building continuous rolling mills. Inevitably by modernizing, the industry was also bound to increase its ingot capacity which rose from the 70 to the 80 million tons level. In 1940, during the Temporary National Economic Committee hearings, the industry was, therefore, criticized for having used whatever cash flow was left from depreciation and depletion after deduction of operating losses, for building new facilities rather than to pay higher dividends, or to lower prices to stimulate demand. But it was only a year later, in July 1941, that the Government requested the industry to increase its capacity from 80 to 95 million tons to meet possible wartime requirements.

After the war, the industry feared a return to the low demand of the thirties and dismantled 4 million tons of the most obsolete capacity. But soon the urgent civilian demand created a situation where some of the small steel customers were unable to purchase steel at competitive prices. The government threatened to build its own steel plants, unless the industry promptly expanded. This was a difficult decision for the industry to make because during the years 1940–50 replacement costs of its facilities had more than doubled (table H–1[1]), and cash flow from legally permitted depreciation based on original costs was insufficient to replace outworn facilities. Profits had, therefore, been in part fictitious and taxed instead of being available for other dividends or expansion. The stock market recognized the then current steel profits as overstated, and steel equities were selling below book values for the period 1946–54, thereby cutting off access to the capital market through the sale of new shares, because the sale of additional shares to finance expansion would have meant diluting the existing equity as shown in table H–2.

Compounding its postwar need for cash, the industry faced the early exhaustion of its traditional source of iron ore, the direct shipping highgrade Mesabi ores. As yet, it could not be foreseen that large high-grade ore deposits would soon be found in Canada and Venezuela, and that the beneficiation of taconite would prove to be a very successful method of using the low-grade Mesabi ores. Meanwhile, depletion charges that had accrued for some 60 years against the mining of the Mesabi ore were, of course, not available in cash. These depletion charges may have been used to keep the steel companies solvent in the loss years of the great depression, or to pay for the replacement of facilities when depreciation reserves had proved insufficient due to inflation. Even if cash would have been set aside, it

[1] See appendix for all tables prefaced by a letter.

would have been partly eroded by inflation, and partly insufficient because the now needed beneficiation plants vastly exceeded in cost the former open pit mining facilities of the high-grade ores.

Important managerial decisions had to be made: to increase profit margins by raising prices and to use the resulting cash flow to finance the new facilities and absorb rising costs. Equity financing was not feasible as discussed above, and going into debt seemed imprudent in light of the depression experience of the thirties.

Looking back at the fifties, one might conclude that the industry's success in reaching certain of its goals exceeded all expectations. At an expense of some $5 billion huge new plants to beneficiate and pelletize 25 percent, iron-ore-bearing taconite from Minnesota, northern Wisconsin, and Michigan were built, and new high-grade ore deposits in Canada, South America, and Africa had been discovered and developed, including railroads, ports, loading facilities, and ore boats.[1] Ingot capacity on January 1, 1958, of 140.7 million tons represents an increase of 40.7 million tons over the January 1, 1950, capacity of 100 million tons, brought about in part with the help of the rapid (5-year) amortization certificates granted the industry for Government-approved capacity increases during the Korean emergency.

With these accomplishments, the industry's common stock became one of the "growth stocks" groups of the 1954–57 bull market. The industry and the security analysts were in an ebullient mood during this period; the industry was ready for a substantial growth in demand but it failed to appear. Ingot output in 1955 at 117 million tons was to prove a peak that was not to be reached again until 1964.

Again, the industry went through a period of frustration. This time, the trouble was lack of demand. At first, in 1958, this was blamed on a cyclical inventory adjustment, but when the demand for steel failed to keep pace with the general economic recovery of 1959, the question arose as to what extent unfavorable long-term trends were impinging on the demand for steel?

How much had to be blamed on the slow changeover of our economy into one shifting more and more from durable goods to services? Were better and longer lasting rustproof steels responsible? Or had the increase of steel prices, in the fifties, that had exceeded price increases for aluminum and prestressed concrete and to price cuts in plastics, encouraged domestic competition from these substitutes? The causes for the 1955–63 decline in steel output other than the 1957–59 and 1960–61 recession are discussed in Chapter V.

There have been allegations that the industry in the fifties built some 40 million tons of open hearth capacity, in spite of the fact that the BOF's could be installed for about one-half of the capital costs, and that they would save about one-half of the operating costs. This hindsight criticism appears to be unjustified for these reasons:

(1) Of the net increase in open hearth capacity by 40 million tons, only 16.3 million tons were newly built; the other 23.7 million tons capacity resulted from an upward revision of existing furnace capacity due to oxygen lancing, better refractories and better charging equipment.

[1] As to the total cost of exploration, research, acquisition of iron ore deposits, investment in mines, transportation facilities (loading docks, railroads, ships), beneficiation plants and storage facilities for the development of new iron ore and taconite sources of supply, the total amount spent by the U.S. steel industry for the period 1950–66 was approximately $5 billion, according to Frank Brantley, Bureau of Mines, U.S. Department of the Interior. Of this amount, $1.25 billion had received rapid tax amortization under the Defense Production Act of 1950.

(2) Beginning with January 1, 1951, the industry expanded ingot capacity at the request of the government in order to meet the combined military and civilian requirements in case of a possible escalation of the war in Korea into World War III. Could the industry, at that time, gamble with an unproven experimental type of steelmaking equipment? The fact that the U.S. steel industry adopted the new BOF process at a faster rate than the rest of the world, with the exception of only Japan, can be seen from this comparison: U.S. BOF production expanded between 1955 and 1966 by 34 million tons, while open hearth production declined by 20 million tons. During the same period, open hearth production increased further in the rest of the world by over 100 million tons.

A second dynamic period started in 1962 when the steel industry decided to intensify its efforts to meet the challenge presented by the new technology and by the invasion of its domestic markets by substitutes and imports with another program of heavy capital outlays. Tables H-3 and H-4. The new methods of making and finishing steel had now proven feasible in large-scale units. The Government concerned with a stagnating economy and a balance of payment problem, decided upon the 7-percent investment credit and accelerated depreciation allowances. Even though these stimuli to investment were available to all industries, it was the steel industry where they were especially effective, because of its heavy investment in fixed assets, and because of the availability of cost-reducing technology. To provide even more cash flow, a number of steel producers cut their dividends. Capital outlays doubled between 1962 and 1966, and are expected to continue in excess of an annual rate of $2 billion.

Now, in the middle of this technical revolution which promises to substantially lower the cost of steel making,[1] the industry entered its third postwar period of frustration, caused by an upsurge of steel imports at prices some 20 percent below the domestic price level for many steel products.

Savings per ton

	Employment costs	Other costs	Yield	Overhead	Total
Hot metal	$1.00	$2.50		$2.00	$5.50
BOF	7.00	2.00	($1.20)	(1.00)	6.80
Continuous casting	.50	.90	3.30	(.40)	4.30
Hot mill	1.30	2.10	1.10	(2.50)	2.00
Cold mill	5.50	1.50	1.50	(4.50)	4.00
Total savings	15.30	9.00	*4.70	(6.40)	22.60
Adjusted savings	17.65	11.35		(6.40)	22.60

*Since saving in "yield" is a savings of some expense earlier in the process, we have arbitrarily allocated 50 percent of the yield savings to employment costs and 50 percent to "other costs."

The Republic Steel Corp. was asked to give an opinion as to the validity of these estimates of cost savings but the management finally replied that it would neither confirm nor deny the accuracy of these estimates.

It should be emphasized, however, that these savings could only be realized between a year before any of these modernizations were installed, say 1957, and a year, say 1975, when all installations would be fully modernized, i.e., when the industry would use only BOF and only continuous casting. Because this will not happen, a more realistic estimate would show the industry's cost savings that can be realized between July 1, 1967, and July 1, 1972, when BOF capacity might be doubled and continuous casting be used by 25 percent of the industry. On this realistic basis, cost savings per ton of finished products to be achieved in the next 5 years may be $5 to $6 a ton provided, of course, that there is no change in the cost of labor and raw materials.

[1] A study of cost savings that might be achieved by the introduction of the most modern technology in all phases of the steel production processes was worked out by the L. F. Rothschild & Co. in 1965, with specific reference to the Republic Steel Corp., and resulted in the following table giving possible savings per ton of steel produced:

Chart 76 "Financing Capital Expenditures," and tables H-3, 4, 5, 6, and 7 provide in capsule form the financial record of the steel industry from the end of World War II to the end of 1966. Table H-3 compares cash flow with capital expenditures, and shows the annual excess or shortage of capital expenditures over the industry's cash flow. The data shows that in the period 1946-55 total cash flow exceeded capital expenditures by $354.3 million, but in the period 1956-66 the condition reversed whereas capital expenditures exceeded cash flow by $1,162.6 million. During the entire period analyzed, 1946-66, capital expenditures exceeded cash flow by $808.3 million.

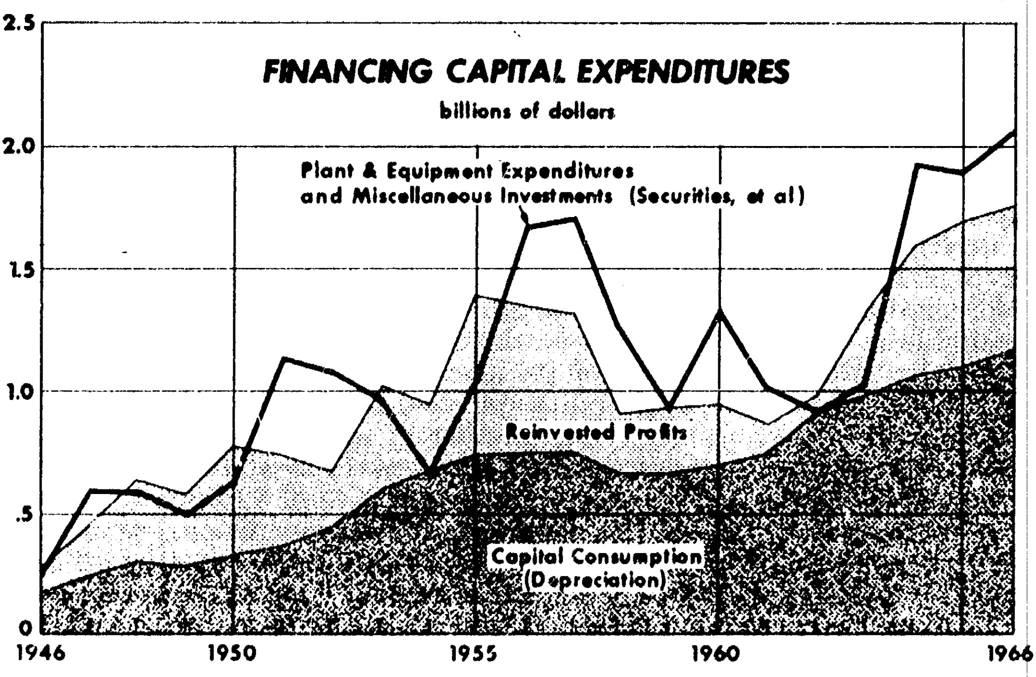


CHART 76

Cash flow is a measurement derived by adding retained earnings (profits after deduction of Federal income tax and dividends) to capital consumption allowances (depreciation, depletion, amortization). Thus cash flow consists of two entirely different parts: capital consumption allowances which is the return of investment, and profit which is the return on investment.

Summary of table H-3

[In millions]

Period	Depletion amortization depreciation	Retained earnings	Cash flow	Capital expenditures	Excess of capital expenditures over cash flow
1946-66	$13,709.2	$7,603.1	$21,312.3	$22,120.6	$808.3

In addition to excess capital expenditures over cash flow, the industry during the same period, 1946–66, added some $2,210.7 million to working capital, principally in the form of cash, marketable securities, inventories, and accounts receivable, and increased its investments in the form of stocks and bonds of companies formed principally to develop new iron ore reserves and transportation facilities by $1,120.7 million.

Over the 21-year period, capital expenditures, additions to net working capital, and to investments totaled $25,452 million, $4,139.7 million more than was generated by the industry through its cash flow.

The additions to working capital and investments have been necessitated as a natural result of the growth of the industry during this period. As the industry expanded its physical plant, it also had to increase its net working capital, especially its inventories, accounts receivable, and investments in companies mining and transporting the newly developed iron ore resources.

Summary of table H-5

[In millions]

Balance sheet, Dec. 31	Current assets	Current liabilities	Working capital	Investments
1966	$7,284.9	$3,235.2	$4,049.7	$1,603.8
1945	2,564.6	725.6	1,839.0	483.1
Changes 1945–66	4,720.3	2,509.6	2,210.7	1,120.7

To meet its needs for funds to expand, the steel industry relied, in addition to cash flow, largely on expansion of long-term debt, which increased $3.3 billion during the 1946–66 period (this resulted in a change in long-term debt as a percent of the net worth and debt from 11.8 percent in 1946 to 23.9 percent in 1966 (table H–5)). After having increased long-term debt by only $1.1 billion during 1946–55, in the following period, 1956–66, long-term debt increased $2.2 billion, after the industry was able to overcome its hesitancy during the first postwar decade to increase its debt burden. This total increase in long-term debt during the 21 years, 1946–66, is shown in tables H–6 and H–7.

Part of the increase in long-term debt is the result of refunding preferred stock, which was decreased by $532.1 million. The balance of the increase in long-term debt, or $2.8 billion, was used for investment in fixed and current assets.

In addition to this increase in long-term debt, table H–8 shows that interest charges between 1946 and 1966 increased from $18 million to $177 million, or by 883 percent. Part of this increase was due to the increase in the average rate of interest between 1946 and 1966 from 3.3 to 4.7 percent. Interest charges as a percent of revenues increased from 0.4 to 1 percent in 1966.

As shown in table H–5, long-term debt as a percentage of total capitalization had risen to 23.9 percent in 1966 compared with 11.8 percent in 1945. The steel industry advises that it considers a long-term debt of 25 percent of total capitalization as a maximum debt that prudent management should incur. The same judgment regarding a number of industries was reached by Gordon Donaldson: "Corporate Debt Capacity," Harvard University Press, Cambridge, Mass., 1961.

The 25 percent long-term debt limit becomes even more critical in a period of high interest rates, and specifically for the steel industry in a period of rising fixed costs (depreciation, fringe benefits). Any narrowing of the margin of profits on sales raises the break-even point, that is, the rate of use of capacity required for the steel industry to show any profit. Table 79, at the end of this chapter, shows how fixed depreciation charges would increase between 1966 and 1975, even without consideration of increasing interest charges on long-term debt.

There remains an analysis of whether the steel industry in the postwar period used its cash flow to pay out dividends at a higher percentage of net profits than all corporations, or whether an unnecessary high net working capital was maintained. For the period 1946–66 the steel industry paid $8.5 billion in dividends out of profits of $16.1 billion, or 52.8 percent compared to only 43.4 percent by all corporations, but a 52.8-percent payout hardly can be criticized.

The ratio of current assets to current liabilities of the steel industry (table H–9) was on the high side in 1946–47 in line with the experience of all corporations, because wartime restrictions had caused the postponement of many needed replacements of facilities. Thereafter, the ratio has been in line with prudent managerial policies of all U.S. corporations and certainly there is no evidence that the companies held too much cash as some critics of the industry have alleged. Conversely, the liquidity of net working capital as measured by the ratio of cash and securities to working capital (table H–10) has fallen throughout the period. The ratio of inventories as a percentage of working capital (table H–11), however, has risen throughout the period, and constitutes evidence that the growing competition among the steel companies—and against imports and substitutes—has forced them to hold higher and higher inventories in relation to sales to meet competition not only on the basis of quality and price, but also promptness of delivery.

Finally, table H–12 shows the ratio of net working capital to sales, a measure indicating the adequacy of net working capital to handle the volume of sales; it shows no trend but it invites comparison with the ratios of foreign steel producers.

Table 78 shows net profit as percent of sales for the steel industry, as compared to other leading manufacturing industries. The fact that in 1966 the steel industry ranked in 21st place out of 41 industries, fails to reveal the degree to which profit margins had become unsatisfactory. Because the steel industry requires about $2 of investment to achieve $1 of sales, while the average for other manufacturing industries requires about $1 of investment for $1 of sales. Therefore, the steel industry has to obtain double the margin of profit on sales to achieve a comparable return on equity capital. As a result, table 77 shows that the steel industry ranked in 39th place out of 41 industries in regard to return on net worth.

TABLE 77.—*Steel industry versus other leading manufacturing industries, net profit as percent of net worth, 1946–66*

Year	Steel industry		41 Leading manufacturing industries	Year	Steel industry		41 Leading manufacturing industries
	Percent	*Rank*	*Percent*		*Percent*	*Rank*	*Percent*
1966	9.3	39	14.1	1955	15.2	14	15.0
1965	9.6	37	13.9	1954	9.4	32	12.4
1964	9.2	35	12.7	1953	11.6	21	12.5
1963	7.3	37	11.6	1952	8.8	35	12.3
1962	5.4	41	10.9	1951	12.3	25	14.4
1961	6.4	32	9.9	1950	15.3	28	17.1
1960	7.8	29	10.6	1949	11.5	24	13.8
1959	8.4	35	11.6	1948	14.0	38	18.9
1958	8.2	27	9.8	1947	11.3	42	17.0
1957	13.2	17	12.8	1946	7.5	41	12.1
1956	13.9	17	13.9				

NOTE.—The First National City Bank of New York data does not necessarily cover the same steel companies as the AISI.

Source: The First National City Bank of New York; April monthly letters covering 41 manufacturing industries from 1956 to 1966, and 44 to 46 from 1946 to 1955.

TABLE 78.—*Steel industry versus other leading manufacturing industries, net profit as percent of sales, 1946–66*

Year	Steel industry		Leading manufacturing industries	Year	Steel industry		Leading manufacturing industries
	Percent	*Rank*	*Percent*		*Percent*	*Rank*	*Percent*
1966	5.9	21	6.3	1955	7.8	12	6.7
1965	5.9	19	6.4	1954	6.0	13	5.9
1964	6.1	18	6.1	1953	5.6	11	5.3
1963	5.4	18	5.7	1952	5.0	18	5.4
1962	4.1	26	5.5	1951	5.8	17	6.2
1961	5.2	18	5.2	1950	8.0	18	7.7
1960	5.7	18	5.5	1949	7.1	16	6.8
1959	5.8	15	5.8	1948	6.7	27	7.5
1958	6.3	12	5.2	1947	6.1	30	7.1
1957	7.3	8	5.9	1946	5.5	19	6.0
1956	7.3	12	6.0				

Source: The First National City Bank of New York; April monthly letters covering 41 manufacturing corporations from 1956 to 1966, and 44 to 46 from 1946 to 1955. Steel industry data, American Iron & Steel Institute.

The industry's argument would be even more forceful if one remembers that with heavy, long-lived plant facilities, steel industry profits are overstated because both the book value of plant facilities and depreciation charges are in terms of the original dollar-cost rather than the present replacement cost which, as shown in table H–1, is now 421.8 percent for construction and 243.1 percent for producers durable equipment of its 1940 base.

The steel industry has historically been called a prince or pauper industry due to the sharply fluctuating profits in periods of prosperity or depression. This high degree of susceptibility to the business cycle is due to the heavy investment in plants and equipment in relation to sales which resulted in fixed costs (interest, depreciation, depletion) being a high percentage of total costs. The percentage of fixed costs and the resulting breakeven points have been even higher abroad because of a higher percentage of debt to equity, because of higher rates of interest, and because of a less flexible policy in regard to employment of blue-collar workers. It is true that since 1946, in this country automatic stabilizers (unemployment compensation insurance, progressive personal income tax) and anticyclical monetary and fiscal policies have been successful in greatly diminishing the amplitude of the five postwar cycles, and, therefore, done their share to increase the stability of use of capacity and of profits in the steel industry.

But there have been countervailing forces at work in the industry. The ratio of white-collar employees as a percentage of all employees has been rising, as shown in table H-13, thereby increasing fixed costs because white-collar workers are less likely to be laid off when production declines. Furthermore, fringe benefits which constitute fixed charges have been rising and so have debts as a percentage of assets and the rate of interest of debts. Finally, the BOF process uses only 30 percent scrap and 70 percent hot metal, and therefore increases fixed costs because in the formerly prevailing open hearths, scrap was used at above 50 percent of total charge in recession when scrap prices fell as much as one-half.

Another factor that has adversely affected profits and, incidentally, has invited imports has been the periodical wide swing in demand for steel due to the periodical periods of steel inventory accumulation and liquidation by steel customers preceding and following steel collective-bargaining dates, as shown in chapter X.

As long as plant and equipment annual expenditures will run in an order of magnitude of $2 to $2.5 billion at a time when depreciation and depletion are only about $1.1 billion, the industry can draw on some $600 million of retained profits, but the remaining $300 to $800 million will have to be raised by going into debt unless the industry should choose to sell common stock, convertible preferred stock, or reduce dividends.

An important factor determining future cash flow will be constituted by future profit margins on sales. Favorable factors will be the cost-reducing effects of the installation of new technology, especially BOF, continuous casting and computerization, and a growing domestic demand for steel; unfavorable factors will be rising costs of labor, and depreciation charges, and possible increases in steel imports and greater use of substitutes for steel. Unless the new investment in fixed assets produces cost savings in excess of higher costs per ton, and unless tonnage increases to absorb the increases in fixed costs, profit margins will actually fall.

In contrast to managerial decisions to finance the replacement of the exhausted iron ore deposits through increases in prices, until recently the steel companies made their decisions to meet the challenge of rising costs by cost reduction through heavy investments in the new technology.

But new plant and equipment can hardly be acquired except by increasing debts at a time when interest rates are rising. Fixed charges, including interest, depreciation, and local property taxes will probably increase at an annual average rate of at least $100 million.[1 2] To cover these steadily growing additional fixed costs, the industry will have to earn at the recent rate $40 per ton of operating profit

[1] This amount was suggested by J. H. Walker, vice president, finance, Bethlehem Steel Corp., in a paper presented to the 1967 steel industry seminar, Pittsburgh, Pa., Apr. 26, 1967. In a letter to the writer dated Apr. 28, he stated: "The fact is that, from a financial standpoint if we can't beat that horse [imports] into submission, it will most certainly kick us to death. That is a position I came to only recently and reluctantly, but a cold examination of the numbers leaves no alternative."

[2] TABLE 79 shows increases in depreciation costs, but does not attempt to project increases in the costs of interest and local property taxes.

(before fixed charges and taxes) on a yearly increase of steel shipments of 2.5 million tons just to stay even. Unless the industry's shipments grow at this rate, its present healthy financial status cannot be maintained.

On the other hand, if shipments at the 1966 level of 90 million tons should show little further growth, the industry would have to increase its operating profits every year by $1.10 a ton in order to absorb these increasing fixed charges of $100 million a year.

But variable costs, labor and materials, will also rise and any increase in operating margins by $1.10 a ton can only result from higher productivity of the newly installed equipment or from price increases.

This analysis highlights the problem the steel industry faces in the future. Price increases would aggravate the competition from substitute and imports and unless domestic steel shipments increase by 2.5 million tons a year, the industry's financial status will deteriorate to such an extent that loans to pay for the new technology will be more and more difficult to arrange for.

The present managerial decisions of the industry have the aim to substitute high investment in cost cutting facilities for the price increases of the early fifties. But, these decisions can pay off only if the demand for domestic steel increases sufficiently every year to compensate for the growing fixed charges assumed by this unprecedented magnitude of annual investment in new technology. The prospects of winning the race between costs and revenue are further clouded by the fact that much of the new investment is primarily quality improving rather than cost saving. But, competition among the domestic steel producers and between them and imports and substitutes forces them to make these costly outlays in new equipment even if cost savings are minor or nonexisting.

TABLE 79.—*Projection of increases in depreciation charges resulting from assumed additional annual investment in plant and equipment of $2,000,000,000*

[In billions of dollars]

Year	Jan. 1 gross plant and equipment	Estimated additions	Estimated retirements	Dec. 31 gross plant and equipment	Accumulated depreciation	Jan. 1 net plant and equipment	Current year depreciation	Dec. 31 net plant and equipment	Depreciation increase over 1966
1967	24.7	2.0	0.3	26.4	14.0	12.4	1.4	11.0	0.2
1968	26.4	2.0	.3	28.1	15.1	13.0	1.4	11.6	.2
1969	28.1	2.0	.3	29.8	16.2	13.6	1.5	12.1	.3
1970	29.8	2.0	.4	31.4	17.3	14.1	1.6	12.5	.4
1971	31.4	2.0	.4	33.0	18.5	14.5	1.6	12.9	.4
1972	33.0	2.0	.4	34.6	19.7	14.9	1.6	13.3	.4
1973	34.6	2.0	.5	36.1	20.8	15.3	1.7	13.6	.5
1974	36.1	2.0	.5	37.6	22.0	15.6	1.7	13.9	.5
1975	37.6	2.0	.5	39.1	23.4	15.7	1.7	14.0	.5

NOTE.—Based on gross plant and equipment data of Dec. 31, 1966, AISI. Depreciation formula based on percent of net plant and equipment average from 1962–66.

Summary

The financial position of the domestic steel industry in the postwar period has been characterized by a steady upward trend of the ratio of debt to equity, and of the ratio of fixed costs to variable costs. The availiability of technological progress has been in excess of cash flow from depreciation and retained earnings, and probably of access to the capital market.

In contrast to most foreign steel producers, analyzed in chapter IX the domestic industry has succeeded so far in preserving a sound financial status. But its profit on invested capital in 1966 ranked in 39th place out of 41 major industries. The steel industry is investing heavily in new technology with the hope of reducing production costs—by \$5 to \$6 a ton in 5 years. As table 79 shows, depreciation cost alone would rise by \$400 million or about \$4 a ton, even if the cost of raw materials, labor, and interest charges would not rise.

CHAPTER IX

THE FINANCIAL STATUS AND POLICIES OF THE FOREIGN STEEL INDUSTRIES

An analysis of financial and operating ratios of foreign steel producers was held to be an important part of this study because it proves that world overcapacity in steel and the exporting of steel at "bargain basement prices" has brought the steel industry of many foreign countries close to bankruptcy. Starting with a debt structure higher than is considered good financial practice in this country, the growing excess of steel capacity in these countries has weakened the price structure, first in the export market and subsequently at home. The result has been low or nonexistent profit margins and quite unsatisfactory return on investment. The erosion of profits has in turn prevented equity financing and led to further debt in a never-ending cycle with debt exceeding equity.

The financial analysis of foreign steel producers was initially based on the reports of individual companies, but in the realization of the difficulty of comparing foreign company reports, the financial ratios shown in this study were compiled in part from the so-called Goudima reports, an official publication of the High Authority.[1]

The information based on the Goudima reports was crosschecked with the financial statements of individual foreign steel companies and with replies received from the British (BISI), the Japanese, and the German steel federations.

As discussed in Chapter VIII, in this country widely accepted standards of financial management holds that a steel producer should not burden himself with long-term debt in excess of 25% of his total

[1] A list was prepared for this study of comparative financial ratios, for the years 1960–65, for the major steel companies of the nine major steel producing countries: United States, Belgium, Luxembourg, The Netherlands, W. Germany, France, Italy, United Kingdom, and Japan. These ratios include:

Profits after taxes as percent of total revenues.
Profits after taxes as percent of total assets.
Profits after taxes as percent of equity.
Dividends as percent of profit after taxes.
Profits after taxes on ingots produced.
Employment costs per ingot produced.
Depreciation and depletion per ingot produced.
Interest costs per ingot produced.
Corporate income taxes per ingot produced.
Cost of raw materials per ingot produced.
Current assets as percent of current liabilities.
Debt as percent of equity.
Debt as percent of total revenue.
Employment costs as percent of total revenues.
Depreciation cost as percent of total revenues.
Corporate income taxes as percent of total revenues.
Raw material cost as percent of total revenues.
Sources of funds:
- Retained income.
- Depreciation and depletion.
- Increase in debt.
- Increase in equity.

assets, which by definition, equal total liabilities, or debt plus equity.[2] The reason for the reluctance to incur too heavily a debt lies in the fact that the demand for steel is highly cyclical, and that fixed costs are a very large portion of total costs, a combination which in a period of low steel demand could threaten a steel company with bankruptcy. Just such a development came about in 1967 for the family-owned business of Krupp. The banks had refused further credit, and cash had to be advanced by the German Government.

The "German Steel Federation" replied on May 22, 1967:

> The ratio long-term debt to equity has been steadily rising and now even for the most favorably situated company is 120. Some ratios cluster about 180 but one company is in considerably worse shape. As a consequence and because interest rates are much higher in Germany than in the United States, fixed charges rising from debt are substantially heavier than for U.S. steel producers. On the other hand, German labor costs are lower, but rising faster than U.S. labor costs. Even if all costs of making steel would be equal in both countries, foreign producers could still export steel mill products to the United States at substantially lower prices because the ratio of net profit on sales for the German steel industry is only one-sixth of what the U.S. steel industry is able to achieve.

For the six major Japanese steel companies, debt was 114 percent of equity, and it was even higher in Italy and France. This means that in these countries the steel industry belongs to its creditors rather than to its stockholders—in Italy and France the creditors are the governments. For Japan and Germany this is legally not so, but even if the case of Krupp should remain only an exception, there is abundant evidence of the close relationship between governments, central banks, commercial banks, and steel companies in these two countries. As a result of World War II, steel plants in both countries had to be rebuilt, practically from the ground up, and government funds, or credit creation by the central banks had to step into the breach.

In the United States, bankers would insist on increases in equity funds to back up increases in debt, but foreign capital markets seem to be unable to absorb sales of equity to the public.

As a result, not only long-term debt of foreign producers is too dangerously high but also their working capital position as evidenced by the ratio of current assets to current liabilities is unsatisfactory by U.S. standards of financial management.

These unfavorable financial ratios of foreign steel producers, illustrated in charts 80 and 81 have recently been aggravated by the deterioration of their "Profits after Taxes as a percent of Total Assets" as shown in chart 81.

The background information for these and other ratios and financial information compiled from the Goudima reports, or supplied by the British and Japanese steel federations are shown in the appendix.

As indicated in previous chapters recent years have witnessed declining operating rates and downward pressure on prices in many of

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[2] The information on the debt position of foreign steel producers was furnished for use by this study in three different ratios:

(1) Long-term debt as a percentage of total assets to (debt plus equity).
(2) Long-term debt as a percentage of equity.
(3) Total debt as a percentage of total assets.

The first two ratios measure long-term debt in relation to the owners' (stockholders') equity. The third ratio is used in the Goudima publications as the only possible method of achieving comparability between all countries covered. Total debt include all current liabilities, including dividends declared but not yet paid, and reserves for future taxes and contingencies. If the third ratio is used, the U.S. debt exceeds 30 percent instead of the 23.9 percent shown according to ratio (1) (long-term debt as percentage of total assets).

CURRENT ASSETS AS A PERCENT OF CURRENT LIABILITIES

(Percent)

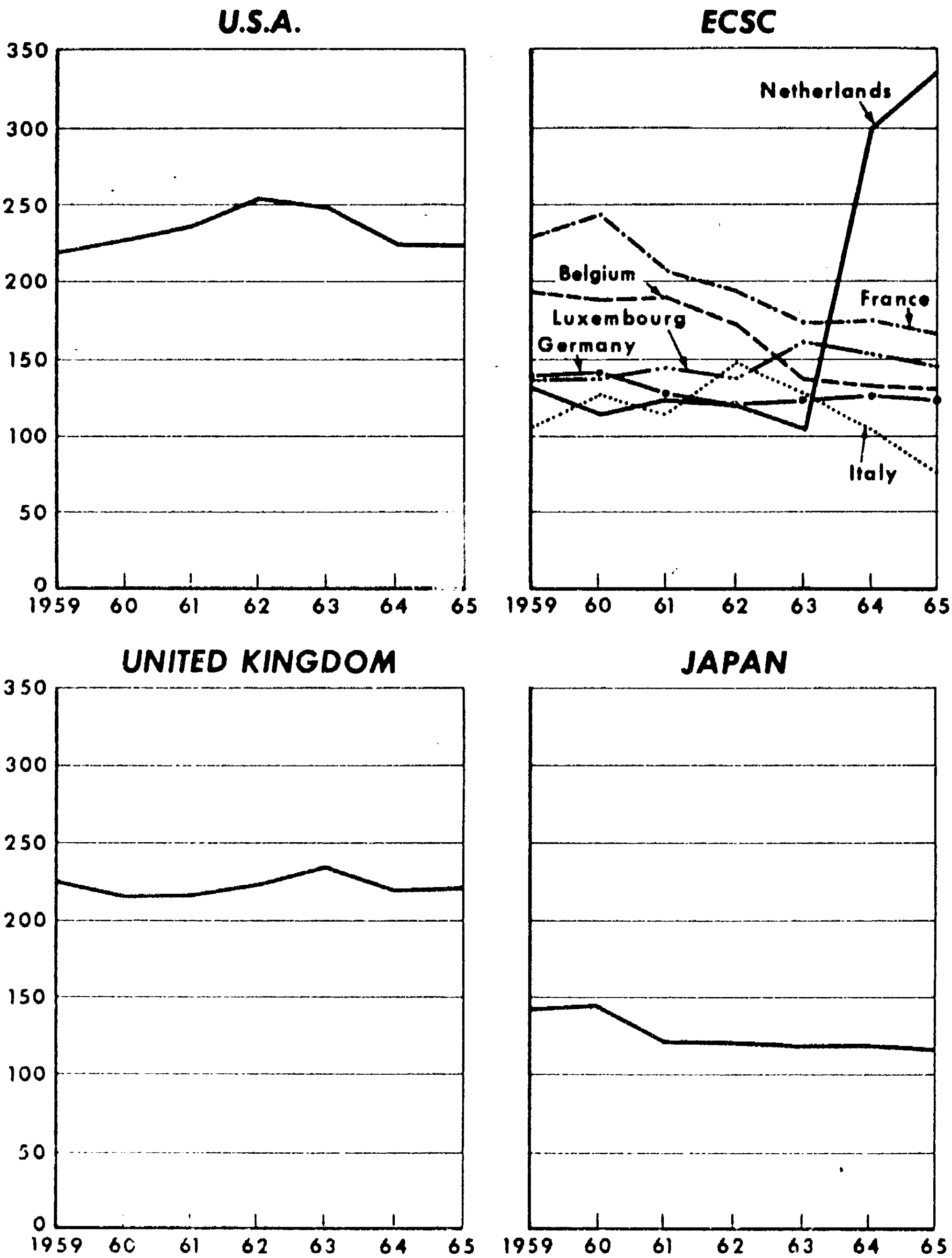

CHART 80

PROFITS AFTER TAXES AS A PERCENT OF TOTAL ASSETS

(Percent)

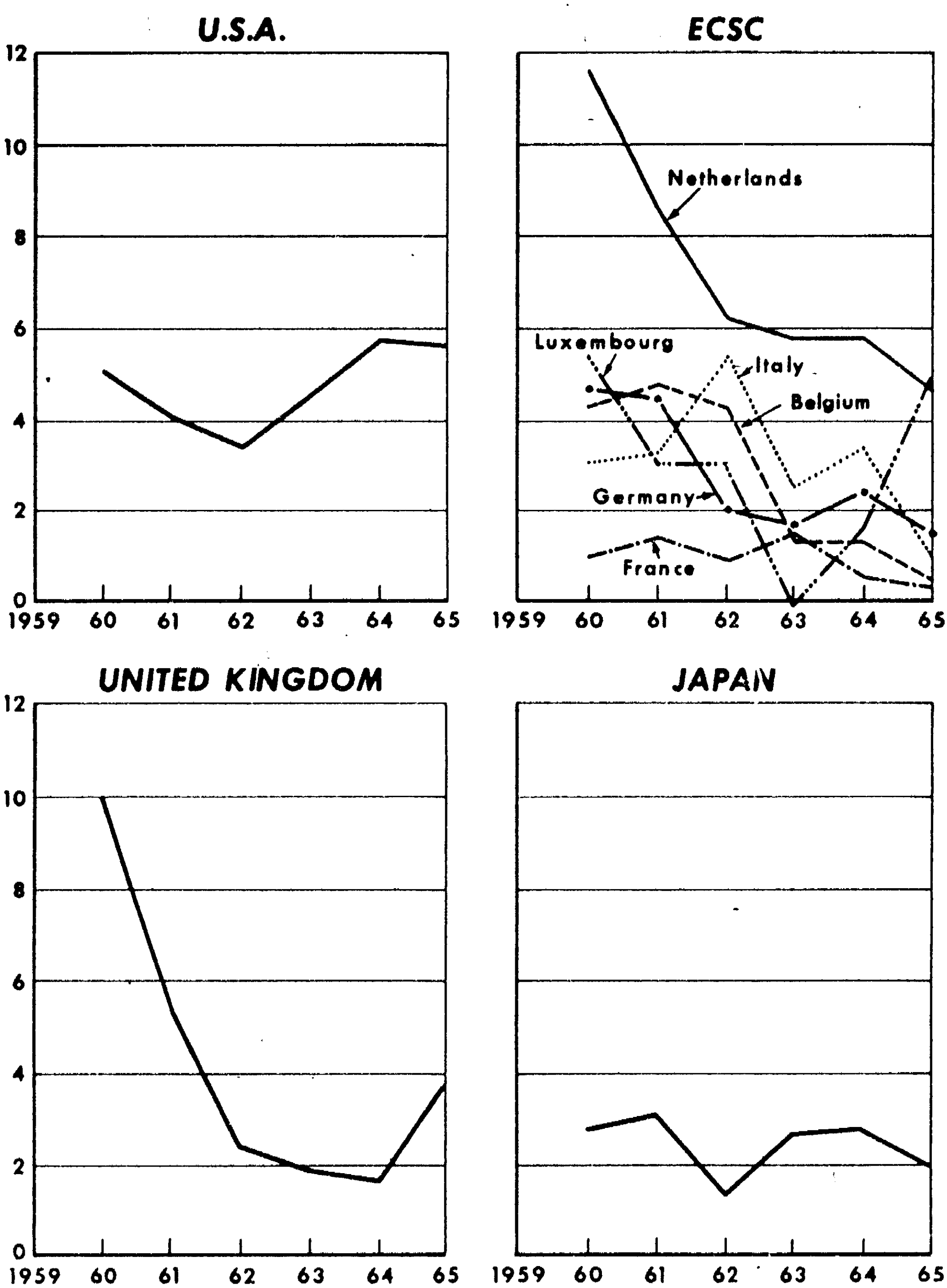

CHART 81

TOTAL DEBT AS A PERCENT OF TOTAL ASSETS
(Percent)

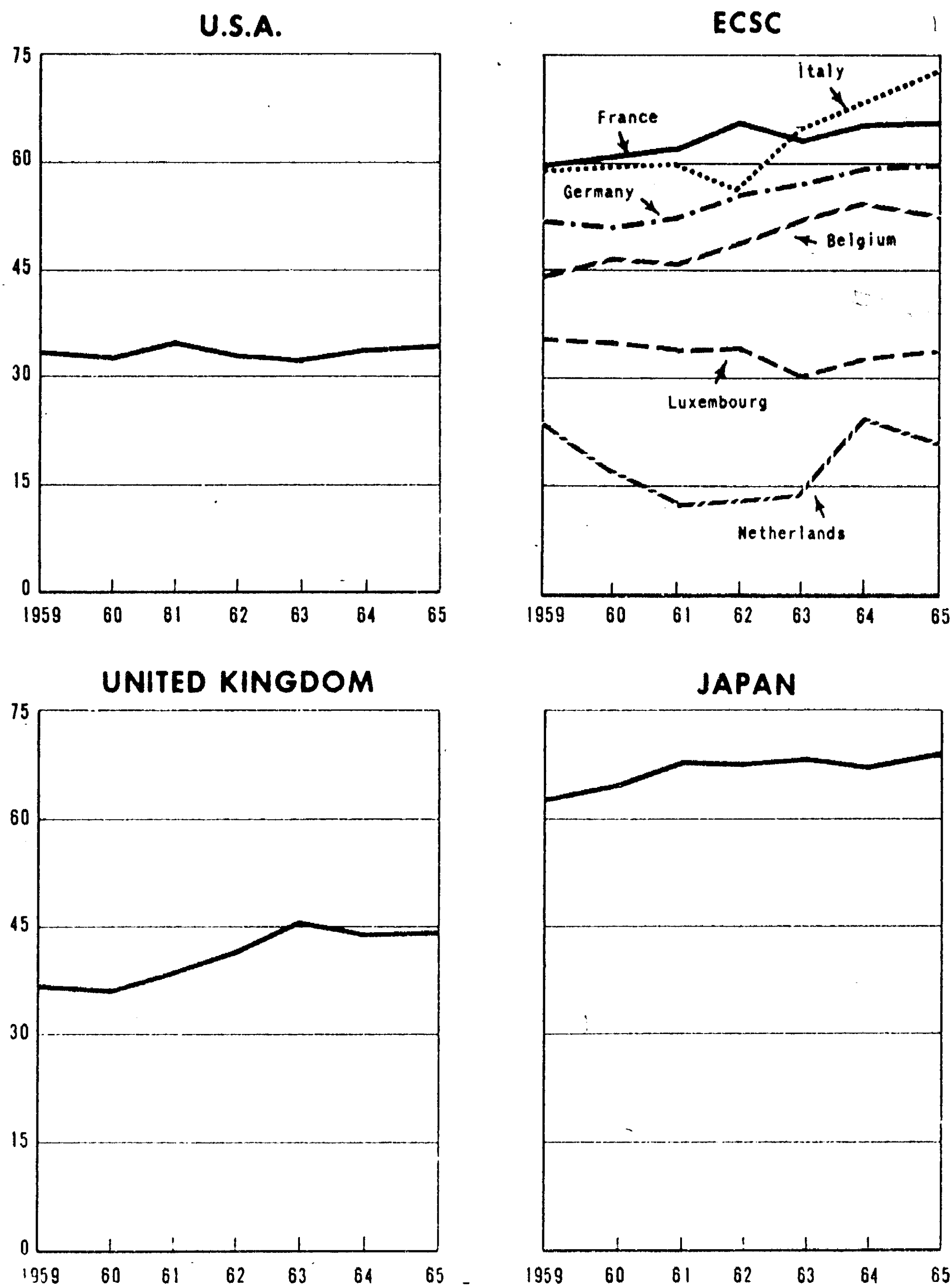

CHART 82

these countries. The initial impact of the price weakness was in the export market, with prices dropping in many cases to the point where they barely covered variable costs. However, the weakness soon spread to the domestic market, as efforts were made to upgrade unprofitable export sales by redirecting them to the home market and as widespread alignment on these lower prices followed suit. The effect of these pricing practices on the vulnerable financial structure is illustrated in charts 80, 81, and 82. While it is impossible to compare directly these profit margins in the different countries, due to the differences in depreciation and reserve practices, interest charges, income taxes and dividend policies, nonetheless the charts show the declining profit margin in the survey period, as the price weakness squeezed the highly debted financial structure.

These conclusions must be drawn from the financial analysis of foreign steel companies:

(*1*) ***Their debt structures make them particularly vulnerable to decreases in volume and prices.***

(*2*) ***Their current difficulties are attributable less to volume deficiencies than to price weakness—in both the export and domestic markets.***

(*3*) ***Accordingly, less price flexibility in both the export and domestic markets would appear to be in their best financial interests.***

(*4*) ***Unless foreign producers adopt more profit-minded pricing policies they may be drifting into financial disaster and become instruments of their respective governments.***

As "instruments of government" foreign steel industries in the future may be exporting at low prices to provide foreign exchange; they may even sell at low prices at home to stimulate exports of end-products containing steel, such as automobiles. Finally, low steel prices may be used to stimulate full employment at home.

Government subsidies, export incentives, government credit, partial or full government ownership are in some cases already in force or might develop. Cartels with or without government sanction may again hold up prices in the domestic markets and permit exports at lower prices. As discussed under Chapter III, there is considerable evidence of the development of cartel-like associations abroad for the purpose of improving domestic steel prices. The consequence of such cartels, however, could be to further aggravate the export price situation. To the extent that total overhead costs can be covered through higher domestic prices, foreign producers will be afforded more leeway to lower their export prices.

CHAPTER X

THE IMPACT OF LABOR CONTRACT NEGOTIATIONS AND STEEL INVENTORY SWINGS ON STEEL IMPORTS

This chapter documents the interrelationships between the periods of accumulation of steel inventories by the steel consuming industries that regularly preceded labor contract negotiations, and the rise of steel imports. It also discusses how swings in inventories increase the cost of making steel with unfavorable repercussions on the steel industry's profits and on its ability to meet foreign competition in the domestic market. If lower costs would allow lower prices—or at least make price increases less necessary to maintain profits—the U.S. balance of trade and payments would benefit. Domestic steel consuming industries would buy less foreign steel and would be better able to compete with their sales of end-use products containing steel in the world market.

Labor Contract Negotiations and Steel Imports

The so-called Livernash report "Collective Bargaining in the Basic Steel Industry" (U.S. Department of Labor, January 1961) concluded in the foreword by James P. Mitchell, Secretary of Labor: "The long-range economic effects of past steel strikes have left no permanent scars on our economy" (p. V).

Charles M. Rehmus, one of the authors of the report, and codirector, Institute of Labor and Industrial Relations, University of Michigan, stated in a paper presented at the Annual Meeting of the American Statistical Association, September 7, 1962, as follows:

> The first problem here was to separate the net strike losses on aggregate national production and income from the losses of the parties themselves. This requires balancing excess anticipatory and catch-up production against curtailed production during the strike. Obviously, there is less output loss on balance over some time period longer than the strike itself.
>
> This is not to say that a given strike does not have substantial and serious impact upon the parties themselves even if one assumes no net long-term loss of production. To the companies there are special shutdown and start-up costs. Certain out-of-pocket costs are incurred even during the strike. There are special inventory costs, excess costs associated with the dislocation and flow of raw materials, and special overtime and other costs. Any production man can tell you how much efficiency increases when overall production can be maintained at a relatively even keel compared to periods of widely fluctuating rates of operation.
>
> For the employees, on the other hand, even if one again assumes total production as a constant, there is likewise no clear balancing of income and employment. Some employees suffer a complete income loss proportional to the duration of the strike. Others may even have greater income over some period of time, for example, because of increased overtime. The use of vacation pay to offset loss of income during a strike and unemployment compensation for possible alternative layoff further complicates the question.
>
> Other problems with which we were concerned involved the difference between general national effects and serious situations which occur on a specialized or localized basis. Secondary effects of steel strikes are exceedingly complex to trace. The problem of the degree of substitution of other products for steel is in this category. *Permanent loss of markets to foreign steel had to be examined, even though we finally concluded it was of little magnitude.* [Emphasis added.]

This statement has been quoted to illustrate how as late as in 1962 the causal relationship between steel strikes and steel imports was not recognized.

Chart 83 "Imports and Basic Labor Agreements" and the explanatory text show that strikes and the hedge buying preceding the termination dates of steel-labor agreements have, indeed, again and again played their role in exposing the U.S. market to steel imports. Table J-1 [1] shows the dates of the steel strikes and AISI estimates of raw steel production lost.

General steel strikes

Years	Duration	Length (calendar days)	Lost raw steel production (net tons)	Estimated wage loss
1946	Jan. 21 to Feb. 17	28	7,789,000	$120,000,000
1949	Oct. 1 to Nov. 11	42	9,169,500	180,000,000
1952	Apr. 29 to May 2	3	17,900,200	[1] 300,000,000
	June 2 to July 26	55		
1955	July 1	(2)	(3)	(3)
1956	July 1 to Aug. 3	34	10,975,300	[1] 250,000,000
1959	July 15 to Nov. 7	116	26,100,000	808,000,000
	Total	278	71,934,000	1,658,000,000

[1] Over this amount.
[2] A few hours.
[3] While steel tonnage and wages were lost during shutting down and starting up, the amounts have not been estimated.

Source: AISI.

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[1] See appendix for all tables prefaced by a letter.

IMPORTS AND BASIC LABOR AGREEMENTS

CENTERED THREE-MONTH MOVING AVERAGE OF STEEL MILL PRODUCT IMPORTS

(Thousand Net Tons)

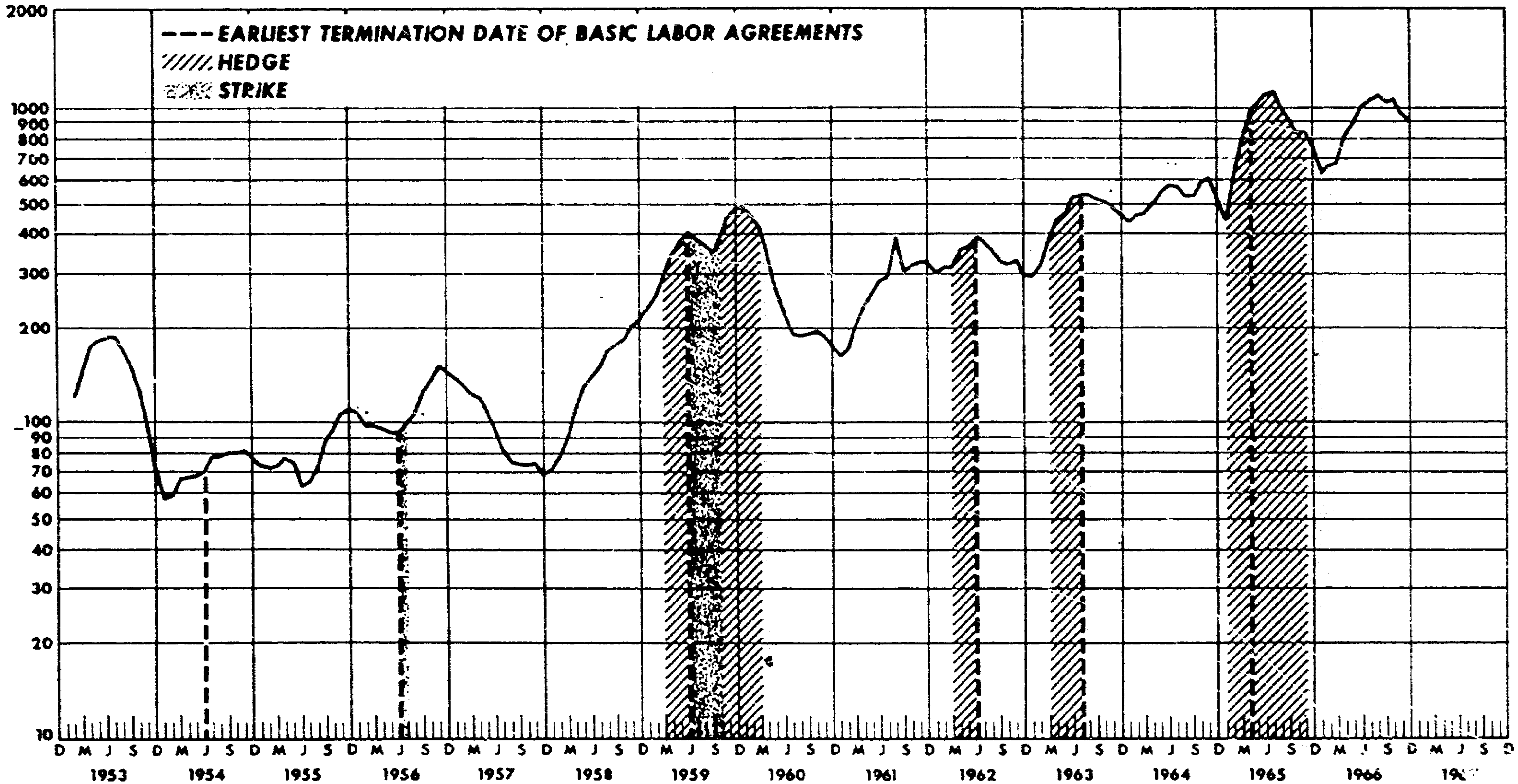

CHART 83

Steel-labor contract negotiations in the United States have contributed to the rise of steel imports by encouraging hedge buying against the possibility of a strike. Labor agreements in the steel industry have been concluded on the average about every 2 years since 1952. During periods of contract negotiations, the possibility of the failure of the negotiating parties to reach an agreement before the termination date of the existing contract poses serious problems to consumers of steel mill products. In order to guarantee an adequate supply of steel in the event of a labor strike, steel consumers generally increase their inventories significantly, and in recent years, both foreign and domestic steels have been used to meet consumer inventory requirements. The historical position of foreign steel as related to hedge inventory building is indicated in chart 84 and shown in detail in table J–2.

Hedge buying of foreign steel became a major factor in the import picture for the first time as a consequence of the 1959 steel-labor dispute. While there were both strikes and threats of strikes prior to 1959, steel consumers in the United States could not go abroad for any appreciable portion of their steel supply because products of the types which are consumed at a high rate and can be stocked for substantial periods were not available on the world market up to that time. Two significant factors contributing to the extensive hedge building in 1959 were first, that steel consumers' inventories were at a low level after the 1958 recession and thus strike hedge buying was superimposed on the inventory buildup which normally occurs during a business upswing; and second, that 1958 was also a recession year in Western Europe and Japan; excess capacity was appearing, and additional export business was being sought actively through substantial price reductions. Experience with foreign producers and products initially gained in 1959 has reduced inhibitions against purchasing foreign steel products.

A circumstance which encouraged buying abroad during the 1959 steel dispute was that in August 1958, during a recession, U.S. steel producers increased their prices by 2.9 percent. Furthermore, the 1959 steel contract negotiations were preceded by the most extensive advertising campaign in history involving a labor dispute.

Both the steelworkers' union and the AISI carried ads in leading newspapers throughout the country, setting forth their extreme positions. The industry was highlighting foreign competition as its main argument and thereby calling attention to this available substitute source of steel supply in event of a strike. The wide difference of contract positions of the two parties and the asperity of their respective statements gave the impression that a strike was inevitable. Apparently hedge-buying increased greatly during this period of high tension. So great was the demand for inventory accumulation by the steel consuming industries that all domestic production records were broken in the first 6 months of 1959, and in spite of the 116 days' shutdown in the second half, more steel was produced in 1959 than in strike-free 1958. U.S. steel capacity during the first half of 1959 was strained to the utmost, and steel consumers who were in a panic to increase their steel inventories in preparation for a seemingly inevitable strike, turned to steel importing.

In charts 83 and 84, the hedge periods prior to the earliest termination date of the basic labor agreements are shown as the immediately preceding 3- to 4-month period because of the concentration of imports during this time for inventory purposes. It is recognized that not all imports during this period were going into inventories and also that some share of the import purchases prior to this period may have been made for the same purpose.

Steel Inventories at Manufacturing Consumers' Plants and Basic Labor Agreements

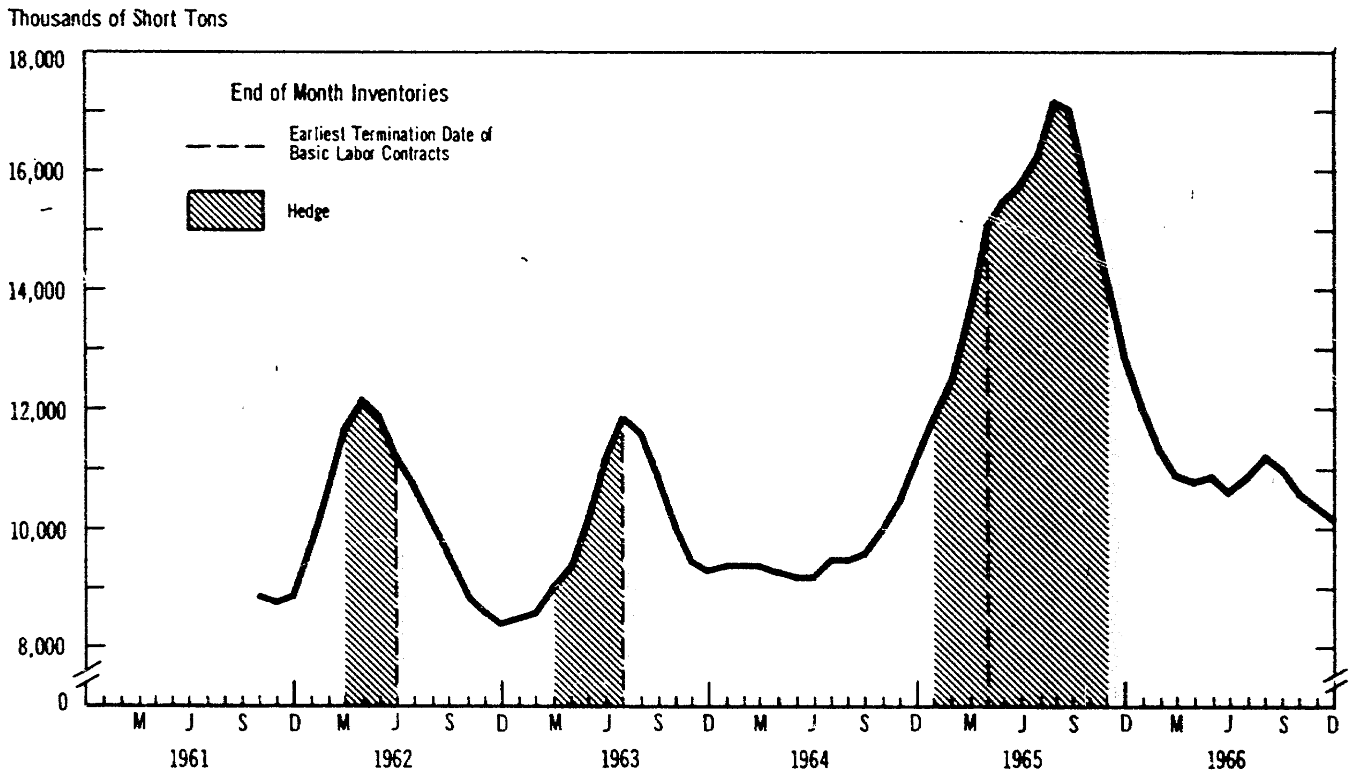

CHART 84

Most of the surge of imports occurred in the second quarter of 1959 as they reached 1,154,875 net tons, or almost equal to total imports for 1957. The sudden drop in imports after July reflected the assumption by consumers that an agreement would be forthcoming before stocks were exhausted. The ensuing strike lasted 116 days, far longer than anyone had expected. Domestic steel production resumed November 7, under the order of a Federal injunction which was in force until January 4, 1960, when an agreement was finalized. In response to these events, a new wave of imports occurred during the last quarter of 1959 and the first quarter of 1960. For all of 1959, steel imports had risen to an unprecedented 4.4 million tons, and accounted for 6.1 percent of apparent domestic consumption of steel.

Even though imports dropped substantially following the contract settlement, foreign steel producers had made extensive inroads into the American market. This foothold was never relinquished and served as the new base for rising imports in the future.

The labor contract made in January 1960, ran to June 30, 1962, and imports dropped steadily throughout 1960 and the first 2 months of 1961 as inventories were worked off and industrial production declined. Although the contract termination was still 16 months away, imports began to rise sharply in March 1961, and continued to grow until November. That increase, from about 150,000 to 350,000 tons per month (contrasted with the pre-1958 level of about 100,000 tons), was not related to labor negotiations, but to general supply-and-demand conditions.

The 1962 negotiations began early and a settlement was reached nearly 3 months before the end of the then current contract's term. Nevertheless, there was an inventory buildup to which imports contributed, primarily during the second quarter.

Once again, labor negotiations in the United States coincided with a sharp drop in European and Japanese steel demand and a consequent decline in world steel prices. The drop in imports following the settlement, however, still left them about 300,000 tons a month or 50 percent above the level reached after the 1960 settlement. Most of the growth of imports reflected the attractive rise in the demand for steel in the American market and the relatively static steel market conditions prevailing elsewhere in the world.

In 1962 labor contracts did not have a fixed term but could be terminated 90 days after notice by either party. The earliest termination date was June 30, 1964. A reopening on a limited number of subjects was permitted in 1963. As in 1962, imports rose substantially during the first 6 months of 1963 but to a much higher peak, and the subsequent dropoff, extending into early 1964, left imports at a 50 percent higher level than the peak in 1962. Some of the increase reflected inventory building; however, much of the growth in imports now was in response to the buoyant state of economic activity in this country. For 1963, imports were 5.5 million tons or 6.9 percent of the domestic market.

Among the 1963 amendments to the steel labor contract was a provision for 120 days' notice of termination, rather than 90 days as in earlier contracts, and the earliest date of termination was set at May 1, 1965. At the beginning of 1964, the rise in industrial production accelerated and steel imports increased. In fact, the average level of imports in 1964, when there were no labor contract negotiations, was nearly 20 percent above the level in 1963, when negotiations had last occurred. Stockpiling by steel consumers began in earnest toward the end of 1964, just as steel consumption in Europe and Japan and world steel prices turned downward.

In 1965, there was again a further increase in the level of imports in response to inventory building. In March, following the termination of the dock strike, steel imports soared to well over 1 million tons. With the exception of April, imports maintained the million-ton-per-month mark through August. The basic labor agreement was finalized in September following a 4-month extension, but as a result of delivery leadtimes, orders placed earlier in the hedge buildup were arriving through November. For 1965, steel imports were 10.4 million tons and accounted for 10.3 percent of the domestic market.

It may be interesting to note that during the first three quarters of 1965 domestic production was at record levels and the record imports during this period therefore caused no loss of U.S. steel employment. Immediately upon the successful completion of the negotiations, domestic production dropped, while imports continued at a high even if somewhat reduced rate.

The inventory buildup in 1965 had given steel consumers a reason for buying foreign steel to guarantee an adequate source of supply in the event of a strike. In 1966, a nonnegotiation year, steel imports did not recede but went on to set a new record high of 10.8 million tons or 11 percent of the domestic market. In the first 6 months of 1967 imports rose further by 13 percent (as compared with the first half of 1966)—at a time, incidentally, when domestic steel shipments were declining.

Summary

The coincidence in late 1958 and early 1959 of excess capacity in steel producing centers outside the United States resulting in a decline in world steel prices, and of recovery in the United States led to a sharp increase in imports. Thereafter, as world steel capacity continued to grow faster than requirements and therefore import prices remained weak in contrast to the 1958 increase in U.S. steel prices, each round of labor negotiations encouraged further increases in steel imports. The growing tendency of foreign producers to require orders on a continuing basis in return for guaranteed supplies during periods affected by labor contract negotiations in the U.S. had a ratchet effect; i.e., imports increased markedly and remained at high levels.

In 1968, it can be expected that foreign steel producers will try to take full advantage of the forthcoming labor negotiations to expand further the sales of their products in this country.

The unfavorable impact of periods of inventory accumulations and liquidation by the steel consuming industries is not confined to the encouragement of imports in periods of accumulation. Both periods have an unfavorable impact on the steel companies' earnings.

The steel industry is more susceptible to the business cycle than all other major industries. Some 65 percent of steel shipments are consumed by the capital goods industries, and, therefore, exposed to the violent fluctuations in demand that characterizes plant and equipment outlays. Some 25 percent is used in the fabrication of consumer durables, such as passenger cars, the demand for which also fluctuates widely because consumers can delay purchases when their incomes are falling, or the outlook is uncertain. Only some 10 percent of steel is used in containers, a large part of which is used for packaging foods and drinks, the demand for which is basically as stable as that for the consumer nondurables, and for the service sectors of the economy.

During the postwar period four recessions, four major steel strikes, and several periods of anticipated strikes or recessions that never occurred have perpetuated the traditional prince and pauper pattern of demand for steel.

Cyclical swings of steel output

	Percent
Percentage change from peak year to trough year:	
Recessions:	
1948–49	–12
1953–54	–21
1955–58	–27
1960–61	–1
Percentage change from trough year to peak year:	
1949–53	+43
1954–55	+33
1958–60	+16
1961–66	+37

If upswings would be shown on a monthly basis, i.e., from month to peak month, the percentage changes would have been as follows:

Month	Production (thousands of tons)	Percent change
February 1961	6,239	95.4
May 1966	12,191	
April 1958	5,533	117.8
January 1960	12,049	
Lowest month was August 1959 [1]	1,439	
July 1954	6,628	58.5
December 1955	10,504	
July 1949	5,784	75.8
March 1953	10,168	
Lowest month was October 1949 [1]	928	

[1] Strike was on.

Steel demand by the steel-consuming industries consists not only of the demand from the ultimate buyer of products that contain steel, such as automobiles, but also on the desired level of inventories of steel which the manufacturers wish to carry.

Steel inventories fluctuate widely with the business cycle and with periods of accumulation and liquidation preceding and following labor contracts settlements. These inventory fluctuations constitute a drain on profit margins because they not only needlessly tie up capital when they exceed normal requirements, but also they are the direct cause of abnormally low uses of capacity in periods of liquidation and of abnormally high uses of capacity in periods of accumulation which may cause use of high-cost obsolete facilities and overtime pay.

Low inventories can mean inability to match a delivery promise of a competitor and therefore the loss of an order. When orders turn up, low inventories of steel mills result in lengthening of steel delivery schedules. Adequate inventories held by steel users become inadequate when it takes 2 months to replace steel used up rather than the normal 3 or 4 weeks.

Swings from 50 percent of capacity to 100 percent are a costly way to run a steel mill. Layoffs, in addition to the harm done the man furloughed, mean higher payments for unemployment compensation. By reducing consumer income and injuring employee confidence, it can result in a cutback in consumer spending for cars or appliances, thus further injuring both steel customers and steel producers. Thus, instability in steel output contributes to general economic instability by stimulating inventory cycles thoughout manufacturing. The extremes of inventory building and liquidation have been a major cause of our postwar recessions. Inventory cycles by adding to the instability of the economy increase the need of Government intervention in the private enterprise system through the use of monetary and fiscal policies.

Any efforts made by corporate decisions in the direction of evening out the inventory cycles would therefore diminish the role Government action has to play in the fostering of steady economic growth.

During periods of inventory building by steel consuming industries in fear of future shortages, old and inefficient steelmaking equipment has to be used at high costs and overtime to fill orders that exceed any reasonable current demand. In such periods, foreign steel is bought in the panicky attempt to guard against future interruptions of the output of these steel customers that might be caused by lack of steel on hand.

Once a fear of such shortages has subsided because a new contract agreement has been signed, or boom conditions are cooling off, steel inventories are reduced with the result that orders on the rolling schedules of the steel mills fall drastically and even the most efficient plant facilities are being used only at reduced rates of capacity. Because of the high, fixed overhead inherent in the steel business, steel company profits fall and unemployment among steelworkers increases.

In times of declining business activity, use of foreign steel may increase because domestic steel users are faced with stronger price competition for their fabricated products, and may be forced to compensate for reduced profit margins by buying less expensive foreign steel.

The adverse effect of steel imports on demand for domestic shipments is further aggravated because the relationship between buyers of foreign steel and the service centers of steel fabricators, commonly implies purchase commitments for a much longer period than is customary for domestic steel. Cancellation or reduction in foreign tonnage commitments generally implies penalty payments.

To illustrate: A customer with a normal requirement of 100,000 tons annually may have decided to obligate 30 percent to foreign sources, and obtain 70,000 tons from domestic sources. Reduced requirements now call for a yearly purchase of only 80,000 tons. To avoid a penalty, he adheres to his contract for foreign tonnage, but cuts domestic purchases to 50,000 tons. Thus a 20 percent decrease in the total demand has equated to a 30 percent reduction in the requirement from domestic mills.

This study concludes that in the interest of both the industry and the steelworkers union, labor contract negotiations in the future might well be conducted as in other industries, such as the coal industry, where strikes and fear of strikes have not occurred in the last 17 years. Also, the anticyclical monetary and fiscal policies of the U.S. Government have recently been rather successful in ameliorating the former roller-coaster-type business cycle.

CHAPTER XI

TRENDS OF LABOR AND CAPITAL PRODUCTIVITY IN THE U.S. STEEL INDUSTRY, 1947–66

To appraise the causes and probable future trends of steel imports, a comparison of labor and capital productivity trends in the United States and leading foreign steel producing countries is crucial. The result of such findings will shed light on the problem of to what extent the U.S. steel industry can hope to increase its labor and capital productivity sufficiently to offset cost advantages now favoring foreign producers. This chapter will assess the trends for the last two decades of the productivity of labor and capital in the U.S. steel industry, while the next chapter will compare hourly wage costs and labor productivity (unit labor costs) in the steel industries here and abroad.

This chapter shows that between 1947 and 1966 the average annual rate of increase in unit labor cost of the U.S. steel industry compared with all U.S. manufacturing industries as follows:

[In percent]

	All manufacturing industries	Steel industry
Output	3.6	1.7
Total compensation per man-hour	5.0	5.7
Output per man-hour	2.9	1.7
Unit labor cost	2.0	3.9

The U.S. steel industry faced annual increased total compensation per man-hour of 5.7 percent compared to only 5 percent for all manufacturing industries, while output per man-hour increased at an annual rate of only 1.7 percent compared to 2.9 percent for all manufacturing. Unit labor costs thereby increased 3.9 percent annually in steel compared to 2 percent in all manufacturing.

As to capital productivity, which is expected to restore the competitiveness of the domestic steel industry, the findings are: For the domestic steel industry, gross (undepreciated) plant and equipment per dollar of value added doubled between 1947 and 1966 from \$1.26 to \$2.52 which compared with a decline from \$0.95 to \$0.86 for all manufacturing industries (1947–55; 1966 data not yet available). The capital-output ratio measures the dollar amount of capital needed to produce a dollar of value added.

The evidence is probably unexpected because of the new technology such as the basic oxygen furnace (BOF) and continuous casting greatly reduces investment per ton of output. Competition on a quality basis, however, has forced the domestic steel industry to invest even more in new, costlier finishing facilities than in cost-saving BOF's, and in continuous casting.

In the U.S. economy, productivity has increased at a rate of approximately 1.5 percent per annum during the past 50 years. This continued improvement is the result of increased technological innovation and the increased skills of labor required to operate the more sophisticated plant and equipment. The factor of production capital has been increasing at a more rapid rate than labor because of the public's increasing propensity to save and labor's goal to work fewer hours. The net result of a trend toward a more capital intensive economy is that each unit of labor has a greater amount of capital stock to work with, and labor's real wages have risen faster than the total factor productivity.

Productivity in the steel industry is a function of many contributing factors. They include capital invested and utilized as discussed in chapter VIII, the skills and organizational ability of management, the state of technology, the efficiency of use of raw materials, the volume of output or operating rate of capacity, and the skills of labor.

Until the decade of the 1950's, emphasis on changes of productivity was generally restricted to measures of output per man-hour. Those responsible for carrying out the huge new investment programs, stockholders and management, obviously felt that recognition must be given to capital's contribution toward the better performance of workers. Studies of the relation of capital to output and their longrun relationships have been pioneered by the National Bureau of Economic Research,[1] and also have been undertaken by the National Industrial Conference Board,[2] and the National Planning Association.[3]

In the U.S. steel industry a substantial part of the investment program is not necessarily directed toward improving capital and labor output but it is oriented toward product improvement and product development. One of the prime goals of product oriented technological change is unit-weight reduction of steels for specific purposes. The achievement of these goals is sometimes obscured by the traditional productivity measures and is in effect negated by the statistics that are based on weights or output.

The performance of the industry is generally measured in terms of raw steel production or tons of shipments, adjusting to such important facts as changes in product mix, greater strength but lighter gage steels.

Examples of these changes may be found in stronger, lighter structural steels, thinner tinplate for containers and generally improved quality steels. Because of these variable nonproductive factors it is extremely difficult to accurately measure the impact of technological advancements on the U.S. steel industry. Be this as it may, measurements of productivity are widely used by Government, management, and the unions.

Labor Productivity in the U.S. Steel Industry

The best known measurement of the influence of technological advancement on the industry is the long-term trend in output per man-hour. An analysis of output per man-hour is not to be interpreted as assigning improved productivity results solely to the worker's

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[1] Kendrick, J. W., *Productivity Trends in the United States*, Princeton University Press, Princeton, N.J., 1961.

[2] National Industrial Conference Board, *Capital Expansion and Capacity in Post War Manufacturing, Studies in Business Economics*, No. 72, 1961, New York, and *Measuring Company Productivity*, No. 74, 1961.

[3] National Planning Association, *National Economic Projections to 1976-77*, Washington, D.C., 1966.

better performance. The subject of capital's productivity, including investment in the preparation of raw materials, is discussed in the latter part of this chapter.

Certain inherent dangers exist when attempting to analyze output per man-hour statistics. The total output per man-hour data as developed by the Bureau of Labor Statistics[4] utilizes man-hours for the industry as homogeneous and additive, making no distinction between the hours of different groups of employees. The relative man-hour requirements for the various products of the steel industry were compiled for use of the BLS through arrangements made by the AISI.[5] Man-hour requirements for various products change relatively rapid over time, thus the weights now in use, 1961 data, may soon be updated even though official reliable sources have indicated that the introduction of a more current period will alter the weights only slightly.

During 1966 the number of employees required to produce 134.1 million tons of raw steel was 651,200, compared with 1947 production of 84.9 million tons and 655,800 employees. However, during the interim years (1947–66) steel employment fluctuated rather severely, from a high of 726,100 in 1953 to a low of 587,300 in 1959. An analysis of employment and production data, table 85, shows that production worker employment tends to fluctuate more than nonproduction worker employment and the number of nonproduction workers is growing, while the number of production workers, (except for cyclical fluctuations) reflecting the trend toward new technology and automation, is on the decline. Comparing 1947 with 1966, the number of nonproduction workers had increased by 49.3 percent while production workers had decreased by 7.7 percent. Raw steel production during the same period increased by 57.9 percent in spite of the fact that the 1966 steel output consists of a far more sophisticated product than that produced in 1947. Furthermore, tons of raw steel produced per employee had risen to 205.9 in 1966 from 129.5 in 1947 and this upward trend will probably continue. The index of steel output,[6] table 86, increased 51.8 percent from 1947 to 1966, equivalent to an average annual rate of 1.3 percent and 15 percent from 1957 to 1966, equivalent to an average annual rate of 3.4 percent.

During the same period the index of steel output per all employee man-hours, increased at an average annual rate of 1.7 percent from 1947 to 1966, and 2.8 percent from 1957 to 1966. Table K–1 [7] presents the index of man-hours for all employees, production workers, and nonproduction workers, as well as steel output. The index of output per man-hour is derived by dividing the index of steel output by the index of man-hours.

The improved performance per all employee man-hours in the period 1957–66 over 1947–66 primarily reflected the increase in tonnage produced that occurred in 1963 and thereafter. Steel output per production worker man-hour increased at an average annual rate of 2.2

[4] BLS Report No. 310, Labor Productivity of the Steel Industry in the United States July 1966.

[5] Ibid, pp. 31–32.

[6] Output indexes for the steel industry, as developed by the Bureau of Labor Statistics, are based on: (1) the physical output of pig iron, ferro alloys, ingots and steel for castings, and coke; and (2) the shipments of semifinished steel products. The output data used for constructing the indexes are from published annual reports of the AISI with the exception of the data on coke production which are published by the Bureau of Mines, U.S. Department of the Interior.

In constructing the output measures, 1947 relative man-hour weights were used for combining output data for the period 1947–57. For the 1957–66 period, 1961 relative man-hour weights were used. For a more detailed description of the methodology employed, see BLS Report No. 310, pp. 29–36.

[7] See appendix for all tables prefaced by letter.

TABLE 85.—*Raw steel production and employment in the steel industry (1947–66)*

[Raw steel in millions of net tons, employment in thousands]

Year	Raw steel production	All employees	Production workers	Nonproduction workers
1966	134.1	651.2	530.6	120.6
1965	131.5	660.4	541.1	119.3
1964	127.1	629.4	515.8	113.6
1963	109.3	589.9	479.1	110.8
1962	98.3	592.8	476.3	116.5
1961	98.0	595.5	478.4	117.1
1960	99.3	651.4	528.4	123.0
1959	93.4	587.3	470.9	116.4
1958	85.3	601.1	486.5	114.6
1957	112.7	719.9	600.1	119.8
1956	115.2	706.6	595.4	111.2
1955	117.0	706.9	604.5	102.4
1954	88.3	645.5	546.1	99.4
1953	111.6	726.1	620.4	105.7
1952	93.2	638.0	541.5	96.5
1951	105.2	714.4	620.2	94.2
1950	96.8	674.4	586.8	87.6
1949	78.0	610.1	526.8	83.3
1948	88.6	678.6	593.9	84.7
1947	84.9	655.8	575.0	80.8
Percent change:				
1947–66	57.9	−.7	−7.7	49.3
1957–66	19.0	−9.6	−11.6	.7

Source: Raw steel production, AISI annual statistical reports.

Number of employees, U.S. Department of Labor, Bureau of Labor Statistics.

TABLE 86.—*U.S. steel industry: Indexes of steel output, steel output per all employee man-hours and steel output per production worker man-hour, 1947–66*

[Index, 1957–59 = 100]

Years	Steel output	Steel output per all employee man-hours	Steel output per production worker man-hour	Steel output per nonproduction worker man-hour
1966	132.1	124.2	123.1	129.0
1965	131.3	121.5	119.7	130.0
1964	120.7	116.6	114.7	125.1
1963	106.3	111.8	111.5	112.8
1962	100.2	106.9	108.4	101.2
1961	95.2	101.7	103.3	95.5
1960	99.5	98.6	99.6	94.8
1959	99.3	105.0	106.2	99.8
1958	85.8	93.5	95.0	87.6
1957	114.8	101.1	98.8	112.0
1956	119.0	103.7	99.7	125.1
1957	120.9	105.2	99.8	138.0
1954	91.7	92.6	89.7	107.9
1953	114.5	97.0	92.0	126.5
1952	97.5	95.0	90.9	117.9
1951	110.6	94.4	88.1	136.7
1950	101.7	93.9	87.7	135.1
1949	80.5	85.3	80.8	112.3
1948	91.6	84.8	78.8	125.5
1947	87.0	84.3	78.4	124.8
Average annual rate of change in percent: [1]				
1947–66	1.3	1.7	2.2	−.6
1957–66	3.4	2.8	2.7	3.5

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

percent from 1947 to 1966, and 2.7 percent from 1957 to 1966. Steel output per nonproduction worker man-hour decreased at an annual average rate of 0.6 percent from 1947 to 1966 and increased by 3.5 percent from 1957 to 1966.

Steel output per man-hour is greatly influenced by capital outlays resulting in new technology, by improved managerial skills, by improved labor skills and most of all, by changes in use of capacity. Whenever large annual increases in output per man-hour occur, such as from 1963 to 1964 and 1964 to 1965, the major cause may be found in the large increases in steel output. Small changes in output per man-hour reflect small changes in the volume of output.

The major effect on steel output per man-hour occurs during periods when the use of capacity increases from a low level, for example, 50 percent to a higher level of 90 percent, such as during the early stages of a cyclical upswing. As the use of capacity increases above 90 percent and as new capacity is brought on stream, the effect of increases in tonnage output on steel output per man-hour may vary anywhere from negative to less than proportional to increases in tonnage output.

As a criterion of cost trends, a factor even more important than output per man-hour is the labor cost per unit of output which is compensation per man-hour divided by output per man-hour. If compensation per man-hour, as shown in tables 87 and K-2 rises more rapidly than output per man-hour, then unit labor costs will rise and tend to increase the cost of output. Table K-2 presents compensation per man-hour, output per man-hour and the resultant unit labor cost. From 1947 to 1966 compensation per man-hour increased by 181.8 percent, equivalent to an average annual increase of 5.7 percent and from 1957 to 1966 the increase was 38.9 percent, equivalent to an average annual increase of 3.4 percent. As mentioned above, output per man-hour increased during the same periods, 1947-66 and 1957-66, at average annual rates of 1.7 percent and 2.8 percent, respectively. A summary of this analysis follows:

U.S. steel industry, unit labor cost

[Index, 1957-59=100]

Year	Compensation per man-hour	Output per man-hour	Unit labor cost
1966	129.9	124.2	104.6
1957	93.5	101.1	92.5
1947	46.1	84.3	54.7
Average annual rate of change in percent:			
1947-66	5.7	1.7	3.9
1957-66	3.4	2.8	.6

The more rapid increase in compensation per man-hour over output per man-hour, especially from 1947 to 1956, resulted in an increase in unit labor costs of 91.2 percent from 1947 to 1966, equivalent to an average annual increase of 3.9 percent. The period 1957-66 provided a closer relationship between compensation per man-hour and output per man-hour, with the former rising by 38.9 percent, and the latter by 23 percent, resulting in an increase in unit labor costs of 13.1 percent, equivalent to an average annual increase of 0.6 percent.

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This relatively small increase in unit labor costs played no small part in contributing to price stability in the iron and steel industry, especially since 1958.

TABLE 87.—*Total employment cost per hour, wage employees, 1946–66*

	Pay for hours worked [1]	Total payroll cost per hour [2]	Total employment cost per hour [3]
Year:			
1966	3.64	4.02	4.63
1965	3.54	3.83	4.48
1964	3.43	3.70	4.36
1963	3.39	3.67	4.25
1962	3.33	3.62	4.16
1961	3.24	3.50	3.99
1960	3.09	3.35	3.82
1959	3.14	3.42	3.80
1958	2.93	3.18	3.51
1957	2.73	2.92	3.22
1956	2.54	2.70	2.95
1955	2.38	2.51	2.72
1954	2.19	2.33	2.51
1953	2.15	2.27	2.44
1952	2.04	2.15	2.32
1951	1.87	1.95	2.11
1950	1.68	1.75	1.91
1949	1.63	1.70	1.75
1948	1.57	1.63	1.68
1947	1.46	1.51	1.56
1946	1.28	1.35	1.40

[1] Includes regular and premium time, but excludes fringe benefits.
[2] Includes pay for hours worked and holidays, vacations, and adjustments.
[3] Includes total payroll cost per hour plus employee benefits.

Source: AISI annual statistical reports 1946–66.

Table 88 presents a comparison of changes in the price indexes of finished steel mill products and unit labor costs. The price of finished steel mill products increased by 114.5 percent from 1947 to 1966, while unit labor costs were increasing by 91.2 percent. From 1957 to 1966 finished steel mill products prices increased by 7.7 percent and unit labor costs increased by 13.1 percent.

To clarify the meaning of changes in output per man-hour, the reciprocals of the output per man-hour measures, unit labor requirements, are presented in table K–3. Unit labor requirements reflect the change in units of labor required for each unit of output. Units of labor required for each unit of output declined from 1947 to 1966 at an average annual rate of 1.7 percent, and from 1957 to 1966 the decline was at a rate of 2.8 percent. Unit labor requirements are further defined in terms of production and nonproduction workers in table K–3.

Another useful measurement of labor productivity trends in the steel industry is shown in table K–8, which presents net tons of shipments and raw steel production per 1,000 man-hours worked. Between 1947 and 1966 net tons of shipments per 1,000 man-hours worked increased by 44.6 percent and net tons of raw steel production per 1,000 man-hours worked increased by 60.1 percent. Table K–4 utilizes industry production statistics and AISI hourly statistics that deviate slightly from total hours worked by all members of the industry.

TABLE 88.—*U.S. steel industry: Wholesale price indexes of finished steel mill products and unit labor costs*

	Finished steel mill products	Unit labor costs		Finished steel mill products	Unit labor costs
1966	104.7	104.6	1954	78.2	80.8
1965	103.3	103.7	1953	75.0	74.9
1964	102.8	106.0	1952	69.7	71.5
1963	102.0	107.3	1951	68.2	67.6
1962	101.4	109.5	1950	63.1	61.3
1961	101.7	111.1	1949	60.1	63.0
1960	102.1	110.3	1948	55.5	59.5
1959	102.3	102.3	1947	48.8	54.7
1958	100.6	107.6	Percent change:		
1957	97.2	92.5	1947–66	114.5	91.2
1956	88.8	83.9	1957–66	7.7	13.1
1955	81.9	76.8			

Source: Table I-5 and U.S. Department of Labor, Bureau of Labor Statistics.

Even though the steel industry has shown increases in output, output per man-hour and relative stability in unit labor costs since 1958, it has lagged behind all U.S. manufacturing industries. Table K-5 compares the index of the steel industry with the index of U.S. manufacturing industries in the categories of output, total compensation per man-hour, output per man-hour, and unit labor costs. A summary of this data, including percent changes and the average annual rates of change, is presented below:

[Indexes, 1957–59=100]

Year	Output		Total compensation per man-hour		Output per man-hour		Unit labor costs	
	Total manufacturing	Steel industry	Total manufacturing	Steel industry	Total manufacturing	Steel industry	Total manufacturing	Steel industry
1966	153.3	132.1	135.5	129.9	130.8	124.2	103.6	104.6
1957	101.7	114.8	95.8	93.5	98.2	101.1	97.6	92.5
1947	69.3	87.0	52.5	46.1	72.3	84.3	72.6	54.7
Percent change:								
1947–66	121.2	51.8	158.1	181.8	80.9	47.3	42.7	91.2
1977–66	50.7	15.1	41.4	38.9	33.2	22.8	61.	13.1
Average annual rate of change in percent:								
1947–66	3.6	1.3	5.0	5.7	2.9	1.7	2.0	3.0
1957–66	5.2	3.4	3.8	3.4	3.6	2.8	.2	.6

During the entire period summarized above, total compensation per man-hour had increased less rapidly in all U.S. manufacturing industries than in the steel industry, but output per man-hour had increased more rapidly in all manufacturing than in the steel industry. As a result, unit labor costs rose more rapidly in the steel industry than in the manufacturing industries. A major cause of the better output per man-hour performance in all manufacturing was due to the faster and more consistent rise in output. From 1947 to 1966 all manufacturing output was increasing 121.2 percent, equivalent to an average annual rate of 3.6 percent, compared with an increase in steel output for the same period of only 51.8 percent, or at an average annual rate of only 1.3 percent. From 1957 to 1966 all manufacturing output increased by 50.7 percent, equivalent to an average annual rate increase of 5.2 percent, compared with the steel industry's increase of only 15.1 percent, or at an average annual rate increase of 3.4 percent.

The steel industry's failure to keep pace with all manufacturing in output and output per man-hour increases, combined with having to pay higher compensation per man-hour, resulted in higher unit labor costs for the steel industry. The industry tried to offset this profit squeeze by raising prices, especially before 1958 when the invasion by substitutes and imports had not yet been fully recognized. Even so, it failed to maintain its profit margins.

Table 89 compares the steel industry's output per man-hour and compensation per man-hour with the total private nonfarm economy, as well as with total manufacturing. Increases in output per man-hour in the steel industry also lagged behind the total private nonfarm economy although the differential is not quite as great as steel compared to all manufacturing. Compensation per man-hour increased more rapidly in the steel industry for the entire period, 1947 to 1966, than in the total private nonfarm economy. But in the last half of the period, from 1957 to 1966, the increase in compensation per man-hour was actually slightly higher in the total private nonfarm economy than the steel industry because of the more rapid rise of wages and salaries in the nonmanufacturing industries. This resulted in higher unit labor costs for the total private nonfarm economy than in either

TABLE 89.—*U.S. total manufacturing versus steel industry output, total compensation per man-hour, output per man-hour, and unit labor costs, 1947–66*

[Indexes, 1957–59=100]

Year	Output		Total compensation per man-hour [1]		Output per man-hour [2]		Unit labor costs [3]	
	Total manufacturing	Steel industry	Total manufacturing	Steel industry	Total manufacturing	Steel industry	Total manufacturing	Steel industry
1966	153.3	132.1	135.5	129.9	130.8	124.2	103.6	104.6
1965	142.5	131.3	129.1	125.9	128.7	121.5	100.3	103.7
1964	131.1	120.7	126.0	123.6	124.6	116.6	101.1	106.0
1963	122.7	106.3	120.3	120.0	118.9	111.8	101.2	107.3
1962	116.8	100.2	116.5	117.1	114.3	106.9	102.0	109.5
1961	106.0	95.2	111.9	113.0	107.9	101.7	103.7	111.1
1960	106.4	99.5	108.5	108.7	105.5	98.6	102.9	110.3
1959	104.9	99.3	104.2	107.4	103.7	105.0	100.6	102.3
1958	93.4	85.8	100.0	100.5	98.1	93.5	101.9	107.6
1957	101.7	114.8	95.8	93.5	98.2	101.1	97.6	92.5
1956	101.3	119.0	90.5	86.9	96.2	103.7	94.1	83.9
1955	100.9	120.9	85.0	80.9	97.2	105.2	87.4	76.8
1954	90.3	91.7	81.8	74.8	91.8	92.6	89.1	80.8
1953	97.1	114.5	78.3	72.7	90.2	97.0	86.8	74.9
1952	89.7	97.5	74.2	67.9	87.3	95.0	84.9	71.5
1951	87.8	110.6	69.7	63.8	86.9	94.4	80.2	67.6
1950	79.7	101.7	63.2	57.5	85.0	93.9	74.4	61.3
1949	68.7	80.5	60.3	53.7	79.3	85.3	76.0	63.0
1948	72.7	91.6	57.6	50.5	76.4	84.8	75.4	59.5
1947	69.3	87.0	52.5	46.1	72.3	84.3	72.6	54.7
Average annual rate of change in percent: [4]								
1947–66	3.6	1.3	5.0	5.7	2.9	1.7	2.0	3.9
1957–66	5.2	3.4	3.8	3.4	3.6	2.8	.2	.6

[1] Includes estimated proprietors' labor income.
[2] Output per man-hour=output divided by man-hours.
[3] Unit labor cost=total compensation per man-hour divided by output per man-hour.
[4] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

total manufacturing or the steel industry, as shown on table K-6. But unlike in the steel industry, the higher unit labor costs were passed on by the total private nonfarm economy by raising of prices in the nonmanufacturing sector as shown in table K-6.

The matrixes tabulated in the appendix provide the fundamental year-to-year percentage changes in steel industry output, output per worker, output per man-hour, compensation per man-hour, and the end result: unit labor costs. The latter have not been, and are not expected to be, published by BLS, but they were supplied for this study.

The reason why these matrixes are of great importance may be illustrated by table 89, which shows, for the period 1957-66, unit labor costs in total manufacturing rose by two-tenths of 1 percent annually compared to six-tenths of 1 percent for the steel industry. If, instead of the 1957-66 period, the period 1961-66 would have been chosen, the results would have been quite different.

1961-66

	Total manufacturing (percent)	Steel industry (percent)
Output per man-hour	4.0	4.2
Compensation per man-hour	3.8	2.7
Unit labor cost	-.2	-1.4

For the period 1961-66 the results are reversed compared to the 1957-66 period. Unit labor costs fell for both total manufacturing and for steel, and for steel they fell seven times as much. The reasons were that for the steel industry with its high fixed costs, the business upturn, and the resulting higher rate of use of capacity, increased productivity more sharply than for total manufacturing. Furthermore, there was more of a shift in the ratio of production workers to nonproduction workers, and finally, due to the obvious competition from imports and substitutes, compensation per man-hour during the 1961-66 period in the steel industry advanced less than in total manufacturing. Conversely, any reduction in output of the steel industry, whether caused by a domestic recession, by imports, or by substitutes, is bound to substantially depress productivity and thereby raise unit labor costs. This happened during the first half of 1967, when profits declined by 28 percent.

The steel industry has invested heavily in technological change, but the improvements in output per man-hour have yet to outpace compensation per man-hour. This challenge facing the industry was well outlined by Dr. Ewan Clague in his concluding statements to the AISI on May 25, 1967:[1]

> In conclusion, I do not think that the next 5 years are going to be easy ones for the U.S. steel industry. Further technological progress is needed to widen the productivity differential until it balances the wage differential. That progress will have to take place in an economy that at present is not the most favorable for that purpose. I wish you every success in your efforts to meet the challenge.

[1] Dr. Ewan Clague, "Economic Trends and Collective Bargaining," presented at the 75th General Meeting of the AISI at New York, May 25, 1967.

Capital Productivity and the U.S. Steel Industry

Increases in productivity result in greater output per unit of resources employed. Productivity increases make available more goods and services for either present consumption or future consumption in terms of additions to the nation's capital structure. Changes in productivity influence almost all aspects of the nation's economy: the return to the factors of production, including the profitability of business enterprise; the level of employment; the cost of production; the availability of investment funds; the ability to effectively compete with foreign producers; the ability to invest in research and development programs and others.

The steel industry in the United States has experienced productivity improvements throughout the post World War II period. However, the steel industry has lagged behind all manufacturing and all industries. The results are approximately the same when measuring productivity changes in terms of output per man-hour or the ratio of steel output to capital input.

First part of this chapter presented changes in productivity as measured in terms of steel output per unit of total man-hour input. Measures of productivity change must include each of the factors of production (inputs) including the use of natural resources, capital, management, and labor. In addition to the changes in the productivity of these inputs, another important and often overriding factor is the rate of capacity utilization which reflects changes in demand for steel. Increases in the use of capacity, within certain ranges up to approximately 90 percent, result in improved productivity performance, while capacity utilization above 90 percent will decrease productivity because of bringing into use less efficient facilities. Such changes in the volume of output in the short run particularly affect output per man-hour.

Aside from the cyclical changes in the use of capacity, a significant long-term contribution influencing capital productivity in the U.S. steel industry is the recent substantial capital investment in new technology. The steel industry per annum capital investment, which reached approximately $2 billion in both 1965 and 1966, promises to continue at least at that rate for the next 5 to 7 years. The industry apparently has decided that these expenditures are essential in order to realize the cost savings required to remain competitive. At least two-thirds of the steel industry's planned capital spending is directed toward replacement and modernization, compared with less than 55 percent for all manufacturing.[1]

The record of productivity changes in certain specific installations such at the blast furnace during the period 1946–66, testifies to the progress made by constant experimentations with new technology. The industry has made significant capital outlays in almost all aspects of steelmaking from the extraction of raw materials to finding new uses for finished products.

The steel industry's investment for beneficiation facilities has made it possible to use low-grade mesabi ores and has succeeded in reducing the blast furnace burden per ton of ore produced. Blast furnace

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[1] U.S. Department of Labor, Bureau of Labor Statistics, BLS Reports No. 310, "Labor Productivity of the Steel Industry in the U.S." p. 28, July 1966.

efficiency has also been improved by the increased use of agglomerated products such as sinter, that contain a high content of iron and by the expanded injection of coal, oil, and natural gas into the furnace. These factors plus oxygen enrichment of the blast has lowered costs through increased hot metal production per ton of raw material used. Table 90 shows the changing composition of raw materials used in the blast furnace.

TABLE 90.—*U.S. steel industry—Changing composition of iron ore burden, coke, and flux used in the blast furnace per ton of hot metal produced, 1946–66*

[Pounds per ton of hot metal]

	Iron ore	Coke rate	Limestone and dolomite
1966	3,072	1,322	536
1965	3,028	1,312	558
1964	3,062	1,310	548
1963	3,060	1,338	568
1962	3,114	1,380	564
1961	3,154	1,416	602
1960	3,146	1,498	606
1959	3,176	1,570	628
1958	3,206	1,598	658
1957	3,284	1,684	710
1956	3,260	1,700	732
1955	3,324	1,746	778
1954	3,312	1,746	790
1953	3,382	1,812	836
1952	3,420	1,844	852
1951	3,450	1,848	864
1950	3,474	1,844	858
1949	3,506	1,870	856
1948	3,534	1,908	880
1947	3,496	1,900	824
1946	3,450	1,868	812
1966 as a percent of 1946	89.0	70.8	66.0
1966 as a percent of 1957	93.5	78.5	75.5

Source: AISI annual statistical reports, 1946–66.

In 1966 iron ore requirements in the blast furnace were 89 percent of 1946, coke requirements in 1966 were 70.8 percent of 1946 and flux (limestone and dolomite) 1966 requirements were 66 percent of 1946.

Combining the improved thermal efficiency with larger hearth areas and other technological changes in the blast furnace, has resulted in an almost doubling of hot metal production per blast furnace day as shown in table 91. The large capital expenditure program directed toward greater hot metal production efficiency has reduced the cost of producing a ton of hot metal by as much as $5.

In recent years (1962–67) steel industry capital spending to a large degree has been directed toward the conversion process of hot metal to steel. Basic oxygen furnaces accounted for 25.3 percent of raw steel production in 1966, compared to 5.6 percent in 1962, as shown in table 92. The rush in recent years to make steel by this method has been necessitated by the state of competition, both domestic and foreign. The basic oxygen process lowers the cost of production from $5 to $7 a ton and capital costs are approximately one-half that of the conventional open hearth furnace; namely, $18 million versus $35 million. (Capital costs are also slightly lower than electric furnaces.)

Continuous casting is receiving increased attention by U.S. steelmakers but many of its technical as well as economic problems remain to be solved. The continuous casting process permits the exclusion of the ingot stage in steel production, thereby reducing capital costs and permitting lower operating costs by as much as $4 a ton. In 1966 continuous casting accounted for as yet only 1 percent of the steel processed but may account for 25 percent by the middle 1970's.

Hot rolling, cold rolling and finishing mills have received a substantial share of attention and capital outlays in the 1946–66 period. Capital expenditures in the rolling mills have provided the introduction of process computers and other instrumentation, wider and faster mills and other changes directed primarily toward quality improvement rather than toward cost savings, although estimates of cost savings from installation of the most modern rolling mills range as high as $6 a ton.

However favorable these results from capital expenditures, the overall industry record of productivity appears to have been increasingly lagging behind all manufacturing and has caused an increase in the capital output ratio as discussed below.

TABLE 91.—*U.S. steel industry—Hot metal production per blast-furnace-day, 1946–66*

Tons per blast-furnace-day:	
1966	1,489
1965	1,436
1964	1,443
1963	1,427
1962	1,349
1961	1,305
1960	1,182
1959	1,091
1958	1,066
1957	982
1956	958
1955	937
1954	931
1953	919
1952	867
1951	864
1950	848
1949	811
1948	786
1947	774
1946	753
1966 as a percent of 1946	197.7
1966 as a percent of 1957	139.7

Source: AISI annual statistical report, 1946–66.

TABLE 92.—*U.S. steel industry—BOF production, 1955–66*

Year	Production (millions of tons)		BOF as percent of total
	BOF	Total	
1966	33.93	134.10	25.3
1965	22.88	131.46	17.4
1964	15.44	126.93	12.2
1963	8.54	109.26	7.8
1962	5.55	98.33	5.6
1961	3.97	98.01	4.1
1960	3.35	99.28	3.4
1959	1.86	93.45	2.0
1958	1.32	85.26	1.5
1957	.61	112.72	.1
1956	.51	115.22	
1955	.31	117.04	

Source: AISI Annual Statistical Reports, 1959–66.

TABLE 93.—*Capital-output ratio of U.S. steel industry,*[1] *1947–66*

Year	Amount (billions of 1958 dollars)		Dollars of undepreciated plant and equipment per dollar of value added
	Undepreciated plant and equipment [2]	Value added [3]	
1966	23.4	9.3	2.52
1965	22.2	8.9	2.49
1964	20.9	8.4	2.49
1963	19.6	7.7	2.55
1962	19.1	7.2	2.65
1961	18.6	7.4	2.51
1960	17.9	7.7	2.32
1959	16.7	7.5	2.23
1958	16.2	7.2	2.25
1957	15.5	9.3	1.67
1956	14.6	9.8	1.49
1955	14.3	10.0	1.43
1954	13.9	8.0	1.74
1953	13.4	10.6	1.26
1952	12.7	8.7	1.46
1951	11.2	10.3	1.09
1950	10.8	8.7	1.24
1959	10.2	7.1	1.44
1948	10.1	8.4	1.20
1947	10.1	8.0	1.26

[1] AISI Annual Statistical Reports. Data covers the consolidated statements including all the affiliated interests (fabrication, transportation, shipbuilding, cement, etc.) of the parent companies submitting AISI-11 reports, and representing 90.9 to 95.2 percent of total industry raw steel production.
[2] See note following table J-5 for explanation of undepreciated plant and equipment.
[3] Value added equals net billing value of products shipped and other services less purchased materials, supplies, freight and other services, etc.

The capital-output ratio, or the reciprocal of the capital-productivity ratio (capital employed in terms of plant and equipment divided by value added) of the U.S. steel industry has risen throughout the post World War II period, as shown in table 93. The dollars of gross (undepreciated) plant and equipment owned by the industry per dollar of value added in 1947 was 1.26. By 1957 the industry owned $1.67 of gross plant and equipment per dollar of value added, an increase of 32.5 percent over 1947. In 1966 the dollars of gross plant and equipment per dollar of output had increased to 2.52, or 50.9 percent higher than 1957 and 100.0 percent higher than 1947. During the same period value added, in billions of 1958 dollars increased 15.0 percent from 1947 to 1966 and did not change from 1957 to 1966. The increase in the capital output ratio would be even larger if replacement costs of plant and equipment would have been used in the calculation of the ratio instead of book values adjusted by the implicit price deflator of producers durable equipment. Between 1955 and 1967 undepreciated plant and equipment had increased from $12.3 billions to $24.7 billions. This increase reflects in part the expansion of plant and equipment and in part the replacement of existing facilities at higher prices. In calculating plant and equipment in terms of constant 1958 dollars, table 94, only the producers durable goods price deflator was used instead of using both it and the price deflator for nonresidential structures. The reason for ignoring structures in this calculation is because of the substantially greater capital outlays on equipment rather than structures. (See note following table 94.) Construction cost indexes for 1966 show an advance to 421.8 compared with 100 in 1940 while the producer durable index was 243.1 in 1966. If a combination of both indexes would have been used in table 94, then the constant dollar plant and equipment series would have been slightly lower for 1966. This in turn would have lowered somewhat the rate of increase in the capital-output ratio. A summary of the trend of the capital-output ratio, 1947–66 follows:

Capital-output ratio, U.S. steel industry

	Undepreciated plant and equipment	Value added	Dollars of undepreciated plant and equipment per dollar of value added
Calculated in 1958 dollars:			
1966	23.4 billions	9.3 billions	2.52.
1957	15.5 billions	9.3 billions	1.67.
1947	10.1 billions	8.0 billions	1.26.
Percent change:			
1947–66	131.7	15.0	100.0.
1957–66	51.0	0	50.9.

TABLE 94.—*U.S. steel industry—Value added and fixed plant and equipment in current and constant dollars*

Year	Value added current dollars	Value added price deflator, 1958=100 [1]	Value added 1958 prices	Fixed plant and equipment (undepreciated)	Implicit price deflator producers durable equipment, 1958=100	Fixed plant and equipment, 1958=100 prices
1966	10.1	[2] 109.2	9.3	24.7	105.5	23.4
1965	9.7	108.7	8.9	23.0	103.8	22.2
1964	9.1	108.2	8.4	21.5	103.1	20.9
1963	8.3	107.2	7.7	20.1	102.3	19.6
1962	7.7	106.4	7.2	19.5	102.3	19.1
1961	7.6	103.3	7.4	19.0	102.1	18.6
1960	8.0	104.5	7.7	18.3	102.2	17.9
1959	7.6	102.0	7.5	17.0	102.0	16.7
1958	7.2	100.0	7.2	16.2	100.0	16.2
1957	8.7	93.8	9.3	15.1	97.5	15.5
1956	8.2	83.3	9.8	13.4	91.8	14.6
1955	7.8	78.1	10.0	12.3	85.9	14.3
1954	6.0	75.4	8.0	11.7	84.0	13.9
1953	7.0	66.1	10.6	11.2	83.5	13.4
1952	5.4	61.9	8.7	10.4	82.2	12.7
1951	6.3	60.9	10.3	9.1	80.9	11.2
1950	5.1	58.4	8.7	8.1	75.2	10.8
1949	3.9	55.3	7.1	7.5	73.6	10.2
1948	4.1	48.7	8.4	7.1	70.3	10.1
1947	3.5	43.7	8.0	6.5	64.6	10.1

[1] Deflators for value added were based essentially on census data as published in the census of manufacturing annual survey.
[2] Estimate.

NOTE.—The calculations of the capital output ratio for the steel industry are admittedly primitive because the fixed plant and equipment values largely reflect investment made in prior years while the implicit price deflator is a current one for each year. But the trend still yields evidence to the effect that the capital output ratio in the steel industry has been rising in spite of the much publicized capital savings resulting from the installation of basic oxygen furnaces and other capital saving equipment. The explanation lies in the recent large investment in quality improving finishing facilities.

Source: AISI Annual Statistical Reports, 1947–66, Department of Commerce, Office of Business Economics.

This evidence is remarkable because it is contrary to the apparent savings in the capital cost of the new technology as discussed above. Evidently competition has forced the steel industry to invest more in facilities for quality improvement rather than achieving savings in capital costs.

It is clearly evident that the increase in value added by the steel industry failed to keep pace with capital expenditures, resulting in a higher capital-output ratio. Furthermore, there is reason to believe that the $2 billion-plus increase in capital investment over the next few years would only result in a higher capital output ratio unless value added would increase more than its recent long term upward trend.

It must be pointed out that this long term upward trend of the ratio has been interrupted .in some years as a result of swings in steel demand caused by the cyclical fluctuations of the economy. For example, the capital-output ratio in 1955 declined to 1.43 from the 1954 level of 1.74. This change was the result of a record production year of such magnitude that it was not to be surpassed until 1964.

While the steel industry was experiencing a long run upward trend of its capital-output ratio, U.S. manufacturing firms were experiencing an improved capital-output ratio. This performance which appears on table 95 is summarized as follows:

Capital-output ratio, all manufacturing industries

Year	Undepreciated plant and equipment	Value added by total manufacturing	Dollars of undepreciated plant and equipment per dollar of value added
Calculated in 1958 dollars:			
1965	161,800,000,000	188,700,000,000	0.86
1957	137,000,000,000	134,600,000,000	1.02
1947	87,600,000,000	91,800,000,000	.95
Percent change:			
1947–65	84.7	105.5	−9.5
1957–65	18.1	40.1	−15.7

As the above summary indicates all manufacturing owned $0.86 of gross (undepreciated) plant and equipment per dollar of value added in 1965 compared with $1.02 in 1957 and $0.95 in 1947. Unlike the steel industry, the capital-output ratio of all manufacturing has been declining. Similar to the steel industry year-to-year changes in all manufacturing's capital-output ratio is influenced by fluctuations of the business cycle, with better performances occurring during relatively high capacity usage.

A summary of this widening differential between the capital output ratio of the steel industry and of all manufacturing is provided by exclusion of the .ingot stage in steel production, thereby reducing table 96.[2] It indicates one of the reasons for the relative lag of steel industry profits as compared to the profits of all manufacturing industries. The relative decline of the return on net worth is a direct consequence of the increase in the capital-output ratio. The decline in the ratio of net profit on sales resulted from the higher fixed charges, especially depreciation on the increased plant and equipment, as shown in table 96.

The U.S steel industry's investment expenditure program in so far as it has been directed toward cost reduction, has resulted in reducing unit labor requirements necessary to produce a ton of output. Therefore, one method of measruing the long range effects of the investment program is to compare the output per employee over the period 1947–

[2] The calculations of the capital-output ratios are admittedly primitive. In addition the capital-output as calculated for the steel industry is not entirely comparable with total manufacturing because of the different methods employed in arriving at undepreciated plant and equipment and value added data.

66. In 1947 raw steel output per employee was 129.5 tons, and in 1966 it had increased to 205.9 tons, or a significant improvement of 59 percent. This increase in productivity enabled the industry in 1966 to produce almost 60 percent more output than in 1947, with approximately the same number of employees.

This trend toward a more highly capital intensive steel industry is clearly documented in chapter VIII. Table 97 presents the average number of employees reported by the AISI, gross plant and equipment employed and the dollar of fixed assets required per employee from 1947 to 1966. The $42,900 of fixed assets per employee in 1966 represents an increase of 77.3 percent over 1957 and an increase of 279.6 percent over 1947. The dollars of fixed assets installed per employee in the U.S. steel industry represents one of the highest ratios in the U.S. economy; the $42,900 per employee in 1966 is approximately three times greater than the fixed assets employed per worker for the total U.S. labor force.

TABLE 95.—*Capital-output ratio of U.S. manufacturing firms, 1947–66*

Year	Amount (billions of 1958 dollars)		Dollars of undepreciated plant and equipment per dollar of value added
	Undepreciated plant and equipment	Value added of total manufacturing industries	
1965	161.8	188.7	0.86
1964	156.3	173.6	.90
1963	151.9	162.4	.94
1962	149.0	154.6	.96
1961	146.5	140.4	1.04
1960	144.6	140.9	1.03
1959	141.8	138.9	1.02
1958	140.0	123.7	1.13
1957	137.0	134.6	1.02
1956	131.0	134.1	.98
1955	124.8	133.6	.93
1954	120.6	119.5	1.01
1953	116.0	128.6	.90
1952	113.3	118.7	.95
1951	106.3	116.2	.91
1950	100.9	105.5	.96
1949	97.7	90.9	1.07
1948	93.8	96.3	.97
1947	87.6	91.8	.95

Source: U.S. Department of Commerce, Office of Business Economics, Summary of Current Business, February and April Nos. 1967.

TABLE 96.—*U.S. manufacturing firms and U.S. steel industry capital-output ratios, 1947–66*

[In constant 1958 dollars]

Year	All manufacturing	Steel industry	Dollar difference in undepreciated plant and equipment employed in steel versus all manufacturing per dollar of value added
1966	....	2.52	....
1965	0.86	2.49	1.63
1964	.90	2.49	1.59
1963	.94	2.55	1.61
1962	.96	2.65	1.69
1961	1.04	2.51	1.47
1960	1.03	2.32	1.29
1959	1.02	2.23	1.19
1958	1.13	2.25	1.12
1957	1.02	1.67	.65
1956	.98	1.49	.51
1955	.93	1.43	.50
1954	1.01	1.74	.73
1953	.90	1.26	.36
1952	.95	1.46	.51
1951	.91	1.09	.18
1950	.96	1.24	.28
1949	1.07	1.44	.37
1948	.97	1.20	.23
1947	.95	1.26	.31

Source: Tables J-4 and J-6.

TABLE 97.—*U.S. steel industry—Dollars of fixed assets required per employee, 1947–66*

Year	Number of employees	Fixed assets gross plant and equipment	Dollars of fixed assets per employee
	Thousands	*Billions*	*Thousands*
1966	575.5	$24.7	$42.9
1965	583.9	23.0	39.4
1964	553.6	21.5	38.8
1963	520.3	20.1	38.6
1962	520.5	19.5	37.5
1961	523.3	19.0	36.3
1960	571.6	18.3	32.0
1959	515.1	17.0	33.0
1958	523.5	16.2	30.9
1957	623.8	15.1	24.2
1956	620.7	13.4	21.6
1955	624.8	12.3	19.7
1954	581.9	11.7	20.1
1953	650.2	11.2	17.2
1952	621.9	10.4	16.7
1951	638.3	9.1	14.3
1950	592.3	8.1	13.7
1949	580.8	7.5	12.9
1948	591.5	7.1	12.0
1947	573.7	6.5	11.3
Percent change:			
1947–66	0.3	280.0	279.6
1957–66	10.0	63.6	77.3

NOTE.—The number of employees used in the above calculations cover only those engaged in the production and sale of iron and steel products as reported to the AISI on AIS-1 and do not conform to the number reported by the BLS under SIC 331.

Source: AISI annual statistical reports. Data covers the consolidated statements including all the affiliated and interests (fabrication, transportation, shipbuilding, cement, etc.) of the parent companies submitting AISI-11 reports and representing 90.9 to 95.2 percent of total industry raw steel production.

CHAPTER XII

INTERNATIONAL COMPARISONS OF STEEL INDUSTRY LABOR COSTS

Using the traditional method of dividing costs into labor, raw materials, and overhead, the United States has the lowest cost in the world for coking coal and electric power, and in most cases, for iron ore. On the other hand, labor costs per man-hour are the highest in the world and they are also reflected in the construction cost of building steel plants and producing and installing steelmaking equipment. High investment costs of steel plants and equipment in turn is reflected in high depreciation charges. Until recently, fixed overhead costs for interest on debt was lower in the United States because of a generally lower ratio of debt to equity financing, and because lower interest rates had been available in the U.S. capital market than in Europe or Japan. But in 1966 and 1967 interest rates in this country have reached the highest level in 40 years, while certain foreign steel industries, especially in France, obtained Government loans at about half the interest cost that U.S. steel companies have to pay today on bank loans or bond issues.

Chart 98 and table L-1 [1] compare hourly employment costs for production workers in the U.S. steel industry with those of eight leading foreign steel producing countries, while table 99 shows the disparity between U.S. and foreign hourly employment costs in dollars.

During 1966 the disparity between the United States and the nations listed ranged from $3.53 in Japan to $2.55 in the Netherlands with the remaining five nations fitting in between these two extremes. The rate of increase in each of the nations compared has been greater for the period 1960–64 than the United States, as shown in table 100.

It would be erroneous, however, to conclude that hourly wage costs abroad will soon equal ours. Column 5 of table 100 therefore, has been calculated to demonstrate how many years would have to elapse before the hourly wage costs in each country would reach the then U.S. level, assuming that all increases were to continue at the same rate as during the 1960–64 period.

This calculation demonstrates that the problem of the existing wage differential between foreign and domestic steel producers will not soon vanish. It would take 54 years in Luxembourg, 26 years in Japan, and 39 years in the United Kingdom.

Any international comparison of hourly labor costs, however, has to be matched against international comparisons of labor productivity.

There is not available, at this time, a satisfactory international comparison of labor productivity (unit labor costs) in all major steel-producing countries; the BLS is working on a comparison among the United States, France, Germany, and the United Kingdom, to be

[1] See appendix for all tables prefaced by a letter.

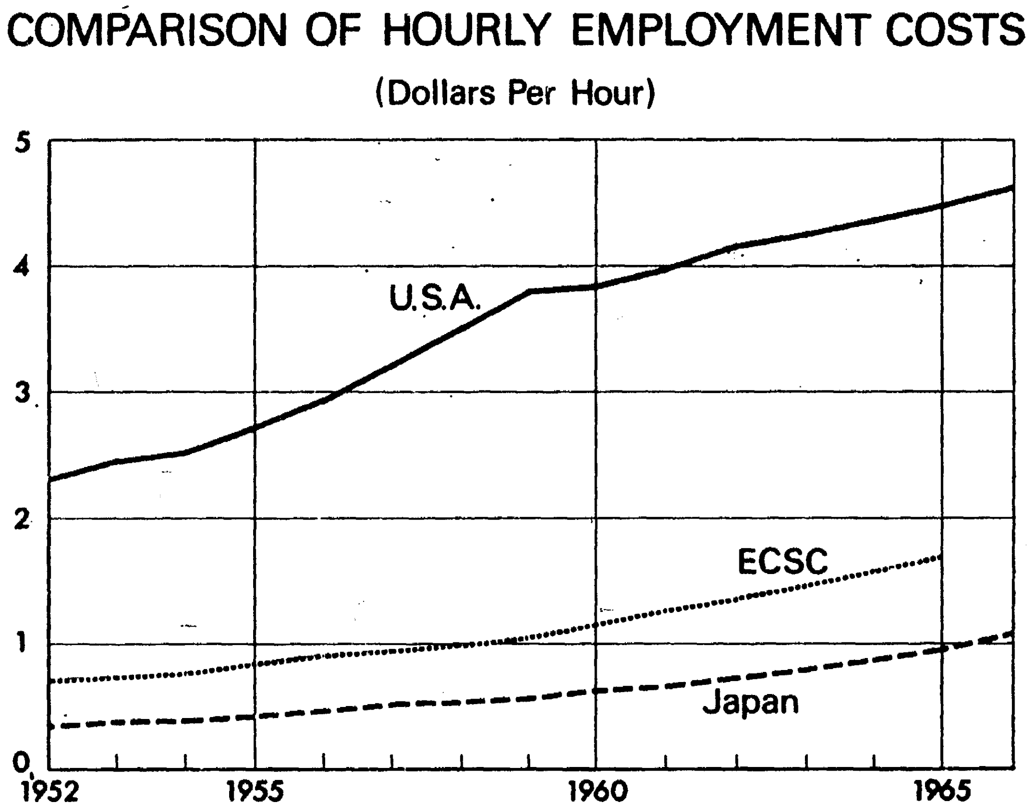

CHART 98

published later. The main difficulty lies in the fact that each country has a different product mix of its output of steelmill products.

In lieu of a fully acceptable comparison of labor productivity trends in the steel industry of the nine countries, there are in charts 101 and 102 a comparison of indexes of productivity and unit labor costs in six countries between 1955 and 1965 for all manufacturing industries. These highlight the steep progress in labor productivity made during this period by Japan. (The data, shown in table L–2, were furnished by BLS.)

TABLE 99.—*Wage Earners: Disparity between hourly employment costs in steel industry in United States vs. selected countries.*

[In U.S. currency]

Year	United States	West Germany	Disparity, United States/West Germany	Belgium	Disparity, United States/Belgium	France	Disparity, United States/France	Italy	Disparity, United States/Italy	Luxembourg	Disparity, United States/Luxembourg	Netherlands	Disparity, United States/Netherlands	Japan [1]	Disparity, United States/Japan [1]
1966	$4.63	$1.87	+$2.76	$1.83	+$2.65	$1.53	+$3.10	$1.76	+$2.87	$1.98	+$2.65	$2.08	+$2.55	$1.10	+$3.53
1965	4.48	1.81	+2.67	1.83	+2.65	1.48	+3.00	1.61	+2.87	1.95	+2.53	1.96	+2.52	.97	+3.51
1964	4.36	1.68	+2.62	1.62	+2.74	1.40	+3.08	1.58	+2.90	1.72	+2.76	1.76	+2.72	.88	+3.48
1963	4.25	1.59	+2.66	1.45	+2.80	1.30	+2.95	1.43	+2.82	1.62	+2.63	1.58	+2.67	.80	+3.45
1962	4.16	1.51	+2.65	1.33	+2.83	1.21	+2.95	1.21	+2.95	1.49	+2.67	1.47	+2.69	.74	+3.42
1961	3.99	1.37	+2.62	1.26	+2.73	1.11	+2.88	1.04	+2.95	1.47	+2.52	1.40	+2.59	.68	+3.31
1960	3.82	1.21	+2.61	1.22	+2.60	.99	+2.83	.98	+2.84	1.41	+2.41	1.08	+2.74	.62	+3.20
1959	3.80	1.12	+2.68	1.13	+2.67	.91	+2.89	.90	+2.90	1.31	+2.49	.95	+2.85	.57	+3.23
1958	3.51	1.06	+2.45	1.00	+2.42	.85	+2.66	.86	+2.65	1.32	+2.19	.94	+2.57	.54	+2.97
1957	3.22	1.01	+2.21	1.08	+2.14	.86	+2.36	.80	+2.42	1.28	+1.94	.90	+2.32	.54	+2.68
1956	2.95	.90	+2.05	.98	+1.97	.96	+1.99	.79	+2.16	1.15	+1.80	.82	+2.13	.48	+2.47
1955	2.72	.83	+1.89	.89	+1.83	.85	+1.87	.70	+2.02	1.02	+1.70	.74	+1.98	.43	+2.29
1954	2.51	.75	+1.76	.83	+1.68	.75	+1.76	.68	+1.83	.95	+1.56	.63	+1.88	.41	+2.10
1953	2.45	.72	+1.73	.81	+1.64	.73	+1.72	.65	+1.80	.95	+1.50	.57	+1.88	.38	+2.07
1952	2.32	.69	+1.63	.82	+1.50	.72	+1.60	.64	+1.68	.98	+1.34	.53	+1.79	.35	+1.97

[1] Revised, American Iron & Steel Institute, June 14, 1967.

Source: European Coal and Steel Community, American Iron & Steel Institute and industry estimates; Iron Age, Apr. 6, 1967.

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TABLE 100.—*Average hourly labor cost and years required to reach the U.S. level if 1960–64 rates of change continue, selected countries* [1]

Country	Hourly labor cost [2] (U.S. dollars [3]) 1960 (1)	Hourly labor cost [2] (U.S. dollars [3]) 1964 (2)	Percent change, 1960–64 (3)	Average annual rate of increase (percent) (4)	Years to catch up (from 1964 [4]) (5)
United States:					
Total cost	3.82	4.36	14.1	3.36	
Direct earnings	3.09	3.43	9.0	2.64	
Austria [5] [6]	.68	.99	45.6	9.84	18
Belgium	1.22	1.62	32.8	7.34	25
France	1.00	1.40	40.0	8.77	21
Germany (Federal Republic)	1.27	1.68	32.2	7.24	25
Italy	.98	1.58	61.2	12.68	11
Japan [6]	.45	.64	41.9	9.10	26
Luxembourg	1.41	1.72	22.0	5.09	54
Netherlands	1.14	1.77	55.3	11.62	11
United Kingdom [6]	1.00	1.23	23.0	5.31	39

[1] Currency revaluations have not been taken into account; the resulting effect is to lower the rate of increase and raise the number of year to "catch up" in Germany and the Netherlands.
[2] Including all supplements, except for Austria, Japan, and the United Kingdom.
[3] Exchange rates: US$1=26 Austrian schillings; 50 FB; 4.9 NF; 4.0 DM; 625 lire; 360 yen; 50 FB (Luxembourg); 3.62 guilders; and 0.375.
[4] $Y_t = Y_o e^{rt}$ where: Y_t=level of earnings at time t; Y_o=level of earnings in 1964; r=average annual rate of increase; and t=time in years.
[5] Austrian cost data have been taken from the Bernstein paper and converted at the official exchange rate.
[6] Compared with the U.S. direct earnings data since hourly cost data do not include all supplementary benefits.

Source: United States data from the "Annual Statistical Report" (New York, American Iron & Steel Institute); ECSC data from "Salaries CECA" (Luxembourg, Statistical Office of the European Communities); Japanese data from the "Statistical Year Book" (the Japan Iron & Steel Federation).

Table 103 was provided by the British Iron and Steel Board for this study, but it is tentative and has never been published. It shows that U.S. output per man-hour has increased from an index of 100 in 1955 to only 125 in 1965. For the same period other countries did substantially better, especially Italy, with an index of 255, followed closely by Japan with 249, and France and the Netherlands with 169 and 168 respectively. The United Kingdom with 139 showed, aside from the United States, the lowest rate of improvement.

The $4.63 per hour employment cost of the U.S. steel industry in 1966 was approximately four times higher than Japan, three times higher than France and Italy, and 2½ times higher than West Germany, Belgium, Luxembourg, and the Netherlands. If the United States is to achieve comparable or better unit labor costs than these countries, then it becomes imperative that the productivity of the U.S. steel industry, in terms of output per man-hour, must be two to three times as high as the output per man-hour in these countries.

Indexes of Productivity and Unit Labor Cost in Six Countries, 1955-65

1957=100 (semilogarithmic scale)

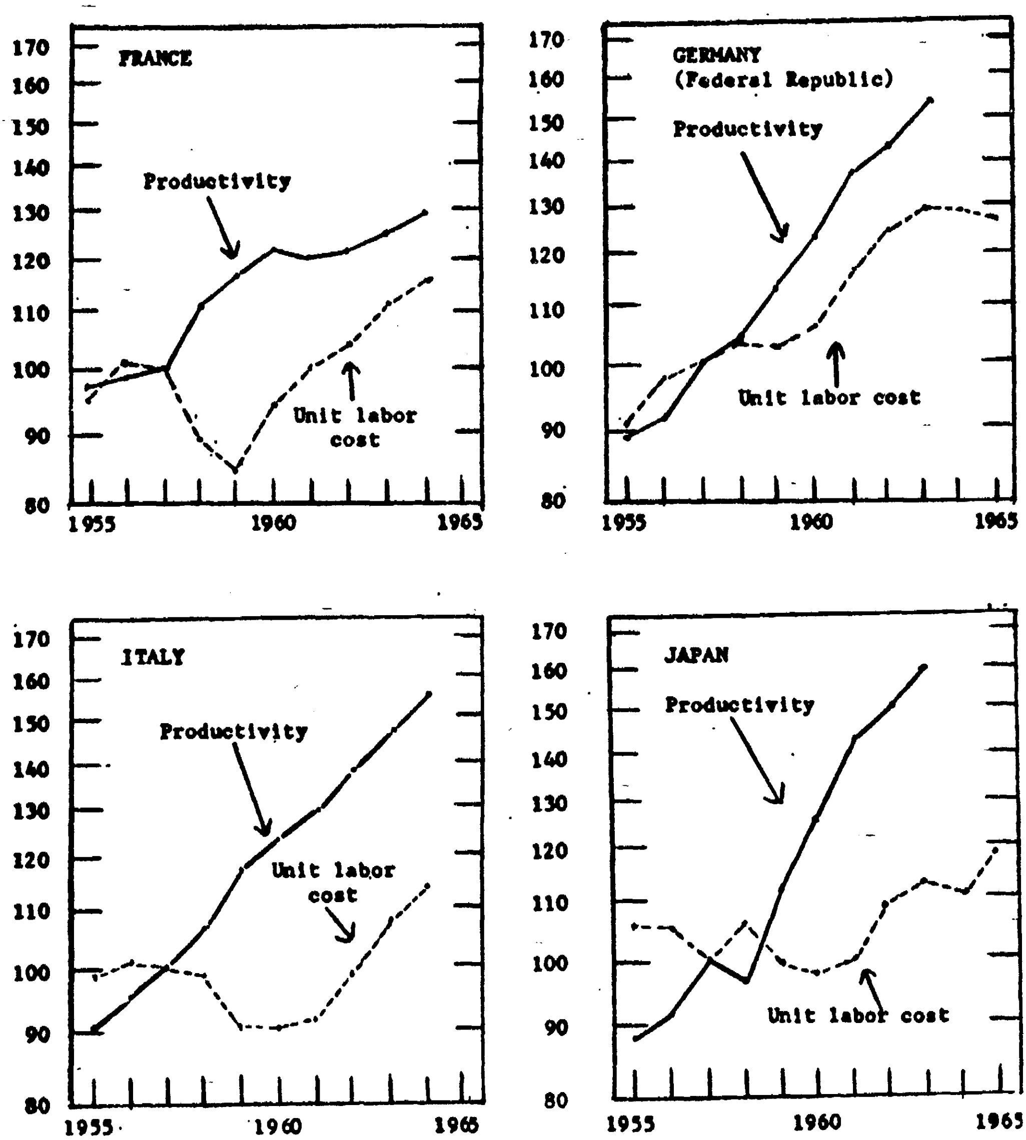
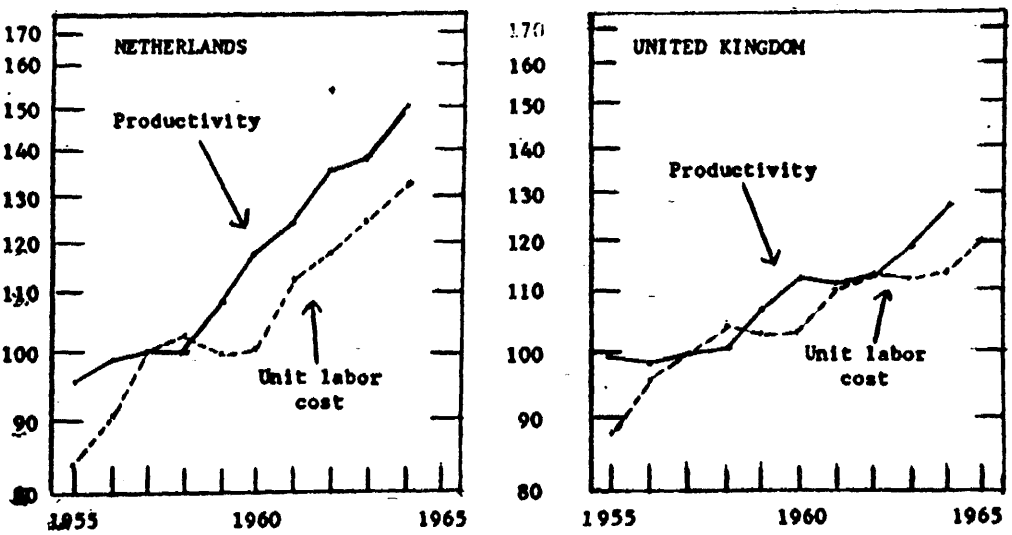


CHART 101

Indexes of Productivity and Unit Labor Cost in Six Countries, 1955-65

1957=100 (semilogarithmic scale)



Prepared by:
Office of Foreign Labor and Trade
Bureau of Labor Statistics
U.S. Department of Labor
May 1967

CHART 102

A comparison of labor productivity trends in the United States, Japan, and the ECSC for the years 1957 and 1966 was supplied by AISI. Even if this comparison must be qualified by admitting that it fails to account for the differences in the product mix of steelmill products, it shows these important trends:

	Year	United States	Japan	ECSC
Output of tons of finished steel products per thousand man-hours	1957	65.3	21.4	40.0
	1966	78.1	57.7	59.8
Annual rate of increase in output of finished steel products per thousand man-hours	1957-66	[1] 2.0	[1] 11.7	[1] 4.1

[1] In percent.

Even though the output per man-hour in the U.S. steel industry is greater than the output of other countries, it is questionable if it is large enough to offset the higher U.S. labor costs. As long as the U.S. steel industry is benefited by lower costs for raw materials, power, and fuel, it can afford higher unit labor costs than its foreign competitors. The existing employment cost disparity, however, obviously is much too large to be overcome by the advantages still enjoyed by the U.S. steel industry on the basis of productivity.

The solution is in more technological progress to close the gap between the domestic and foreign producers' cost of output, a gap that is caused primarily by wage differentials.

Unfortunately there are two roadblocks in this reasoning:

(1) Productivity improvements abroad may equal or exceed that of the domestic steel industry.

(2) Unless domestic steel output increases at some 2 to 2.5 million net tons a year, fixed costs per ton (depreciation and interest) will rise, profits therefore fall, and the domestic steel industry may not be able to afford the investment in new factories and research needed.

TABLE 103.—*Comparison of finished steel output per man-hour in selected countries*

Country	Year	Output per man-hour (1955=100)	Output per man-hour (1960=100)
United Kingdom	1955	100	85
	1960	118	100
	1965	139	118
Western Germany	1955	100	73
	1960	137	100
	1965	158	115
France	1955	100	74
	1960	134	100
	1965	169	126
Italy	1955	100	54
	1960	187	100
	1965	255	137
Netherlands	1955	100	73
	1960	136	100
	1965	168	124
Belgium	1955	100	81
	1960	123	100
	1965	166	135
Luxembourg	1955	100	79
	1960	126	100
	1965	147	117
ECSC	1955	100	72
	1960	139	100
	1965	171	124
United States	1955	100	96
	1960	104	100
	1965	[1] 125	120
Japan	1955	100	65
	1960	154	100
	1965	249	162

[1] The output per man-hour for the United States, as prepared by BLS and shown in table J-2, increased from 1955 to 1965 only about 15 percent for all employees and 20 percent for production workers only, instead of the 25 percent shown here. Table K-6 was prepared by the British Iron and Steel Board, but has not been published. It is believed that the data used by the BISB are internally consistent but they are obviously calculated by a different method.

CHAPTER XIII

THE MAJOR FOREIGN STEEL PRODUCERS

(1) Japan.
(2) European Coal and Steel Community (ECSC).
(3) United Kingdom.
(4) Communist Bloc.

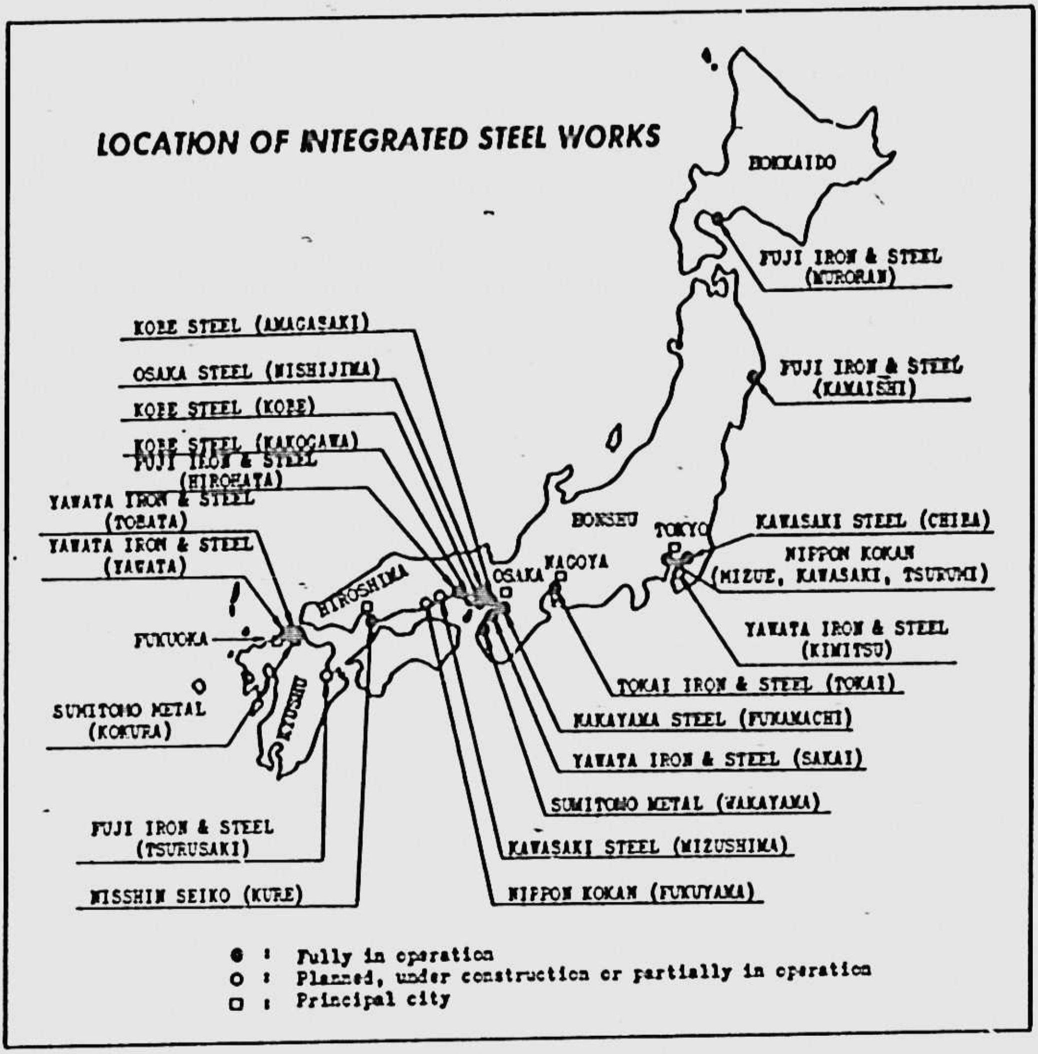
The Japanese Steel Industry: The Risen Sun

The highest prewar output of the Japanese steel industry was 5 million tons in 1941. This compares to 1 million tons in 1947 and a 1966 output of over 53 million tons.

First impulses to build up steel capacity after World War II were caused by the need to rebuild destroyed cities and by U.S. demand for steel during the Korean war. More lasting causes were the rapid industrialization of the country, in part due to the migration of farmers into the cities, in part perhaps as an outlet for Japanese energies and savings formerly absorbed by military propensities. The shift in nutrition and the need for raw materials for industrial expansion explains the forced draft efforts to develop exports to obtain foreign exchange for imports. The Japanese steel industry is today the country's largest earner of foreign exchange.

The Japanese steel industry became one the "target industries," the expansion of which was pushed, at least, indirectly through central bank credit. As a result of its rapid growth, the average age of Japanese steel facilities is the lowest in the world and therefore they are the most modern. As shown in the map for steel-plant locations, most facilities are on tidewater, and, therefore, ideally located for imports of high grade iron ore and coal as well as for exports of finished steel in the world's largest freighters.

The rate of growth of a country's economy depends on three factors: the rate of increase in its labor force, the proportion of its resources it devotes to investment, and the return it gets on that investment. It is the last two which determine productivity or output per man-hour.



The following table ranks countries for the decade of 1955–64 as to percentage of GNP devoted to investment:

Investment as percent of GNP, average 1955–64

	Percent
Japan	28.8
West Germany	23.7
Italy	21.6
France	19.2
United States	17.1
United Kingdom	15.8

Additional output obtained per $100 of investment, average 1955–64

Japan	36
France	27
Italy	26
West Germany	26
United Kingdom	20
United States	18

Partly as a result of the rapid rate of expansion, the financial situation of most Japanese steel companies, although better than their European counterparts, is inferior to that of the U.S. steel industry, as shown in chapters VIII and IX. The Japanese steel industry therefore uses a great deal of bank credit, the cost of which appears to be about 9 percent.

TABLE 104.—*Yearly percentage changes in Japanese wages and productivity*

[In percent]

Year	Wages	Labor productivity	Year	Wages	Labor productivity
1956	9.3	13.8	1962	9.4	2.8
1957	3.4	7.5	1963	10.3	9.4
1958	2.4	-.4	1964	10.8	14.0
1959	7.4	12.6	1965	9.1	5.3
1960	8.0	13.0	1956–60 average	6.1	9.3
1961	11.6	10.2	1961–65 average	10.2	8.3

Source: Bank of Japan.

One of the best recent surveys of the Japanese economy was published in the May 27 and June 3, 1967, issues of The Economist:

The Japanese like to say that theirs is an unplanned, free enterprise economy. But, in our Western terms, it isn't. It is, in your correspondent's view, the most intelligently dirigiste system in the world today. The ultimate responsibility for industrial planning, for deciding in which new directions Japan's burgeoning industrial effort should try to go, and for fostering and protecting business as it moves in those directions, lies with the Government.

Lest this seem a maverick view from a very transient visitor, let me pray in support a voice far more experienced than mine. The excellent journal of the American Chamber of Commerce in Japan recently urged newcomers to this market, from the very inception of their operations there, to recognize that while business in Japan is highly competitive, it is not Western-style free enterprise. Also that, while much corporate and personal rivalry does exist, business, banking, and the Government are all on the same team and broadly function as a partnership to implement the policies and plans of the Government. (Pt. 1, p. X.)

After the war Japan had to build up its productive capacity virtually from scratch, and to build up its money supply virtually from scratch also. The investment boom was financed by the central bank creating money and handing it on to the commercial banks, who then pumped it out to industrial firms. Even today the average big Japanese firm draws the apparently shocking proportion of some 70 to 80 percent of its finance from commercial bank loans and only 20 to 30 percent from its own share capital; in Britain and America the proportions between loan and share finance are broadly the other way round. (Pt. 1, p. XVI.)

The average president of a large Japanese company is only rather minimally interested in the return on his shareholders' yen. The shareholder has provided only between 20 to 30 percent of its capital anyway; the company has borrowed the other 70 to 80 percent from the banks. Of course, the shareholder deserves at least a customary dividend, probably of about 10 percent; if it can be pushed higher, and these rather speculative counters called shares can therefore have another boom, that is rather nice, he supposes. But the Japanese industrialist's main obligations are assumed to be (*a*) to his workers, who can expect to get lifetime employment from him without having to change their jobs (plus some other quasi-workers of his, such as those of his favorite wholesalers' firms); (*b*) to his executives, who should be protected from such un-Japanese discomforts as having cheeky younger men promoted over their heads, just because they are brighter at their jobs; (*c*) to the concept of his firm, or perhaps to a group of associated firms—which is very important, but can better be pushed forward to new glories by increasing its total production and innovating with brilliant new products, rather than maximizing profitability (of course, if there were no profitability, that would be a loss of face and a bore, but even then, if his is a big company, the bank can hardly afford to let it go bust, one presumes); and (*d*) beyond the concept of the firm to the concept of the great "company of Japan." (Pt. 1, p. XXXI.)

In what might be called the more static part of government analysis and planning, the Japanese are mainly concerned to find out what is the trend of the productivity of capital and labor, both in the economy as a whole and within particular industries; when there are clear signs that this productivity is declining in some fields, it becomes deliberate government policy to encourage new resources to move into newer fields instead. When the calculations show that a particular industry has reached this stage, one can almost hear the relevant civil service official leap up from his adding machine with a hiss. True, some protective cushions will be left or put in place to enable the resources still in these industries to stay there and improve their productivity—in the case of anti-import protectionism, frankly internationally immoral cushions of sometimes very low cunning degree. (Pt. I, pp. XXIII–XXIV.)

Nobody who reads the evolving story in Japan's successive economic surveys since the mid-1950's can doubt that she achieved her success by the most deliberate policies. To retail that story now involves delving into figures; but there are occasions on which figures need to be rubbed home.

Goods where growth rate in world trade 1955–1964 was—	Percent share in Japan's exports		Japan's annual average increase in exports, percent, 1955–64	Japan's annual average increase in investment, percent, 1955–64
	1955	1964		
Maximum	10	26	39	31
Large	9	15	23	26
Medium	17	13	10	25
Below average	43	37	9	18
Stagnant	21	8	1	15

The authors of Japan's economic survey last year, looking back again to the takeoff period in 1955, divided Japan's principal exports, nearly a hundred categories of them, into five main groups. These were:

(*a*) "maximum" export growth goods, in which total world exports and imports had more than trebled in the decade after 1955 (they included business machines, electric machinery, and several chemicals);

(*b*) "large" growth goods, in which total world trade had expanded since 1955 by around two-and-a-half times (they included several other sorts of machinery and automobiles);

(*c*) goods which had shown a "medium" growth in total world trade by just about doubling since 1955 (e.g., watches, some other metallic or mineral products, inorganic compounds);

(*d*) goods which had shown a "below average" growth of only somewhere around 75 percent (including iron and steel products, agricultural machinery and ships); and

(*e*) goods in which world trade had proved to be stagnant (of which the most important for Japan were cotton textiles). (Pt. II, p. VII.)

TOO MUCH STEEL?

The main industries which even some of Japan's expansionist-minded economists fear may be about to overinvest are: steel, cement, fertilizers, possibly synthetic textiles (this last had an unexpectedly bleak experience in Japan's so-called recession of 1964–65, as ICI and others ought to have noted). Steel is worth picking out as one of two main tests of industrialists' present mood.

In the financial year to April 1967 Japan has produced about 51 million tons of crude steel. In the year to next March another five giant blast furnaces and associated investment programs are due to come into action, each adding 2 million tons to annual capacity. Since nobody wants his competitor to steal a march on him, another eight furnaces are gleams in somebody's eye. Add these 13 furnaces to present capacity, and you get a potential annual output of 77 million tons.

Put this view to the steel industry, and you get three arguments in reply. First, "although we felt a bit worried in the 1964–65 recession, it now seems clear that Japan is going straight up to a West European standard of life. West Germany, with a population of 60 million, produces 40 million tons of steel a year, so Japan with a population of 100 million should produce over 70 million tons." As Japan's steel output per head even this year will exceed Britain's, that leaves one a bit breathless. Secondly, and more pointedly, "Japan has discovered that it can export competitively to the United States. Our technology has caught up with theirs, and our wage costs are lower." In view of the increasing protectionist howls of the American steel industry, this sounds a bit hopeful. Thirdly, and perhaps more realistically, the companies that are bringing forward their investment programs fastest plainly hope that the others won't in fact follow. (Pt. II, p. XVIII.)

The great trading houses of Japan are a phenomenon at present more or less unknown in other advanced countries. Although Japan's census of distribution can be read as listing over 4,000 or over 7,000 or even, on one reading, over 30,000 trading houses (it depends which definition of the term wholesaler or trading house you use), there are in fact 39 sizable houses that appear in most people's lists. Through them passed 70 percent of Japan's exports and 80 percent of its imports last year. The 11 biggest, whose names appear first on table 1 on page xxviii, at present handle over 50 percent of both exports and imports, as well as some 20 percent of Japan's domestic wholesale trade.

The real giants each employ more than 10,000 highly skilled staff, scattered in many branch offices around Japan and the world. (Pt. II, p. XXV.)

These quotations should be a revelation to anyone who may have wondered to what extent the Japanese steel industry is financed through the banks by the government; to what extent it is an instrument of government and why imports of U.S. steel mill products into Japan encounter unsurmountable obstacles. The great trading houses which have an import monopoly are closely related to both the banks and the steel producers, and neither of these two groups would favor steel imports. Even if a trading company would be independent enough, it would usually add a 30-percent fee, at which cost added to the import tariff, U.S. steel mill products would not be competitive if at prices below cost of production.

Japan's steelmaking costs are the lowest among all steel-producing nations, partly because the country's mills have secured stable supplies of low-cost raw materials through long-term contracts for large purchases of iron ore and coking coal often in the form of joint financing of mines abroad, and partly because they have cut transportation costs by using specially designed large bulk carriers to import raw materials. Labor costs only 25 percent of ours.

Another contributing factor has been technical improvements which have permitted reduction in the ratio of coke consumption, construction of larger blast furnaces and introduction of BOF's to minimize the consumption of scrap iron.

Although Japanese labor costs have steadily increased, this has been more than offset by higher productivity. Crude steel production per man-year stood at 95 tons in 1960 but has not reached 160 tons in the most modern plants.

The Government is known to believe that the iron and steel industry will not face overproduction problems if export campaigns are pushed with determination, especially in the United States market.

Japanese Steel Industry Expansion Plans

On March 16, 1967, "a voluntary" plan of expansion was proposed by the industry after intensive intraindustry and government-industry discussions as to how much steelmaking capacity will be required in the next decade.[1] This plan provided for the construction of eight new

[1] Information supplied by BDSA, U.S. Department of Commerce.

blast furnaces which would adequately cover Government demand estimates of 79.3 million net tons, plus a certain standby capacity by 1971. The steel producers want to increase capacity by 1971 to 85 million net tons. The industry forecasts a demand for 88 million net tons in 1975, if Japan is not to abandon its traditional role as a processor of raw materials rather than as an importer of finished products.

The addition of a 2,500 cubic meter blast furnace would provide for an annual increment of about 2.2 million net tons of raw steel, therefore, to achieve an increment of 17.6 million net tons by 1975, construction of, at least, eight new blast furnaces should be started in 1967.

The staff of the Japan Iron and Steel Federation prepared in January 1967 a draft of guidelines for this expansion plan of which the following are of special interest:

1. Construction of new facilities at new sites should be limited to those locations having—
   (*a*) More than 5 million square meters;
   (*b*) Port facilities capable of accommodating ore carriers of over 88,000 net tons; and
   (*c*) The capability of expanding steel production to more than 6.7 million net tons on an integrated basis in the future.
2. Such new investment should be limited to companies which meet the following minimum financial requirements—
   (*a*) The ratio of net worth to total capital exceeds 35 percent which means that debt is not more than double the equity;
   (*b*) The ratio of fixed assets to capital and long-term debt does not exceed 100 percent; and
   (*c*) The ratio of retained earnings to finance plant and equipment expenditures exceeds 70 percent.

In regard to Japanese steel industry expansion plans, the AISI furnished chart 105 with the following explanatory notes.

Enclosed herewith a chart on Japanese steel capacity, production and consumption, 1955–75. As you know, these numbers are rather controversial, and at the same time rather significant in any appraisal of future world steel trade and imports into the United States. Since the Japanese Government and steel industry have not been too precise about exactly what the numbers should be, it is necessary to make a series of judgments on what future Japanese steel capacity, production and consumption will be.

The attached exhibit will require extensive documentation in order to answer questions as to where the data came from. The sources on which the data charted are based are as follows:

STEEL CAPACITY, PRODUCTION & CONSUMPTION IN JAPAN

(CRUDE STEEL EQUIVALENT)

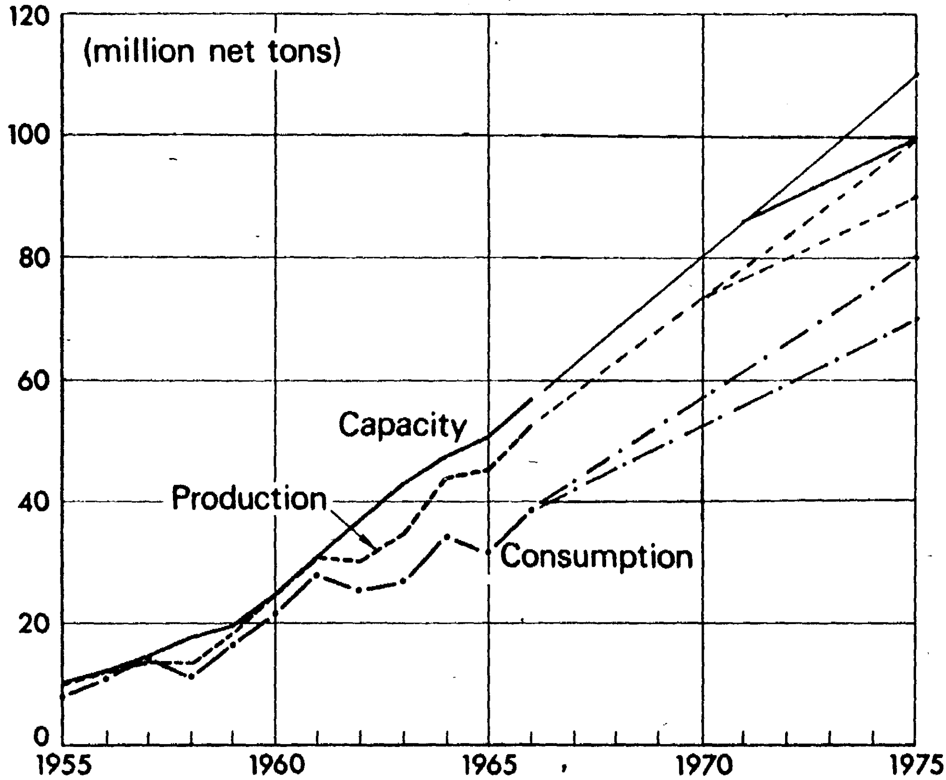


CHART 105

CAPACITY

1955–66: Japan Iron & Steel Federation—"Statistical Yearbook for 1966," table 31, and "for 1965" table 32, average of capacities at beginning and end of each year—with exception of 1955, 1956, 1960, and 1961, when production was used, as it exceeded the reported capacity.

1967–71: BDSA (U.S. Dept. of Commerce) (as reported by Dr. Weidenhammer).

1975: 110 mil. N.T.) Continuation of absolute 1967–71 100 mil. N.T.) increase equals 105 mil. N.T. and of the 1967–71 rate of increase, 110 mil. N.T.[1]

PRODUCTION

1955–66: Japan Iron & Steel Federation—"Statistical Yearbook for 1966," table 2.

1970: Japan Iron & Steel Federation and Ministry of International Trade & Industry, Financial Times, May 10, 1967, estimates averaged.

1975: 90 percent of estimated 1975 capacity.

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[1] A level as high as 110 mil. N.T. is referred to in the Special Supplement, Japan Metal Daily, March 10, 1967, as follows:

"To put it in more definite terms, the steel executives said that Japan's iron and steel production target for fiscal 1975 should be 100,000,000 ingot tons [note: equal to 110 mil. ingot N.T.] and that preparations should be started for achieving that target."

CONSUMPTION

1955–66: Japan Iron & Steel Federation—"Statistical Yearbook for 1966," table 2.

1975: Growth Trends, based on 8½-percent rate of growth in the "Economic-Social Development Program" (Oriental Economist, May 1967), and on 6½-percent rate of growth, the trend line connecting peak consumption in 1961, 1964, and 1966.

NOTE.—The 8½-percent rate of growth assumes the 1966–71 economic growth rate will continue through the period 1971–75 and that Japanese steel consumption will increase at rates reflecting an income elasticity equal to 1.0 (an optimistic assumption based on ECSC experience from 1960 to date and on American experience in the postwar years).

The future estimates, charted on these assumptions, summarize as follows:

	Capacity (million net tons)	Production (million net tons)	Consumption (million net tons)	Export potential (million net tons)
1970	82 (82.1)	74 (73.7)	50 (49.6)	25 to 30.
			55 (53.5)	
1975	100	90	70 (68.0)	20 to 30.
	110	100 (99.0)	80 (80.4)	20 to 30.

Since the crude steel equivalent of exports in 1966, as reported by the Japan Iron & Steel Federation, was 14 mil. N.T., the exhibit suggests (as many of us believe) that the Japanese are planning for exports in the 1970's at rates roughly twice the recent volume.

In view of the fact that an increasing share of Japanese exports has been moving to the United States (reaching nearly 50 percent in 1966), obviously this trend has extremely critical implications for the U.S. On this basis imports from Japan might easily reach 2–3 times the 1966 level of 5 mil. tons in the early 1970's.

The tables in the appendix to this chapter show:

(1) Steel exports from Japan were 30.9 and 26.8 percent of Japan's production in 1965 and 1966, respectively, while imports were 0.1 percent in both years (table M-1).

(2) U.S. imports of steel from Japan by types of steel mill products show that 40 percent of all such imports in 1966 were the highly profitable sheet and strip products (table M–2). Half of all Japanese exports in 1966 went to the United States (table M–3).

(3) In 1966, 62.6 percent of Japanese steel production was made by BOF furnaces, more than doubled the U.S. percentage (table M–4).

(4) Japan's output of the highly profitable sheet and strip products has grown rapidly (table M–5).

(5) Japanese steel capacity by major companies and plant location is shown in table M–6.

(6) Japanese imports of steelmaking raw materials and of indirect steel from the United States have increased, especially iron ore and coking coal (tables M–7, M–8, and M–9).

(7) The growing production of motor vehicles and ships indicates possible future growth of steel demand in Japan (tables M–11 and M–12).

JAPAN AND QUOTAS

The Japanese Government pointed out in 1964 that because of direct or indirect U.S. pressures, Japan was forced to restrict 30.49 percent of its exports by value to the United States in 1961 and 29.92 percent in 1962. The export value of commodities subject to these restrictions amounted to $320 million in 1961 and $419 million in 1962.[1]

[1] Arthur Z. Gardiner, American Embassy unclassified dispatch No. A-149 from Tokyo to U.S. State Department in Washington, Aug. 11, 1964.

As the leading exponent of voluntary quotas, Japan occupies a special niche in U.S. trade policy, and more importantly, in overall foreign policy. Japan is our most important ally in Asia, with a strong private enterprise economy and a democratic form of government. Japan's moderate conservative government strongly supports most U.S. positions in international affairs and cooperates in defense by providing facilities for American air and naval bases in Japan and by maintaining small defense forces. Japan is also important to the United States in other ways. It buys more American agricultural exports than does any other nation, and also takes great quantities of coal, scrap iron, and machinery. Japan is the second largest market for the United States in exports (being outranked by Canada) and is also an important outlet for American technology. Japan is not only the source of political support and profitable business, but also of difficult economic problems, the most persistent and irksome being the competition of Japanese goods in the domestic market. Voluntary quotas have been an important factor in easing the impact of such imports on domestic industries.

The Steel Industry of the ECSC (Common Market)

The present condition of the steel industry in the six Common Market countries is best summarized by this excerpt from the last Annual Report of the High Authority.

During 1967, the High Authority indicates, its major concern for the contracting coal and iron ore mining industries will be to determine how much social assistance to give. For steel, where "incipient stagnation" is developing towards a world-wide "supply-demand imbalance," the High Authority will continue its attempts to persuade producers to gear their output to demand. However, if persuasion fails, more direct production controls may be necessary.

The rapid expansion of new world steel-making capacity and the slow scrapping of older plants caused prices for steel to collapse in the ECSC. Lower prices reduced company revenue during 1966, leaving less capital for modernization and reorganization. Investment projects declared during 1966, the High Authority said, totaled barely $300 million, compared with the annual average rate of more than $500 million since 1960.

"In the face of this disquieting trend," the High Authority said, it has tried to discourage companies offering "discounts of every sort" from selling more steel than the market can absorb. In its campaign of persuasion the High Authority has relied so far mainly on its quarterly program, issued after detailed discussion with the Consultative Committee (composed of representatives of employers, unions and consumers). However, the High Authority will in the future break down its forecasts by product and company, "to bring home to every producer just how matters currently stand in the market."

A Community decision requiring companies to furnish information on tonnages and prices quoted will shortly come into effect. Nonetheless, the High Authority emphasizes, this action does not exclude the possibility of more direct measures "to impose some degrees of discipline on the producers." Gradually concentrating top-level policy decisions in fewer hands, the High Authority believes, would strengthen discipline in the steel market.

Despite the steady trend towards greater concentration of production and distribution, the Community steel market is still more fragmented than the markets of other major steel producing areas. Whenever greater concentration would increase competition, the High Authority indicated it had endorsed it.

Since Community steel producers export about 20 per cent of their output, the High Authority said it had gladly accepted the British government's suggestion for a joint study of world market conditions, through the ECSC-UK Council of Association.

Development of Steel Production and Capacity

Steel production increased 63 percent in 1955–65, from 52.6 to 86 million metric tons. The growth has not been even: Year-to-year increases were small in 1955–57, and 1958 production was slightly lower than in 1957. Production jumped 5.3 million metric tons in 1959, and a further 9.6 million tons in 1960; then held within a half million ton range for the 4 years 1960–63—a situation similar to the one experienced in the United States, where steel production remained in a narrow range in 1959–62. In 1964–65 ECSC steel production once again moved upward—by 9.6 million metric tons in 1964 and 3.2 million metric tons in 1965. The 1966 steel output was slightly below the 1965 level.

Capacity during this period increased steadily. As ECSC steel production remained steady in 1960–63, operating rates naturally declined—from the nineties during the second half of the 1950's to around 83 percent in 1963. The operating rate rose to 90 percent in 1964 but declined to 84 percent in 1965 and is currently below 80 percent. With the continuing additions to capacity, operating rates may decline further. The high authority is currently projecting 81 percent for 1970—capacity totaling 118 million metric tons, production totaling 95 million metric tons. This would represent a somewhat slower rate of increase than was projected earlier this year and may indicate some concern with the low forecasted operating rate. It is probable that future expenditures may be directed toward cutting production costs rather than expanding capacity, in which case even the 118 million metric ton figure may not be attained until after 1970.

New steel plants built in the postwar period have been located at tidewater locations to facilitate imports of steel making raw materials, especially iron ore, scrap, and coking coal, but also to facilitate exports of finished steel products. Completely new major steel plants have been built in the Netherlands at Ymuisiden, in France at Dunkirk, in Germany at Bremen, and in Italy at Taranto. Other Italian steel plants at Genua, Piombino, and Naples have been greatly increased in capacity.

The tables on the following pages show production, and estimated capacity and operating rates for crude steel; the production, production potential and average annual rate of development in the crude steel sector by production process; the production, production potential and average annual rate of development in the rolling sector by types of finished product.

TABLE 108.—*ECSC crude steel production, capacity and operating rate, 1956-65, and estimated to 1969*

[Capacity and production in millions of metric tons]

	Actual										Estimated capacity			
	1956 [1]	1957 [1]	1958 [1]	1959 [1]	1960 [1]	1961 [1]	1962 [1]	1963 [1]	1964 [1]	1965 [2]	1966 [2]	1967 [2]	1968 [2]	1969 [2]
Total, ECSC:														
Capacity	59.1	63.6	67.7	70.5	76.2	79.8	83.4	87.6	91.9	102.0	108.8	113.0	115.8	118.0
Production	56.8	59.8	57.9	63.2	72.8	73.2	73.0	73.2	82.8	86.0				
Operating rate (percent)	96.1	94.1	85.7	89.6	95.6	91.7	87.3	83.4	90.1	84.3				
Belgium:														
Capacity	6.8	7.1	7.4	7.5	8.1	8.3	8.3	8.8	9.8	10.5	11.1	11.9	13.0	13.3
Production	6.4	6.3	6.0	6.4	7.2	7.0	7.3	7.5	8.7	9.2				
Operating rate (percent)	94.1	88.7	81.1	85.3	88.9	84.3	88.0	85.2	88.8	87.6				
Luxembourg:														
Capacity	3.5	3.6	3.6	3.9	4.1	4.2	4.3	4.5	4.8	4.9	5.2	5.4	5.4	5.4
Production	3.5	3.5	3.4	3.7	4.1	4.1	4.0	4.0	4.6	4.6				
Operating rate (percent)	100.0	97.2	94.4	94.9	99.5	97.6	93.0	88.9	95.8	93.4				
Netherlands:														
Capacity	1.1	1.3	1.6	1.8	2.1	2.2	2.5	2.9	3.1	3.5	3.7	3.7	4.1	4.3
Production	1.1	1.2	1.4	1.7	1.9	2.0	2.1	2.3	2.6	3.2				
Operating rate (percent)	100.0	92.3	87.5	94.4	90.5	90.9	84.0	79.3	83.9	91.4				
France:														
Capacity	14.2	14.8	16.0	16.5	17.9	18.6	19.8	21.0	21.5	22.7	23.6	24.0	24.3	25.1
Production	13.4	14.1	14.6	15.2	17.3	17.6	17.2	17.6	19.8	19.6				
Operating rate (percent)	94.4	95.3	91.3	92.1	96.6	94.6	86.9	83.8	92.1	86.3				
Italy:														
Capacity	6.4	7.4	7.9	7.9	8.7	9.8	10.4	10.9	11.6	14.9	17.2	18.6	19.0	19.9
Production	5.9	6.8	6.3	6.8	8.2	9.1	9.	10.2	9.8	12.7				
Operating rate (percent)	92.2	91.9	79.7	86.1	94.3	92.9	94.2	93.6	84.5	85.2				
West Germany: [3]														
Capacity	27.2	29.3	31.3	32.9	35.4	36.9	38.1	39.5	41.1	45.5	48.0	49.4	50.0	50.0
Production	26.6	28.0	26.3	29.4	34.1	33.5	32.6	31.6	37.3	36.7				
Operating rate (percent)	97.8	95.6	84.0	89.4	96.3	90.8	85.6	80.0	90.8	80.7				

[1] United Nations, The European Steel Market series, published annually.
[2] ECSC, "The High Authority: Investment in the Community Coalmining and Iron and Steel Industries," July 1966, p. 81.
[3] Includes Saar.

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Chart 106 shows the trends of capacity by processes, highlighting the recent trend to BOF or Kaldo furnaces. Chart 107 shows the peak of capital expenditures in 1963 and the subsequent decline because of falling profits.

ECSC

Actual Production and Production Potential of Crude Steel by Production Process

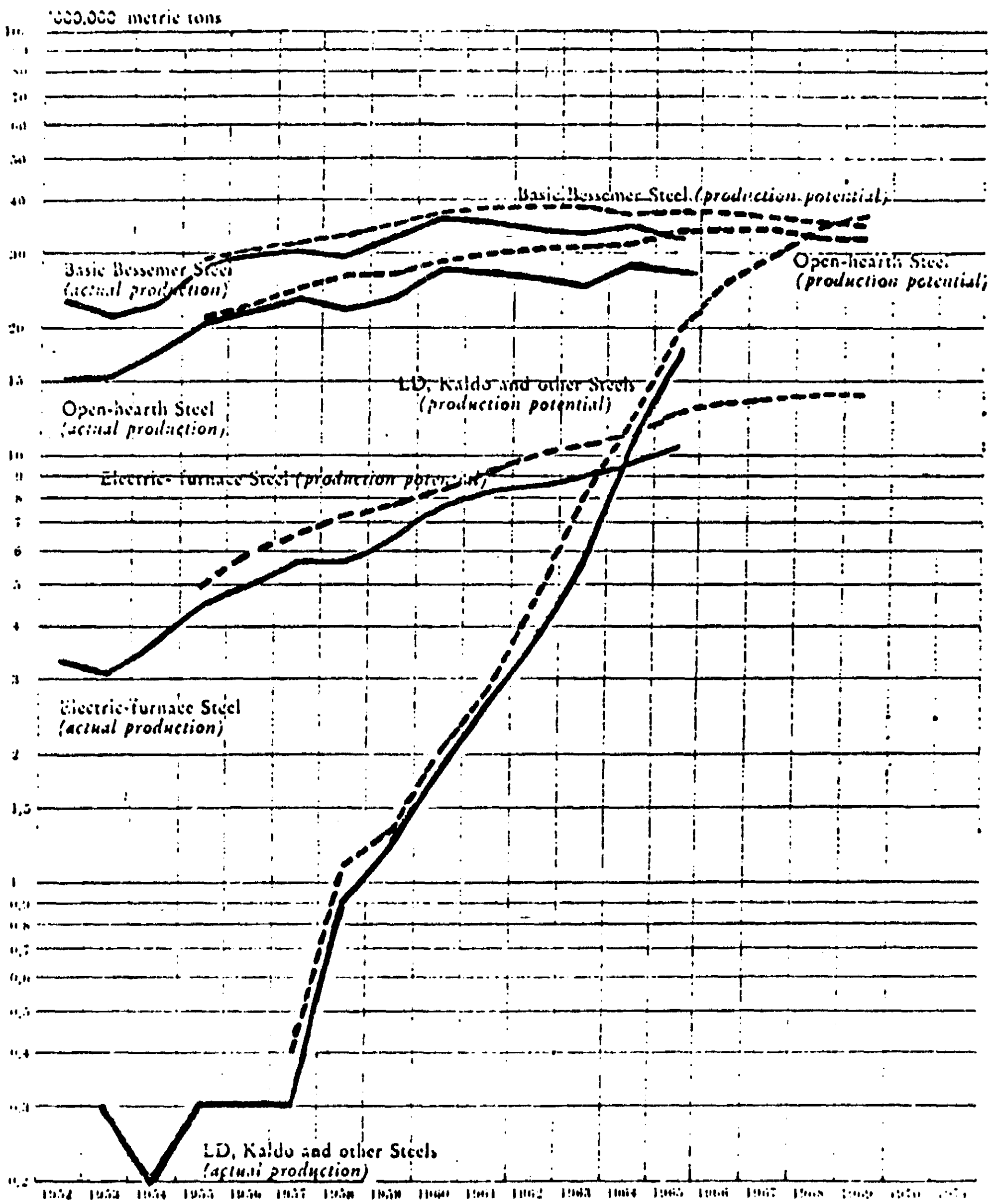
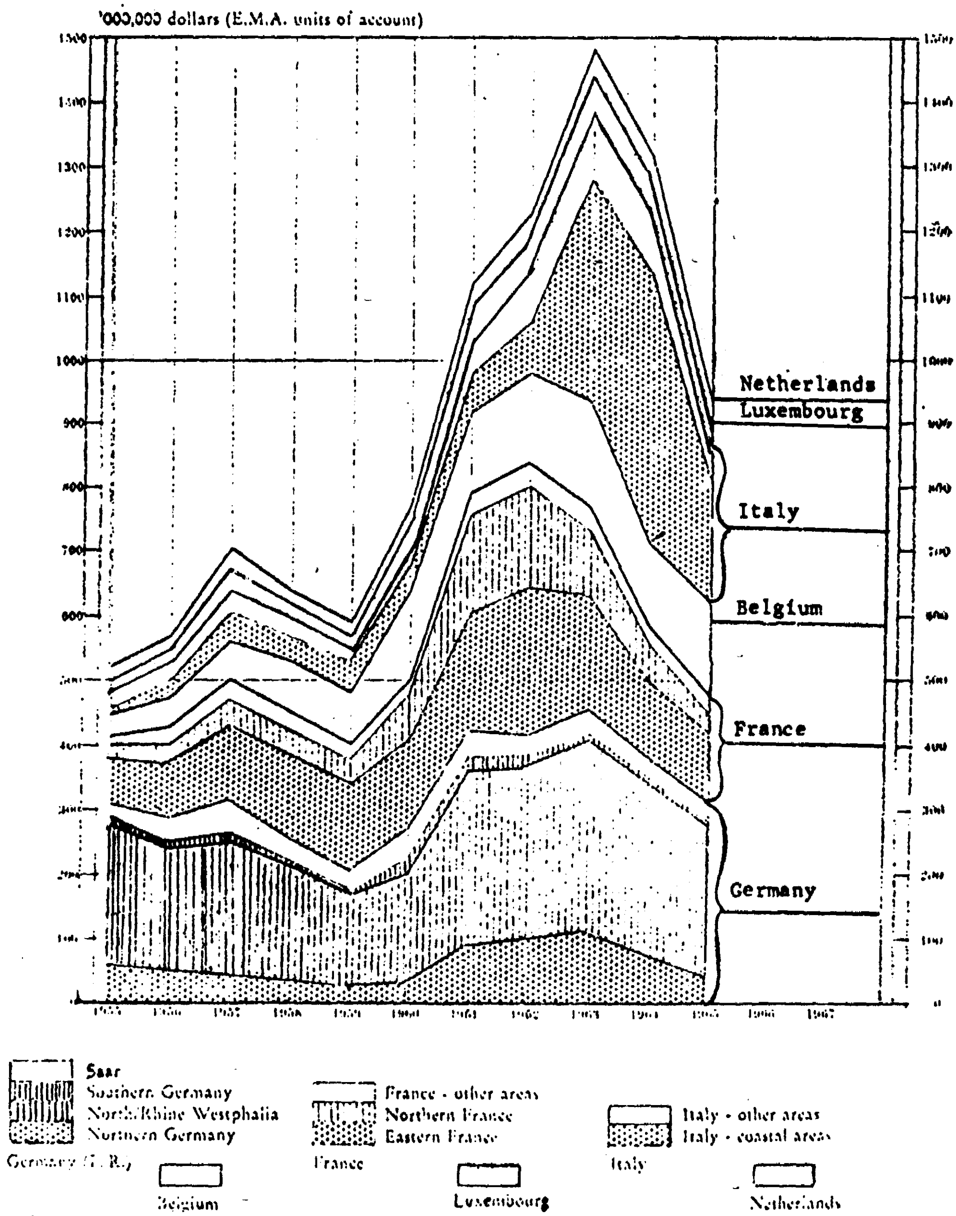


CHART 106

ECSC

The Capital Expenditure in the Iron and Steel Industry



Source: ECSC, The High Authority:
"Investment in the Community Coalmining and Iron and Steel Industries", Annual Series.

CHART 107

TABLE 109.—*ECSC average annual rate of development in the crude steel sector, by production process*

Production process	Actual production: 1952 (millions of metric tons)	Actual production: Average annual rate of increase in actual production, 1952–65 (percent)	Actual production: 1965 (millions of metric tons)	Production potential: 1965 (millions of metric tons)	Production potential: Estimated average annual rate of increase in production potential, 1965–69 (percent)	Production potential: 1969 (millions of metric tons)
Basic bessemer	23.0	+2.6	32.1	37.0	−1.5	34.9
Open hearth	15.2	+4.5	26.9	33.0	−.5	32.4
Electric furnace	3.3	+9.2	10.4	12.5	+2.7	13.9
Basic oxygen	.3	+36.2	16.6	19.5	+17.2	36.8
Total, crude steel	41.8	+5.7	86.0	102.0	+3.7	118.0

Source: ECSC, "The High Authority: Investment in the Community Coalmining and Iron and Steel Industries," report on the 1966 survey, July 1966.

TABLE 110.—*ECSC production potential by country*

STEEL—TOTAL

[Millions of metric tons]

	Actual production: 1952	Actual production: 1965	Production potential expected: 1965	Production potential expected: 1967	Production potential expected: 1969
Germany	18.6	36.7	45.5	49.4	50.0
Belgium	5.2	9.2	10.5	11.9	13.3
France	10.9	19.6	22.7	24.0	25.1
Italy	3.5	12.7	14.9	18.6	19.9
Luxembourg	3.0	4.6	4.9	5.4	5.4
Netherlands	.7	3.2	3.5	3.7	4.3
Total	41.9	86.0	102.0	113.0	118.0
FINISHED ROLLED PRODUCTS—TOTAL					
Germany	12.4	23.6	35.0	38.5	39.7
Belgium	3.7	6.5	8.3	9.2	9.6
France	7.6	14.2	17.0	17.9	18.8
Italy	2.3	8.8	10.6	12.4	13.2
Luxembourg	2.2	3.3	3.5	4.0	4.0
Netherlands	.4	1.8	2.2	2.4	2.5
Total	28.6	58.2	76.6	84.4	87.8

Source: ECSC, the high authority: "Investment in the Community Coalmining and Iron and Steel Industries," report on the 1966 survey, July 1966.

TABLE 111.—*ECSC trend of apparent consumption, 1956–65*

[In thousands of metric tons of crude steel equivalent]

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Belgium-Luxembourg	2,733	2,929	2,318	2,643	2,604	3,257	3,159	3,347	4,065	3,230
France [1]	12,303	13,570	13,895	11,551	13,919	14,167	14,923	15,602	17,234	16,171
Western Germany [1]	21,589	21,097	20,136	24,216	29,211	27,571	27,804	27,276	33,734	31,886
Italy	5,776	6,733	6,250	7,016	9,226	10,901	12,207	13,971	11,269	12,101
Netherlands	2,632	2,876	2,324	2,701	3,186	3,180	3,132	3,140	3,962	3,848
Total, ECSC	45,033	47,205	44,923	48,127	58,146	59,076	61,225	63,336	70,264	67,236

[1] The Saar is included under France until the middle of 1959; under Western Germany since the middle of 1959.

Source: United Nations, The European Steel Market series, published annually.

In the last decade, a significant change has occurred in the balance of trade between the United States and the ECSC.

A. U.S. IMPORTS FROM THE ECSC

ECSC shipments of steel mill products to the United States have increased from an average 850,000 metric tons a year in 1955–58 to 3.8 million metric tons in 1965, and 3.5 million in 1966. Despite this great increase in imports from the ECSC, the ECSC's share of total U.S. imports declined from an average 73 percent in 1955–58 to 40 percent in 1965 and an estimated 35 percent in 1966, reflecting the rising percentage of Japanese steel exports to the United States.

	U.S. imports of steel mill products from ECSC (thousand metric tons)	Imports from ECSC as percent of total U.S. imports
1955-58 average	854	73
1959	2,629	66
1960	1,902	62
1961	1,770	62
1962	1,893	51
1963	2,038	41
1964	2,345	40
1965	3,802	40
1966	3,484	35

Source: American Iron and Steel Institute.

Structurals, bars (including rebars), and wire accounted for over 80 percent of 1955–56 U.S. imports from the ECSC; but declined to 64 percent in 1965. Bars are now the largest item of imports from the ECSC, accounting for about 30 percent of the 1965 total (27 percent in 1955); structurals for 14 percent (32 percent in 1955); wire and wire products 9 percent (28 percent in 1955) and wire rods—12 percent. Sheet and strip imports jumped to over 1 million tons in 1965—25 percent of total imports from the ECSC—versus 9 percent in 1964 and only 1 percent in 1956. Hot and cold rolled sheet imports totaling 966,000 tons made up the bulk of this total. In 1966 the sheet and strip share of imports from the ECSC will be down to about 20 percent.

In absolute numbers, with imports from the ECSC during the decade increasing about fourfold, imports of all product groups with the exception of semifinished, tin mill, and rail products grew sharply. This increase has been made possible by the great increase in ECSC steel capacity occurring during a period of (*a*) leveling out of steel consumption within the ECSC in 1960–63, (*b*) a 116-day steel strike in the United States, (*c*) hedge buying by U.S. customers during subsequent labor negotiations in 1962, 1963, and 1965, and (*d*) pricing exports at or below costs. Since the ECSC is expected to have overcapacity in the years ahead, further penetration of the U.S. market can be expected so long as the ECSC exporter is permitted to follow opportunistic pricing practices in the U.S. market. The decline in the ECSC share of U.S. imports is due to increased Japanese penetration of the U.S. market.

B. U.S. EXPORTS TO THE ECSC

U.S. exports of steel mill products to the ECSC, on the other hand, have declined during this period, though the ECSC's share of total U.S. exports was then, and is now, minor. In 1965 exports declined sharply. They should rise slightly to about 90,000 tons in 1966.

	U.S. exports of steel mill products from ECSC (thousand metric tons)	Imports from ECSC as percent of total U.S. imports
1955-58 average	296	8
1959	133	9
1960	328	12
1961	175	10
1962	124	7
1963	125	6
1964	236	8
1965	80	4
1966 (estimated)	90	4

Source: American Iron and Steel Institute.

The fact that the European Coal and Steel Community has not been a major steel export market for the United States should not be surprising. The ECSC has its own well-developed steel industry. Steelmaking and finishing capacities have increased substantially during the decade and now exceed demand. In fact, ECSC steel production is currently below 80 percent of capacity for the first time in over 15 years. ECSC producers enjoy the same geographic protection which, they argue, gives advantages to U.S. producers. And in addition, they have an advantage through the various imposts such as customs and turnover taxes which are levied on imports in addition to tariffs. The ECSC is therefore not only well able to meet its internal demands; but its markets are well protected, and there is ample capacity for exports.

Four product groups—tin mill, semifinished, sheet and strip, and plates—used to account for virtually all of the U.S. exports to the ECSC. Currently sheet and strip exports account for about half of U.S. exports to the ECSC; tin mill products account for most of the remaining export tonnage. Plate exports have virtually disappeared, and semifinished exports have fluctuated sharply from year to year.

In view of the ECSC's ample steel availability and the protective factors mentioned above, a reversal of the U.S. export trend of the last decade is not to be expected in the years ahead except as special commercial or cyclical situations may arise.

C. THE IMPORTANCE OF EXPORTS TO THE ECSC

In the past decade, the ECSC has been accounting for 50 percent or more of world trade in steel. Intra-ECSC steel trade grew from about one-third of total exports in the years 1955–59 to about one-half in 1963 and 1964. In 1965 ECSC steel exports increased almost 4 million tons, all to third countries. Intra-ECSC trade thus declined to 43 percent and was actually 300,000 tons lower than in 1964. About half of the increase in exports is estimated to have gone to the United States.

The United States has clearly become an increasingly important export outlet for the ECSC. In the years 1955–59, about 10 percent of the ECSC's third country exports were to the United States; in 1963–64, 16 percent; in 1965, 22 percent.

TABLE 112.—*ECSC significance of exports of semifinished and finished steel products, 1955–65*

[Million metric tons]

	Average, 1955–59	1960	1961	1962	1963	1964	1965
Total world steel trade	29.2	39.4	39.8	42.8	45.4	52.5	58.4
ECSC exports	16.3	23.1	22.8	22.4	22.8	26.0	29.9
To Common Market	5.5	9.6	9.8	10.4	11.4	13.2	12.9
To 3d countries	10.7	13.5	13.0	12.0	11.4	12.8	17.0
Of which to USA [1]	(1.1)	(1.5)	(1.5)	(1.7)	(1.8)	(2.1)	[2] 3.8
Intra-ECSC trade as percent of total ECSC exports	34.0	41.6	42.8	46.2	50.0	51.0	43.2

[1] Figures differ from those shown by American Iron & Steel Institute due to difference in products included in respective sources.
[2] Estimated.

Source: U.N. "Statistics of World Trade in Steel" and "The European Steel Market" series, both published annually.

ECSC exports have increased for all products except rails. In terms of share in exports, there has been a significant increase in sheet and strip, a decline in structurals. The share of exports of the other product groups remains relatively unchanged.

As for the future, the High Authority of the ECSC in the "General Objectives for 1970" is predicting 1970 third country exports of ECSC treaty products of about 9 million metric tons of finished product—a decline of almost one-half from the 1965 record of 17 million tons. This figure could well be on the low side. Historically, ECSC pressures to export have increased as domestic demand declined relative to availability. There have been rumblings from the High Authority that production must be geared to demand. It remains to be seen whether the Community can make progress in this direction.

D. THE U.S. EXPORT INTEREST IN THE ECSC COUNTRIES

The U.S. export interest in the ECSC countries will obviously be different for each U.S. producer. A factor common to the group: U.S. producers are interested in creating and developing commercial opportunities in the ECSC and in obtaining removal of tariff and nontariff trade barriers which might hinder the pursuit of such policies.

U.S. producers recognize that, since the ECSC steel producers make a full line of basic steel products in quantities sufficient to meet the demands of their domestic markets, such opportunities may be chiefly in (a) products of a particular grade or dimension not yet produced in sufficient quantity in the ECSC; (b) special commercial situations which may arise from time to time; (c) special relationships which might be developed with specific consumers; (d) developing markets for steel products not now in existence in which the U.S. producer may have an advantage.

In concluding this section on trade between the United States and ECSC and the importance of the U.S. market to the ECSC steel producer, it should be pointed out that for many products steel prices in the home markets of the ECSC countries are not very different from those prevailing in the United States. Therefore, one would expect that if sound commercial and economic polices are followed on both sides of the Atlantic, a large volume of steel trade between the United States and the ECSC would occur only in special situations such as peak business conditions, times of labor uncertainty, or strikes. Shipments on the scale now being made by the ECSC to the United States can, however, be expected to continue, and to become even greater, if the ECSC exporters continue—and are permitted—to follow their traditional pricing policies, quoting lower prices for exports than for the home market.

The tables on the following pages show United States–ECSC steel trade for major product groups and principal products in 1956–65, and ECSC exports by product groups.

TABLE 113.—*U.S. imports/exports of steel mill products from/to ECSC, 1956–65*

[Thousand metric tons]

	Total ECSC		Belgium-Luxembourg		France		West Germany		Italy		Netherlands	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
1956	963	288	544	29	233	13	142	88	19	57	24	102
1957	808	294	435	22	161	20	171	130	15	48	25	74
1958	1,090	225	708	14	145	3	183	123	11	31	45	54
1959	2,629	133	1,305	11	532	1	659	59	56	27	78	35
1960	1,902	327	908	24	315	24	534	106	66	80	83	93
1961	1,770	174	953	11	291	5	453	73	32	70	41	15
1962	1,893	123	1,131	9	271	15	417	60	26	28	48	12
1963	2,038	124	1,161	20	326	11	489	43	18	43	44	8
1964	2,345	237	1,256	19	399	14	613	39	32	140	44	25
1965	3,802	80	1,589	17	778	5	1,068	16	246	33	121	9

Source: American Iron & Steel Institute.

TABLE 114.—*U.S. imports/exports of hot rolled sheets from/to ECSC, 1956–65*

[Metric tons]

	Total ECSC		Belgium-Luxembourg		France		West Germany		Italy		Netherlands	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
1956	[1] 13,752	10,805	(1)	4,959	(1)	454	(1)	4,936	(1)	33	(1)	422
1957	[1] 8,884	22,054	(1)	58	(1)	12	(1)	17,492	(1)	204	(1)	4,288
1958	4,999	5,484	4,632	7	261	24	102	5,052	3	65	0	336
1959	73,627	701	26,637	4	4,282	0	32,629	390	0	299	10,079	8
1960	115,132	8,180	13,932	464	5,254	1,417	57,260	4,886	2,991	475	35,695	938
1961	10,405	3,951	8,218	192	710	1,082	1,393	1,880	81	516	3	280
1962	7,927	9,667	2,362	795	1,368	1,894	4,196	3,155	0	2,692	2	1,131
1963 [2]	32,110	16,308	1,785	5,136	3,431	3,117	26,794	5,993	4	1,374	96	688
1964 [3]	70,850	93,933	12,313	11,294	695	2,957	57,798	14,090	44	63,465	0	2,126
1965	398,957	93,934	107,854	11,295	108,750	2,957	159,978	14,090	28	63,466	22,350	2,126

[1] Sheet and strip imports are combined in the AISI statistics. Individual product detail can be obtained by compiling schedule A commodity classification data from FT-110 reports. In view of the insignificance of total sheet and strip imports during this period, this lengthy manual compilation has been omitted and only the total figures shown.

[2] Due to changes in the tariff schedule effective Aug. 31, 1963, imports of hot and cold rolled sheets are not clearly identifiable. The combined hot and cold rolled sheets are shown.

[3] A clear separation of hot and cold rolled sheets became available with tariff schedule changes effective June 1, 1964. The hot rolled sheet figure therefore is overstated to the extent of the first 5 months' inclusion of pickled sheets in the cold rolled category, and the cold rolled sheets understated to the same extent.

Source: American Iron & Steel Institute.

TABLE 115.—*U.S. imports/exports of cold rolled sheets from/to ECSC, 1956–65*

[Metric tons]

	Total ECSC		Belgium-Luxembourg		France		West Germany		Italy		Netherlands	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
1956	[1] 8,884	57,645	(1)	4,462	(1)	1,411	(1)	31,028	(1)	19,356	(1)	1,388
1957	[1] 18,114	55,401	(1)	1,879	(1)	73	(1)	46,288	(1)	5,917	(1)	1,245
1958	344	69,972	75	4,189	5	28	263	55,539	0	6,752	0	3,464
1959	8,775	51,638	3,524	3,035	2,922	24	2,329	43,775	0	2,106	0	2,697
1960	39,377	150,008	15,473	9,386	4,966	15,361	6,378	81,807	10,554	37,839	2,006	5,616
1961	570	57,674	166	1,947	28	366	367	48,574	0	4,141	11	2,646
1962	3,206	48,618	142	891	43	777	455	42,643	0	3,403	2,567	904
1963 [2]	32,110	45,318	1,785	5,302	3,431	1,947	26,794	27,233	4	9,174	96	1,663
1964 [3]	101,754	17,062	806	3,312	26,653	1,556	74,284	7,685	6	3,534	5	976
1965	477,566	17,062	54,260	3,312	144,312	1,556	220,948	7,685	116	3,533	57,930	976

[1] Sheet and strip imports are combined in the AISI statistics. Individual product detail can be obtained by compiling schedule A commodity classification data from FT-110 reports. In view of the insignificance of total sheet and strip imports during this period, this lengthy manual compilation has been omitted and only the total figures shown.

[2] Due to changes in the tariff schedule effective Aug. 31, 1963, imports of hot and cold rolled sheets are not clearly identifiable. The combined hot and cold rolled sheets are shown.

[3] A clear separation of hot and cold rolled sheets became available with tariff schedule changes effective June 1, 1964. The hot rolled sheet figure therefore is overstated to the extent of the first 5 months' inclusion of pickled sheets in the cold rolled category, and the cold rolled sheets understated to the same extent.

Source: American Iron & Steel Institute.

WEST GERMANY

Since 1960, steel capacity has been increased from 39.6 million net tons to 51.7 million tons, or at the rate of about 4 percent annually.

By 1966, demand for German steel had fallen to 39 million tons and capacity was used at an alltime historic low of 70 percent. In that year, 25 percent of all steel consumed in Germany was imported, productivity per hour worked had increased 25 percent between 1960 and 1966, but wages had increased 50 percent. Interest on loans had risen from 7 percent to 10 percent, and prices for export steel had fallen by some 40 percent since 1960. As a result, many steel producers operated at a loss in 1966; Krupp's loss was over $6 million.

While steel still accounts for 93 to 94 percent of metal consumption, Germany produced 2.2 million tons of plastics in 1965 and consumed 666 million tons which displaced about 2¾ percent of the 25.3 million tons of consumption of domestic steel mill products. Aluminum displaced another 1½ percent.

Other reasons for decreased demand for steel are the well-known factors of reduction of the weight of steel used in construction and manufactured articles, as well as the much longer life of articles made from steel due to better anticorrosion properties.

TABLE 116.—*Foreign trade, between West Germany and the United States, 1960–66*

[In millions of deutsche marks]

Year	Total foreign trade			Steel products			Automotive [1]			Machinery		
	Export	Import	Deficit	Export	Import	Surplus	Export	Import	Surplus	Export	Import	Deficit
1966	7.178	9.178	−2.000	445	10	+435						
1965	5.741	9.196	−3.455	470	26	+444	2.154	584	+1.570	854	933	−79
1964	4.785	8.066	−3.281	242	57	+185	1.857	430	+1.427	653	750	−97
1963	4.195	7.942	−3.747	174	66	+108	1.524	322	+1.202	500	702	−202
1962	3.858	7.033	−3.175	156	60	+96	1.299	263	+1.036	486	745	−259
1961	3.497	6.100	−2.603	171	71	+100	1.021	327	+694	444	678	−234
1960	3.768	5.977	−2.209	242	97	+145	1.183	259	+924	415	516	−101

[1] Until 1963 includes airplanes.

Source: Official German data.

ITALY

Inquiries made of Associazione Industrie Siderurgiche Italiane gave the following data for capacity and consumption for steel products, as reported to the High Authority:

[Millions of metric tons]

Year	Capacity	Consumption
1955	5.7	6.0
1956	6.4	6.3
1957	7.5	6.8
1958	7.9	6.8
1959	7.9	7.7
1960	8.7	9.6
1961	9.8	11.4
1962	10.4	12.8
1963	10.9	14.1
1964	11.6	12.1
1965	14.9	12.5
1966	17.4	14.6
1967	18.6	
1968	19.1	
1969	20.4	
1970	20.6	

The indicated expansion plans make it likely that the Italian steel industry may want to export the widening divergence between the growing capacity and the probable domestic demand.

FRANCE

EMPLOYERS' FEDERATION OF THE
FRENCH IRON METALLURGY,
Paris, March 31, 1967.

Mr. R. M. WEIDENHAMMER,
Committee on Finance,
U.S. Senate, Washington.

DEAR SIR. Thank you for your letter of February 21 in which you asked me to let you know what my thoughts have been regarding the request addressed by the U.S. steel industry to Congress to establish a complementary tariff protection under the form—I am relying on the information available to me at present—of a temporary surtax on imported goods. I do it very gladly but it is not my intention to submit to you an exhaustive study on it. All I wish to do is to indicate to you a few reactions to what I may call a measure of which I, by the way, do not have any official knowledge and whose exact objectives I do not know.

First of all I wish to mention the difficulty which I personally experience when trying to grasp the real meaning that should be ascribed to a measure of this sort. Moreover, I know that this feeling of mine is largely shared by my colleagues.

I, personally, do not see much opportuneness in a measure which, as we see it from here, seems to run counter to the Geneva negotiations of the "Kennedy round.".

The U.S. steel industry is, indeed, the only great world iron metallurgy whose production and benefits achieved new records in 1966 and whose margin of self-financing will—seen at least with our eyes—stay extremely large if we consider the steel market world crisis. Its financial effort in the fields of investment and research is beyond all comparison to the possibilities of any other steel industry in this world. The U.S. steel industry, nevertheless, asks for an increased tariff protection when we all agree on the necessity of a tariff harmonization and a tariff reduction and concur in the U.S. plan according to which Congress and the Federal Government aim to obtain in agreement with the "Trade Expansion Act," a general tariff reduction of 50 percent.

This position intervenes exactly at a time when the official U.S. delegation wishes to obtain from the C.E.C.A. [Communauté Européenne du Charbon et de l'Acier (European Coal and Steel Community—ECSC)] its consent to a "target rate" of 5 percent on steel and when this delegation severely criticizes the refusal of the governments of the European Steel Community to lower by approximately 6.5 percent a tariff which has already spontaneously been cut down by 50 percent without any ensuing similar action by the world iron metallurgies at the time the Common Market came into being. The U.S. market is still benefiting by a protection which for certain products goes frequently up to 10, 12.5, and 14 percent.

Moreover, it seems to me that it is fitting not to lose sight of the fact that the U.S. commercial balance rests on the positive side with some $4 billion which represents more than one-third of the total French exports. During the same period, the French commercial balance is only covered up to the amount of 91 percent and the French deficit with respect to foreign countries amounts to about 5 billion francs, or approximately $1 billion. Traditionally, by the way, the Franco-United States commercial balance is showing a sensible deficit to the disadvantage of France and is, according to the periods, only covered between 40 and 50 percent. Thus, for example, the average deficit of the Franco-United States commerce was approximately $500 million yearly during the last 4 years.

The U.S. steel industry emphasizes the deficit which occurs in its outer trade. This is correct as far as tonnage is concerned. It appears much less in value due to the high degree of elaboration and to the considerable value of a ton of exported U.S. steel.

It is, undoubtedly, true that the Franco-United States steel balance is advantageous to France but the dollars which are spent for the imported French steel serve to pay for the U.S. coal, to cover the amortization of the American rolling mills built in Lorraine or in the north of France, to buy the necessary separate parts, and to pay for the royalties of utilized U.S. licenses.

In connection with the imports of U.S. coal the purchases of the French steel industry represent today 1.2 to 1.3 million tons as opposed to a little more than 1 million tons in 1964 and only 400,000 to 500,000 tons from 1962 to 1963. During the same period we sold 630,000 tons of steel to the United States as opposed to a little more than 300,000 tons from 1963 to 1964 and approximately 200,000 tons from 1960 to 1962. The progression is, as one sees, likewise twofold and threefold as it is the case with our coal purchases. In 1966, we bought approximately 100,000 tons of U.S. coal less than in 1965, but we also sold 100,000 tons less of French steel to the United States and our sales in 1966 dropped to 632,000 tons as against 739,000 tons in 1965, while the U.S. steel imports continued progressing or at least kept their level.

This example and this parallel which, undoubtedly, are fortuitous in one way have the merit of emphasizing the correlation between the U.S. coal exports and U.S. steel purchases: Commerce calls for commerce. The sum of approximately $75 million for French steel sold in the United States allows France to purchase in addition to other items U.S. imported steel for about $35 million.

But we likewise have to consider that if the U.S. coal returns to the United States as a part of French steel, the French steel returns to France in the form of machines: 40 percent of the French imports from the United States consist of machine and transportation material manufactured of steel; our purchases of U.S. material and machines are incessantly increasing and represented $230 million in 1965 (15 percent of the material and the machines imported into France); the U.S. material represents 28 percent of the optical and measuring instruments; 29 percent of the material for electrical construction and 62 percent for planes, These figures can be usefully compared with what the U.S. market represents for our own exports: approximately 10 percent for steel, only 3 percent for our machines, 11 percent for our planes, and 13 percent for our optical material.

The foreign steel imports to the United States against which the U.S. steel industry is protesting thus favor the continued outflow of U.S. material produced with a considerable value of U.S. technical know-how and specialized skill.

Moreover, it would be fitting to show here the relative importance of the U.S. steel and, notably, the French steel imports.

The statistics of the Department of Commerce effectively show a progression of the foreign deliveries, 12.8 million short tons in 1966. But of this tonnage 8.8 million only are iron metallurgical products in the European sense of the term (pipes and wire-drawn goods excluded); of these 8.8 million tons only about a half comes from Europe and only 700,000 tons from France. The French deliveries represent only a little less than 8 percent of the steel imported by the United States against 30 percent for the other ECSC [European Coal and Steel Community] and 45 percent for Japan. At this juncture, we should recall that Japan delivered only 16 percent of the foreign steel imported into the United States from 1960 to 1961.

These tonnages, however important they may be, must be considered on the scale of the U.S. market. They definitely represent only 8 to 9 percent of the domestic U.S. deliveries while on the other hand the imports in France represent one-third of the deliveries of the French plants and one-fourth of the supply of the internal market; the last percentage even goes up to 50 percent for certain products such as H-beams and heavy sheet metal. The French market absorbs proportionally three times more foreign steel than the U.S. market.

I wish to add one more point to this too-long account. Often we hear people talk about the apparent contradiction of exporting European steel to the United States. To me this does not appear at all to be antieconomic if we look at the world as a real open market to free competition, however paradoxical it may seem, it is, indeed, not antieconomic to transport French steel to the United States or U.S. coal to Europe or South American iron ores to the United States. The freight to the ports on the Atlantic coast, the Gulf [of Mexico], Chicago, or Pittsburgh run from $13 to $15. Those to San Francisco are not above $25 in spite of the distance.

You are in a better position than I to acknowledge that these prices for shipment are sensibly lower than those paid for the domestic U.S. railway transportation between the American mills and the numerous markets of destination when the latter are a little far from the centers of production.

I apologize for having written a hasty and spasmodical report on a subject that, undoubtedly, deserves some deeper thoughts. Nevertheless, I hope it will help you grasp the reason for the emotion that has overcome the European economic circles in the face of a possible complementary tariff protection that will run counter to the U.S. steel imports.

Yours very truly,

J. FERRY, *President.*

Steel Industry in the United Kingdom

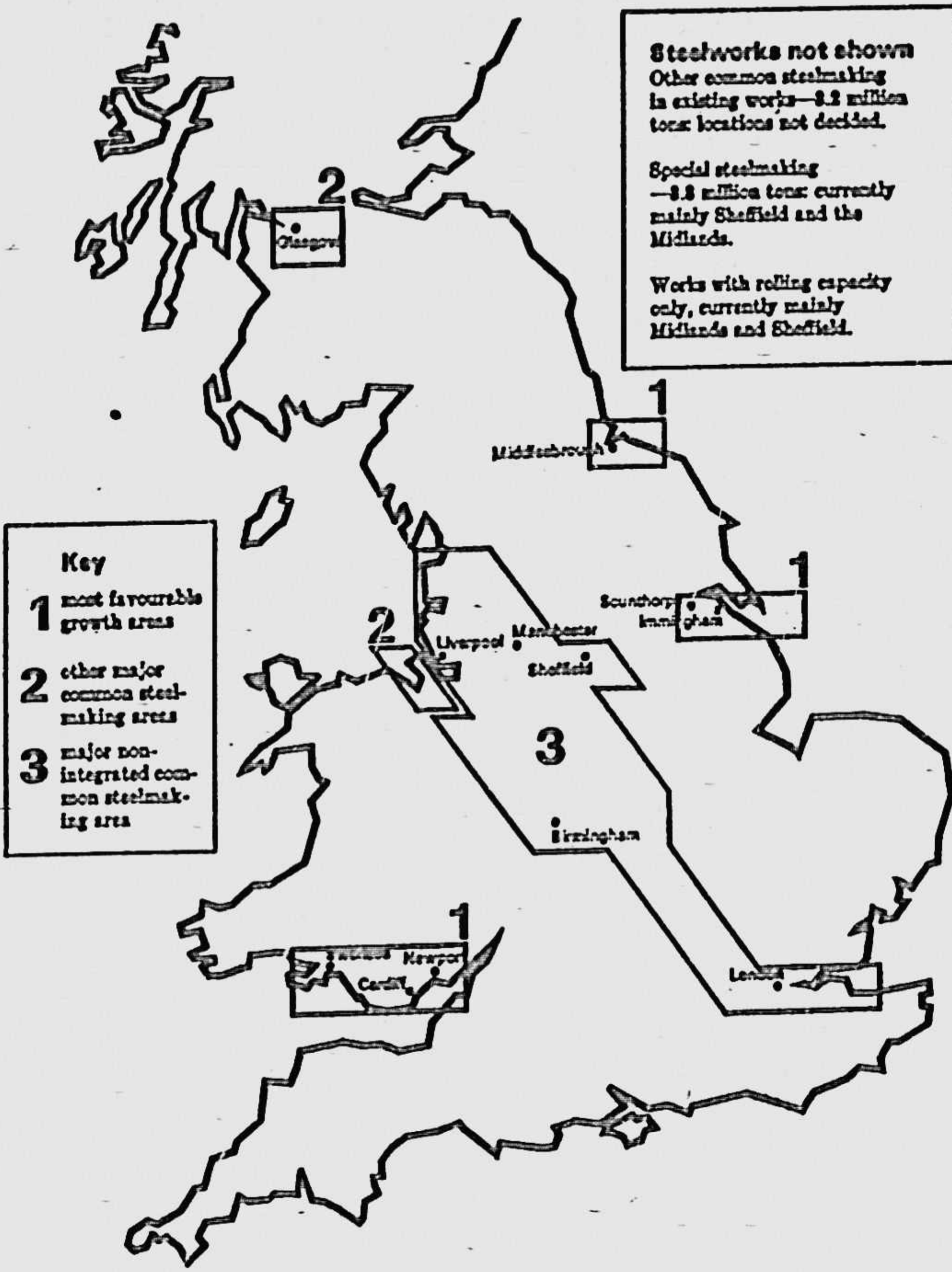
The United Kingdom steel industry was nationalized for the second time in July 1967. Its policies as to investment and pricing had been supervised since return to private ownership by the Iron and Steel Board, which set prices on the basis of a reasonable return on the most efficient facilities.

In July 1966, the so-called Benson report was published. The Benson Committee had been set up in 1965 by the British Iron and Steel Federation to determine the optimum structure of the United Kingdom steel industry by 1975.

This report suggested:

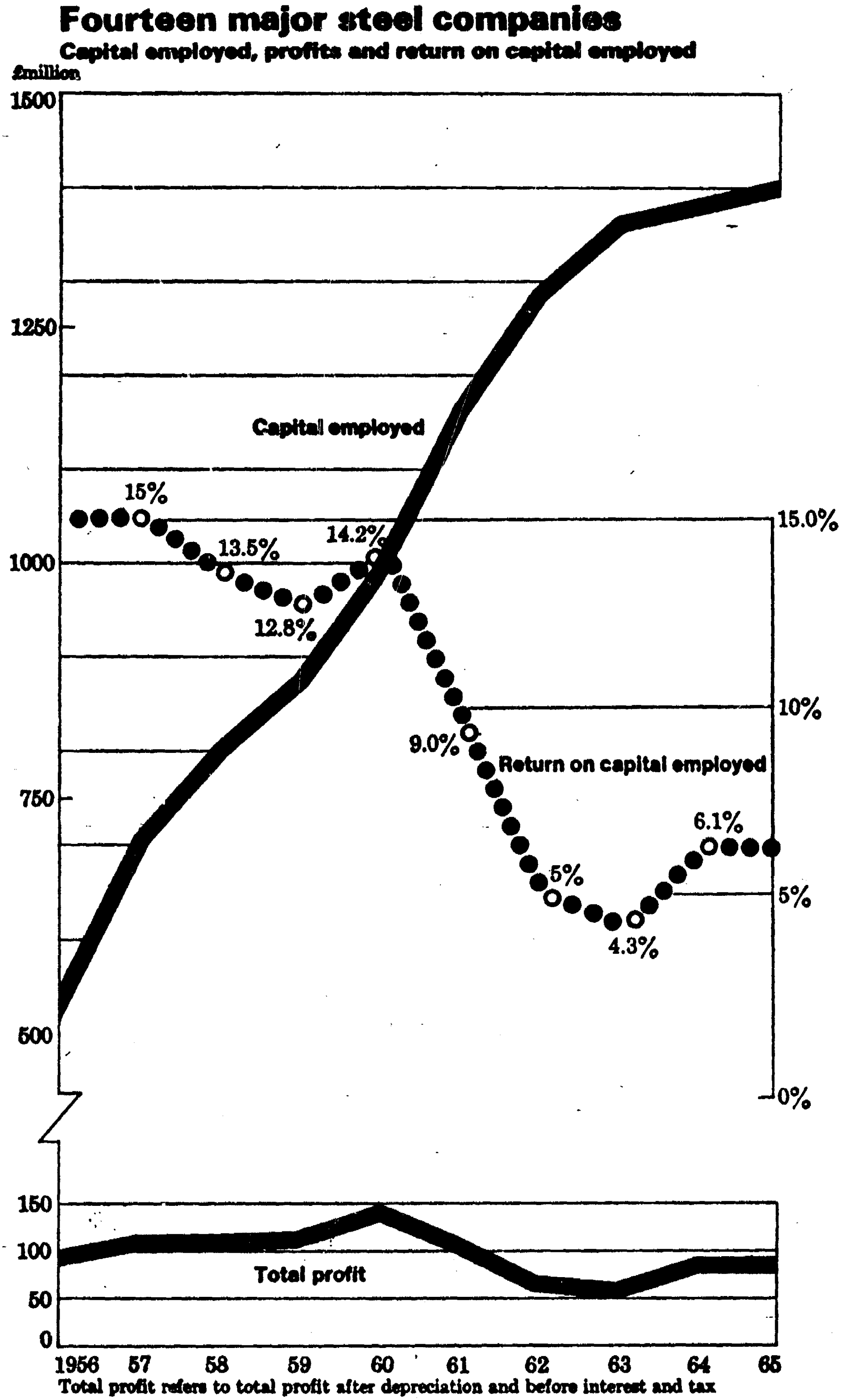
1. A regrouping of the companies into a few units, each larger than the industry had heretofore known. Net additions to capacity would be only slightly more than 3 million tons by 1975, but some 9 million tons of present capacity would be retired and replaced by modern facilities.
2. The new capacity would be concentrated into large integrated works located in three growth centers—North Lincolnshire, South Wales, and Tees-side—as shown on map below in squares designated "1." These works would be located at deep-water ports, providing facilities for the importation of foreign iron ore. Steel making would be by the BOF process, with the smaller nonintegrated units near industrial centers making steel in electric furnaces from local scrap.
3. In 1965 steel produced by 317,000 workers amounted to 27 million tons; in 1975 it was expected that 35.3 million tons would be produced by only 215,000 workers.

The steel industry in the mid-1970s



The following information was submitted to the committee staff in reply to the questionnaire:

Chart 117 indicates the decline of profits since 1960 which coincides with the declining trend of "Continental European Export Prices" as shown in chapter VI.



Fourteen major steel companies
Capital employed, profits and return on capital employed
£million
1500
1250
1000
750
500
150
100
50
0
Capital employed
15%
13.5%
14.2%
12.8%
9.0%
Return on capital employed
5%
4.3%
6.1%
15.0%
10%
5%
0%
Total profit
1956
57
58
59
60
61
62
63
64
65
Total profit refers to total profit after depreciation and before interest and tax

CHART 117

The "British Steel Corporation" in its first report presented to Parliament by the Minister of Power by command of Her Majesty, August 1967, made these comments on the world steel surplus:

"World crude steel production grew by 74 percent between 1958 and 1966 from 264 to 460 million metric tons. A significant feature within this overall growth was the increased output of newer producing countries, and particularly the rapid emergence of Japan as a major steel producer.

"This growth of production has been accompanied by the continuance of worldwide surplus capacity. This surplus capacity is likely to remain an important factor in world trade and current estimates are that it will be between 60 and 70 million metric tons in 1970.

"Several major causes underlie the creation of this surplus capacity. These include, first, the rapid development of indigenous steel industries in a number of countries that have traditionally been importers; i.e., Canada, South Africa, and Australia. Second, the ending of the demand generated by the postwar reconstruction period and the slower subsequent growth of demand than had been provided for; and thirdly, expansion of capacity which has resulted automatically from modernization programs associated with changes in the technology of production.

"Severe competition induced by the surplus has weakened prices to the point where much of the international trade is unprofitable and in many cases does not even cover full production costs."

Both France and Germany, partly in response to world competition, are now concentrating their industries into a small number of large units. The profitability of the United Kingdom industry, in common with that of many other major producers, has dropped. Return on capital employed by the 14 major companies (after depreciation but before interest and tax) fell from 13.5 percent in 1958 to 3.7 percent in 1966.

The Corporation regards its basic objective as being the achievement of the maximum long-term return on its capital investment consistent with—

(*a*) Strengthening its marketing and technological position in the world steel industry;

(*b*) Providing British industry with (steel) products that are competitive in price, quality, and service; and

(*c*) Insuring the efficient and socially responsible utilization of human resources.

The British Steel Corporation, since it took over the nationalized industry at the end of July 1967, has found that the previously privately owned steelmakers had been selling steel to overseas customers at very different and often very low prices.

By central control of exports, the British Steel Corporation hopes to avoid these unprofitable sales. It is felt that by stopping exports of steel at "dumped" prices, some progress toward a more stabilized world steel market could be made. Steelmakers would prefer not to sell at a loss but they are forced to do so by the world steel surplus capacity with so many competitors chasing after too few customers.

The British Steel Corporation is offering its domestic customers "loyalty rebates" if they buy only from it instead of from foreign steelmakers at "dumped" prices. In order to permit some latitude of supply, such "loyalty rebates" are granted even if up to 5 percent of a domestic customer's needs are met from imports, provided, however, that they are not bought at "dumped prices."

The following information was supplied by the BISI:

Average hourly earnings in United Kingdom iron and steel industry, 1947–66

	Shillings	Pence		Shillings	Pence
1947	3	2	1962	7	8
1950	3	7	1963	8	0
1953	4	6	1964	8	8
1956	5	8	1965	9	6
1959	6	8	1966	9	9

Total labor costs per hour are difficult to assess since company arrangements vary widely in the field of "fringe benefits." However, an approximation was recently made within this office on lines which would permit a measure of comparison with figures produced by the ECSC so far as information available in the United Kingdom would permit, which suggested that for the year 1964 there should be added to the figure for average hourly earnings shown above a little over 1s. 6d. per hour per worker to afford an estimate of total labor costs. Changes since 1964 are unlikely to affect the validity of this estimate materially.

Table 118 gives an index of the trend in labor productity in the United Kingdom steel industry.

TABLE 118.—*Labor productivity in the United Kingdom steel industry, 1950–66*

[Index, 1954=100]

	Output per man-hour		Output per man-hour
1950	80. 3	1959	108. 2
1951	84. 4	1960	120. 9
1952	90. 4	1961	113. 9
1953	93. 2	1962	112. 9
1954	100. 0	1963	122. 7
1955	106. 9	1964	134. 2
1956	108. 1	1965	141. 4
1957	111. 2	1966	139. 5
1958	105. 5		

With regard to hourly labor costs divided by output per man-hour, the calculation can be done for the United Kingdom in respect to average hourly earnings, and since it is the trend that you are interested in, the omission of fringe benefits from the calculation will not constitute a material disadvantage. The index is given on this basis in table 119.

TABLE 119.—*Direct labor costs per unit of output, 1955–66*

[Index, 1954=100]

1955	102. 4	1961	139. 9
1956	111. 6	1962	145. 4
1957	115. 8	1963	141. 6
1958	127. 2	1964	139. 5
1959	129. 3	1965	142. 9
1960	123. 9	1966	154. 5

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Raw Material Costs

The buying costs of imported ore to the United Kingdom steel industry are generally the same as elsewhere. However, landed costs tend to be inflated in some measure by the poor port facilities, both directly and because these in turn limit access to the economies connected with the use of large ore carriers.

Scrap is at present a little dearer than in the United States in bought-in terms, despite the existence of governmental limitations on scrap exports whenever the home demand for scrap so requires. Moreover, account has to be taken additionally of the effect of the scrap levy operated in the United Kingdom. (This is an arrangement internal to the industry, by which, in order to prevent the distortions as between scrap and pig iron usage in steelmaking, which could arise from the moderation of scrap prices consequent on the export ban, steelmakers pay a levy on their receipts of bought scrap, which is used to make payments to steelmakers on their consumption of pig iron, the arrangement self-balancing financially over a period.) The present total cost of scrap to United Kingdom steel furnaces, including levy, is £12.8.0. per ton for No. 2 specification—heavy wrought iron and steel scrap, minimum one-fourth inch thick. For an approximately equivalent grade (Grade 11) in the ECSC, the current domestic price indications in Community countries are as follows: West Germany, £10.6.0.; Belgium, £10.5.0.; France, £9.16.0.; Italy, £13.7.6.; Netherlands, £10.19.0. These prices are all delivered works per long ton, except the Italian which is delivered to the Milan area. The comparable U.S. price (No. 1) is currently £9.9.3. per long ton delivered works.

Energy costs have moved against the United Kingdom steel industry over the past decade, largely because of the effects of protective devices to safeguard the coal industry, notably the duty on heavy oils and the ban on imports of coal. The consequence is that the clear advantage in energy costs enjoyed by United Kingdom steelmakers in the early fifties has now virtually, or possibly completely, gone.

Table 120 shows movements in the cost of raw materials used per ton of crude steel made (not per ton of the raw material itself). It thus reflects economies in the consumption of raw materials (cf. the reduction in coal usage with the shift to oil firing) as well as changes in raw material prices as such.

TABLE 120.—*Index of raw material costs per ton of steel, 1955–66*

[1938=100]

Year	Ore	Coke	Coal	Scrap	Other materials	Total
1955	438	476	179	252	423	347
1958	527	590	159	243	427	379
1961	457	629	113	257	489	376
1962	461	650	101	237	560	382
1963	436	580	87	247	574	367
1964	440	613	65	232	608	358
1965	445	580	52	235	608	361
1966	442	603	47	259	669	379

The Steel Industry of the Communist Bloc

The growth of the U.S.S.R. steel industry since the end of World War II has been spectacular, exceeded only by Japan and Italy.

U.S.S.R. raw steel production

[In million net tons]

1966	106.4	1950	29.8
1965	100.3	1947	17.0
1960	72.0	1940	20.1
1955	50.0	1930	6.5

The magazine "U.S.S.R." in July 1962 stated, as follows:

Expansion of the iron and steel industry is another primary requisite for the foundations on which a Communist society will be built. By 1980 Soviet steel output will climb to 250 million metric tons a year [275.5 million net tons.] In 1960 the United States, Britain, France, and West Germany combined produced 168 million metric tons. The target figure of 250 million metric tons [275.5 million net tons] means that the Soviet Union must in 20 years produce three times the present American steel output.

But even this 275.5 million net tons goal is based on a growth rate of steel output of only 3.8 times of that of 1960 while total industrial output was to be 6.2–6.4 times that of 1960. Other sectors of the economy were planned to grow as follows:

Number of times 1980 output will exceed 1960 level

	1980
Electricity	10.3
Oil	4.8
Gas	15.2
Cement	5.2
Machine-tool and metal-working industries	11.0
Mineral fertilizers	9.7
Goods for cultural and household use	10.1

These data, therefore, indicate that as Russia approaches a higher standard of living and achieves a more mature economy, the demand for steel is expected to grow only at half the rate of total industrial output. From more recent reports, it appears that since 1962 the expansion goal for steel capacity has been considerably reduced below these 275 million net tons. An estimate of 1970 capacity published by ECSC in June 1967 is 139 million net tons. The following steel consumption projections for the Communist bloc were prepared for this study by BDSA, U.S. Department of Commerce.

Steel Consumption Projections—Centrally Planned Countries

The steel consumption projections for the centrally planned countries are based on regression equation relationships between steel consumption and gross national product (GNP) in each country during the period 1956–64. Projections of GNP in each country were then used to derive the steel consumption projections from these relationships.

The regression equation for mainland China was derived from data for 1956 through 1964, excluding data for 1959 through 1961. The years 1959 through 1961 were years of exceptional growth in the Chinese steel industry, and it was believed that a more correct trend would appear as a result of their exclusion.

In light of the industrialized nature of the Soviet economy, the growth rate of steel consumption in the U.S.S.R. was projected to increase at decreasing rates that are lower than the projected growth rates of GNP.

GNP projections were obtained by applying rates of growth of gross domestic product projected by the U.N.[1] to 1966 GNP's. These growth rates are given as ranges, and consequently, the steel consumption projection's take the form of ranges.

Population projections, centrally planned countries

[In millions]

	1964	1970	1975	1980
Centrally planned countries	1,065.0	1,189.0	1,306.0	1,441.0
U.S.S.R	227.8	242.6	254.9	268.5
Eastern Europe *	99.4	103.2	107.0	111.1
Mainland China	738.0	843.0	944.0	1,061.0

Annual percentage change in gross national product, centrally planned countries

	1964-75		1975-80		1964-80	
	Low	High	Low	High	Low	High
Centrally planned countries	4.5	6.0	4.5	6.0	4.5	6.0
U.S.S.R	5.0	6.5	5.0	6.5	5.0	6.5
Eastern Europe	4.2	5.5	4.3	5.5	4.2	5.5
Mainland China	3.5	5.0	3.5	5.0	3.5	5.0

Steel consumption projections, centrally planned countries

[Ingot equivalent in thousands of short tons]

	1964	1970		1975		1980	
		Low	High	Low	High	Low	High
Centrally planned countries	136,531	195,572	210,188	253,081	294,076	321,971	402,456
U.S.S.R	89,120	126,179	134,152	159,491	182,128	198,725	244,525
Eastern Europe *	32,541	43,022	49,358	59,735	68,920	76,910	94,059
Mainland China	14,870	23,371	26,678	33,855	43,028	46,336	63,872

* Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania.

Source: United Nations.

[1] United Nations Food and Agriculture Organization, Agricultural Commodities—Projections for 1975 and 1985, vol. II (1966).

Average annual percentage change in projected steel consumption, centrally planned countries

	1964	1970	1970	1975	1975	1980	1964	1980
Centrally planned countries	6.2	7.4	5.3	6.9	4.9	6.4	5.5	7.0
U.S.S.R.	6.0	7.1	4.8	6.3	4.5	6.0	5.2	6.5
Eastern Europe	5.9	7.2	5.3	6.9	5.2	6.4	5.5	6.9
Mainland China	7.9	10.2	7.7	10.0	6.4	8.2	7.4	9.5

Steel consumption per capita projections, centrally planned countries

[In pounds]

	1964	1970		1975		1980	
		Low	High	Low	High	Low	High
Centrally planned countries	243.0	311.0	335.0	366.0	425.0	423.0	529.0
U.S.S.R.	783.0	1,041.0	1,107.0	1,252.0	1,429.0	1,479.0	1,821.0
Eastern Europe	655.0	893.0	957.0	1,111.0	1,283.0	1,385.0	1,693.0
Mainland China	40.3	55.3	63.3	71.7	91.3	87.3	120.4

CHAPTER XIV

ROLE OF U.S. COAL EXPORTS TO FOREIGN STEEL INDUSTRIES IN U.S. FOREIGN TRADE

The United States became the world's leading exporter of coal during World War II. Up to 1950 Canada was still the principal foreign market for U.S. coal which accounted for more than 50 percent of Canada's coal consumption. Canadian capital was and still is invested in coal mining facilities in this country, and U.S. coal producers have maintained sales organizations in Canada as they do in the United States. Overseas coal exports from the United States for the first time exceeded shipments to Canada in 1947 at the height of the European fuel shortage. Not until 1951, however, did overseas exports, principally to Europe, become permanently more important and at the present time, they are twice as large as exports to Canada.

Prior to World War II, Great Britain was the world's leading exporter, and its preeminence in international coal trade goes back to the 19th century. During this period the coal industry had a dominant influence on the economic and social life of the British nation. It provided more employment than any other industry with the possible exception of agriculture, and throughout this period British coal was an important factor in many international trade agreements. The reason for the decline of the British coal industry, which began in the late 1920's, can be traced to the decline of her coal export trade, largely attributable to the displacement of English coals by those produced on the Continent.

Early in the postwar II period, a fuel supply crisis developed throughout most of the world. The coal mines of the continent of Europe were being rebuilt and coal supplies were short, even in the United Kingdom. The United States was the only country able to fill the fuel deficit throughout the world. Between 1944 and 1947 U.S. overseas exports skyrocketed from 2 million tons to 43 million tons. This fuel shortage had abated by 1949, British exports increased sharply, and in 1950 U.S. overseas exports fell back to 2 million tons.

During 1946 and 1947, when the Suez Canal was closed and fuel shortages threatened Europe, U.S. coal and coke exports reached an alltime peak of 81.5 million tons. The Suez crisis was settled early in 1957, but U.S. coal shipments remained at a high level throughout that year due to prior purchase commitments. This resulted in a large surplus of coal in Europe; consequently, U.S. overseas exports dropped to 25 million tons in 1959 and remained at that relatively low level until 1962 when they again began a gradual rise.

Several other important developments occurred during the postwar period with respect to the U.S. trade balance in fuels as shown on table N-1.[1] An unfavorable trade balance for petroleum products

[1] See appendix for all tables prefaced by a letter.

was shown first in 1950, but the value of oil imports did not consistently exceed exports until 1953, and since then the U.S. oil trade deficit has widened steadily. In 1964, for the first time in recent history, the value of coal exports exceeded the total value of petroleum exports, and in 1966 coal exports made up almost a third of the petroleum trade deficit as shown in table N-1. Although the value of petroleum imports did not exceed exports until 1953, the volume of petroleum imports was greater than exports as early as 1948. The reason for this apparent disparity in the foreign petroleum trade balance is due to the respective unit values of oil imports and exports. The United States has exported higher priced petroleum products and imported cheaper crude oil.

The total value of coal production in the United States is a relatively small percentage of gross national product, i.e., less than one-half of 1 percent. Exports of coal in 1966, however, accounted for about 2 percent of total merchandise exports, or $493 million.

Coal Exports

Steam coal and coking (metallurgical) coal are two general classifications which designate how coal is used, i.e., in boilers to generate steam or in coke ovens to produce coke for blast furnaces. Anthracite and bituminous coal is used as steam coal, but 99 percent of coal carbonized in coke ovens is bituminous. Coking coal must conform to exacting chemical specifications, and commands a higher price than steam coal because mines producing metallurgical coal usually have higher production costs. Although 25 States produced coal in the United States during 1966, only 10 States produced any coals suitable for blast furnace fuel—the three principal States being West Virginia, Pennsylvania, and Kentucky. Because metallurgical coal for steel making accounts for two-thirds of U.S. coal exports, these three States, in addition to Virginia, are the major sources of supply. Several countries import only metallurgical coal. It must be pointed out, however, that metallurgical coal is not only used for coking purposes. Due to its low sulfur and high b.t.u. content, it also makes an excellent steam coal and space heating fuel, but, due to the higher price—several dollars per ton—its use for heating rather than in the blast furnace is considered wasteful.

The principal countries exporting metallurgical coal are: the United States, Australia, and West Germany. Coal exported from the United States is marketed widely, as shown in table N-2. Australian coal is principally exported to Japan. France has been the principal customer of West German coal. Currently the United Kingdom does not import U.S. coal, even though during the past several years British steel producers have sought permission to import U.S. coking coal. The British Government has so far consistently refused to license such imports due to their effect on employment and the balance of payments.

Restrictionist Government Policies

Various measures have been undertaken by foreign governments to restrict the importation of coal from the United States as well as other countries, or otherwise adversely alter the competitive status of imported coals in relation to domestically produced coals. In most countries these restrictive trade measures are part of national policies affecting all energy sources, whereby national standards are established and measures are adopted that determine the degree of competition permitted to exist between foreign coal and oil, and indigenous coal that historically had been the major source of domestic energy. In certain countries, such as Yugoslavia and Turkey restrictions on coal imports have been due to problems associated with their balance of payments. In Japan, the Government requires a minimum percentage of domestic coal to be used in coking operations. This ratio is not rigid but the policy is attributed to a number of reasons; such as, balance of payments, high transportation costs on imported coking coals, and the insistence on maximum utilization of domestic coal resources. In spite of these limitations of coal imports from all countries, Japan has been the largest importer of U.S. coking coal during the last decade.

All major coal-consuming countries, except Italy, have exercised control over the volume of U.S. coal imports through licensing systems. Belgium and the Netherlands, largely due to requests from their steel industries, have eased restrictions on U.S. coal imports. In France, where imported coal is subject to Federal price controls, in order to maintain competition between foreign and indigenous coals, the price of U.S. coal has been reduced recently to steel producers in Lorraine, and a tidewater plant at Dunkirk operates almost entirely on U.S. coking coal.

German imports of U.S. coal are restricted by a tariff quota-system which regulates the amount of duty-free coal that can be imported from non-ECSC exporters. The total duty-free quota is 6 million metric tons annually of which about 5.5 million metric tons has been allocated to non-Communist countries. Imports in excess of the duty-free quota are taxed at the rate of DM 20 (U.S. $5) per ton, a measure designed to protect the German coal industry.

In the United Kingdom, the National Coal Board is the only authorized importer of coal. Applications for licenses to import U.S. coking coal have been consistently rejected.

Exports to Canada are unrestricted but there is a duty of 50 cents a ton on noncoking coals. The competitive impact of the Canadian duty on bituminous coal is absorbed by the lower costs, free on board mine, in the United States compared to the higher mining costs in the Atlantic Provinces. However, the Canadian import-duty functions as a penalty on U.S. coal with respect to competition between coal and nuclear energy. The Canadian Government has paid subsidies to the domestic coal industry, an amount necessary to permit Canadian coal to meet the delivered cost of U.S. coal, even after taking into account quality differences.

Other countries grant various forms of economic assistance to their indigenous coal industries. Interest-free government loans have been extended in some countries such as Japan, to assist modernization programs. Under the ECSC treaty subsidies are banned, but the member countries have always paid them. Recently, however, the high authority has proposed to legalize the existing level of financial aid rendered by member states.

Cost, Productivity, and Prices

Chart 121 and table N-3 show that in spite of large increases in the cost of extraction since 1950, free on board mine prices actually have fallen due to increased productivity in bituminous coal mining.

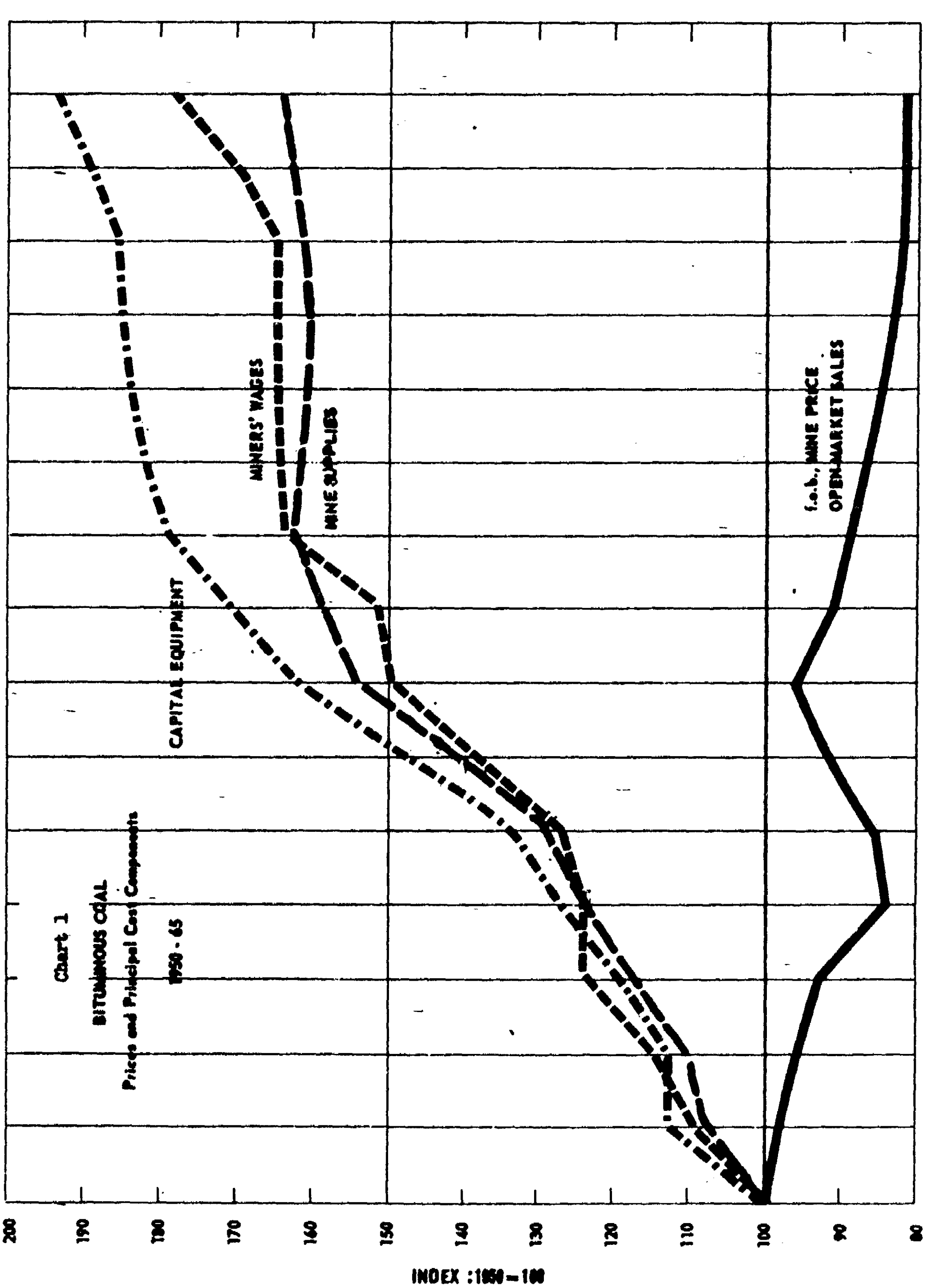
Chart 1
BITUMINOUS COAL
Prices and Principal Cost Components
1950 - 65
CAPITAL EQUIPMENT
MINERS' WAGES
MINE SUPPLIES
f.o.b., MINE PRICE
OPEN-MARKET SALES
200
190
180
170
160
150
140
130
120
110
100
90
80
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
INDEX :1950=100

CHART 121

The productivity of labor in the U.S. bituminous coal industry increased at an average annual rate of about 5 percent between 1950 and 1965. The comparison of tons per man-shift shown in table N–4 illustrates the major problem that has confronted coal industries outside of the United States, that is, the relative lower productivity of labor. The basic reason for the lower productivity of labor is the nature of coal deposits in foreign countries. The coal seams are generally deeper, thinner, and more pitched than in the United States. Although technological innovations have been introduced in coal mining abroad, they have been offset by the unfavorable characteristics of the coal seams. The difference in the productivity of labor and capital, to a large extent has been due to natural conditions, not a lag in the use of highly efficient mechanical extraction techniques. The lower quality of indigenous coals in many foreign countries has increased the demand for U.S. coal.

In every major coal-producing country outside the United States, the closing of the most inefficient mines has been fostered by the respective governments. Mine shutdowns, emphasis on mechanization in the best mines increased importance of petroleum in the total energy market, and increased U.S. coal imports constitute a general trend.

Transportation Costs

In recent years 90 percent of U.S. overseas exports have been shipped through Hampton Roads, with most of the remaining 10 percent shipped through Baltimore and Philadelphia. Transportation costs, railroad, and vessel charges represent more than one-half of the landed price of U.S. coal abroad, but for shipments to South America and Japan ocean freight rates range from $5.50 to $8 per ton.

The instability of short-term ocean freight rates, during periods of shifting demand, as illustrated in table N–5, has been a cause of serious concern to exporters and importers. Since 1958, the lower charter rates have enhanced the competitive position of U.S. export coal.

There is a continuing trend to large-size, low-cost bulk cargo vessels in the overseas coal trade. Importers of large volumes of U.S. coal have increased their demand for large tonnage colliers to coincide with long-term coal purchase contracts made with U.S. producers. Table N–6 shows that there is a significant decline in average rates per ton as the size of vessels increase. A 65,000-ton vessel can carry coal under a long-term contract to Japan for about $5.50 per ton,[1] considerably lower than for the 35,000-ton vessel shown in table 6. In recent years, the average coal cargo loaded at Hampton Roads has been rising steadily, reflecting larger vessels used. In 1960 the average coal cargo leaving Hampton Roads was 14,000 tons; in 1965 it was 25,000 tons.[2]

Several supercolliers are under construction or planned by every major importing country for transporting coal from the United States. The first ship to carry 70,000 tons of coal was a Japanese vessel which took 70,491 tons abroad in May 1965. A sister ship loaded a cargo of

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[1] An Economic Analysis of the U.S. Export Coal Distribution System. A report submitted to the U.S Department of the Interior, Office of Coal Research, by W. B. Saunders & Co., Washington, D.C., on Mar. 25, 1966, p. 71.

[2] International Coal Trade (February 1966), pp. 13; and 35 (January 1966), p. 5.

69,233 tons several days later. The world's largest collier, the *Cetra Columbia*, left Hampton Roads in January 1967 with a record cargo of 83,868 long tons, which required more than 1,000 railroad cars of coal. She carried steam coal destined for a new powerplant at Le Havre, France. The ship's capacity is 87,000 tons and she is scheduled to haul 1 million tons of coal annually to Le Havre on monthly trips. Two other supercolliers are planned by the French. A contract for a 62,000-ton collier to supply U.S. coal to West Germany was let to a Norwegian shipbuilding firm, and similar sized vessels have been proposed or under construction for coal shipments to the Netherlands and Italy. The willingness of foreign importers to invest in supercolliers is an indication of favorable future prospects of U.S. coal exports.

The subject of transportation costs with respect to coal exports has received considerable attention during the past several years. The ability to load 70,000-ton cargoes in 24 hours requires coordination of a railroad and collier transportation network extending from the mines to tidewater ports. For the maiden voyages of the *Cetra Columbia*, the services of two different railroads were required. Compared to vessel rates, which at times have fluctuated widely, rail rates in the United States have had a relatively stable influence on landed prices. Several studies have been made with respect to transportation costs and coal exports, the latest, an economic analysis of the export coal distribution system, concluded that lower costs could be realized on export coal if certain changes in the present distribution system were adopted.[3]

Long-Term Contracts for Export Coal

The long-term future for U.S. coal exports to foreign steel industries depends on the expansion of raw steel production abroad, tempered by the substitution of other fuels for coke, and the improvement in thermal efficiency of blast furnaces throughout the world. The substitution and efficiency parameters are reflected in steadily declining rates of pounds of coke consumed per ton of pig iron produced. The long-term outlook for steam coal is dependent on the rapid growth of electric energy generation, tempered by competition from fuel oil, natural gas, nuclear energy, and an efficiency curve, pounds of fuel per kilowatt-hour generated, that has flattened out in many industrial countries.

Developments in these markets have been characterized by greater emphasis on long-term contracts between coal suppliers and consumers. The purpose of long-term commitments, which may range from 5 to 35 years, is to provide an assured supply of coal, relative price stability, and the coordination of supply and transportation. Sales made under long-term commitments with consumers in the United States, Canada, and overseas, currently account for 75 percent or more of their total sales.

The principle of long-term contracts has the advantage of lessening the depressive effect of periodic distress spot-market pricing.

Until recently long-term contracts were little used in the export coal market, except in Canada. Long-term commitments between U.S.

[3] W. B. Saunders & Co. report to the Office of Coal Research.

producers and overseas importers were uncommon because (1) the existence of import restrictions on U.S. coal; and (2) the lack of a formal long-term policy of foreign governments with respect to U.S. coal and their domestic coal industries. The principal exceptions to the adoption of long-term contracts by foreign purchases were long-term agreements entered into by Italian and Japanese steel companies.

Italy has had a free-import policy and all of her coking coal requirements have been obtained from the United States, West Germany, Poland, and the U.S.S.R. In 1965 approximately 95 percent of Italy's coking coal, and 35 percent of her steam coal requirements were filled by imports from the United States.

In 1950 approximately 40 percent of the steel industry's consumption of coking coal was imported, and in 1965 the ratio of imported coal had increased to 64 percent. Essentially all American metallurgical coal currently imported into Japan is under some form of long-term agreement, ranging from 3 to 15 years.

The German steel industry has taken strong issue with the Government's protectionist attitude toward Ruhr coal because tidewater plants in France and Italy enjoy competitive advantages over steel mills in the Ruhr, not only due to the former's accessibility to low-cost, duty-free U.S. coal, but also due to low-cost, high-grade, imported iron ore and cheap water transportation to ship finished products. Production costs of German steel could be considerably reduced by switching from Ruhr to U.S. coal. During much of the postwar period the German Government has been frustrated in its attempts to reconcile differences between the steel and coal industries, and this was one of the principal factors responsible for the defeat of then Chancellor Erhard's Christian Democratic Party in Westphalia in the July 1966 elections. Despite numerous measures undertaken to sustain the German coal industry, coal's proportion to total primary energy in Germany dropped to 40 percent in 1965, as oil, most of it imported, has been gradually eroding coal's formerly dominant role. Against this background the environment has so far not been conducive for negotiating long-term contracts for U.S. coking coal for steel markets in Germany and in other countries with similar problems.

Prospects for U.S. Coal Exports

During the past 10 years numerous authorities have published forecasts on the outlook of U.S. coal exports. The most comprehensive study was prepared for the U.S. Department of the Interior, Office of Coal Research. A summary of projections to 1970 is shown in table N–7 Forecast A for 1970 is 80.7 million tons. Forecast B is 137.9 million tons, compared with 52.2 million tons in 1966 as shown in table N–8.

Differences between the two forecasts pertain to the relative degree of emphasis to be placed on the liberalization of coal imports by foreign governments. Forecast A assumes, for example, the granting of licenses for the importation of coking coal by certain tidewater plants in the United Kingdom. No basic change from present policies with respect to imports and indigenous coal is assumed in Canada and Japan. In the ECSC some relaxation of existing restrictions on U.S. coal imports is assumed.

Forecast B assumes a very liberal policy with respect to coal imports. The United Kingdom, for example, would grant import licenses for coking coal, as well as for steam coal, for power generation. Canada would eliminate its 50-cents duty on U.S. coal imports and substantially reduce subsidies. Other countries would relax their protection of domestically produced coal.

Forecasts A and B for 1970 "provide a measure of the upper and lower levels of U.S. exports that could result from effective efforts by the U.S. Government and the coal industry to achieve a reduction of foreign import barriers, and to achieve a fuller integration of U.S. coal into the energy markets abroad."

In the past, foreign coal buyers feared shortages and rising cost of U.S. coal, but recent forecasts indicate their recent willingness to engage in long-term commitments because they assume abundant supplies and stable or even falling prices for imported U.S. coal. Table N-9 shows that the United States owns the world's largest known coal deposits.

Although U.S. coal has been confronted with serious competition from Australian coals in Japan, West German coals in Italy, and Communist-bloc coals in other parts of the world, large reserves of high-quality coals, stable prices, and ability and willingness to make long-term commitments, has steadily enhanced the competitive status of American coal abroad. Foreign coal buyers have publicly announced they have been sincerely impressed by the joint efforts of the U.S. coal producers, the United Mine Workers Union, and the transportation companies in maintaining and constantly striving to improve the competitive position of U.S. coal.

The Japanese steel industry depends upon overseas supplies for 90 percent of its iron ore and 65 percent of its coking coal needs. In 1966, Japan imported 45.9 million tons of iron ore. The following table gives the percentage of iron ore imports from various countries:

	Percent		Percent
Chile	16.6	Africa	8.0
Malaysia	12.6	Australia	4.5
Goa	12.1	Canada	4.0
Peru	11.0	Brazil	3.7
India	9.9	Philippines	3.5
United States	8.1	Others	6.0

In 1966 Japan imported 17 million tons of coal for the steel industry, but the U.S. part of it had fallen to 40 percent from 80 percent of total coal imports in 1956. Australia, in 1966, contributed 44 percent of all coal imports, thereby exceeding the United States, as shown in the following table:

	Percent		Percent
Australia	44.2	Canada	4.7
United States	39.5	China	3.1
U.S.S.R	7.9	Poland	.6

Steel scrap imports were 3.5 million tons, 75 percent of which came from the United States. Pig iron imports were 2.9 million tons, mostly from South Africa.

U.S. EXPORTS OF BITUMINOUS COAL TO JAPAN (CONTRIBUTED BY NATIONAL COAL ASSOCIATION, WASHINGTON, D.C.)

Shipments of U.S. bituminous coal to Japan in 1966 amounted to 7.8 million net tons, compared with 7.5 million tons exported in the previous year. All of this tonnage consisted of high-quality metallurgical coal, principally for use in the Japanese steel mills. The value of 1966 coal exports to Japan was approximately $80 million, and represents an important contribution to this country's balance of payments. Long-term contracts were recently negotiated between Japanese interests and U.S. coal suppliers involving about 70 million tons, for delivery over periods up to 15 years. In a recent story carried in the "Japan Economic Journal," it was stated:

> The move on the part of the Japanese steel companies to buy a vast amount of U.S. coal was ascribed to their desire to consolidate a stable supply source for steel-making coal over a long period, as in the case of their purchases of iron ore, along with signs of an international tightening of such coal.

All U.S. coal exports to Japan move through the port of Hampton Roads, Va. In 1965 Congress approved a program to dredge the channels in Hampton Roads to 45 feet to accommodate the larger vessels which are now being constructed by foreign nations, including Japan. The project, estimated to cost $31.8 million, will enhance the position of Hampton Roads as the world's largest port complex in the export of coal.

While the United States has remained the principal coal supplier to Japan, Australia has been steadily increasing its coal shipments to this nation and in 1966 will export more coal tonnage to the Japanese steel industry than U.S. suppliers.

The situation in regard to Japanese coal imports from the U.S.S.R., Canada and Communist China is similar to that of Australia. Each of these countries supplied larger quantities of Japan's imported coal requirements in 1966 than in the previous year.

The magnitude of the growth in Japan's imported coal requirements for recent years is significant when compared with less than the 5 million tons requirement in 1959. It is expected that 1966 Japanese coal imports will establish an alltime annual high of approximately 19 million tons. The heavy demand for imported coal is attributed to the progressive upward trend in requirements of the iron and steel industry.

For the first time in history, Japan imported Polish coal in the amount of 47,000 tons in August of last year. Indications point to a continuation of Polish coal exports to Japan. Plans to improve the port facilities at Gdansk are now being considered, and could result in an even lower price for Polish coal. It has also been reported that because of the recent shortage of coking coal in Japan, plans are being considered by Japanese steelmakers to import West German coal.

CHAPTER XV

ROLE OF SCRAP IN U.S. BALANCE OF TRADE

Since 1950, the United States has exported 12 to 30 times as much scrap than it imports. Scrap exports to foreign steelmakers, therefore, constitute a substantial contribution to our favorable balance of trade. Our best customer is Japan, which, in 1966, imported over 50 percent of our total scrap exports. In chapter IV, the U.S. trade balance in steel was adjusted for the trade in steelmaking raw materials, including scrap.

Tonnage and value of U.S. scrap exports, 1957–66

Year	Total exports		Exports to Japan
	Millions of tons	Millions of dollars	Millions of tons
1966	5.8	172	3.0
1965	6.2	198	2.4
1964	7.9	243	3.9
1963	6.4	174	4.0
1962	5.1	149	2.5
1961	9.7	353	6.3
1960	8.0	241	3.5
1959	4.9	167	3.1
1958	2.9	95	.6
1957	6.8	329	2.4

There are three sources of iron and steel scrap. First there is home scrap; that is, whatever falls by the wayside between the raw steel made, and before the finished steel mill products leave the steel mills. This home scrap has fluctuated between 30 and 35 percent of raw steel, the scrap ratio rising along with quality requirements. The ratio will fall in the future as continuous casting grows in importance to perhaps 20 to 25 percent. Home scrap never leaves the steel mill and is fed into the steel furnace along with purchased scrap at standard rates of 30 percent in the BOF, 50 percent in the OH, and 99 percent in the electric furnace.

Purchased scrap is collected and prepared by the iron and scrap industry from two sources; namely, prompt scrap and obsolete scrap. Prompt scrap is the borings and cuttings left over when automobiles or other final products are made. Obsolete scrap comes from automobile graveyards or demolished buildings.

Prior to the advent of the basic open hearth furnace in this country, the principal steelmaking method (the bessemer) was a low scrap user. Actually, scrap used in the bessemer was less than the amount of home scrap produced by the steel industry in its own operations. As more steel came into use, more obsolete scrap also became available. This increase in the total scrap supply was one of the factors which served to speed adoption of the basic open hearth.

Today's scrap processing industry stemmed originally from the junk industry, and from the oldtime peddlers who made their living by traveling about the country buying and selling goods. As demand for iron and steel scrap grew, specialization increased, and until today the iron and steel scrap processing industry has its own trade association, the Institute of Scrap Iron & Steel, Inc., Washington, D.C., with some 1,350 member companies.

From 1900 on, major growth in the steel industry was largely confined to open hearth furnaces, with bessemer furnaces providing a dwindling proportion of total production. Paralleling this increase, but to a lesser degree, was the growth of electric furnaces.

During the period of the great depression in the thirties, scrap supplies became relatively scarce, even if demand fell likewise. More and more obsolete scrap had begun to come from consumer-type products, such as automobiles and refrigerators, and sales of consumer goods declined severely and the life of products in use was extended. Likewise, demolition preceding construction projects declined.

Then came World War II, with its heavy demands on the steel industry and therefore on the scrap industry. Damage to the collection system of the scrap industry during the thirties had been so great that collections could not be speeded up fast enough to meet demands. Had it not been for foreign markets in the late thirties, even fewer firms in the scrap industry might have survived. As a result of the depression, scrap drives were conducted at the start of World War II and maintained until the system had been geared up again to meet demand.

As far as the reservoir of obsolete scrap was concerned during the wartime period, it was drawn upon heavily. Again output of consumer hard goods was cut back severely, and again the life of existing hard goods was prolonged. In addition, much of the steel going into military items; trucks, guns, tanks, jeeps, was shipped abroad and failed to return to this country after the war, aside from the many ships sunk. The exception to this was in 1947–49 when battlefield scrap was brought back to meet severe scrap shortages which had originated because of the facts cited above.

No sooner had scrap supply and demand begun to reach some equilibrium than the United States found itself embroiled in the Korean conflict. Military production was superimposed upon existing civilian demands, and again scrap drives were started until equilibrium was achieved.

With the late fifties came the development of the BOF, which required about 70 percent hot metal (iron). New sources of high grade iron ore and the upgrading of lean ores through beneficiation and pelletizing helped to produce more metal with existing blast furnace equipment.

As the integrated steel industry turned more and more away from scrap, supplies continued to increase and scrap prices fell from $64 a ton in 1956 below the $30-level price. The scrap industry became more selective in its buying, and improved its scrap production techniques, and the quality of scrap through the use of the hydraulic guillotine shear, and the automobile shredding machines.

During the years of falling scrap demand in the late fifties and the early sixties, it was exports that helped maintain at least part of the collection system. Despite this, census figures show that actual scrap processing firms in operation declined from some 2,800 to 1,800 during the last decade. With ample scrap supplies and prices low, the concern of the steel industry is how to increase the amount of scrap used in the BOF.

On the horizon is continuous casting with its higher yields of finished steel mill products from raw steel and consequent reduction in home scrap. Widespread adoption of this process will mean increased demand for purchased scrap, but integrated steel companies will still retain their flexibility in scrap use, because of the opportunity to increase hot metal charges into the BOF and the oxygen-lanced open hearth furnaces.

Iron and Steel Scrap Exports

The scrap industry has joined the steel industry, especially its merchant pig iron section, in strongly opposing imports of low-priced pig iron from Communist nations. Merchant pig iron producers sell iron to steel producers which have no blast furnaces, or to foundries, and include such large integrated steel companies as United States Steel Corp. and Republic Steel Corp.

The steel industry has likewise asked the scrap industry to take a stand against imports of steel, but the scrap industry cannot do this without the risk of offending its foreign customers. This does not apply to the steel industry's request that nontariff barriers against U.S. exports of steel should be removed. Here the stand of the scrap industry is quite consistent. Any increase in U.S. steel exports will widen the market for domestic scrap and coincide with the scrap industry's stand in favor of free world trade.

The scrap industry needs markets and finds exports a welcome alternative for the domestic market, even if it may cost more to ship the scrap to foreign countries, credit terms may be more difficult to arrange, and language may at times present problems. But being able to export scrap has been essential to the scrap industry's sales in the face of the absolute, or at least relative, decline in domestic demand of scrap bought by the U.S. steel industry. The cause for this decline is the rise of BOF production, which uses only some 30 percent scrap and 70 percent hot metal (iron) rather than the traditional 50 percent scrap used in the O.H.

In 1956 steel production was 115 million tons. Steel mill use of scrap purchased on the outside totaled 29 million tons. In 1966 steel mill output was 132 million tons, and scrap purchased on the outside was still 29 million tons.

Higher steel consumption creates more prompt scrap; that is, scrap resulting from fabricating steel mill products into automobiles and other final products. The increased supply is bound to depress scrap prices, as shown in the chart 122.

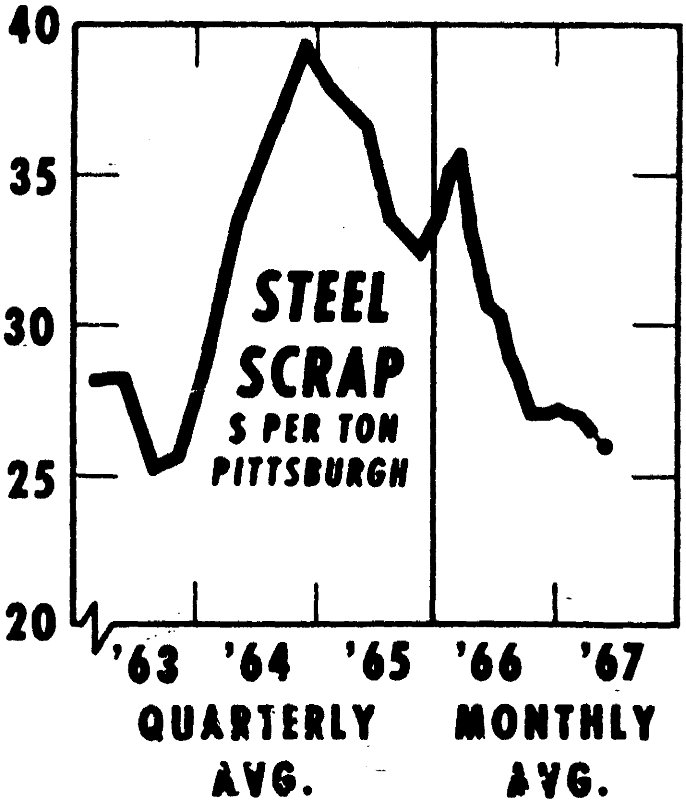


CHART 122

Incidentally, as foreign steel producers install BOF capacity to replace open hearth capacity their demand for scrap will decline relative to their raw steel output. On the other hand, as in Europe, BOF capacity replaces Thomas converters, which never used scrap, the demand for scrap will rise. Once continuous casting is installed here and abroad, home scrap in the steel mills will decline sharply and the demand for purchased scrap (prompt and obsolete) will again rise.

Scrap export markets, while assisting the scrap industry to meet the strains of reduced domestic demand, have at the same time assisted the United States in its continuing fight to maintain a satisfactory balance-of-payments position.

There are no significant tariff barriers to U.S. export of scrap. Similarly, the United States does not impose any tariffs on the import of scrap, including scrap iron. It has also been mentioned that some of the larger scrap dealers now own their own ships to export scrap and, perhaps, to import foreign steelmill products as return freight.

CHAPTER XVI

SPECIALTY STEELS (TOOL AND STAINLESS)

The development of new alloy steels and their production are especially important to national defense. The often voiced argument that specialty steels take more hours of labor to make than carbon steel is correct, but it does not follow that they are therefore more susceptible to competition from countries with low labor rates. Actually, labor constitutes a smaller percentage of the total cost of specialty steels than of carbon steels because they contain very high cost alloying materials and they require very expensive equipment to treat relatively small quantities. In other words, specialty steels are material and capital intensive rather than labor intensive.

The following statement was prepared by AISI.

Producers of tool and stainless steel make up an industry which is distinct from the basic carbon steel industry. Specialty steel is high-alloy high-performance material. It is made in smaller quantities, has a higher labor content and is less susceptible to automated production than carbon steel.

Specialty steel has a unique importance to national defense and security because of its superior chemical and physical properties. The research and development activities of the specialty steel industry have made valuable contributions to metallurgy for all phases of domestic industry.

As of the end of the year 1966 the specialty steel industry had lost 13.3 percent of its domestic market to imports compared to approximately 11.8 percent for basic carbon steel. This penetration of U.S. markets by foreign specialty steels has increased steadily over the past ten years.

Japan is the source of almost half of all stainless steel imported into the United States. Sweden and Austria together account for more than half of the imported tool steel sold here.

1. DIFFERENCES BETWEEN SPECIALTY AND CARBON STEEL INDUSTRIES

Tool and stainless steel producers in the United States produce about one percent of the total annual tonnage of the domestic steel industry. Until fairly recently the specialty steel industry has therefore been regarded as a small segment of the basic carbon steel industry. There is now a growing awareness, however, that the specialty steel producers by the nature of their products and market compose an industry which is distinct, although not apart, from the basic carbon steel industry.

The specialty steel industry differs from the basic carbon steel industry because of the sophistication of its products. Stainless steels are made highly resistant to rust, corrosion, and heat by the addition of substantial amounts of chromium, nickel, and occasionally other alloying elements such as molybdenum, titanium, and columbium. Tool steels may contain tungsten, vanadium, molybdenum, cobalt, and other elements for toughness and strength under high-temperature high-stress operations.

Specialty steels have chemical and physical properties which enable them to do things that carbon steel cannot do. These properties, however, make specialty steels more difficult and expensive to produce than carbon steel. For example, AISI type 302 stainless steel, a common stainless steel, contains approximately 18 percent chromium and 9 percent nickel. The chromium in a ton of this steel costs $90 and the nickel costs $153. The alloy material alone in an ingot ton of type 302 stainless steel costs more than most carbon steel ingots sell for. Another factor contributing to the differences between carbon and specialty steel is the higher number of man hours per ton required to produce, finish, and ship the product in this segment of the steel industry. Finishing operations alone in the specialty steel industry require more man hours by a wide margin than in the basic carbon industry. The number of man hours per ton in the specialty steel industry averages 6.5 times that in carbon steel, and reaches 10 to 20 times the carbon average in some instances. These man hours cannot be eliminated by automation to the extent possible in the basic carbon industry because of the specialized nature of the product and the fact that stainless and tool steels are produced in much smaller quantities than carbon steels.

The complex metallurgy of specialty steels increases research and development costs, the chemical and physical properties of the product increase production costs, and the sophisticated applications of these high performance steels increase marketing costs. All these higher costs mean higher prices, averaging 7 times the prices of comparable carbon steels. The U.S. Bureau of Labor Statistics reported the price of type 302 cold rolled stainless steel sheet in May 1967 at $1,074 per ton compared to carbon steel cold rolled sheets at $142 per ton. Tool steels sell anywhere from $1,000 to $7,000 per ton and higher, while carbon products commonly are offered anywhere from $120 to $200 per ton.

Specialty steel tends to be produced in small quantities on a custom basis. Many specialty producers are small companies, entirely dependent on their production of tool or stainless steel.

2. IMPORTANCE OF SPECIALTY STEEL TO NATIONAL SECURITY AND DEFENSE

As an example of the crucial importance of the specialty steel industry to the national defense effort, it should be noted that present requirements for steel as set by BDSA and the Department of Defense under the Defense Production Act of 1950 amounted to six percent of the production of the basic carbon steel industry and fourteen percent of the production of the stainless steel industry.

A list of strategic products which are dependent upon specialty steels would include missile and rocket frames and parts, airplane structures, atomic reactors, jet engine turbine blades, ball bearings, oil refining equipment, drills, taps, reamers, and other cutting tools and dies. Not only is the Apollo spacecraft fashioned from stainless steel but also is the anti-spike innersole in the combat boot now being worn in Viet Nam. Aircraft parts such as drive shafts for the Army's helicopters are made from stainless steel. The inner support members of other aircraft are of a special ultra-high strength steel developed by the tool steel industry. Also, the Atomic Energy Commission has awarded a contract for the development of a "mobile military nuclear power plant" which must be made completely of stainless steel and which is to be used as a source of power by combat forces. The Supersonic Transport program as well as newer combat aircraft are dependent on the ability of the specialty steel industry to exist and supply both the materials of construction and the tools for fabrication.

The research and development capability of the specialty steel industry is vital to the national defense and security. For example, this industry pioneered in vacuum melting techniques for the production of nickel and cobalt alloys for jet engine blades which must operate and maintain their strength and toughness at white heat, and for the manufacture of bearing and gear steels of utmost reliability to permit the safe operation of helicopters, hydrofoils, and power generating equipment.

This is only a small list of examples where the defense of the United States is strategically dependent upon specialty steels. In addition to the direct strategic importance of specialty steels to the national defense, mention should also be made of the dependence of all industry upon specialty steels for dies, machinery, precision tooling, and other in-house applications. Twentieth century industry relies upon specialty steels for their high performance under stress and close tolerances to do jobs which other steels or materials cannot. The Department of Defense thinks in terms of "material systems." The properties demanded of materials used in missiles and rockets, for example, are such that only a tailor-made steel or vacuum melting specialty materials can satisfy requirements.

The research and development costs borne by the specialty steel industry are high. These costs are incurred with the expectation that new products mean new growth and new methods mean new economies. Underwriting these costs are the routine sales of staple specialty steel products. As explained more fully in section 4 below imports of specialty steel have cut deeply into the U.S. market for standard tool and stainless steels, and are increasing at a rate which indicates that the growth potential of the domestic industry is being drained off. Loss of growth potential can only reduce the enthusiasm of the specialty steel industry for continued expansion of this vital research and development function.

3. CHANGING PATTERNS OF WORLD TRADE IN SPECIALTY STEELS

World War II is the watershed between two distinct periods in world trade in specialty steels. The prewar period witnessed the birth and full development of the specialty steel industry—one of the many new industries created in the twentieth century. During this period, the production of specialty steels was confined to the industrialized nations. The United States was the largest producer of specialty steels in the world; in addition to being the world's largest supplier of these steels.

The postwar period, on the other hand, has brought some dramatic changes to world trade in specialty steels. To begin with, more nations are becoming specialty steel producers. This expansion is no longer confined to the industrialized countries.

The principal objective of all foreign specialty steel producers is to move toward greater self-sufficiency, striving for reduced dependence upon imports.

In many instances foreign specialty steel producing nations, because of limited home markets, have increased their production capacity beyond home market demand and look to the export market to absorb the excess tonnage. To encourage exports, foreign specialty steel producers like other foreign manufacturers receive extensive government assistance in terms of liberal credit, subsidies, tax rebates, and other incentives to expand their exports abroad, For example: A French steel manufacturer which exports 25 percent of its annual production thereby becomes eligible for special financial benefits. In Holland the government subsidizes the importation of labor in order to increase productive capacity, a substantial portion of which enters the world export market. The Austrian government owns the Austrian steel industry outright. On the other hand the domestic markets of these same foreign producers are protected by an elaborate network of tariff and non-tariff trade barriers. As a result, competition in specialty steel in the world market has resulted in a steadily decreasing world market share for the United States.

Thus, the changing patterns in world trade in specialty steels have created two serious problems for our industry—threat of severe injury from extensive imports at home, and the proportional erosion of our markets abroad.

4. IMPORTS OF SPECIALTY STEELS

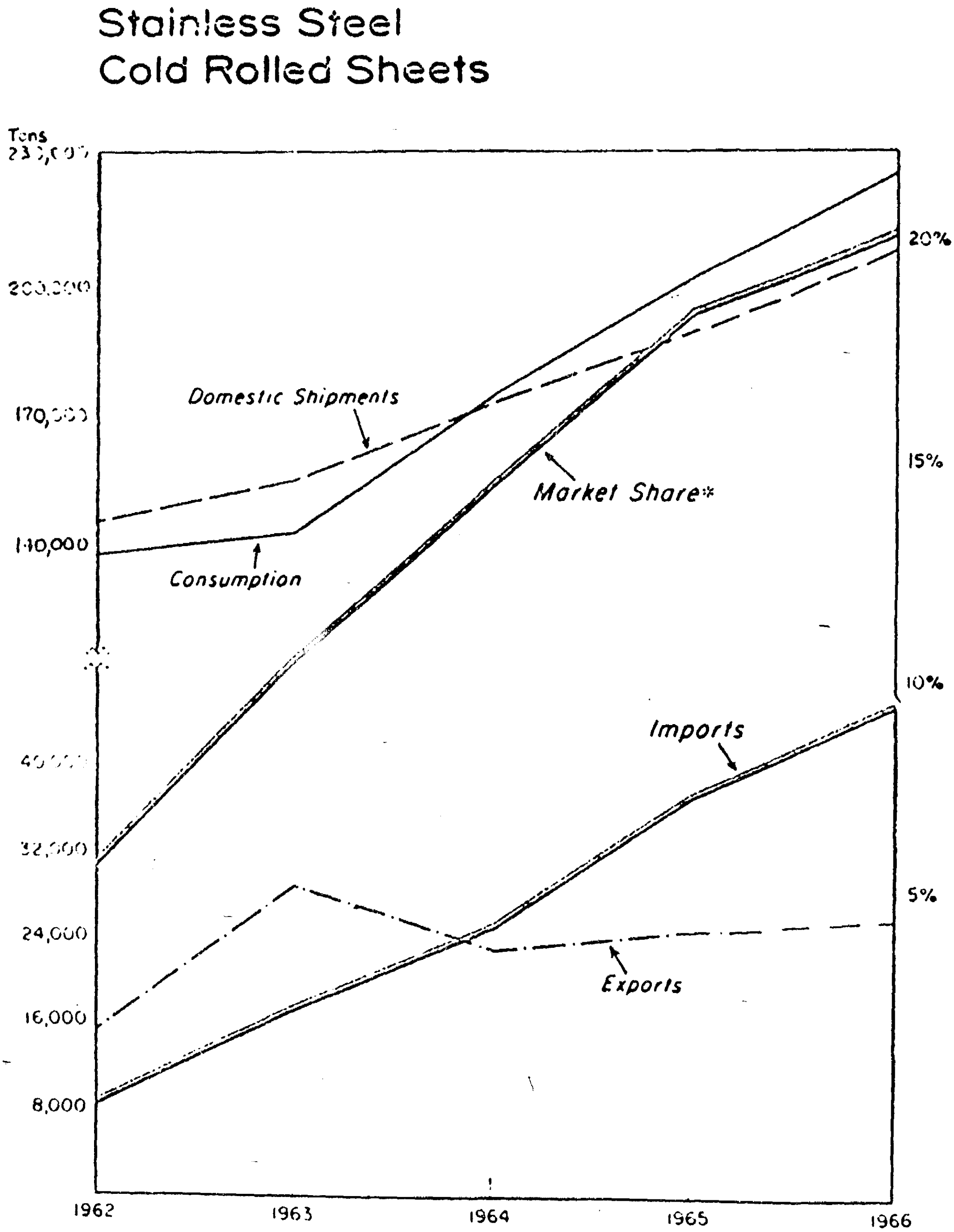
In 1966 stainless steel imports were 137,000 tons, compared with 80,000 tons in 1964 and only 8,000 in 1959. The share of apparent domestic consumption claimed by imports has jumped from 1 percent in 1959 to 13.5 percent in 1966.

This increase is dramatically illustrated by the recent history of imports of stainless steel cold rolled sheet appearing in Chart 123, Imports of this staple product have jumped from 8,000 tons in 1962 to 47,000 tons in 1966, with a corresponding increase in market penetration from 6 to 20 percent.

Tool steel imports have increased rapidly during the past three years from 3,600 tons in 1962 to 17,600 tons in 1966. Foreign tool steels now claim 12.8 percent of apparent domestic consumption of these specialty products. Chart 124 shows this increase in imports of high speed tool steel bars, which rose from 748 tons in 1962 to 3,572 tons in 1966.

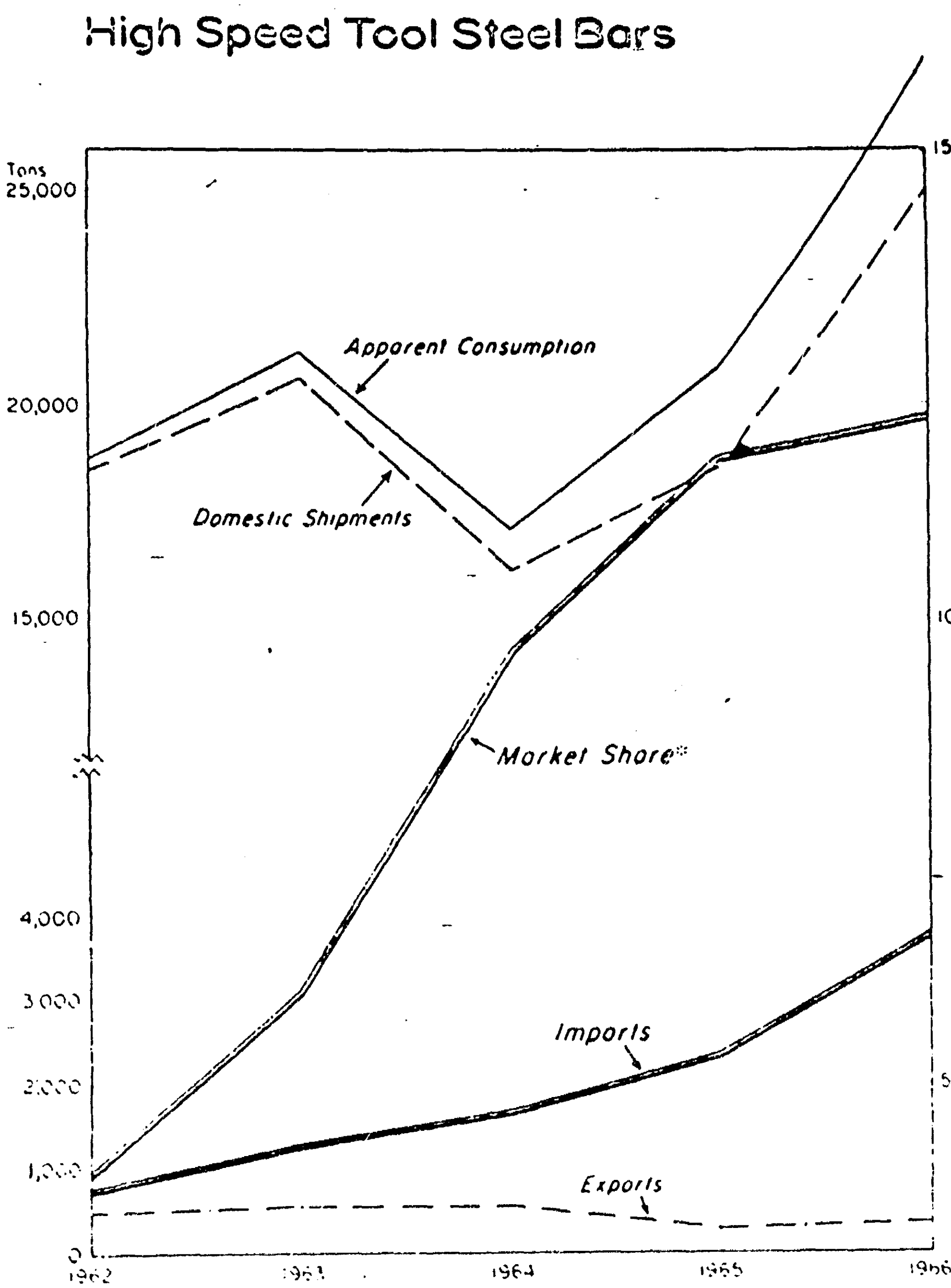
Meanwhile United States exports have not kept pace. Our balance of trade in specialty steel was favorable up to 1965 when exports exceeded imports by $13.3 million. In 1966, however, imports exceeded exports by $11.6 million, and the projections for 1967 are more pessimistic.

In the face of recent production cutbacks and the import growth trend it appears certain that both the share of the domestic market occupied by imports and our unfavorable trade balance will increase in 1967.



*"Market share" is the percentage of U.S. apparent consumption made up by imports. Apparent consumption is U.S. shipments plus imports minus exports.

CHART 123



*"Market share" is the percentage of U.S. apparent consumption made up by imports. Apparent consumption is U.S. shipments plus imports minus exports.

CHART 124

Foreign specialty steels are of no better quality than domestic products, and foreign suppliers cannot provide the same customer service that the domestic mills offer. The principal factor that has made the United States market so vulnerable to foreign steel is the substantially lower price offered by the foreign producer. Several elements combine to permit this lower price. For example, specialty steel imports tend to be concentrated in the less sophisticated, standard sizes and grades. This permits a foreign producer to realize substantial volume economies in its production for export. This same concentration simplifies the distribution of imported steel in the United States, permitting additional economies in marketing operations. As a matter of fact, distribution of imported steel mill products is usually entirely handled for the foreign producer by a jobber or service center in the United States.

The principal price factor, however, is the wide differential in labor content between foreign and domestic specialty steels.

The average hourly wage of an American steelworker is $4.63 including fringe benefits. The earnings of his Japanese counterpart are less than one-quarter of that amount. The best information available to the American Iron and Steel Institute indicates that it takes 97 man hours to produce a ton of cold rolled stainless steel sheet. This means that the Japanese steelmaker starts out with a labor cost advantage alone of over $336.60 per ton on this product. An analysis of 43 recent shipments of cold rolled stainless steel sheet into the United States shows the median difference between the landed duty-paid price of the imported material and the price of identical domestic material delivered at the same spot was $213 per ton, or 21 percent of the United States selling price. This is by no means an unusual price differential between imported and domestic specialty steel products. Stainless steel producers have reduced prices on many items during the past 6 years as shown in Table IV. Each reduction, however, has been followed promptly by a corresponding reduction in the price of the imported product.

This price differential has enabled imported specialty steel to penetrate United States markets at an ever-increasing rate. From 1962 to 1966, during an unprecedented expansion of the United States economy, shipments of stainless steel mill products increased at an average rate of 10 percent per year. During that same period imports of stainless steel increased an average of 51 percent per year. This wide discrepancy indicates that imported specialty steel mill products are eating into the growth potential of the domestic industry. During periods of economic expansion imported steels established themselves in the bread-and-butter specialty products, and when the boom slows they cannot be driven out. During the first five months of 1967 shipments of tool and stainless steel lagged behind 1966 by 5 percent, yet imports of specialty steel increased 38 percent over the comparable 1966 period.

The rate of increase of imports of foreign specialty steel presents a problem of national significance which transcends the immediate difficulties of the domestic tool and stainless steel producers. The strategic importance of the domestic specialty steel industry has been discussed earlier in this chapter. A healthy, growing industry can expand with the economy, maintaining its special technical skills, its reservoir of highly trained labor, and its research and development capability. The health of our specialty steel industry depends upon its markets for standard products: the stainless steel sheet, and the high speed tool steel bars. These markets are being seriously penetrated by increasing imports of steel from Europe and Japan. As its present markets are invaded, the industry's growth potential declines, producing a directly proportional decline in its ability to maintain and expand its labor skills, technical abilities and research capacity. These are assets which cannot be stockpiled, nor can they swiftly be built up in time of need. As they atrophy in the domestic industry, we must become more and more dependent, not only upon imported techniques, skills, and metallurgy. As emphasized elsewhere in this study, such a situation cannot be tolerated in an industry of such overriding strategic importance.

5. STATISTICS

Tables O-1 through O-7 relate to stainless steel. Table O-1 and O-2 show stainless steel imports for the years 1962-1966 broken down by mill products. Flat rolled products make up the greatest tonnage of these imports, followed by semi-finished shapes and wire rod. In market penetration wire rods are well in front with imports claiming 46.5 percent of apparent domestic consumption in 1966. Cold rolled sheet shows a 20.6 percent penetration by imported product, and round wire has lost 22 percent of the domestic market.

Table O–3 and O–4 show Japan to be the leading exporter of stainless steel to the United States by a wide margin, accounting for nearly half of all foreign stainless sold in this country.

Table O–5 shows the values of imports by shape and form and by country of origin to rank in essentially the same order as the volumes. Flat rolled products, which exceed semi-finished shapes by a slim margin in volume, account for more than twice the dollar value, however.

Table O–7 shows stainless steel prices on selected grades from 1960 to 1967.

Tables O–8, O–9, and O–10 show imports of tool steel. The bulk of these are in bars which account for over 90 percent of all tool steel imports. Here Sweden and Austria together provide over half the foreign tool steel sold in the United States with Canada and Japan in third and fourth place.

Explanatory Note to Tables

The U.S. Bureau of the Census began to report imports of stainless and tool steel products separately in July 1962. Before that date, specialty steel products were reported together with other alloy steel products.

Schedule A commodity classifications were in effect through August 1963. Beginning in July 1962, Schedule A was modified and separate classification numbers were assigned to certain specialty steel products.

In September 1963, Schedule A was replaced by the new classification of the Tariff Schedule of the United States Annotated. Not in all instances do the TSUSA commodity numbers correspond exactly to those of Schedule A. The TSUSA commodity numbers with the comparable Schedule A numbers are shown below.

Stainless categories

Product	TSUSA No.	Schedule A No.
Ingots, blooms, billets, slabs, sheet bars and die blocks.	608-18-20	Not shown separately for stainless steel.
Bars:		
Hot rolled	608-52-10	600-88-01.
Cold rolled	608-52-50	600-88-11.
Wire rods	608-76-20	Not shown separately for stainless steel.
	608-78-20	Do.
Plates and sheets, hot rolled	608-85-10	605-76–01.
	608-85-40	
Plates and sheets, cold rolled	608-88-10	Not shown separately for stainless steel.
	608-88-40	Do.
Strip and flat wire	609-06-20	609-51-01.
	609-07-20	609-51-11.
	609-08-20	609-53-01.
	609-30-20	609-53-11.
	609-31-20	
	609-32-20	
Round wire	609-45-10	609-43-01.
	609-45-40	
	609-75-20	
Pipes and tubes	610-51-20	609-28-01.
	610-52-20	

Tool steel categories

Product	TSUSA	Schedule A No.
Bars:		
High-speed tool steel, hot rolled	608-52-20	600-88-02.
High-speed tool steel, cold rolled	608-52-60	600-88-12.
Tool steel, hot rolled	608-52-30	600-88-03.
Tool steel, cold rolled	608-52-70	600-88-13.
Other alloy steel, hot rolled	608-52-40	600-88-04.
		600-88-05.
Other alloy steel, cold rolled	608-52-80	600-88-14.
		600-88-15.
Plates and sheets:		
High-speed tool steel	608-85-20	605-76-02.
	608-85-50	605-76-12.
	608-88-20	
	608-88-50	
Other alloy steel	608-85-30	605-76-04.
	608-85-60	605-76-05.
	608-88-30	605-76-14.
	608-88-60	605-76-15.
Round wire:		
High-speed tool steel	609-45-20	609-43-02.
	609-45-50	
Other alloy steel	609-45-30	609-43-04.
	609-45-60	609-43-05.
	609-75-40	609-80-04.
		609-81-04.

Source: Unless noted otherwise, all data are from the reports of the U.S. Bureau of the Census: "U.S. Imports of Merchandise for Consumption by Country of Origin, 1922–66."

Stainless steel imports were not reported separately by the Census Bureau before July 1962, and in some instances not until September 1963, but were included in alloy steel imports of individual products. Except for the three product groups—Ingots, Billets, Etc., Wire Rods, and Plates and Sheets, Cold Formed, the estimates for the January–June 1962 period were made by determining the proportion of stainless steel imports of each product of the total alloy steel imports of that product during the second half of 1962 and by applying this proportion to the reported total alloy steel imports of the same product during the first half of 1962. All these estimates were carried out for each country individually.

Stainless steel imports of Ingots, Billets, Etc., and of Wire Rods were not reported separately until September 1963. The procedure employed in estimating these imports during 1962 and January–August 1963 was similar to that described in the note above except that the proportion of stainless steel imports of total alloy steel imports of each product was based on the data for the September–December 1963 period.

Stainless steel imports of Plates and Sheets, Cold Formed were not reported separately prior to September 1963 but were included under "Sheets and Plates of Iron and Steel, Polished, Planished or Glanced" under Schedule A Number 6039700. Japan, France and Sweden appear to have accounted for 96–99 percent of such imports during each year in the 1962–1965 period, with Japan being by far the most important exporter of these products to the United States. Japanese and Swedish official export statistics show exports of stainless steel plates and sheets to the United States during 1962 and 1963. These data were used in arriving at import figures for stainless steel plates and sheets, cold formed, from these two countries during 1962 and 1963. The procedure employed in using these figures and in arriving at estimates of imports from other countries is described below.

Japan

Japanese official statistics show exports of stainless steel plates and sheets, *both hot rolled and cold formed*, to the United States at 11,211 short tons in 1962 and 20,507 short tons in 1963 (converted from metric tons). The U.S. Census figures show imports of stainless steel plates and sheets, *hot rolled*, from Japan of 2,098 short tons in the second half of 1962 and of 6,718 short tons during 1963. Imports of *hot rolled* stainless plates and sheets during the first half of 1962 were estimated at 1,091 short tons (see note above). For the entire year 1962 such imports therefore are estimated at 3,189 short tons. Deducting imports of *hot rolled* stainless plates and sheets, based on the U.S. Census figures, from the *total* imports of stainless sheets and plates, as reported by the Japanese official statistics, the imports of *cold formed* stainless plates and sheets were estimated at 7,015 short tons in 1962 and at 13,789 short tons in 1963.

Sweden

Swedish official statistics report exports of *cold formed* stainless plates and sheets to the United States at 68 short tons in 1962 and 323 short tons in 1963 (converted from metric tons). The estimate for the January–August 1963 period was made by deducting 109 short tons, as reported by the U.S. Census for the September–December 1963 period, from the total of 323 short tons, as reported by the Swedish official statistics. In the absence of any reported imports from Sweden of this product during 1962 (no imports from Sweden are given under Schedule A Number 6039700), the distribution of the 1962 imports of cold formed stainless steel plates and sheets, as reported by the Swedish official statistics, between the first and the second halves of 1962 (which is immaterial for the purposes of the final analysis) was assumed to be in equal proportions.

Other countries

Of the other exporting countries, only France had significant, though relatively small, exports of cold formed stainless plates and sheets to the United States in 1962 and 1963. Exports from three other countries—Canada, United Kingdom and West Germany—were insignificant. In the absence of national statistics on exports of stainless steel products from these countries during 1962 and 1963, an approximation of imports of cold formed stainless plates and sheets from these countries to the United States was made by assuming that 90 percent of Schedule A Number 6039700, as reported by the U.S. Census Bureau for each of the two halves of 1962 and for the January–August 1963 period, represented imports of stainless steel plates and sheets. This assumption was taken in accordance with the views expressed by a U.S. Customs Official dealing with imports of these products. (It may also be noted that the figure of 7,015 short tons of stainless plates and sheets imported from Japan during 1962, as reported by the Japanese official statistics, represented 92 percent of the Schedule A Number 6039700 of 7,721 short tons for Japan in that year).

The value of most of stainless steel imports during the first half of 1962 was estimated as in the case of quantities, by determining first the proportion that the value of stainless steel imports of each product was of the value of total alloy steel imports of that product during the second half of 1962 and then by applying this proportion to the value of total alloy steel imports of the same product during the first half of 1962. A similar procedure was used in estimating the value of imports of stainless steel ingots, billets, etc. and wire rods during 1962 and the January–August 1963 period, with the proportion used based on the September–December 1963 period. This procedure was based on a supposition that the composition of products within each group, that is the proportion of each product made of different alloys, did not change within the periods involved. In the case of value data, there is an additional underlying assumption that the price relationships of the product made up of different alloys have not changed either. These two assumptions are likely to be correct, within limits, when applied to large imports from major countries of origin. In the case of small imports, usually from the countries which are not major exporters of such products to the United States, these two assumptions are likely to be less valid.

As an example of distortions which may be introduced into the value/quantity relationships in the case of small imports, the following imports of stainless and alloy steel strip and flat wire, not over 0.01″ in thickness and 8″ in width, from Switzerland are cited below:

Period	Schedule A No.	Product	Quantity (pounds)	Value (U.S. dollars)
January-June 1962	609-51-04	Alloy strip, etc	354	8,243
July-December 1962	609-51-01	Stainless steel strip, etc	221	5,195
July-December 1962	609-51-05	Alloy strip, etc	83	1,945
January-August 1963	609-51-01	Stainless steel strip, etc	143	3,334

It may be noted that the average value of all stainless steel strip and flat wire imported during 1962 and 1963 ranged from about $1,000 to $4,000 per short ton; also that no imports similar to those cited above have been reported in the subsequent periods.

The value of cold formed stainless steel plates and sheets imported during the January-June 1962, July–December 1962 and January–August 1963 periods was estimated by applying the unit values based on the imports from each country of origin during the September–December 1963 period to the quantities imported from these countries during the three earlier periods. This was done on the assumption that the unit prices did not change significantly during the periods involved. In the September–December 1963 period, of the exporting countries only Japan exported a small quantity of cold formed *plates* to the United States, the bulk of imports from Japan and all of the imports from other countries having been only stainless steel *sheets*. The imports from Japan consisted of 29 short tons of stainless steel plates and 8,959 short tons of stainless steel sheets. Since the imports of stainless steel plates accounted only for 0.3 percent of the total, the unit values used were in all instances those of stainless steel sheets. It may also be noted that the imports of cold formed stainless steel plates from Japan and from other countries (Canada, France and West Germany) during 1964 and 1965 were also insignificant in relation to the imports of stainless steel sheets from these countries.

CHAPTER XVII

ARGUMENTS FOR AND AGAINST PROTECTION

On the basis of the facts developed throughout this study, the question naturally arises as to whether or not the domestic steel industry, now or in the future, may need assistence from the Government to maintain itself as a healthy, viable, and dynamic force in the economy. This chapter summarizes the arguments for and against protection of the domestic industry against imports.

Arguments for Protection

Under section 232 of the Trade Expansion Act of 1962 a formal procedure has been established whereby upon application of an interested party, or upon his own initiative, the Director of the Office of Emergency Planning shall set in motion an investigation to determine the effects on the national security of imports. This procedure was outlined in the following letter received from the Office of Emergency Planning.

EXECUTIVE OFFICE OF THE PRESIDENT,
OFFICE OF EMERGENCY PLANNING,
Washington, D.C., June 26, 1967.

Mr. ROBERT M. WEIDENHAMMER,
Senate Finance Committee, New Senate Office Building,
Washington, D.C.

DEAR MR. WEIDENHAMMER: In compliance with your request communicated on June 15, to a member of my staff, I am furnishing you herewith an outline of the statutory criteria contained in section 232 of the Trade Expansion Act of 1962, Public Law 87-794, and the procedural steps involved in initiating a national security investigation.

In general, the section provides that upon the request of the head of any Government department or agency, upon an application of an interested party, or upon his own motion, the Director of the Office of Emergency Planning shall set in motion an investigation to determine the effects on the national security of imports of any article.

In making such a determination, the Director is required to take into consideration, without excluding other factors, the following:

1. Domestic production needed for projected national defense requirements.
2. The capacity of domestic industries to meet such requirements, including existing and anticipated availabilities of human resources, products, raw materials, and other essential supplies and services.
3. The requirements of growth of such industries to assure capacity to meet projected defense requirements.
4. The effect which the quantities, availability, character, and use of imported goods have or will have on the capacity of such industries to meet national security requirements.
5. The economic impact of imports under investigation on the domestic industry and the resultant effect on our internal economy, in light of the close relation between the economic welfare of the nation and the national security. In determining whether such impact may impair the national security by weakening our Nation's economy, any substantial unemployment, decrease in revenues of Government, loss of skills or investment, or other serious effects resulting from the displacement of any domestic products by excessive imports shall be considered.

Twenty-five copies of an application for an investigation shall be filed with the Director, Office of Emergency Planning. The application shall describe how the quantities or circumstances of imports of the particular article affect the national security and shall contain, as a minimum, the following information:

1. Identification of the applicant on whose behalf the application is filed.
2. A precise description of the article.
3. Description of the domestic industry concerned, including pertinent information regarding companies comprising the industry and their plants, locations, capacity, and current output of the industry concerned with the article in question.
4. Pertinent statistics of quantities and values of both imports and domestic production.
5. Nature, sources, and degree of competition created by imports of the article.
6. The effect, if any, of imports of the article upon restoration of domestic production capacity in an emergency.
7. Employment of special production skills.
8. Extent to which investment and specialized productive capacity is or will be adversely affected by imports.
9. Revenues of Federal, State, or local governments which are or may be affected by the volume of imports of the article.
10. Defense or defense-supporting uses of the article, including data on past and current defense contracts or subcontracts.

Confidential business data within the meaning of section 1905 of title 18 of the United States Code will be accorded confidential treatment if so requested and the information properly marked.

The investigation by the Director of the Office of Emergency Planning or his designee shall be such as to enable him to arrive at a fully informed opinion as to the effect on the national security of imports of the article in question.

Upon undertaking an investigation, the Director normally publishes a notice to that effect in the Federal Register and invites all interested parties to submit 25 copies of any comment, opinion, or data relative to the investigation within 45 days after such notice. Rebuttal material submitted may be filed within 75 days after the public notice, and the record completed within 90 days after the notice. The material comprising record of the case, except for confidential information, is available for inspection at the Office of Emergency Planning in Washington, D.C.

The Director or his designee may request further data from other sources, or hold public hearings to elicit further information.

The Director or his designee shall in the course of the investigation seek information and advice from appropriate Government departments and agencies.

Upon completion of an investigation, a report on the case is made and published. Copies of the report become available to the public at the Office of Emergency Planning.

If, as a result of the investigation, the Director is of the opinion that imports of the article are not threatening the impairment of the national security, the matter ends there. This, however, does not preclude the applicant from submitting at some future date new information of material character and request the Director to reopen the investigation.

If, on the other hand, the Director, as a result of the investigation is of the opinion that the said article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security, he shall promptly so advise the President.

The President, unless he determines that the imports of the article do not threaten the national security, shall take such action, and for such time, as he deems necessary to adjust the imports of the article so that such imports will not so threaten to impair the national security.

It has not been considered the function or responsibility of the Director to recommend or suggest to the President the type of action to be taken in the case of an affirmative finding. Presumably, such action could take the form of a total embargo on the importation of the article in question, an import quota system, an increase in import duties, or a combination of any of these.

I trust that the information in this letter adequately answers your questions. If not, please let us know.

Sincerely,

W. C. Truppner,
Director, National Resource Analysis Center.

The pertinent criteria of whether imports have risen to an extent that a danger to national security may exist, or may be approaching are: unemployment, loss of skills or investment, and decrease in revenues of government. The more an industry or some of its products are essential to defense, the more vigilantly the Office of Emergency Planning obviously has to appraise the threat to national welfare and security in case such imports should, at some future date, suddenly fail to supply such products.

In the case of steel mill product imports, the impact on employment, loss of skills or investment, and loss of Government revenues recently has been obscured by the high levels of domestic steel demand. In certain product lines, however, such as wire rods, wire nails and staples, imports exceeded 40 percent of domestic consumption, and in barbed wire and in woven wire fence they approached a third.

Idled or Dismantled Facilities

The adverse effect of these high rates of imports in certain product lines has resulted in the closing down of a number of facilities in which these specific products had been produced. But the upward trend since 1962 in total domestic demand for all steel products, whether made by U.S. steel mills or imported, has for the period of 1962–66 obscured the impact of imports on unemployment of steel workers, on steel industry sales and profits, and on Government revenues. More ominous has been the trend in the first 6 months of 1967 when steel imports increased by 13 percent, while domestic shipments fell 7 percent, and profits of steel producers declined by 28 percent with Government tax receipts falling in proportion.

The following is a list of facilities closed due to imports. In some cases the equipment has been sold to steel producers abroad which have lower labor costs, while the workers found employment either in other departments of the mills or in other industries.

List of Facilities Closed Due to Imports [1]

Jones & Laughlin: Barbed wire and woven wire fence (February 1965); nails (Aliquippa, March 1966).

Armco: Barbed wire and fence (Houston, 1963).

Pittsburgh Steel: Merchant Trade Products Division (1959); remaining rod and wire operations (Monessen, June 1966).

Colorado Fuel & Iron: Steelmaking facilities and hot mills for blooms, billets and rods (Buffalo, N.Y., 1963).

United States Steel: Steelmaking and finishing facilities of Donora plant. In this case, however, imports were not the only reason for closing the plant—others include shifting markets, high costs of the mill, and air pollution (over a period of years 1961–64).

[1] Hearings on impact of imports on American labor, September and October 1966, and May 1967 before a subcommittee of the House Committee on Education and Labor.

Impact of Employment

During 1966 steel imports as a percent of the U.S. market were 11.9 percent. Among the "destructive effects" of these imports that exceeded 10.8 million tons in 1966, are claimed to be the often-mentioned loss of some 80,000 employment opportunities. The 80,000 "lost" employment opportunities may be calculated by dividing the 10.75 million tons of 1966 imports by 0.70—approximate yield of raw steel to finished steel—to arrive at the raw steel equivalent of 16.2 million tons. To produce 16.2 million tons of raw steel, approximately 80,000 employees would have been required on the basis of 1965–66 data because 200 tons of raw steel were produced per employee during this period. But, the "lost" employment opportunities do not mean to imply that layoffs have taken place in the industry. The contrary has occurred during the 1963–66 period.

Employment has been remarkedly stable in the steel industry since the 1955–63 interruption of the industry's long-term growth trend. Between 1963 and 1966 total employment has actually increased approximately 10.6 percent.

The 58-percent increase in steel output of 1966 over 1947, with approximately the same number of employees, is a reflection of the steel industry's continuing effort to reduce the cost per ton of steel produced in order to increase productivity and to combat competition from domestic substitutes and foreign producers of steel. Tons of raw steel produced per employee has risen from 129.5 net tons per annum in 1947 to 205.9 net tons by 1966, as shown in table M–1.

An analysis of steel industry accession rates and separation rates indicates that employment has been more stable than in most manufacturing industries, even if it has not shown increasing job opportunities. The industry, of course, would have experienced some further growth in employment and enjoyed greater utilization of existing capacity if it were not for imports. Adding the 80,000 jobs discussed above would have meant record employment in 1964–66 accompanied by record tonnage output, sales, and earnings.

It appears that the domestic industry in 1966 had sufficient overall capacity to meet domestic requirements, but it encountered difficulties in locating the needed numbers of steelworkers for certain steel centers like Chicago.

Steel imports did not increase appreciably until the 1962–63 periods except during the 1959 shortage resulting from the record strike of that year. Simultaneously, domestic demand for steel expanded, and the upward shift in demand was stronger than increasing imports for the 1963–66 period which resulted in employment opportunities opening up for more than 50,000 steelworkers. At the same time that imports were increasing, thereby raising questions of the balance of payments, domestic demand for steel responded to the expansion phase of the business cycle with favorable consequences for employment.

A comparative analysis of accession and separation rates, table P–1,[1] of the U.S. steel industry and total manufacturing for the period 1958 through 1966, and the first quarter of 1967 (estimated), indicates that total manufacturing experienced a greater degree of employment

[1] See appendix for all tables prefaced by a letter.

fluctuation than the steel industry. In each of the 9 years compared, total manufacturing experienced a higher percentage than steel of quits, new hires, total separations, and total accessions. Only in layoffs, and it occurred but twice, in 1960 and 1962, in the period 1958 through 1966, did the steel industry exceed total manufacturing. During the first recession year of this period, 1958, steel industry layoffs were the same as total manufacturing at 2.6 per 100 employees. The recession of 1960 caused steel layoffs to increase to 3.4 per 100 employees, while total manufacturing layoffs were at an annual average rate of 2.4 per 100 employees. In 1962 the steel industry was experiencing a recession of its own, its layoffs rising from 1.6 in 1961 to 2.8 per 100 employees, while total manufacturing was responding to conditions of improved economic output with layoffs declining from 2.2 to 2.0 per 100 employees.

Layoffs in the steel industry peaked in May 1962, then declined steadily until after the passing of the strike threat and the beginning of the inventory adjustment process in October 1965. Layoffs declined after the inventory adjustment period throughout 1966 with the annual average rate falling to 0.5, the best record on an annual average basis since 1959.

A comparison of steel imports as a percentage of the U.S. market to U.S. unemployment rates, steel industry layoffs and new hiring is presented in table P-3.

Steel imports have increased from 2.8 percent of the U.S. market in 1958 to 11.9 percent during 1966. However, during the same period the U.S. unemployment rate dropped dramatically from 6.8 percent of the work force in 1958 to 3.9 percent during 1966.

The average annual layoffs (1958–66) of steelworkers fluctuated with the business cycle but as table P-3 indicates, the performance was better in the latter part of the period, 1963–67, than the first part. From 1958 to 1962 layoffs ranged from 0.4 to 3.4 per 100 workers, but from 1963 to 1966 average annual layoffs ranged from 0.5 to 1.7 per 100 workers. This is strong evidence that unemployment in the steel industry was quite low during this period. The demand for labor experienced by the industry for the period 1963–66 is further evidenced by the improved new hiring rate, ranging from 0.7 per 100 workers in 1963 to 1.8 in 1966.

So far in 1967 increased imports together with a decline in domestic demand for steel have resulted in a softening of domestic production and employment of steelworkers. Employment in the steel industry in 1967 has declined as follows:

Thousands of workers as reported by BLS under Standard Industrial Classification 331

1966 December	640.1
1966 average	651.3
1967 January	639.6
1967 February	635.6
1967 March	636.6
1967 April	630.1
1967 May	628.5
1967 June	634.6
1967 July	635.3
1967 August	634.8
1967 September	634.8

SOURCE.—U.S. Department of Labor, Bureau of Labor Statistics, "Employment and Earnings and Monthly Report of the Labor Force," vol. 13, No. 11, May 1967, p. 139. SIC 331—Blast furnace and basic steel products.

Impact on Profits and Government Revenues

In chapter VIII it has been shown that the steel industry in recent years has ranked in relation to net profit as percent of net worth in a tabulation of 41 leading manufacturing industries as follows:

Year:	Rank
1966	39 out of 41.
1965	37 out of 41.
1964	35 out of 41.
1963	41 out of 41.

The net profits for the first 6 months of 1967, as mentioned above, have declined by 28 percent. Corporate income taxes fall in proportion to corporate profits.

Impact on Balance of Payments

The relationship of net steel imports and the U.S. balance of payments has been referred to by the Chairman of the President's Council of Economic Advisers, Gardner Ackley, on January 3, 1966, as follows:

> The deterioration of our balance of payments due to steel over the last decade is $1.3 billion, probably as large as our entire balance-of-payments deficit in 1965.

For a more detailed discussion of net steel imports and of the balance of payments, see chapter IV.

Impact on National Welfare, Security, and Defense

Regardless of steel's relative decline in competition with substitute materials, especially plastics, it is still not only the basic material of an industrial economy but also the basic material for national defense.

If the United States would rely more and more on importing steel, it would gamble with the national welfare and the national security by assuming that these imports would always be available in the future. We probably can afford to take this risk on Scotch whisky, French cognac, German beer, and Japanese motorcycles, but we cannot allow a basic industry like the steel industry to decay. Even the most quoted of all economists, Adam Smith, in advocating free trade stated in his book "The Wealth of Nations": "As defense, however, is of much more importance than opulence, the Act of Navigation is perhaps the wisest of all commerce regulations of England." He was referring to a law which assured the naval dominance of the high seas by his country in terms of foreign trade in British ships.

The Office of Emergency Planning is at this time not prepared to commit itself to any specific percentage which imports of steel, either overall or for specific products, would have to reach or approach before it would make a finding that national security is endangered. In lieu of such finding by OEP, three arguments minimizing the danger of steel shortages to national security must be considered.

The first such argument, namely, that modern war probably uses fewer tons of steel than if a comparable dollar outlay were to be spent for peaceful purposes is sound. So is the second argument, namely, that we now have excess steel capacity, and the third argument, that in an all-out war, we can severely restrict civilian uses of steel. But, these three arguments miss this point: The pattern of defense steel product requirements is distributed unevenly over the entire steel product mix and it is those areas of high defense demand and low product capacity that bottlenecks could be suicidal. The steel industry's support of a war effort in year X is dependent on the basic research for new products and new technologies for making new special steels.

National defense has always been in the vanguard in creating new demands for superior steel products. In World War II, welded tank armor, helmet steels, and steel spring technology all resulted from research efforts of the American steel industry.

At the present time, a number of new products has been introduced to meet the ever-increasing demands of the military. Maraging steels for high strength aircraft and missile requirements; dual hardness armors for helicopters, river patrol boats, and armored vehicles; high tensile strength plate for submarine hulls, and mortar-proof revetments for aircraft shelters are just a few of the examples of steel products designed to meet the specific requirements of the military market.

Today, national defense requirements have created the initial need, and now represent almost the entire market for vacuum melted steels. Other specialty steels have particular importance to the security of the United States, stemming from the unique capabilities and qualities of these steels. Specialty, steels, because of their varied high alloy content and unique properties, have myriad important applications. Some can remain stable at high temperatures, some have extraordinary toughness, particularly at low temperatures. These unique qualities have made specialty steels an integral part of the defense program of the United States.

A list of strategic products which are dependent upon specialty steels include missile and rocket frames and parts, airplane structures, atomic reactors, jet engines, turbine blades, ball bearings, oil refining equipment, and cutting tools and dies. Not only is the Apollo spacecraft fashioned from stainless steel but is also the antispike innersole in the combat boot now being worn in Vietnam.

This is only a small list of examples where the defense of the United States is strategically dependent upon steels especially produced for defense requirements. In addition to the direct strategic importance of specialty steels to the national defense, mention should also be made of the dependence of all industry upon specialty steels for dies, machinery, precision tooling, and other in-house applications. Twentieth century industry relies upon specialty steels for their high performance under stress and close tolerances to do jobs which other steels or materials cannot.

Most specialty and tool steels have suffered severe inroads from foreign steel products. In hearings held before the Senate Finance Committee on Senate Resolution 149, testimony indicated that—

> more than 50 percent of certain strategic materials needed in Vietnam were imported into the United States, and the importation of strategically important stainless steels had increased approximately 15 times since 1959.

Arguments Against Protection

The arguments against protection can be summarized as follows:

(1) The economic principle of comparative advantage;

(2) the national concern with our balance of payments and its being imperiled by inflationary tendencies in the U.S. economy;

(3) the political need for the United States to keep its allies, and finally

(4) the importance of permitting steel merchants and fabricators to have alternative sources of supply.

The Principle of Comparative Advantage

There can be no doubt that a world in which goods would be made only in countries where costs are the lowest and exchanged for goods for which other countries enjoy cost advantages would be the best of all possible worlds. Such an arrangement presupposes the existence of pure competition, including absolute certainty that the supply of such imports is assured under all possible future conditions. History hardly warrants a belief in such an ideal and permanent state of affairs, and national security, in the framework discussed above, may force certain limitations on this ideal. Obviously, a balance has to be found between cost advantages favoring imports and the national security.

The Anti-Inflation Argument (Balance of Payments)

The Council of Economic Advisers[1] has analyzed the relationship of steel price trends in the 1950's to the general price level:

> The behavior of steel prices in recent years is in marked contrast to their steady rise in the 1950's when steel played a central role in the inflation of industrial prices which did so much to weaken our competitive position abroad. Rapidly rising labor and material costs contributed to the steel price increases of the 1950's.
>
> Steel remains by far the most important industrial material, three times as large in industrial production as all other metals combined.[2] It is an important material input, accounting for more than 5 percent of the inputs in 20 of the 52 manufacturing industries; including, for example, 8.5 percent in automobiles, nine-fifteenths percent in machinery industries, and 44 percent in metal containers. The output of steel has fallen in relation to the economy's industrial output, but because of the increased price of steel, its value-weight in the wholesale price index has fallen only slightly from 5.2 to 4.8 percent since 1947.
>
> Apart from its arithmetic weight in the wholesale price index, the price of steel has a strategic significance for the price-cost behavior of American industry. Because steel is America's number one industrial, its price is viewed as a key indicator or barometer. When the price of this basic input is raised, hundreds of other prices are re-examined. Few other cost changes are as likely to lead to price changes: a rise in basic wage rates in excess of productivity gains, and a rise in the price of steel are the two cost changes most likely to upset the general stability of industrial prices.
>
> Imported steel products began to penetrate the U.S. market significantly in 1959 as a result of the 116-day strike * * *. New channels had been established and many steel consumers had discovered that they could use the cheaper foreign product.

[1] Report of the President on steel prices by the Council of Economic Advisers, 1965.

[2] The CEA refers here and in the next sentence to steel in terms of dollar costs; in terms of tonnage the role of steel is, of course, much higher: Steel in terms of weight is over 95 percent of all materials used in industrial production and over 90 percent of an automobile.

Most of the loss of U.S. exports of the 1950's was concentrated in durable goods. It has been estimated that of the $1.2 billion loss of our exports in particular markets between 1954–56 and 1961, $600 million was suffered in automobiles, $260 million in iron and steel, and $190 million in machinery * * *. Increased costs of U.S. products played a large role in these losses.

Five steel companies feel that discriminatory ocean shipping rate differentials do not put them at a major disadvantage, either because they can deal effectively on an individual basis with the shipper, or because the shipping rate problem is a minor part of the overall export problem. Two companies, however, do feel that discriminatory freight rates place them at a competitive disadvantage.

These quotations from the CEA report have been selected to highlight the CEA view of steel prices as a factor in both domestic price trends and in the U.S. balance of trade.

To test the relationship between the degree of severity of import competition for specific steel mill products and the trend of prices for these specific products, an analysis[1] was made giving May 1967 prices with 1957–59 as a base (100). The results of this analysis are not conclusive. It is true that prices have actually declined to 90 percent of the 1957–59 base for wire nails, where imports in 1966 were 45.8 percent of total domestic consumption, but they rose to 101.4 percent for wire rods, where imports were 45.9 percent. Even the latter, of course, compared to an average price increase of 105.7 percent.

The largest price increases were for tool steel bars (114.6 percent) where imports were 16.2 percent, while reinforcing bars prices decreased to 95.7 percent with imports amounting to 17.1 percent.

The largest decline in prices was recorded for cold rolled stainless sheets to 80.3 percent with imports reaching 18.6 percent, but hot rolled carbon sheets with imports reaching 16.2 percent rose to 107.7 percent, or in excess of the average price increase of 105.7 percent.

On balance, while the results as mentioned above are not conclusive, there seems to be some evidence that import pressures have caused price declines or price increases smaller than the average price increase of 105.7 percent.

Up to a certain annual rate of growth, and up to a certain percentage of domestic steel output, the competition of imports and substitutes is anti-inflationary and stimulates technological progress. But beyond these points, once competition slows down domestic output growth to less than the increase of fixed costs per ton due to heavy investment in new technology, or once such competition actually reduces domestic output, imports begin to constitute a cost-push type of inflationary factor. The steel industry would either have to increase prices or suffer financial decay.[2]

One of the anti-Government intervention arguments is based on the belief that any pro-industry measures are bound to result in higher prices for the products of the protected industry. The steel industry might counter this argument by replying that it would use

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[1] See table P-4.

[2] The steel industry's fixed costs are high and rising as a result of depreciation of new investment, and rising interest burden on debt. Any reduction of output due to competition from imports is bound to increase cost per ton produced. Increasing cost would be compensated for by raising prices, or would decrease profits. The financing of new facilities will have to come primarily from retained profits, because debt is already close to a safety limit and equity financing is precluded as steel stocks are selling at less than either par or book value.

the cash flow from protected earnings to install modern facilities and thereby reduce its costs; that the domestic steel industry would be able to improve its profits and cash flow because of an increase in output if exports were rising or imports falling, rather than by increasing prices; that if net imports were to increase further and cause a decline in output the result would be a higher unit cost of production and therefore either lower profits and cash flow or else the need for a price increase.

Antiprotectionists might counter that it has been the spur of foreign competition that has forced the domestic industry to increase its efforts of cutting costs and of improving the quality of its products. The industry would answer that it already has sufficient competition from its own members and from substitutes and that any further competition will only decrease the industry's ability to fight back with research and investment in cost-cutting facilities.

The Political Goal of Keeping Alliances

In a world where Communist economies have greatly restricted free international trade, and where U.S. foreign policy has been directed toward making and keeping friends among allied and noncommitted nations, a preference for freeing trade from tariff and nontariff barriers is a prime objective. The recent success of the Kennedy round has been considered a milestone toward this goal.

This study has indicated that Japan's steel industry is by far the most puissant competitor of the U.S. steel industry. But Japan is also, next to Canada, our best trading partner, with a balance of trade until 1964 in our favor. Japan is also a political ally in a part of the world where Red China constitutes a potential threat to both our countries. Edwin O. Reischauer, former U.S. Ambassador to Japan, has stated:

> Japan and the U.S. have a great identity of basic interests. We are both trading countries, believing in as free an international trade as possible * * *. Nothing helps the Japanese economy more than prosperity in the U.S., and vice versa. If the Japanese economy prospers, then it becomes a larger market for American goods. As we both prosper, we benefit each other; it has been proven time and again.

Matters of foreign policy may be considered by our State Department to be of overriding importance, but a question of priorities arises: ***To what extent can the United States afford to neglect the health of one of its strategic industries in order to please political allies? If a conflict arises between foreign policy goals and the viability of the U.S. steel industry, where lies the danger point?***

Imports and Competition in the Domestic Market

The traditional view that the demand for steel is inelastic, i.e., that a decrease in price will not increase effective demand sufficiently to raise total revenue or that an increase in price will result in greater total revenue in proportion to the price increase, no longer holds true for the long run. Since the mid-1950's the U.S. steel industry is competing in its domestic market with both foreign steel and substitute materials, especially plastics and aluminum. Any price increase carries with it a risk of less than proportional increase in revenue because of the danger of increased competition from imports and/or substitutes.

Steel Service Centers and Dual Distribution

There are two groups of businessmen who have traditionally complained of the adverse effects on them of the steel industry's so-called "dual distribution" system. The independent warehouses or jobbers, now called service centers, compete with the wholly owned subsidiaries of the steel mills. In times of shortages the independent service centers can be denied supplies, while the centers owned by the mills receive regular shipments. The other group is the independent fabricators who have complained at times that the steel mills charge their wholly owned fabricators less than they charge their independent customer-competitors for steel of like quality.[1] Prof. W. Adams [2] has classified the techniques of abuse of market power into three methods, namely:

(1) Raising prices for steel without a corresponding change in the finished-product price (simple squeeze);

(2) Reducing the finished-product price without a corresponding change in steel (simple squeeze);

(3) Raising the price of steel and simultaneously reducing the price of the finished product (double squeeze).

Denial of supplies can be practiced only in times of shortages, but the price squeeze can be applied as long as price leadership is followed by all steel producers.

The trend of steel distribution through service centers and oil and gas supply houses accounted for 20.1 percent of all steel shipments in 1956 as against 17.7 percent in 1965, but no breakdown is available as to what percentage of such shipments was by independents or by steel mill subsidiaries. It is most likely, however, that the ready availability of foreign steel, especially so-called shelf items, has been welcomed by many of the independent service centers.

Regarding the annual meeting of the Steel Service Center Institute (SSCI) in San Francisco, the American Metal Market reported (May 8, 1967) that those members interviewed "sought anonymity and were scathingly indictful of the steel producers."

> I think they still suffer from a seller's market mentality,

scoffed one SSCI member.

> The sales managers, in particular, don't understand how to compete with imports—fairly or otherwise.
>
> They cited a number of possible things the mills might do to keep service centers and others from buying imported steel. Among them—
>
> Laying down metal on consignment;
>
> Offering extended terms of payment;
>
> Widespread adoption of Wheeling Steel's price at time of order concept;
>
> Better packaging;
>
> Better scheduling;
>
> Annual contracts at a firm price where the buyer would commit himself to an absolute minimum tonnage.

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[1] Statement of Senator Russell B. Long, Democrat of Louisiana, on dual distribution, hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, U.S. Senate, 89th Cong., 1st sess., pt. 1, Sept. 15, 16, and 17, 1965, pp. 10–14.

[2] Statement of Dr. Walter Adams, professor of economics, Michigan State University, East Lansing, Mich., on dual distribution in the steel industry, hearings, Subcommittee No. 4, Select Committee on Small Business, House of Representatives, 88th Cong., 1st sess., vol. 2, May 22, 23, 28, June 7 and 13, 1963, pp. 435 and 436.

An attempt was made to obtain opinions from buyers of foreign steel products as to their position on the question of protection for the domestic steel industry. Generally, the firms contacted did not wish to be quoted as to their position. An exception was made by the Independent Wire Drawers Association, which supplied an analysis of answers to a questionnaire it sent to its members. In the appendix to this chapter there is a letter from the general counsel of this association together with the analysis. There is also a reply to this analysis furnished by a major U.S. steel producer.

Summary

The arguments against Government intervention to provide protection for the domestic industry are persuasive in the abstract. The goals of keeping political alliances, maintaining price stability, and pursuing a consistent trade policy that upholds the principle of comparative advantage are all worthwhile and important. The real question is however, at what point can a nation afford to allow one of its vital industries to undergo a serious decay because of imports? Perhaps the United States could afford to import 10 percent of its domestic consumption of steel. But would it be in the national interest to import 15, 20, 30, or even 50 percent? [1] It is the trend which must be of concern, and a judicious decision will have to be made at some point as to how much the Nation can depend on imports of steel to meet domestic civilian and defense needs.

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[1] For imports as a percentage of U.S. consumption and of U.S. shipments for the years 1957–66, and the first 8 months of 1967 (see table P-5); for imports of specific steelmill products as a percentage of U.S. consumption (see table D-4).

APPENDIX A

TABLE A-1.—*Steel production since 1900, world total and United States*

[In millions of net tons]

Year	World total [1]	United States [2]	Ratio (percent)	Year	World total [1]	United States [2]	Ratio (percent)
1900	31.17	11.41	37	1934	90.83	29.18	32
1901	34.23	15.09	44	1935	109.79	38.18	35
1902	38.06	16.74	44	1936	137.08	53.50	39
1903	39.77	16.28	41	1937	149.53	56.64	38
1904	40.08	15.52	39	1938	121.53	31.75	26
1905	51.70	22.43	43	1939	151.86	52.80	35
1906	56.46	26.21	46	1940	155.96	66.98	43
1907	58.39	26.17	45	1941	170.90	82.84	48
1908	45.64	15.71	34	1942	168.00	86.03	51
1909	59.78	26.83	45	1943	176.66	88.84	50
1910	66.12	29.23	44	1944	168.92	89.64	53
1911	66.72	26.52	40	1945	129.67	79.70	61
1912	80.21	35.00	44	1946	123.97	66.60	54
1913	84.12	35.06	42	1947	149.86	84.89	57
1914	66.60	26.33	40	1948	169.33	88.44	52
1915	73.42	36.01	49	1949	172.[illegible]	77.98	45
1916	86.21	47.91	56	1950	207.13	96.84	47
1917	90.40	49.79	55	1951	232.16	105.20	45
1918	85.03	49.01	58	1952	234.24	93.17	40
1919	64.41	38.10	59	1953	258.76	111.61	43
1920	79.99	46.18	58	1954	246.45	88.31	36
1921	49.87	21.64	43	1955	297.84	117.04	39
1922	75.86	38.95	51	1956	312.95	115.22	37
1923	86.26	49.02	57	1957	321.70	112.72	35
1924	86.51	41.45	48	1958	298.88	85.26	29
1925	99.74	49.70	50	1959	337.17	93.45	28
1926	102.92	52.90	51	1960	381.58	99.28	26
1927	112.25	49.27	44	1961	390.06	98.01	25
1928	121.12	56.62	47	1962	394.54	98.33	25
1929	133.15	61.74	46	1963	422.24	109.26	26
1930	104.82	44.59	43	1964	479.03	127.08	27
1931	76.74	28.61	37	1965	503.08	131.46	26
1932	55.91	15.12	27	1966 [3]	519.81	134.07	26
1933	74.98	25.72	34				

[1] Source: BISF [1900–44]; AISI [1945–66].
[2] Source: AISI.
[3] Preliminary.

TABLE A-2.—*Raw steel production by major producing countries, selected years, 1910–66*

[In thousands of net tons and percent]

Countries	1910		1920		1930		1940		1947	
	Production	Ratio	Production	Ratio	Production	Ratio	Production	Ratio	Production	Ratio
United States	29,220	44	47,185	59	44,591	44	66,983	42	84,894	57
Canada	830	1	1,243	2	1,131	1	2,174	1	2,902	2
Belgium/Luxembourg	2,800	4	2,016	3	6,194	6	3,221	2	5,069	3
France	3,763	6	3,360	4	10,416	10	4,864	3	6,338	4
West Germany [1]	14,436	22	10,225	13	14,392	14	23,732	15	5,519	4
Italy	806	1	851	1	1,926	2	2,487	1	1,874	1
United Kingdom	7,134	11	10,158	13	8,210	8	14,527	9	12,248	8
Japan	(2)	------	930	1	2,565	3	8,288	5	1,041	1
Czechoslovakia	(2)	------	1,075	1	2,027	2	2,606	2	2,520	2
Poland	(2)	------	1,075	1	1,366	1	1,600	1	1,731	1
U.S.S.R	3,897	6	180	(3)	6,462	7	20,130	13	17,060	11
Red China	------	------	------	------	------	------	661	(3)	55	(3)
All other	3,227	5	1,692	2	2,232	2	9,628	6	8,615	6
Total world	66,113	100	79,990	100	101,512	100	160,901	100	149,856	100

Countries	1950		1955		1960		1965		1966	
	Production	Ratio	Production	Ratio	Production	Ratio	Production	Ratio	Production	Ratio
United States	96,836	47	117,036	39	99,282	26	131,462	26	134,072	26
Canada	3,384	2	4,529	2	5,790	2	10,028	2	10,003	2
Belgium/Luxembourg	6,857	3	10,050	3	12,416	3	15,153	3	14,667	3
France	9,537	5	13,880	5	19,069	5	21,604	4	21,590	4
West Germany [1]	15,453	7	27,008	9	37,590	10	40,588	8	38,920	7
Italy	2,583	1	5,947	2	9,071	2	13,980	3	15,017	3
United Kingdom	18,240	9	22,165	7	27,222	7	30,247	6	27,233	5
Japan	5,332	3	10,370	3	24,404	7	45,372	9	52,657	10
Czechoslovakia	3,190	2	4,932	2	7,460	2	9,480	2	9,983	2
Poland	2,750	1	4,880	2	7,364	2	10,013	2	10,793	2
U.S.S.R	29,800	14	49,902	17	71,971	19	100,328	20	106,422	21
Red China	750	(3)	3,307	1	20,337	5	13,228	3	13,700	3
All other	12,442	6	23,834	8	39,608	10	61,600	12	64,756	12
Total world	207,134	100	297,840	100	381,582	100	503,083	100	519,813	100

[1] Includes Saar and, until 1950, East Germany.
[2] Not available.
[3] Negligible.

Source: AISI, BISF.

TABLE A-3.—*Steel ingot production—Specific areas*

[In millions of net tons]

	United States	U.S.S.R.	Japan	Eastern Europe	Italy	Canada	Latin America
1966	134.1	106.4	52.7	32.9	15.0	10.0	10.0
1965	131.5	100.3	45.4	31.0	14.0	10.0	9.2
1964	127.1	93.7	43.9	30.0	10.8	9.1	9.0
1963	109.3	88.4	34.7	27.8	11.2	8.2	7.7
1962	98.3	84.1	30.4	27.1	10.5	7.2	6.5
1961	98.0	78.0	31.2	25.1	10.1	6.5	5.9
1960	99.3	72.0	24.4	22.9	9.1	5.8	5.4
1959	93.4	66.1	18.3	21.4	7.5	5.9	4.4
1958	85.3	60.4	13.3	19.1	6.9	4.3	3.7
1957	112.7	56.1	13.8	17.8	7.5	5.0	3.2
1956	115.2	53.6	13.2	16.9	6.5	5.3	2.9
1955	117.0	49.9	10.4	15.3	5.9	4.5	2.8
1954	88.3	45.6	8.5	13.9	4.6	3.2	2.3
1953	111.6	41.8	8.4	13.7	3.9	4.1	2.2
1952	93.2	38.0	7.7	12.1	3.9	3.7	1.9
1951	105.2	34.5	7.2	10.5	3.4	3.6	1.6
1950	96.8	29.8	5.3	7.7	2.6	3.4	1.4
1949	78.0	23.6	3.4	6.7	2.3	3.2	1.2
1948	88.4	18.7	1.9	6.4	2.3	3.2	1.1
1947	84.9	17.1	1.0	5.1	1.9	2.9	.9
1946	66.6	15.6	.6	3.7	1.3	2.3	.7

Source: AISI.

TABLE A-4.—*World steel production—Major areas*

[In millions of net tons]

	United States	Western Europe	Eastern Europe	Japan	Rest of the world	Total
1966	134.1	139.7	139.3	52.7	54.0	519.8
1960	99.3	120.2	94.8	24.4	43.9	382.6
1950	96.8	57.7	37.5	5.3	9.8	207.1
1940	67.0	53.6	25.5	8.3	6.5	160.9
1930	45.6	43.9	10.4	2.6	2.3	104.8
1920	47.2	27.7	2.4	.9	1.8	80.0
1910	29.2	32.1	3.9	(1)	.8	66.0
1900	11.4	17.2	2.4	(1)	....	31.0

[1] Not available.

Source: 1910–30, British Iron & Steel Federation; 1940–66, AISI.

TABLE A-5.—*World raw steel production by major economic blocs, selected years, 1930–66*

[In thousands of net tons]

Economic blocs	1930	1940	1947	1950	1955	1960	1965	1966
World	101,512	160,901	149,856	207,134	297,840	381,582	503,083	519,813
Red bloc	10,275	26,272	22,509	38,506	69,148	115,865	145,966	154,520
Free world	91,237	134,629	127,347	168,628	228,692	265,717	357,117	365,263
United States	44,591	66,983	84,894	96,836	117,036	99,282	131,462	134,072
Other free world	46,646	67,646	42,453	71,792	111,656	166,435	225,655	231,191
Developed areas	45,918	65,968	40,228	68,806	106,782	146,879	207,947	212,374
Less developed areas	728	1,678	2,225	2,986	4,874	19,556	17,708	18,817

Source: AISI, BISF.

TABLE A-6.—*Compilation of reports of world raw steel production, 1930–66*

[In thousands of net tons]

	1930	1940	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
North America:												
United States	44,591	66,963	79,702	66,603	84,894	88,435	77,978	96,836	105,200	93,168	111,610	88,312
Canada	1,131	2,174	2,803	2,293	2,902	3,159	3,186	3,384	3,567	3,659	4,104	3,158
Total	45,722	69,157	82,505	68,896	87,796	91,594	81,164	100,220	108,767	96,827	115,714	91,470
Latin America:												
Argentina										139	192	205
Brazil	22	156	227	379	426	673	677	834	930	983	1,118	1,263
Chile					100	150	150	152	200	268	345	354
Colombia												
Costa Rica												
Cuba												
El Salvador												
Honduras												
Mexico	12	123	201	277	353	268	380	390	500	559	508	500
Peru												
Puerto Rico												
Ecuador [1]												
Jamaica												
Uruguay												
Venezuela												
Total	34	279	428	656	879	1,091	1,207	1,376	1,630	1,949	2,163	2,322
Free Europe:												
Belgium	3,696	2,086	805	2,508	3,188	4,200	4,242	4,155	5,590	5,621	4,997	5,522
Luxembourg	2,498	1,135	291	1,426	1,881	2,823	2,507	2,702	3,391	3,273	2,914	3,075
France	10,416	4,864	1,822	4,859	6,338	7,984	10,086	9,537	10,842	11,954	10,997	11,690
Saar	1,680	1,243		317	780	1,922	1,936	2,092	2,869	3,105	2,952	3,086
Western Germany	12,712	23,732	5,500	3,604	4,739	6,127	10,090	13,361	14,888	18,387	16,962	19,177
Italy	1,926	2,487	436	1,269	1,874	2,342	2,265	2,583	3,362	3,889	3,850	4,628
Netherlands		179		146	213	370	470	538	609	754	945	1,020
Total ECSC	32,928	35,726	8,854	14,129	19,013	25,768	31,596	34,968	41,551	46,983	43,617	48,198
Austria	526	840	189	207	394	713	920	1,044	1,133	1,163	1,412	1,818
Denmark					100	150	150	152	200	194	198	219
Ireland												
Finland	34	90	90	101	90	123	123	112	146	162	162	193
Greece												
Norway		78	45	67	67	78	90	90	101	108	122	133
Portugal												
Spain	96	766	617	656	581	604	793	900	902	998	984	1,210
Sweden	67	1,280	1,327	1,335	1,311	1,270	1,511	1,587	1,658	1,858	1,960	2,048
Switzerland												165

Iceland [1]												
Turkey		45	67	90	101	112	112	101	146	169	180	186
United Kingdom	8,210	14,527	13,243	14,220	12,248	16,662	17,256	18,240	17,516	18,388	19,722	20,742
Yugoslavia	9	280	78	224	347	403	437	470	470	486	567	678
Total, excluding ECSC	8,942	17,906	15,656	16,900	15,239	20,115	21,392	22,696	22,272	23,526	25,307	27,392
Total, Free Europe	41,870	53,632	24,510	31,029	34,252	45,883	52,988	57,664	63,823	70,509	68,924	75,590
Africa:												
Algeria												
Angola												
Ghana												
Morocco												
Nigeria												
Rhodesia										40	28	36
Senegal												
Somalia												
Tunisia												
Uganda												
Union of South Africa	5	396	594	568	660	750	699	830	1,045	1,326	1,368	1,518
Total, Africa	5	396	594	568	660	750	699	830	1,045	1,366	1,396	1,554
Middle East:												
Egypt												
Iran												
Iraq												
Lebanon												
Israel												
Saudi Arabia												
Total												
Far East:												
Burma												
Ceylon												
Taiwan										17	22	28
Hong Kong												
India	694	1,399	1,426	1,373	1,346	1,237	1,517	1,610	1,680	1,768	1,687	1,887
Indonesia												
Japan	2,565	8,288	1,177	608	1,041	1,916	3,352	5,332	7,167	7,687	8,428	8,525
Malaysia												
Pakistan										9	12	11
South Korea										1	1	1
Thailand												
Vietnam, South												
Total	3,259	9,687	2,603	1,981	2,387	3,153	4,869	6,942	8,847	9,482	10,150	10,452

See footnotes at end of table, p. 261.

TABLE A-6.—*Compilation of reports of world raw steel production, 1930–66*—Continued

[In thousands of net tons]

	1930	1940	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
Oceania:												
Australia	347	1,478	1,505	1,164	1,373	1,425	1,309	1,596	1,606	1,818	2,295	2,486
Philippines												
New Zealand												
Total	347	1,478	1,505	1,164	1,373	1,425	1,309	1,596	1,606	1,818	2,295	2,486
Total, free world	91,237	134,629	112,145	104,294	127,347	143,896	142,236	168,628	185,718	181,951	200,642	183,874
Red bloc, Europe:												
Albania												
Bulgaria											14	68
Czechoslovakia	2,027	2,606	1,045	1,843	2,520	3,157	2,756	3,190	3,651	4,169	4,873	4,699
East Germany	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	1,111	2,082	2,395	2,454
Hungary	403	827	142	389	658	794	882	1,100	1,360	1,536	1,697	1,640
Poland	1,366	1,600	546	1,344	1,731	2,116	2,539	2,750	3,078	3,501	3,964	4,344
Rumania	17	291	134	168	202	370	504	616	720	768	791	690
U.S.S.R.	6,462	20,130	14,300	15,620	17,050	18,700	23,600	29,800	34,500	37,950	41,800	45,577
Total	10,275	25,454	16,167	19,364	22,161	25,137	30,281	37,456	45,020	50,006	55,534	59,472
Far East:												
China		661	1,008	34	55	34	111	750	997	1,655	1,946	2,453
North Korea		157	347	280	293	260	304	300	428	630	640	650
Vietnam, North												
Total		818	1,355	314	348	294	415	1,050	1,425	2,285	2,586	3,103
Total, Red bloc	10,275	26,272	17,522	19,678	22,509	25,431	30,696	38,506	46,445	52,291	58,120	62,575
Total, world	101,512	160,901	129,667	123,972	149,856	169,327	172,932	207,134	232,163	234,242	258,762	246,449
Number of steel-producing countries	25	30	30	30	32	32	32	32	33	38	39	40

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 preliminary
North America:												
United States	117,036	115,216	112,715	85,255	93,446	99,282	98,014	98,328	109,261	127,076	131,462	134,072
Canada	4,529	5,306	5,038	4,345	5,922	5,790	6,466	7,173	8,190	9,131	10,029	10,003
Total	121,565	120,522	117,753	89,600	99,368	105,072	104,480	105,501	117,451	136,207	141,491	144,075

Latin America:												
Argentina	256	223	242	260	237	305	487	710	986	1,394	1,508	1,395
Brazil	1,281	1,513	1,628	1,760	2,057	2,516	2,693	2,816	3,131	3,413	3,326	3,814
Chile	320	419	427	390	458	497	431	582	575	644	525	586
Colombia	85	80	100	133	119	190	212	173	245	253	268	181
Costa Rica	------	------	------	------	------	------	------	------	------	------	------	------
Cuba	------	10	20	30	30	33	20	20	50	50	50	50
El Salvador	------	------	------	------	------	------	------	------	------	------	3	4
Honduras	------	------	------	------	------	------	------	------	------	------	------	------
Mexico	812	650	756	1,088	1,441	1,697	1,854	1,887	2,223	2,566	2,706	3,046
Peru	10	------	------	30	45	55	83	79	84	90	102	102
Puerto Rico	------	------	------	------	15	15	15	35	35	40	35	35
Ecuador [1]	------	------	------	------	------	------	------	10	------	------	------	------
Jamaica	------	------	------	------	------	------	------	------	------	------	------	15
Uruguay	10	------	------	15	22	18	10	9	7	16	15	15
Venezuela	15	20	25	25	25	52	78	156	395	486	689	713
Total	2,789	2,915	3,198	3,731	4,449	5,378	5,883	6,477	7,731	8,952	9,227	9,956
Free Europe:												
Belgium	6,403	7,008	6,922	6,626	7,092	7,319	7,718	8,094	8,295	9,618	10,099	9,828
Luxembourg	3,647	3,807	3,814	3,698	4,038	4,497	4,534	4,420	4,445	5,025	5,054	4,839
France	13,880	14,785	15,510	16,095	16,752	19,069	19,375	19,004	19,350	21,806	21,604	21,590
Saar	3,489	3,711	3,812	3,835	3,983	4,167	4,355	4,263	34,830	41,160	40,588	38,920
Western Germany	23,519	25,508	26,957	25,065	28,465	33,423	32,526	31,631				
Italy	5,947	6,502	7,466	6,898	7,454	9,071	10,059	10,459	11,196	10,795	13,960	15,017
Netherlands	1,073	1,154	1,304	1,581	1,841	2,141	2,172	2,301	2,582	2,930	3,467	3,625
Total, ECSC	57,958	62,475	65,785	63,798	69,625	80,287	80,739	80,172	80,698	91,334	94,792	93,819
Austria	2,009	2,286	2,760	2,682	2,768	3,486	3,420	3,273	3,251	3,521	3,552	3,539
Denmark	261	264	288	281	322	349	356	405	396	437	454	448
Ireland	15	25	25	39	44	44	45	45	44	22	22	30
Finland	206	217	230	221	274	301	328	365	359	392	400	425
Greece	66	66	66	66	72	72	72	72	230	231	232	260
Norway	183	316	381	410	459	527	536	539	599	679	756	789
Portugal	------	------	------	------	------	------	75	250	245	276	301	289
Spain	1,336	1,367	1,482	1,716	2,026	2,116	2,565	2,424	2,556	3,333	3,875	4,189
Sweden	2,342	2,668	2,758	2,640	3,131	3,547	3,920	3,979	4,278	4,947	5,208	5,251
Switzerland	183	188	258	268	276	303	327	351	355	380	383	450
Iceland [1]	------	33	38	------	------	------	------	------	------	------	------	------
Turkey	217	223	203	190	251	309	335	282	400	446	641	915
United Kingdom	22,165	23,138	24,303	21,914	22,609	27,222	24,736	22,950	25,223	29,378	30,247	27,233
Yugoslavia	888	974	1,153	1,231	1,432	1,590	1,689	1,758	1,750	1,852	1,950	2,040
Total, excluding ECSC	29,871	31,765	33,945	31,608	33,664	39,866	38,404	36,693	39,666	45,894	48,021	45,858
Total, Free Europe	87,829	94,240	99,730	95,406	103,289	120,153	119,143	116,865	120,384	137,228	142,813	139,677

See footnotes at end of table, p. 261.

TABLE A-6.—*Compilation of reports of world raw steel production, 1930–66*—Continued

[In thousands of net tons]

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 preliminary
Africa:												
Algeria		17	17	17	17	18	18	18	35	35	35	35
Angola												
Ghana										10	30	30
Morocco												
Nigeria									3	12	12	12
Rhodesia	40	62	65	70	70	94	90	90	100	150	125	115
Senegal											25	25
Somalia												5
Tunisia											40	60
Uganda											20	20
Union of South Africa	1,741	1,708	1,850	2,020	2,090	2,405	2,725	2,890	3,122	3,426	3,624	3,591
Total, Africa	1,781	1,787	1,932	2,107	2,177	2,517	2,833	2,998	3,260	3,633	3,911	3,893
Middle East:												
Egypt	55	30	30	110	110	110	165	165	165	200	300	350
Iran												
Iraq												
Lebanon									20	20	20	20
Israel		40	65	66	66	77	85	100	72	72	72	72
Saudi Arabia												
Total	55	70	95	176	176	187	250	265	257	292	392	442
Far East:												
Burma	30			20	35	34	50	22	22	22	22	22
Ceylon												
Taiwan	15	70	70	66	70	132	150	150	220	275	275	275
Hong Kong									68	75	75	60
India	1,910	1,946	1,915	2,033	2,725	3,623	4,517	5,885	6,587	6,653	7,065	7,388
Indonesia												
Japan	10,370	13,217	13,827	13,332	18,330	24,404	31,160	30,364	34,724	43,870	45,372	52,657
Malaysia										44	53	60
Pakistan	10	15	15	17	17	13	15	15	13	13	13	13
South Korea	10			17	20	22	50	75	176	143	189	219
Thailand									10	10	10	10
Vietnam, South												
Total	12,345	15,248	15,827	15,485	21,197	28,228	35,942	36,511	41,820	51,105	53,074	60,704

Oceania:												
Australia	2,313	2,916	3,413	3,540	3,796	4,127	4,339	4,650	5,119	5,622	6,059	6,396
Philippines	15	40	50	50	50	55	75	100	100	100	100	100
New Zealand	----	----	----	----	----	----	----	----	----	50	50	50
Total	2,328	2,956	3,463	3,590	3,846	4,182	4,414	4,750	5,219	5,772	6,209	6,546
Total, free world	228,692	237,738	241,998	210,095	234,502	265,717	272,945	273,367	296,122	343,189	357,117	365,293
Red bloc, Europe:												
Albania	----	----	----	----	----	----	----	----	----	----	----	----
Bulgaria	63	143	155	232	254	279	364	460	494	523	648	753
Czechoslovakia	4,932	5,379	5,683	6,061	6,764	7,460	7,761	8,420	8,375	9,233	9,480	9,983
East Germany	2,765	3,421	3,634	3,817	4,086	3,678	4,314	4,480	4,511	4,841	4,288	4,453
Hungary	1,796	1,568	1,515	1,790	1,937	2,078	2,315	2,572	2,617	2,606	2,778	2,907
Poland	4,880	5,515	5,834	6,206	6,790	7,364	7,973	8,469	8,823	9,445	10,013	10,793
Rumania	843	857	950	1,027	1,564	1,991	2,345	2,702	2,981	3,347	3,770	4,009
U.S.S.R	49,902	53,568	56,147	60,355	66,083	71,971	77,990	84,112	88,434	93,691	100,328	106,422
Total	65,181	70,442	73,918	79,488	87,478	94,821	103,062	111,215	116,235	123,686	131,305	139,320
Far East:												
China	3,307	4,565	5,486	8,800	14,693	20,337	13,200	8,800	9,000	11,000	13,228	13,700
North Korea	660	200	300	495	500	707	855	1,157	882	1,150	1,433	1,500
Vietnam, North	----	----	----	----	----	----	----	----	----	----	----	----
Total	3,967	4,765	5,786	9,295	15,193	21,044	14,055	9,957	9,882	12,150	14,661	15,200
Total, Red bloc	69,148	75,207	79,704	88,783	102,671	115,865	117,117	121,172	126,117	135,836	145,966	154,520
Total, world	297,840	312,945	321,702	298,878	337,173	381,582	390,062	394,539	422,239	479,025	503,083	519,813
Number of steel-producing countries	49	49	52	53	53	53	54	55	57	60	64	66

[1] No current evidence of production or planned capacity.
[2] Included with West Germany.

Source: The foregoing production data through 1964 were compiled from available official sources augmented by American Iron & Steel Institute reports and by domestic and foreign trade reports, such as American Iron and Steel Engineer, Iron and Steel (London), Metal Bulletin (London), Japan Metal Bulletin, Far East Iron and Steel Trade Reports (Japan), Far Eastern Economic Review (Hong Kong), Indian Press Iron and Steel Trade Reports, etc.

TABLE A-7.—*Steel exports—World total and United States, selected years, 1913–66*

[In thousands of net tons of finished products]

	Total world steel exports	Intra-ECSC steel trade	Intra-Red bloc steel trade	World, excluding intra-ECSC, Red-bloc trade	United States steel exports	U.S. ratio	
						World total	World, excluding intra-ECSC, Red-bloc trade
1913	13,254				2,803	21	
1925	13,592				1,626	12	
1929	19,735				2,492	13	
1936	12,774				1,184	9	
1937	15,923				2,711	17	
1938	11,404				1,673	15	
1936–38 average	13,367				1,856	14	
1950	17,469	1,939	1,013	14,517	2,840	16	20
1951	20,495	2,042	1,381	17,072	3,236	16	19
1952	20,366	2,339	1,566	16,461	4,001	20	24
1953	20,367	3,054	1,755	15,558	3,082	15	20
1954	22,359	4,325	1,747	16,287	2,800	13	17
1955	28,793	5,670	2,190	20,933	4,079	14	20
1956	30,347	5,225	2,382	22,740	4,323	14	19
1957	33,918	5,849	2,704	25,365	5,312	16	21
1958	32,149	5,756	3,045	23,348	2,949	9	13
1959	35,716	7,678	3,371	24,767	1,735	5	7
1960	43,164	10,611	3,844	28,709	2,988	7	10
1961	42,701	10,777	4,295	27,629	1,999	5	7
1962	46,572	11,436	5,477	29,659	2,004	4	7
1963	49,465	12,544	5,726	31,195	2,151	4	7
1964	57,331	14,600	6,330	36,401	3,438	6	9
1965	65,633	14,252	7,563	43,818	2,508	4	6
1966	[1] 62,000	[1] 14,200	[1] 7,800	[1] 40,000	1,725	3	4

[1] Estimate.

Source: Economic Commission for Europe (ECE).

TABLE A-8.—*World steel exports*

[Thousand net tons of products]

Economic blocs (exporting)	1929	1936	1950	1955	1960	1965
World	19,735	12,774	17,469	28,793	43,164	65,633
Red bloc	879	649	1,188	3,064	5,124	10,495
Free world	18,856	12,125	16,281	25,729	38,040	55,138
United States	2,492	1,184	2,840	4,079	2,988	2,508
Other free world	16,364	10,941	13,441	21,650	35,052	52,630
Developed areas	16,364	10,941	13,441	21,650	35,052	52,630
Less developed areas [1]						

[1] ECE trade statistics contain no data on exports of less developed countries. On the basis of available statistics, total exports by the less developed countries are estimated at about 1,000,000 tons in 1965.

Source: Economic Commission for Europe (ECE).

TABLE A-9.—*World steel exports by exporting regions, selected years, 1929–65*

[In thousand net tons of products]

Regions exporting	1929	1936	1950	1955	1960	1965
United States	2,492	1,184	2,840	4,079	2,968	2,508
Canada	30	193	236	436	842	919
Latin America						
Western Europe	16,160	9,835	12,551	19,151	31,121	40,495
European Coal and Steel Community	12,342	7,663	9,593	15,383	25,442	33,036
United Kingdom	3,522	1,877	2,634	2,820	3,418	4,328
Other Western Europe	296	295	324	948	2,261	3,131
Eastern Europe	879	649	1,188	3,064	5,124	10,495
U.S.S.R		71	712	1,925	3,312	5,497
Other Eastern Europe	879	578	476	1,139	1,812	4,998
Africa and Middle East					164	107
South Africa					164	107
Other Africa and Middle East						
Asia and Far East	174	914	654	2,063	2,925	11,109
Japan	174	872	602	1,953	2,471	10,743
China, North Korea, North Vietnam						
India						
Australia		42	52	110	454	366
Other Asia and Far East						
World Total	19,735	12,775	17,469	28,793	43,164	65,633

Source: Economic Commission for Europe (ECE).

TABLE A-10.—*World steel exports by major exporting countries, selected years, 1929–65*

[Volume amounts in thousand net tons of products]

Exporting countries	1929		1936		1950		1955		1960		1965	
	Volume	Percent world total	Volume	Percent world total	Volume	Percent world total	Volume	Percent world total	Volume	Percent world total	Volume	Percent world total
Austria	114	(1)	93	1	189	1	619	2	1,277	3	1,252	2
Belgium-Luxembourg	4,593	23	3,305	26	3,708	21	6,085	21	8,338	19	10,489	16
Czechoslovakia	629	3	296	2	288	2	866	3	1,000	2	2,254	3
West Germany	4,257	22	2,870	22	1,925	11	2,849	9	8,652	20	10,523	16
France	3,412	17	1,387	11	3,618	21	5,462	19	6,076	14	7,240	11
Italy	----	----	67	(1)	134	1	399	1	1,229	3	2,684	4
Japan	174	1	872	7	602	3	1,953	7	2,471	6	10,743	16
Netherlands	80	(1)	34	(1)	209	1	588	2	1,278	3	2,099	3
Poland	250	1	283	2	188	1	273	1	812	2	1,035	2
Sweden	183	1	197	2	131	1	290	1	589	1	1,064	2
U.S.S.R.	----	----	71	(1)	712	4	1,925	7	3,312	8	5,497	9
United Kingdom	3,522	18	1,877	15	2,634	15	2,820	10	3,418	8	4,328	7
United States	2,492	13	1,184	9	2,840	16	4,079	14	2,988	7	2,508	4
All other	30	(1)	234	2	291	2	585	2	1,724	4	3,917	6
Total world	19,736	100	12,774	100	17,469	100	28,798	100	43,164	100	65,638	100

[1] Negligible percentage.

Source: Economic Commission for Europe (ECE);

TABLE A-11.—*Steel imports—World total and United States, selected years 1913–66*

	Thousand net tons of finished products					Percent of U.S. absorption	
	Total world steel imports	Intra-ECSC steel trade	Intra-Red-bloc steel trade	World, excluding intra-ECSC Red-bloc trade	U.S. steel imports	World total	World, excluding intra-trade
1913	13,254				147	1	
1925	13,592				229	2	
1929	19,735				368	2	
1936	12,774				268	2	
1937	15,923				281	2	
1938	11,404				184	2	
1936–38 average	13,367				244	2	
1950	17,469	1,939	1,013	14,517	1,231	7	9
1951	20,495	2,042	1,381	17,072	2,252	11	13
1952	20,366	2,339	1,566	16,461	1,232	6	8
1953	20,367	3,054	1,755	15,558	1,641	8	11
1954	22,359	4,325	1,747	16,287	751	3	5
1955	28,793	5,670	2,190	20,933	847	3	4
1956	30,347	5,225	2,382	22,740	1,294	4	6
1957	33,918	5,849	2,704	25,365	1,001	3	4
1958	32,149	5,756	3,045	23,348	1,556	5	7
1959	35,716	7,678	3,371	24,767	3,902	11	16
1960	43,164	10,611	3,844	28,709	2,741	6	10
1961	42,701	10,777	4,295	27,629	2,832	7	10
1962	46,572	11,436	5,477	29,659	3,835	8	13
1963	49,465	12,544	5,726	31,195	4,933	10	16
1964	57,331	14,600	6,330	36,401	6,119	11	17
1965	65,633	14,252	7,563	43,818	10,252	16	23
1966	[1] 62,000	[1] 14,200	[1] 7,800	[1] 40,000	10,753	17	26

[1] Estimate.

Source: Economic Commission for Europe (ECE).

TABLE A-12.—*World steel imports by major importing economic blocs, selected years, 1929–65*

[In thousand net tons of products]

Economic blocks	1929	1936	1950	1955	1960	1965
World	19,735	12,774	17,469	28,793	43,164	65,633
Red bloc	1,232	1,328	1,478	2,583	7,025	9,774
Free world	18,503	11,446	15,991	26,210	36,139	55,859
United States	368	268	1,231	847	2,741	10,252
Other free world	18,135	11,178	14,760	25,363	33,398	45,607
Developed areas	12,166	6,955	8,823	16,084	22,915	32,551
Less developed areas	5,969	4,223	5,937	9,279	10,483	13,056

Source: Economic Commission for Europe (ECE).

TABLE A-13.—*World steel imports by importing regions, selected years, 1929–65*

[In thousand net tons of products]

Importing regions	1929	1936	1950	1955	1960	1965
United States	368	268	1,231	847	2,741	10,252
Canada	1,430	488	1,189	1,222	1,037	2,089
Latin America	2,335	1,552	2,364	3,662	3,333	3,466
Western Europe	8,706	5,305	6,124	13,267	20,330	28,201
ECSC	3,401	1,715	2,422	6,835	12,583	16,772
United Kingdom	2,580	1,195	529	1,672	1,365	715
Other Western Europe	2,725	2,395	3,173	4,760	6,382	10,714
Eastern Europe	769	700	781	1,798	6,122	8,895
U.S.S.R.	340	284	153	179	1,400	1,366
Other Eastern Europe	429	416	628	1,619	4,722	7,529
Africa and Middle East	1,338	1,361	2,428	3,024	3,744	5,457
South Africa	356	530	393	348	202	942
Other Africa and Middle East	982	831	2,035	2,676	3,542	4,515
Asia and Far East	4,302	2,809	3,175	4,642	5,828	7,015
Japan	1,056	297	6	62	205	86
China, North Korea, and North Vietnam	467	625	697	790	902	879
India	1,090	451	291	1,009	1,306	987
Australia	459	184	886	772	729	689
Other Asia and Far East	1,280	1,252	1,295	2,009	2,686	4,374
Unallocated	487	291	177	331	29	258
World total	19,735	12,774	17,469	28,793	43,164	65,633

Source: Economic Commission for Europe (ECE).

TABLE A-14.—*Steel trade interpenetration among major producing areas*

[In thousands of net product tons]

	1950	1955	1960	1965
Exports:				
Japan to—				
United Kingdom	(1)	38.8	1.8	6.6
ECSC		6.3	1.3	176.2
United States	26.6	40.7	480.8	4,543.7
Total	26.6	85.8	483.9	4,726.5
United Kingdom to—				
Japan		.3	91.0	2.1
ECSC	110.1	137.6	273.8	497.7
United States	61.2	51.9	198.4	717.5
Total	171.3	189.8	563.2	1,217.3
ECSC to—				
Japan	1.3	3.0	23.0	3.6
United Kingdom	434.4	599.5	557.9	393.7
United States	922.1	537.7	1,693.3	4,145.0
Total	1,357.8	1,140.2	2,274.2	4,542.3
United States to—				
Japan	2.9	55.7	76.2	8.0
United Kingdom	66.8	850.0	359.7	23.0
ECSC	265.8	468.7	360.8	90.0
Total	335.5	1,374.4	796.7	121.0
Grand total	1,891.2	2,790.2	4,118.0	10,607.1
Imports:				
Japan from—				
United Kingdom		.3	91.0	2.1
ECSC	1.3	3.0	23.0	3.6
United States	2.9	55.7	76.2	8.0
Total	4.2	59.0	190.2	13.7
United Kingdom from—				
Japan	(1)	38.8	1.8	6.6
ECSC	434.4	599.5	557.9	393.7
United States	66.8	850.0	359.7	23.0
Total	501.2	1,488.3	919.4	423.3
ECSC from—				
Japan		6.3	1.3	176.2
United Kingdom	110.1	137.6	273.8	497.7
United States	265.8	468.7	360.8	90.0
Total	375.9	612.6	635.9	763.9
United States from—				
Japan	26.6	40.7	480.8	4,543.7
United Kingdom	61.2	51.9	198.4	717.5
ECSC	922.1	537.7	1,693.3	4,145.0
Total	1,009.9	630.3	2,372.5	9,406.2
Grand total	1,891.2	2,790.2	4,118.0	10,607.1

1 Negligible.

Source: Economic Commission for Europe (ECE).

TABLE A-15.—*Apparent steel consumption—World total and United States, selected years, 1913–66*

[In thousand net tons of raw steel]

	World total	United States	U.S. percent of world consumption
1913	84,120	31,474	37
1925	99,740	47,814	48
1929	133,150	58,873	44
1936	137,080	52,264	38
1937	149,530	53,359	36
1938	121,530	29,739	24
1936–38 average	136,047	45,120	33
1950	207,130	94,668	46
1951	232,160	103,871	45
1952	234,240	89,432	38
1953	258,760	109,664	42
1954	246,450	85,544	35
1955	297,840	112,676	38
1956	312,950	111,131	36
1957	321,700	106,900	33
1958	298,880	83,380	28
1959	337,170	96,376	29
1960	381,580	98,946	26
1961	390,060	99,134	25
1962	394,540	100,802	26
1963	422,240	113,016	27
1964	479,080	130,700	27
1965	503,080	141,914	28
1966	[1] 519,810	146,260	28

[1] Preliminary.

Source: ECE, AISI, BISF.

TABLE A-16.—*World apparent steel consumption by major economic blocs, selected years, 1929–65*

[In thousands of net tons of raw steel]

Economic blocs	1929	1936	1950	1955	1960	1965
World	133,146	137,077	207,134	297,840	381,582	503,083
Red bloc	10,623	23,048	38,897	68,498	118,431	144,993
Free world	122,523	114,029	168,237	229,342	263,151	358,090
United States	60,335	52,266	94,664	112,674	98,948	141,916
Other free world	62,188	61,763	73,573	116,668	164,203	216,174
Developed areas	53,289	54,751	62,572	99,267	130,494	180,840
Less-developed areas	8,899	7,012	11,001	17,401	33,709	35,334

TABLE A-17.—*Apparent steel consumption by regions, selected years, 1929–65*

[In thousands of net tons of raw steel]

Regions	1929	1936	1950	1955	1960	1965
United States	60,335	52,266	94,664	112,672	98,948	141,916
Canada	3,437	1,652	4,670	5,590	6,053	11,608
Latin America	3,320	2,319	4,567	7,733	9,878	13,906
Western Europe	44,292	45,752	48,988	79,885	105,586	126,215
ECSC	28,787	28,447	25,288	46,418	62,927	72,835
United Kingdom	9,526	12,273	15,398	20,615	24,451	25,369
Other Western Europe	5,979	5,032	8,302	12,852	18,208	28,011
Eastern Europe	9,998	21,819	36,906	63,472	96,169	129,145
U.S.S.R	5,969	18,296	29,045	47,544	69,390	94,751
Other Eastern Europe	4,029	3,523	7,861	15,928	26,779	34,394
Africa/Middle East	1,851	2,173	4,108	5,918	7,537	11,526
Republic of South Africa	525	1,052	1,361	2,211	2,457	4,752
Other Africa/Middle East	1,326	1,121	2,747	3,707	5,080	6,774
Asia/Far East [1]	9,913	11,096	13,231	22,570	57,411	68,767
Japan	3,722	4,981	4,527	7,817	21,345	30,985
China/North Korea/North Vietnam	630	1,225	1,991	5,034	22,262	15,848
India	2,122	1,583	2,008	3,272	5,386	8,397
Australia	1,102	1,109	2,722	3,207	4,498	6,495
Other Asia/Far East [1]	2,337	2,198	1,988	3,240	3,920	7,042
World	133,146	137,077	207,134	297,840	381,582	508,083

[1] Unallocated imports are included in other Asia and Far East.

Source: ECE, AISI, BISF.

TABLE A-18.—*Significant relationships by major economic blocs, selected years, 1937–65*

[Cols. A, B, D, F, and G in thousand net tons of raw steel]

Economic bloc	Years	(A) Capacity	(B) Production	(C) Operating percent rate (B+A)	(D) Exports	(E) Exports percent of production (D+B)	(F) Consumption	(G) Imports	(H) Imports percent of consumption (G+F)
World	1937	192.1	149.5	78	21.5	14	149.5	21.5	14
	1950	217.7	207.1	95	23.6	11	207.1	23.6	11
	1957	363.4	321.7	89	45.8	14	321.7	45.8	14
	1960	446.9	381.6	85	58.3	15	381.6	58.3	15
	1965	568.2	503.1	89	88.6	18	503.1	88.6	18
Red bloc	1937	27.7	25.2	91	1.1	4	25.9	1.8	7
	1950	40.0	38.5	96	1.6	4	38.9	2.0	5
	1957	80.6	79.7	99	5.1	6	80.4	5.8	7
	1960	116.5	115.9	99	6.9	6	118.5	9.5	8
	1965	146.5	146.0	99	14.2	10	145.0	13.2	9
Free world	1937	164.4	124.3	76	20.4	16	123.6	19.7	16
	1950	177.7	168.6	95	22.0	13	168.2	21.6	13
	1957	282.8	242.0	86	40.7	17	241.3	40.0	17
	1960	330.4	265.7	80	51.4	19	263.1	48.8	19
	1965	421.7	357.1	85	74.4	21	358.1	75.4	21
United States	1937	78.1	56.6	72	3.7	7	53.3	0.4	1
	1950	99.4	96.8	97	3.8	4	94.7	1.7	2
	1957	123.5	112.7	91	7.2	6	106.9	1.4	1
	1960	148.6	99.3	67	4.0	4	99.0	3.7	4
	1965	156.5	131.5	84	3.4	3	141.9	13.8	10
Free world (excluding United States)	1937	86.3	67.7	78	16.7	25	70.3	19.3	27
	1950	78.3	71.8	92	18.1	25	73.5	19.9	27
	1957	149.3	129.3	87	33.5	26	134.4	38.6	29
	1960	181.8	166.4	92	47.3	28	164.2	45.1	27
	1965	265.2	225.7	85	71.1	32	216.2	61.6	28
Developed areas (free world excluding United States)	1937	84.2	66.5	79	16.7	25	61.8	12.0	19
	1950	74.2	68.8	93	18.1	26	62.6	11.9	19
	1957	142.2	123.9	87	33.5	27	113.8	23.4	21
	1960	167.0	146.9	88	47.3	32	130.5	30.9	24
	1965	240.9	207.9	86	71.1	34	180.8	43.9	24
Less developed areas (free world)	1937	2.1	1.2	57	--------	--------	8.5	7.3	86
	1950	4.1	3.0	73	--------	--------	11.0	8.0	73
	1957	7.1	5.4	76	--------	--------	20.6	15.2	74
	1960	14.8	19.6	--------	--------	--------	33.7	14.2	42
	1965	24.3	17.7	72	--------	--------	35.3	17.6	50

Source: Economic Commission for Europe, AISI, BISF.

TABLE A-19.—*Significant relationships by regions, selected years, 1937–65*

[Cols. A, B, D, F, and G in thousand net tons of raw steel]

Regions and years	Capacity (A)	Production (B)	Operating (percent) rate (B÷A) (C)	Exports (D)	Exports as percent of production (D÷B) (E)	Consumption (F)	Imports (G)	Imports as percent of consumption (G÷F) (H)
Canada:								
1937	1.8	1.6	89	0.2	13	2.2	1.0	45
1950	2.7	3.4	....	.3	9	4.7	1.6	34
1957	6.3	5.0	79	.4	8	7.5	2.9	39
1960	6.8	5.8	85	1.1	19	6.1	1.4	23
1965	11.8	10.0	93	1.2	12	11.6	2.8	24
Latin America:								
1937	.3	.1	33	....	....	3.3	3.2	97
1950	1.8	1.4	77	....	....	4.6	3.2	70
1957	4.1	3.2	78	....	....	9.3	6.1	66
1960	6.5	5.4	83	....	....	9.9	4.5	46
1965	12.3	9.2	75	....	....	13.9	4.7	34
European Coal and Steel Community:								
1937	44.4	40.0	90	12.0	30	30.9	2.9	9
1950	37.0	35.0	95	13.0	37	25.3	3.3	13
1957	74.3	65.8	89	24.3	37	51.3	9.8	19
1960	84.3	80.3	95	34.3	43	63.0	17.0	27
1965	110.8	94.8	86	44.6	47	72.8	22.6	31
United Kingdom:								
1937	15.3	14.5	95	3.0	21	13.3	1.8	14
1950	19.3	18.2	94	3.6	20	15.3	.7	5
1957	25.1	24.3	97	4.5	19	21.0	1.2	6
1960	28.9	27.2	94	4.6	17	24.4	1.8	7
1965	34.7	30.2	87	5.8	19	25.4	1.0	4
Other Western Europe:								
1937	14.3	2.4	17	.6	25	5.7	3.9	68
1950	4.8	4.5	94	.4	9	8.3	4.3	52
1957	11.0	9.6	87	2.5	26	13.6	6.5	48
1960	14.2	12.6	89	3.1	25	18.2	8.6	47
1965	18.7	17.8	95	4.2	24	28.0	14.5	52
U.S.S.R.:								
1937	19.5	19.5	100	.1	(1)	19.7	.3	2
1950	30.1	29.8	99	1.0	3	29.0	.2	1
1957	56.4	56.1	99	3.3	6	53.9	1.1	2
1960	72.0	72.0	100	4.5	6	69.4	1.9	3
1965	100.3	100.3	100	7.4	7	94.7	1.8	2
Other Eastern Europe:								
1937	7.2	5.1	71	1.0	20	4.7	.6	13
1950	9.1	7.7	85	.6	8	7.9	.8	10
1957	18.0	17.8	99	1.8	10	19.8	3.8	19
1960	23.5	22.9	97	2.4	10	26.8	6.4	24
1965	31.5	31.0	98	6.7	22	34.4	10.2	30
Republic South Africa:								
1937	.4	.4	100	....	....	1.1	.7	64
1950	1.0	.8	80	....	....	1.3	.5	38
1957	2.0	1.9	95	....	....	2.6	.7	27
1960	2.5	2.4	96	.2	8	2.5	.3	12
1965	3.6	3.6	100	.1	3	4.8	1.3	27
Other Africa and Middle East:								
1937	....	....	....	....	....	1.4	1.4	100
1950	.2	....	....	....	....	2.7	2.7	100
1957	.6	.2	33	....	....	1.6	1.4	88
1960	1.1	.3	27	....	....	5.1	4.8	94
1965	1.3	.7	59	....	....	6.8	6.1	90
Japan:								
1937	6.6	6.4	91	.9	14	6.8	1.3	19
1950	7.7	5.3	69	.8	15	4.5	....	....
1957	19.9	13.8	69	1.8	13	13.4	1.4	10
1960	25.9	24.4	94	3.3	14	21.4	.3	1
1965	55.1	45.4	82	14.5	32	31.0	.1	(1)
China, North Korea, North Vietnam:								
1937	1.0	.5	50	....	....	1.4	.9	64
1950	.8	1.0	....	....	....	1.9	.9	47
1957	6.2	5.8	94	....	....	6.7	.9	13
1960	21.0	21.0	100	....	....	22.2	1.2	5
1965	14.7	14.7	100	....	....	15.9	1.2	8

TABLE A-19.—*Significant relationships by regions, selected years, 1937–65*—Continued

[Cols. A, B, D, F, and G in thousand net tons of raw steel]

Regions and years	Capacity (A)	Production (B)	Operating (percent) rate (B÷A) (C)	Exports (D)	Exports as percent of production (D÷B) (E)	Consumption (F)	Imports (G)	Imports as percent of consumption (G÷F) (H)
India:								
1937	1.2	1.0	83	----------	----------	1.6	.6	38
1950	1.9	1.6	84	----------	----------	2.0	.4	20
1957	2.1	1.9	90	----------	----------	4.2	2.3	55
1960	6.6	3.6	55	----------	----------	5.4	1.8	33
1965	9.8	7.1	72	----------	----------	8.4	1.3	15
Australia:								
1937	1.4	1.2	86	.1	8	1.3	.2	15
1950	1.7	1.6	94	.1	6	2.7	1.2	44
1957	3.6	3.4	94	.5	15	3.2	.3	9
1960	4.4	4.1	93	.6	15	4.5	1.0	22
1965	6.2	6.1	98	.5	8	6.5	.9	14
Other Asia and Far East:								
1937	.6	.1	17	----------	----------	2.4	2.3	96
1950	.2	----------	----------	----------	----------	2.0	2.0	100
1957	.3	.1	33	----------	----------	3.8	3.7	97
1960	.6	.3	50	----------	----------	4.0	3.7	93
1965	.9	.8	96	----------	----------	7.1	6.3	89
European Coal and Steel Community (excluding intra-trade):								
1937	44.4	40.0	90	10.4	26	30.9	1.3	4
1950	37.0	35.0	95	11.1	32	25.3	1.4	6
1957	74.3	65.8	89	18.5	28	51.3	4.0	8
1960	84.3	80.3	95	23.7	30	63.0	6.4	10
1965	110.8	94.8	86	30.3	32	72.8	8.3	11

1 Negligible.

Source: Economic Commission for Europe (ECE), AISI, BISF.

The steel producing countries of the world have been listed in three categories: (1) countries producing raw steel in 1966; (2) countries that have produced raw steel only since 1945 indicated by asterisks; and (3) countries with steel mills under construction or soon to be constructed.

1. Countries producing raw steel (ingots)

North America:
- 1. Canada
- 2. United States

Latin America:
- *3. Jamaica
- 4. Mexico
- *5. Cuba
- *6. Puerto Rico
- *7. El Salvador
- *8. Argentina
- 9. Brazil
- *10. Chile
- *11. Colombia
- *12. Peru
- *13. Uruguay
- *14. Venezuela

Free Europe:
- 15. France
- 16. Italy
- 17. Belgium
- 18. Luxembourg
- 19. Netherlands
- 20. West Germany
- 21. United Kingdom
- 22. Norway
- 23. Sweden
- *24. Denmark
- 25. Spain
- 26. Austria
- *27. Switzerland
- *28. Ireland
- 29. Finland
- *30. Greece
- *31. Portugal
- 32. Turkey
- 33. Yugoslavia

1. Countries producing raw steel (ingots)—Continued

Africa:
- *34. Algeria
- *35. Ghana
- *36. Nigeria
- *37. Rhodesia
- *38. Senegal
- *39. Somalia
- *40. Tunisia
- *41. Uganda
- 42. Union of South Africa

Middle East:
- *43. United Arab Republic
- *44. Lebanon
- *45. Israel

Far East:
- *46. Pakistan
- 47. India
- *48. Formosa (Taiwan)
- *49. Hong Kong
- 50. Japan
- *51. South Korea
- *52. Singapore (Malaysia)
- *53. Thailand
- *54. Burma

Oceania:
- 55. Australia
- *56. New Zealand
- *57. Philippines

Red Bloc—Europe:
- 58. Czechoslovakia
- 59. Hungary
- 60. East Germany
- 61. Poland
- 62. Rumania
- *63. Bulgaria
- 64. U.S.S.R.

Red Bloc—Far East:
- 65. China
- 66. North Korea

2. Countries with steel finishing capacity only

Latin America:
1. Guatemala
2. Panama
3. Costa Rica
4. Ecuador

Europe, other:

5. Malta

Middle East:

6. Libya
7. Saudi Arabia
8. Iran

Africa:

9. Angola
10. Zambia
11. Tanzania
12. Ethiopia

Asia:

13. Ceylon
14. Malaysia (Malay Peninsula and Islands)
15. Nepal
16. North Vietnam

3. Steel works under construction or announced to be built as of the end of 1966

Central America:
1. Nicaragua
2. Honduras
3. Trinidad

Middle East:

4. Morocco
5. Iraq

Africa:

6. Ivory Coast
7. Liberia

Asia:

8. Indonesia
9. South Vietnam

*Countries not in production of raw steel prior to the year 1945.

APPENDIX B

TABLE B-1.—*Steel capacity, production, and capacity utilization, United States, 1961–67*

Year	Capacity [1]	Production of steel ingots and castings	Production as a percent of capacity
	Millions of net tons	*Millions of net tons*	
1961	150	98.0	65.3
1962	157	98.3	62.6
1963	162	109.3	67.5
1964	165	127.1	77.0
1965	168	131.5	78.3
1966	174	134.1	77.1
1967 (1st 6 months)	184	62.1	67.5

	Unadjusted	Seasonally adjusted	Unadjusted	Seasonally adjusted
Monthly average for quarter:	*Thousands of net tons*	*Thousands of net tons*	*Percent*	*Percent*
1964—January-March	9,836	9,476	71.5	68.0
April-June	10,602	10,364	77.1	75.4
July-September	10,430	11,060	75.9	80.4
October-December	11,491	11,491	83.6	83.6
1965—January-March	11,681	11,253	83.5	80.4
April-June	11,857	11,624	84.7	83.0
July-September	10,941	11,602	78.2	82.9
October-December	9,248	9,248	66.1	66.1
1966—January-March	10,970	10,568	75.6	72.9
April-June	11,721	11,491	80.9	79.3
July-September	11,056	11,724	76.3	80.9
October-December	10,944	10,933	75.5	75.5
1967—January-March	10,546	....	68.8	....
April-June	10,167	....	66.3	....

[1] Official industry figures on steel capacity are not available beginning in 1961. Estimates for 1961-67 are from Wall Street Journal. Capacity figures for all years include obsolete and standby plants as well as high-cost or marginal plants.

TABLE B-2.—*World basic oxygen furnace installations of over 3,000,000 net tons annual capacity* [1]

Company	Plant location	Furnaces [2]	Rated annual capacity (net tons)		
			Operating	Announced	Total
Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.	Ijmuiden	3X110	2,480,000		
		2X300		2,760,000	5,240,000
Yawata Iron & Steel Co., Ltd.	Tobata (No. 1)	3X85	2,100,000		
	Tobata (No. 2)	2X170	2,380,000		4,480,000
	Sakai	2X175	2,050,000		
		1X195		2,360,000	4,410,000
Bethlehem Steel Corp.	Lackawanna	3X290	4,700,000		4,700,000
Fuji Iron & Steel Co., Ltd.	Hirohata (No. 1)	2X105	2,650,000		
		1X115			
"	Hirohata (No. 2)	2X105		1,490,000	4,140,000
Jones & Laughlin Steel Corp.	Aliquippa	2X80	1,000,000		
		3X160/190		3,000,000	4,000,000
Met Zavod Krivorizhstal	Krivoi-Rog	4X55	1,800,000		
		3X110	2,200,000		4,000,000
Kawasaki Steel Corp.	Chiba	3X175	3,970,000		3,970,000
Sumitomo Metal Industries, Ltd.	Wakayama	3X175	3,860,000		3,860,000
Fuji Iron & Steel Co., Ltd.	Muroran (No. 1)	2X125	1,650,000		
		1X125		1,430,000	
	Muroran (No. 2)	1X55	330,000		
		1X55		170,000	3,580,000
Algoma Steel Corp.	Sault Ste. Marie	3X110	1,560,000		
		2X200		2,000,000	3,560,000
National Steel Corp.	Ecorse	2X300	3,300,000		3,300,000
Italsider SpA	Taranto	2X290/330	3,200,000		3,200,000
Fuji Iron & Steel Co., Ltd.	Nagoya	2X180	1,570,000		
		1X195		1,630,000	3,200,000
United States Steel Corp.	Duquesne	2X210	2,000,000		
		1X210		1,500,000	3,500,000
	Gary	3X200	3,500,000		3,500,000
	South Chicago	3X150		3,000,000	3,000,000

[1] Capacity of single plants as listed by Kaiser Engineers.
[2] Number of furnaces and output/heat.

NOTE 1.—Variation in rated capacity of BOF installations is exemplified by the following plants: Usinor (France) Dunkerque Works 3–175 ton vessels rated at 2,500,000 net tons, estimated production 3,000,000. Jones & Laughlin (United States) Aliquippa Works 3–160 ton vessels rated at 3,000,000 net tons, actual production (not yet operating). Kawasaki (Japan) Chiba Works 3–175 ton vessels rated at 3,970,000 net tons, actual production 4,770,000. At the end of 1968 the leading BOF steelmaking companies on the basis of capacity will be: 1st—Yawata Iron & Steel Co., Ltd., 12,730,000 net tons; 2d—Fuji Iron & Steel Co., Ltd., 11,860,000 net tons; 3d—United States Steel Corp., 10,000,000 net tons.

There are 23 steel plants throughout the world with rated, operating and announced, annual capacities between 2,000,000 and 3,000,000 tons per year. These plants are—

United States:	
Armco Steel Corp.: Middletown	2, 000, 000
Bethlehem Steel:	
Bethlehem	2, 500, 000
Sparrows Point	2, 200, 000
Ford Motor Co.: Dearborn	2, 500, 000
Granite City Steel: Granite City	2, 200, 000
Inland Steel: East Chicago	2, 600, 000
Jones & Laughlin: Cleveland	2, 250, 000
McLouth Steel Corp.: Trenton	2, 800, 000
National Steel: Weirton	2, 500, 000
Republic Steel: Cleveland	2, 000, 000
Wheeling Steel: Steubenville	2, 000, 000
Youngstown S. & T.: East Chicago	2, 400, 000
Canada:	
Dominion Foundries & Steel Co.: Hamilton	2, 000, 000
France:	
Union Siderurgique du Nord de la France (USINOR): Dunkerque	2, 500, 000
West Germany:	
Hoesch AG Huettenwerke: Dortmund-Hoerder	2, 650, 000
Italy:	
Italsider, S.p.A.: Bagnoli	2, 430, 000
Czechoslovakia:	
Vychodoslovenkse Zeleziarne Narodny Podnik: Kosice	2, 200, 000
U.S.S.R.:	
Novolipetskiy Met Zavod: Novo-Lipetsk	2, 200, 000
Zhdanovskiy Met Zavod "Ilyich": Zhdanov	2, 200, 000
Japan:	
Kawasaki Steel Corp.: Mizushima	2, 760, 000
Nippon Kokan Kabushiki Kaisha: Mizue	2, 430, 000
Nisshin Steel Co., Ltd.: Kure	2, 121, 000
Australia:	
Broken Hill Proprietary Co., Ltd.: Newcastle	2, 290, 000

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TABLE B-3.—World LD (BOF) Steel Plants

Kaiser Engineers, Oakland, Calif., has recently published its annual list of LD steel plants in operation, under construction, or in an advanced stage of planning. This list, reprinted below, shows that world capacity has reached nearly 137 million short tons, an increase of 35 million tons on a year ago. Of this increase, the U.S. share was 12 million tons, and LD steel now accounts for about 24 percent of total ingot output there, against 17 percent last year. By 1970 another 65 million tons is expected to be added to world capacity.

Location and company	LD plant location	Number of furnaces	Output per heat (short tons of ingots)	Startup date	Annual capacity (short tons of ingots)	
					Existing	Future additions
NORTH AMERICA						
United States:						
Alan Wood Steel Co.	Conshohocken, Pa.	2	140	1967		1,250,000
Allegheny Ludlum Steel Corp.	Brackenridge, Pa.	1	20	1964	(1)	
	Natrona, Pa.	2	65	1966		500,000
Armco Steel Corp.	Ashland, Ky.	2	150	1963	1,400,000	
	Middletown, Ohio	2	(2)	1968		(2)
Bethlehem Steel Co.	Lackawanna, N.Y.	2	290	1964	4,200,000	
		1	250	1966		
	Sparrows Point, Md.	2	200	1966	1,900,000	
Colorado Fuel & Iron Corp.	Pueblo, Colo.	2	115	1961	1,000,000	
Crucible Steel Co. of America	Midland, Pa.	2	90	1968		1,250,000
Ford Motor Co.	Dearborn, Mich.	2	250	1964	2,400,000	
Granite City Steel Co.	Granite City, Ill.	2	220	1967		2,200,000
Inland Steel Co.	East Chicago, Ind.	2	230	1966	2,200,000	
Interlake Steel Corp.	Chicago, Ill.	2	75	1959	725,000	
Jones & Laughlin Steel Corp.	Aliquippa, Pa.	2	80	1957	1,000,000	
		3	160	1967		3,000,000
	Cleveland, Ohio	2	230	1961	2,250,000	
Kaiser Steel Corp.	Fontana, Calif.	3	110	1958	1,440,000	
McLouth Steel Corp.	Trenton, Mich.	3	60	1954	2,000,000	(2)
		2	105	1958		
		1	105	1960		
National Steel Corp.:						
Great Lakes Steel Corp.	Ecorse, Mich.	2	300	1962	3,200,000	
Weirton Steel Division	Weirton, W. Va.	2	300	1967		2,500,000
Pittsburgh Steel Corp.	Monessen, Pa.	2	190	1964	1,500,000	
Republic Steel Corp.	Warren, Ohio	2	155	1965	1,500,000	
	Gadsden, Ala.	2	150	1965	1,500,000	
	Cleveland, Ohio	2	220	1966	2,000,000	
United States Steel Corp.	Duquesne, Pa.	2	190	1963	1,600,000	
		1	150	1967		1,500,000
	Gary, Ind.	3	150	1965	3,000,000	

	South Chicago, Ill.	3	150	1967		3,000,000
Wheeling Steel Corp.	Steubenville, Ohio	2	225	1965	2,000,000	
Wisconsin Steel Div. of International Harvester Co.	South Chicago, Ill.	2	140	1964	1,200,000	
Subtotal					38,015,000	15,200,000
Canada:						
The Algoma Steel Corp.	Sault Ste. Marie, Ontario	3	110	1958/64	1,560,000	
		2	200			2,000,000
Cominco	Kimberley, British Columbia	1	20	1966	60,000	
Dominion Foundries & Steel	Hamilton, Ontario	3	150	1961/66	2,000,000	
Subtotal					3,620,000	2,000,000
Total, North America					41,635,000	17,200,000
SOUTH AMERICA						
Argentina: Somisa	San Nicolás	2	130			1,260,000
Brazil:						
Siderúrgica Belgo-Mineira	Monlevade	2	40	1957	330,000	
Siderúrgica Mannesmann	Belo Horizonte	2	30	1963	260,000	
Siderúrgica Nacional	Volta Redonda	2	130	1970/72		1,210,000
Cosipa	Piaçaguera	2	85	1965	830,000	
Siderúrgica Barra Mansa	Barra Mansa	2	20	1967		220,000
Usiminas	Ipatinga	2	60	1963	690,000	
		1	70			410,000
Subtotal					2,110,000	1,840,000
Peru: Sogesa	Chimbote	2	35			(5)
Total, South America					2,110,000	3,100,000
WESTERN EUROPE—ECSC						
Belgium:						
Forges de Clabecq	Ittre	2	70	1964	500,000	
Cockerill-Ougrée	Ougrée	1	70	1963	200,000	
	Seraing	2	200	1965	1,540,000	
Forges de la Providence	Marchienne-au-Pont	1	[4] 40	1965	170,000	
Métallurgique d'Esperance-Longdoz	Chertal	2	165	1963	1,100,000	
Sidmar	Ghent	2	220	1967		1,650,000
Hainaut-Sambre	Montignies	1	25	1963	80,000	
		2	200	1968		1,320,000
Usines Gustave Böel	La Louvière	2	95	1967		790,000
Subtotal					3,590,000	3,760,000

See footnotes at end of table p. 282.

TABLE B-3.—*World LD (BOF) Steel Plants*—Continued

Location and company	LD plant location	Number of furnaces	Output per heat (short tons of ingots)	Startup date	Annual capacity (short tons of ingots)	
					Existing	Future additions
France:						
Aciéries du Furan	Saint-Etienne	1	2	1963	20,000	
H.K. Porter-France	Marpent	1	2	1961	10,000	
Forges de la Providence	Rehon	1	35	1963	120,000	120,000
Societé des Aciéries de Pompey	Pompey	2	65	1964	390,000	
Societé Métallurgique de Normandie	Mondeville	1	60	1967		220,000
Societé Miniére et Métallurgique du Perigord	Fumel	1	2	1963	10,000	
Usinor	Denain	3	70	1960/61/64	600,000	
	Dunkirk	3	175	1962/63	2,500,000	
Subtotal					3,650,000	340,000
Germany (West):						
Dillinger Huttenwerke	Dillingen (Saar)	2	35	1960/61	230,000	
		2	145	1968		1,100,000
August Thyssen-Hütte	Beeckerwerth	2	245	1962	1,760,000	
	Ruhrort	2	100	1962/66	1,440,000	
Hoesch AG Hüttenwerke	Dörtmund-Hörde	3	200	1963/66	2,650,000	
Edelstahlwerk Witten	Witten (Ruhr)	1	35	1957	120,000	
Fried. Krupp Huttenwerke:						
Gussstahlwerk Bochumer Verein	Bochum-Höntrop	2	45	1957	760,000	
Hüttenwerk Rheinhausen	Rheinhausen	2	95	1963/64	1,320,000	
		2	95	1967		1,320,000
Hüttenwerke Oberhausen	Oberhausen	2	195	1969		[5]
Ilseder Hütte/Peine	Peine	3	90	1954	1,430,000	
Klöckner-Werke	Bremen	2	245	1968		1,980,000
Mannesmann	Duisburg-Huckingen	2	220	1966	1,650,000	
		3	45			790,000
Salzgitter Hüttenwerk	Salzgitter-Drütte	1	70	1962	440,000	
		2	175	1967		[5]
Subtotal					11,800,000	5,190,000
Italy:						
Italsider	Bagnoli	3	140/165	1964	2,430,000	
	Taranto	2	290/330	1964	3,200,000	
Nazionale Cogne	Aosta	2	40	1968		190,000
Subtotal					5,630,000	190,000

Luxembourg:						
Arbed	Dudelange	1	35	1958	440,000	
		1	55	1962		
	Each-Schifflange	1	85	1964	330,000	
	Each-Belval	2	130	1967		660,000
Minière et Métallurgique de Rodange	Rodange	1	25	1965	90,000	
Subtotal					860,000	660,000
Netherlands:						
Hoogovens	Umuiden	3	110	1956/61	2,480,000	
		2	275	1968		2,760,000
Subtotal					2,480,000	2,760,000
Total, ECSC					28,010,000	12,900,000
WESTERN EUROPE—OTHER						
Austria:						
Oesterreichisch-Alpine Montangesellschaft	Donawitz	2	40	1953	440,000	
Vöest	Linz	3	35	1952/56	1,540,000	
		2	55	1959		
		1	55	1967		440,000
Subtotal					1,980,000	440,000
Greece: Halyvourgiki	Elefsis	2	40	1963	300,000	
Norway: Norsk Jernverk	Mo I Rana	2	50	1961	390,000	
Portugal: Siderúrgia Nacional	Seixal	2	45	1961	250,000	
Spain:						
Altos Hornos de Vizcaya	Sestao	2	45	1963	390,000	
		1	65	1966/67		720,000
Ensidesa	Avilés	2	70	1966	770,000	
		1	70	1967		770,000
Uninsa	Veriña	2	110	1969		1,100,000
		3	110	1969/70		1,650,000
Subtotal					1,160,000	4,240,000
Sweden:						
Fagersta Bruks	Fagersta	1	25	1958	130,000	
		1	40	1962		
Grängesberg-Oxelösunds	Oxelösund	1	145	1968		730,000
Subtotal					130,000	730,000
Turkey:						
Eregli	Eregli	2	100	1965	550,000	
				1967		220,000
Subtotal					550, 00	220,000

See footnotes at end of table, p. 282.

TABLE B-3.—*World LD (BOF) Steel Plants*—Continued

Location and company	LD plant location	Number of furnaces	Output per heat (short tons of ingots)	Startup date	Annual capacity (short tons of ingots)	
					Existing	Future additions
United Kingdom: [a]						
Colvilles	Motherwell	2	110	1964	940,000	
Consett Iron Co.	Consett	2	145	1964	1,250,000	
		1	170	1967		950,000
Lysaght's Scunthorpe Works (GKN Steel)	Scunthorpe	2	90	1964	700,000	
Richard Thomas & Baldwins	Ebbw Vale	3	45	1960/62/63	760,000	
	Llanwern (near Newport)	3	145	1962	1,900,000	
Stewarts & Lloyds	Corby	3	125	1965	1,680,000	
Subtotal					7,230,000	950,000
Total, other Western Europe					11,990,000	6,580,000
EASTERN EUROPE						
Bulgaria: Kremikovtsi Iron & Steel Works	Kremikovtsi	3	110	1968		1,290,000
Czechoslovakia: East Slovakia Iron Works	Kosice	3	110	1966	2,220,000	
Poland: Lenin Steel Works	Nowa Huta	2	110	1966	1,100,000	
Rumania: Gheorghe Gheorghiu-Dej Iron & Steel Works	Galatz	3	145	1967		2,100,000
U.S.S.R.:						
Chelyabinskiy Met. Zavod	Chelyabinsk (Urals)	3	110			2,200,000
Kuznetskiy Met. Kombinat	Novokuznetsk (western Siberia)	2	110	1966/70		1,300,000
Met. Zvod Imeni Petrovskogo	Dnepropetrovsk (Ukraine)	3	30	1956/57	600,000	
Met. Zavod "Krivorizhstal"	Krivoi-Rog (Ukraine)	4	55	1958	1,800,000	
		3	110	1965/66	2,200,000	
Novolipetskiy Met. Zavod	Novo-Lipetsk (Central European U.S.S.R.)	3	110	1965/66	2,200,000	
Novo-Tagilskiy Met Zavod	Nizhniy-Tagil (Urals)	2	110	1963	1,800,000	
		1	110	1966		900,000
Zhdanovskiy Met Zavod "Ilyich"	Zhdanov (Ukraine)	3	110	1964/65	2,200,000	
Subtotal					10,800,000	4,400,000
Yugoslavia: Rudnici i Zelezarnica Skopje	Skopje	2	115	1967		850,000
Total, Eastern Europe					13,600,000	8,640,000
ASIA						
China: Shihchingshan Iron & Steel Works	Peking	1	3	1965	(1)	

India.						
Bokaro Steel	Bokaro Steel City, Hazarbagh (Bihar)	4	110	1970		1,870,000
Hindustan Steel	Rourkela (Orissa)	3	55	1959/60	1,710,000	
		2	65	1966		
Thy Mysore Iron & Steel, Ltd	Bhadravati (Mysore)	2	13	1965	90,000	
Subtotal					1,800,000	1,870,000
Japan:						
Daido Steel Co.	Chita	2	45	1967		420,000
Fuji Iron & Steel Co.	Hirohata No. 1	2	105	1960	2,650,000	
		1	115	1965		
	Hirohata No. 2	2	105	1968		1,490,000
	Muroran No. 1	2	125	1961	1,650,000	
		1	125	1967		1,430,000
	Muroran No. 2	1	55	1964	330,000	
		1	55	1967		170,000
	Kamaishi	2	75	1965	940,000	
Kawasaki Steel Corp.	Chiba	3	175	1962/65	3,970,000	
	Mizushima	2	200	1967		2,760,000
Kobe Steel	Kobe	2	90	1961	1,060,000	
		1	90	1966		790,000
	Amagasaki	2	35	1960	460,000	
Nippon Kokan	Kawasaki	3	55	1958/64	1,270,000	
	Mizue	3	90	1960/62	2,430,000	
	Tsurumi	2	90	1963	1,100,000	
	Fukuyama	2	165	1966	1,650,000	
Nisshin Steel Co.	Kure	2	80	1965	1,150,000	
		1	65	1966	(1)	970,000
Nisso Steel Manufacturing Co.	Toyama	1	5	1961		
North Japan Special Steel Co.	Hachinohe	1	14	1963	10,000	
Osaka Iron & Steel Co.	Nishijima	2	35	1964	400,000	
Sumitomo Metal Industries	Kokura	2	75	1961	1,100,000	
	Wakayama	3	175	1963/65	3,860,000	
Tokai Iron & Steel Co. (subsidiary of Fuji Iron & Steel)	Nagoya	2	180	1964	1,570,000	
		1	195	1967		1,630,000
Tooholku Electro-Chemical Industries Corp.	Gunma	1	10	1960	70,000	
Yawata Iron & Steel Co.	Yawata No. 5 (Kukioka)	3	75	1957/64	1,860,000	
	Tobata No. 1	3	85	1959/60	2,100,000	
	Tobata No. 2	2	170	1962	2,380,000	
	Sakai	2	175	1965	2,050,000	
		1	195	1968		2,360,000
	Yawata No. 1	1	[7] 85	1966	880,000	
	Higashida	1	[7] 85	1967		1,100,000
Subtotal					34,940,000	13,120,000
Malaysia: Malayawata Steel Ltd.	Prai	2	12	1967		140,000
Philippines: Iligan Integrated Steel Mills	Ilign City (Mindanao)	2	60	1969		500,000
Total, Asia					36,740,000	15,630,000

See footnotes at end of table p. 282a

TABLE B-3.—*World LD (BOF) Steel Plants*—Continued

Location and company	LD plant location	Number of furnaces	Output per heat (short tons of ingots)	Startup date	Annual capacity (short tons of ingots)	
					Existing	Future additions
AFRICA						
South Africa: Highveld Development Co. Ltd	Witbank (Transvaal)	2	55	1967		440,000
Tunisia: Elfouladh	Menzel-Bourguiba	2	15	1965	100,000	
Total, Africa					100,000	440,000
OCEANIA						
Australia:						
The Broken Hill Proprietary Co	Newcastle	2	225	1962	1,900,000	
		1	55	1966		390,000
	Whyalla	2	110	1965	670,000	450,000
Total, Oceania					2,570,000	840,000
Total world, excluding United States					98,740,000	50,130,000
Total, world					136,755,000	65,330,000

1 Experimental.
2 Not announced.
3 Under construction.
4 LD and Kaldo combination process.
5 In planning.
6 Excluding plans announced by Steel Co. of Wales (3 270-ton LD's.
7 Removable LD furnace enabling production equal to normal 2-furnace shop.

LIST OF EUROPEAN COAL/STEEL COMMUNITY STEEL MERGERS AS AUTHORIZED BY THE HIGH AUTHORITY

Date of authorization	*Name of companies*
March 10, 1965	Societe Denain-Anzin and Societe des Forges et Acieries du Nord et de l'Est. These were two holding companies, each owning 40 percent of Usinor, also controlling interests in steel processing enterprises and steel dealers.
Nov. 25, 1965	Reorganization of the two companies: Forges et Acieries de Nord et Lorraine and Hauts-Fourneaux de Saulnes et Gorcy (both Paris) into Societe des Hauts-Fourneaux Reunis de Saulnes et Uckange, Paris.
March 3, 1965	Friedrich Flick KG/Stahlwerke Sudwestfalen AG merger with Friedrich Flick KG/Daimler-Benz AG.
October, 1964	Merge of Acieries et Trefileries de Neuves-Maisons Chatillon (Paris) with Tissmetal, Lionel-Dupont, Teste & Cie (Lyons) into Chatillon-Tissmetal (Paris).
December 15, 1965	Societe Lorraine de Forgeage ("Lorforge") merged with Forges de Bar-sur-Aube to form Bar-Morforge.
April 28, 1965	Union siderurgique lorraine/Societe industrielle de laquage et produits anticorrosion, Marxheim.
July 14, 1965	Societe des forges and ateliers du Creusot, Paris/Acciaierie Rochling S.p.A., Milan, special-steels wholesalers.
July 21, 1965	Denain-Anzin and Nord-Est/Societe lorraine des produits metallurgiques, Societe nouvelle de metallurgie and Societe lorraine des aciers speciaux, all steel wholesale firms.
November 25, 1965	Societe des mines d'Anderny-Chevillon, Paris/concession of the iron-ore mine at Sancy.
November 25, 1965	Friedrich Krupp, Essen/Spinnbau G.m.b.H., Bremen, makers of spinning machines.
November 25, 1965	Heinr. Aug. Schulte Eisenhandlung G.m.b.H., Dortmund (Handelsunion AG)/Richard Auffermann KG., Dusseldorf, steel merchants.
November 25, 1965	Societe de construction and de galvanisation de Montataire, Paris (Usinor)/Societe Le Phenix, Rousies, makers of tinned sheet.
July 22, 1964	Formation of the Societe des acieries de Lorraine, S.A. (Sacilor) for operation of the Gaudrange Steelworks (Moselle) by 50% participation each of Union siderurgique Lorraine S.A. (Sidelor) and De Wendel & Cie, (S.A.), (Paris).
July 15, 1964	Formation of Societe pour l'agglomeration and l'enrichissement de minerais S.A.E.M., S.A.R.L. (Mont-Saint Martin) by the three following steel enterprises: Lorraine-Escant (Paris), Hauts Fourneaux et Forges de Saulnes-Gorcy (Paris), and Forges de la Providence (Marchienne-au-Pont).
December 21, 1964	Permission granted to Societe des Mines d'Anderny-Chevillon to acquire shares in the Societe de Moutiers (Paris) bring Moutiers indirectly under the control of Compagnie des Forges et Acieries de la Marine, de Firminy et de Saint-Etienne (Marine) and Compagnie de Pont-a-Mousson (Nancy).
February 26, 1964	Permission granted to Compagnie des Forges and Acieries de la Marine de Firminy and de Saint-Etienne (Acieries de la Marine), (Paris), to acquire majority holding in S.A. Chaudronnerie Industrielle de Bezons (Bezons).
April 8, 1964	Permission granted to Hoesch AG (Dortmund) to acquire all shares of Dittmann & Neuhaus AG (Herbede-Ruhr).
April 22, 1964	Permission granted to Societe des Hauts Forneaux de la Chiers, Longwy-Bas to acquire majority holding in Lefort & Cie, Mohon.

LIST OF EUROPEAN COAL/STEEL COMMUNITY STEEL MERGERS AS AUTHORIZED BY THE HIGH AUTHORITY—Continued

Date of authorization	*Name of companies*
November 26, 1964	Permission for Salzgitter AG to acquire shares in Bussing Automobilwerke AG granted.
December 21, 1964	Permission granted for Friedrich Krupp (Essen) to acquire a majority holding in Atlas-Werke (Bremen).
January 28, 1965	Permission granted for Hutten- und Bergwerke Rheinhausen AG (controlled by Freidrich Krupp) to acquire majority holding in Westfalische Drahtindustrie (WDI) of Hamm (Westphalia). The shares held by Krupp family.
March 18, 1964	Granted permission for S.A. Metallurgique d'Esperance-Longdoz, Liege (E.L.) to acquire shares in the companies Covepum (Comptoir de Vente de Produits d'Usines Metallurgiques, Gennevilliers), P.U.M. (Societe Produits d'Usines Metallurgiques, Reims, Sopumor (Societe de Vente de Produits d'Usines Metallurgiques, Lille) and Cisapum (Societe de Cisaillage de Produits d'Usines Metallurgiques, Reims).
December 21, 1964	Permission granted for Ferrostaal-Haniel GmbH (Mannheim) to acquire all shares of Strabburger Stahlkontor GmbH, Kehl.
December 21, 1964	Permission granted for Handelsunion AG, (Dusseldorf) to take over N.V. Simons Metaalhandel (Rotterdam).
December 21, 1964	Permission granted to Rheinische Stahlwerke, Essen to acquire all shares of Richard Auffermann KG (Dusseldorf).
March 18, 1964	Permission granted for the formation of Societe Belge d'Oxycoupage (Oxybel).
July 10, 1963	Permission for August Thyssen-Hutte AG., Duisburg-Hamborn (A.T.H.) to acquire majority interest in Phoenix-Rheinrohr AG. Vereinigte Hutten- und Rohrenwerke (Dusseldorf).
January 22, 1964	Merger of Societe Metallugique de Knutange (Paris) and Union des Consommateurs de Produits Metallurgiques et Industriels (Paris) to form Societe Mosellane de Siderurgie ("Somosid"), granted.
December 12, 1962	Fiat not using permission granted by High Authority to acquire 50 percent of the shares in Breda Siderurgica S.p.A.
May 22, 1964	Permission granted to Forges de la Providence S.A., Marchienne-au-Pont to acquire majority holding in Establissements Demangels & Manestamp S.A. (Charlesville).
October 30, 1964	Permission granted to Hauts-Fourneaux et Acieries de Differdange-St. Ingbert-Rumelange to acquire majority holding in Societe des Usines, Boulonneries et Etirage de La Louviere.
December 18, 1964	Permission granted to Compagnie des Forges et Acieries de la Marine de Firminy et de St. Etienne to acquire majority holdings in Anciens Establissements Charles Bertheiz (Paris) and Outillage Precy, St. Etienne.
July 17, 1964	Permission granted to Hansa-Eisen GmbH (Dusseldorf), controlled by Dortmund-Horder Huttenunion AG., (Dortmund) to acquire majority holding in Dortmunder Eisenhandel GmbH., (Dortmund).

LIST OF EUROPEAN COAL/STEEL COMMUNITY STEEL MERGERS AS AUTHORIZED BY THE HIGH AUTHORITY—Continued

Date of authorization	*Name of companies*
April 25, 1962	Authorization given to establish steel concern "Sidmar" in Belgium by combining: S.A. Cockerill-Ougree, Seraing, S.A. Forges de la Providence, Marchienne-au-Pont, Societe Generale de Belgique (Brussels), Compagnie Financiere et Industrielle ("Cofinindus"), Brussels; Compagnie Belge de Participations Paribas "(Coberpa"), Brussels; S.A. Acieries Reunies de Burbach-Eich-Dudelange ("Arbed"), Luxembourg; Schneider & Cie, Paris, Societe Metallurgique de Knutange, Paris, Societe Miniere de Droitaumont-Bruville, Paris.
October 10, 1962	Permission granted to Societa Acciarierie e Ferriere Lombarde Falck (Milan) to acquire 5 percent of the initial capital of Sidmar.
October 10, 1962	Friedrich Krupp/Capito & Klein.
June 20, 1962	Permission granted to Compagnie des Forges et Acieries de la Marine de Firminy et de St. Etienne (Paris) to acquire majority holding in S.A. Acieries Bedel (Paris).
December 12, 1962	Authorization given to Fiat (Turin) to acquire 50 percent of the shares in Breda Siderurgica S.p.A., (Milan) from State holding company Finsider.
July 25, 1962	Permission granted for Klockner-Werke AG (Duisburg) to acquire assets of Suddeutsche Drahtverarbeitungs-werke, GmbH, Kehl.

Source: European Coal and Steel Community—The High Authority, *General Report*, Nos. 14, 13, 12, and 11 (1966, 1965, 1964, and 1963).

The following is a list of the world's major steel companies, showing the results of the recent mergers in the Common Market:

[1964 output in millions of metric tons]

European Community:	
Thyssen	8.44
DHH [1]	2.94
Hoesch [1]	2.61
Hoogovens [1]	2.32
Total	7.87
Usinor [2]	4.03
Lorraine-Escaut [2]	2.30
Total	6.33
Arbed [3]	3.59
Hadir [3]	1.40
Total	4.98
Italsider	3.89
Japan:	
Yawata	7.74
Fuji	6.08
Nippon Kokan	4.41
Kawasaki	4.31
Sumitomo	3.92
Kobe (estimate)	1.50

(Continued on following page.)

[1964 output in millions of metric tons]

United States:	
United States Steel	32.40
Bethlehem	19.44
Republic	10.21
National	8.11
Jones & Laughlin	7.44
Armco	6.83
Inland	6.41
Youngstown	5.77
Kaiser	2.55
United Kingdom:	
United Steel	3.33
RTB	3.22
SCOW	2.46
Colvilles	2.40
Stewarts & Lloyds	2.04
Guest Keen	2.00
Dorman Long	1.94
Summers	1.77
S Durham	1.39

[1] Linked. [2] Planning merger. [3] Merged.

Table B-4.—*Foreign raw steelmaking capacity by major economic blocs, selected years, 1937–65*

[In thousands of net tons]

Economic blocs	1937	1950	1957	1960	1961	1962	1963	1964	1965
World—excluding United States	114.0	118.3	229.9	298.3	312.8	324.9	346.5	380.5	411.7
Red bloc	27.7	40.0	80.6	116.5	117.2	120.7	126.7	135.8	146.5
Free world—excluding United States	86.3	78.3	149.3	181.8	195.6	204.2	219.8	244.7	265.2
Developed areas	84.2	74.2	142.2	167.0	180.5	188.4	202.5	224.5	240.9
Less developed areas	2.1	4.1	7.1	14.8	15.1	15.8	17.3	20.2	24.3

Table B-5.—*Foreign raw steelmaking capacity by regions, selected years, 1937–65*

[In thousands of net tons]

	1937	1950	1957	1960	1961	1962	1963	1964	1965
Canada	1.8	2.7	6.3	6.8	7.6	7.8	8.7	10.9	11.8
Latin America	.3	1.8	4.1	6.5	6.9	7.6	8.8	10.8	12.3
Western Europe	74.0	61.1	110.4	127.4	132.9	138.8	145.4	152.8	164.2
ECSC	44.4	37.0	74.3	84.3	88.5	92.0	96.8	101.6	110.8
United Kingdom	15.3	19.3	25.1	28.9	29.7	31.1	32.3	33.6	34.7
Other Western Europe	14.3	4.8	11.0	14.2	14.7	15.7	16.3	17.6	18.7
Eastern Europe	26.7	39.2	74.4	95.5	103.8	111.2	116.2	123.8	131.8
U.S.S.R	19.5	30.1	56.4	72.0	78.0	84.1	88.4	93.7	100.3
Other Eastern Europe	7.2	9.1	18.0	23.5	25.8	27.1	27.8	30.1	31.5
Africa and Middle East	.4	1.2	2.6	3.6	3.8	4.0	4.2	4.5	4.9
South Africa	.4	1.0	2.0	2.5	2.9	3.1	3.2	3.5	3.6
Other Africa and Middle East	......	.2	.6	1.1	.9	.9	1.0	1.0	1.3
Asia and Far East	10.8	12.3	32.1	58.5	57.7	55.5	63.2	77.7	86.7
Japan	6.6	7.7	19.9	25.9	32.5	33.9	39.8	51.4	55.1
China, North Korea, North Vietnam	1.0	.8	6.2	21.0	13.4	9.5	10.5	12.0	14.7
India	1.2	1.9	2.1	6.6	6.6	6.7	6.7	7.7	9.8
Australia	1.4	1.7	3.6	4.4	4.6	4.8	5.4	5.9	6.2
Other Asia and Far East	.6	.2	.3	.6	.6	.6	.8	.7	.9
World total (excluding United States)	114.0	118.3	229.9	298.3	312.8	324.9	346.5	380.5	411.7

Source: Economic Commission for Europe (ECE).

Prospects for Steel Demand

The past and possible future trends of steel imports into the U.S. market depend, to an important extent, on the prospects for steel demand in the world and in the United States.

If world steel demand catches up with world steel capacity, world steel export prices will rise and the U.S. industry will be more competitive pricewise; imports into the United States would fall and exports from the United States would rise.

Equally important are the prospects for U.S. steel demand. As shown in section F the U.S. steel industry has made the managerial decision to become competitive in the world market by high investments in the newest technology. The reduction in costs that can result from these investments can only be achieved if production rises on an average by over 2 percent a year. If imports fall or, at least, do not rise substantially in future years, domestic production will rise in response to domestic demand and the combined force of higher capacity utilization and cost savings from new technology should improve profits. If domestic demand fails to rise by over 2 percent a year, the high rate of investment on new technology would actually increase the cost per ton.

Estimates of U.S. steel demand vary greatly. Some official steel industry forecasts are optimistic. Mr. Leslie B. Worthington, president, United States Steel Corp., stated in a formal address delivered on April 26, 1967, and printed in the June issue of Iron and Steel Engineer, page 145, under the title "Steel in a Competitive World":

> And while we are concerned about foreign markets from a long-term standpoint, the prospects for growth here in the United States during the next 10 years are almost staggering. I recently saw a report, for instance, which I have reason to believe is conservative, and which indicated that consumption of steel in the United States would increase by 40 percent by 1977.[1]

Mr. Worthington thereby predicted a U.S. steel demand of 136 million tons of steelmill products for 1977. How much of this demand will be supplied by the domestic steel industry would depend on how much steel would be imported in 1977. Officials of the domestic steel industry have stated before Congress that imports are expected to increase.

In contrast, Mr. G. Doyle Dodge, in charge of market research for McLouth Steel Corp., in a widely quoted forecast made in "Energy and the Michigan Economy: A Forecast," published by the Bureau of Business Research, University of Michigan, 1967, went further, both in time and by projecting not only consumption, but also exports and imports, as follows:

PROJECTION I

[In thousands of net tons]

Year	Raw steel production	Shipments	Exports	Imports	Consumption
1970	115,000	111,756	4,431	11,000	118,325
1975	183,000	137,756	5,513	9,000	141,243
1980	206,000	162,155	6,477	7,000	162,678

[1] Mr. Worthington assumed 1977 to be a year like 1966, i.e., a year of high level capital goods output and unemployment just below 4 percent.

To get an opinion from outside the steel industry, Mr. Alan Greenspan, of the Townsend-Greenspan Co., Inc., economic consultant, furnished the following projection on the assumption that steel imports would be held constant at the 1966 level through a system of quotas:

PROJECTION II

U.S. steel projection, actual 1966 and projected 1970 and 1975

[Million net tons]

Domestic output	1966	1970	1975	Average annual change (in percent)	
				1966-70	1970-75
Total raw steel (carbon, alloy, stainless)	134.1	140.0	158.0	1.1	2.4
Total shipments	90.0	100.0	116.0	2.7	3.2
Alloy shipments	8.0	9.3	11.0	3.9	3.4
Stainless shipments	.93	1.0	1.2	1.8	3.7

On the basis of the same rate of growth in domestic demand, but if imports were to continue recent trends, as assumed in testimony by AISI before congressional committees, and increase to 30 million net tons in 1970,[1] production of raw steel and shipments of finished steel would actually fall.

PROJECTION III

Domestic output	1966	1970	Average annual change (in percent)
Total	134.1	111.5	−4.5
Total shipments	90.0	80.0	−2.9

An appraisal of the future implications of world steel industry overcapacity and of the future changes for steel exports from the United States has to start with estimates of world steel demand for periods up to 1975 and 1980. The staff requested several Federal Government agencies and "Resources For The Future, Inc." (Ford Foundation) for their views on such projections. BDSA (U.S. Department of Commerce) made steel consumption projections for the free world to 1975 and 1980, and the Bureau of Mines (U.S. Department of the Interior) provided two previously made projections.

The BDSA projection for the free world steel demand in ingot (raw steel) equivalent in millions of net tons for 1980, as shown in table B-12, was 532 to 629; for the United States alone it was 197 to 222. Table B-14 gives the range of estimate for per capita consumption. Average annual percentage change in steel consumption 1964-80 is 2.9 to 3.9 percent for the free world, and 2.6 to 3.4 percent for the United States alone, as shown in table B-13. Of the two Bureau of Mines projections, the latter one was published in 1967, under the title

[1] This assumption was made in a prepared statement by Mr. John P. Roche, president, AISI, in hearings on steel imports before the Committee on Finance, U.S. Senate, June 3, 1966, p. 270: "Should this growth continue unchecked at the same rate, imports by 1970 would skyrocket to nearly 30 million tons. . . . Even allowing for a rising trend of industry efficiency, the 1970 employment loss related to 30 million tons of imports would be on the order of 180,000 jobs."

"World Demand for Mineral Products and the Shipping Supply of Mineral Raw Materials," by Alfred Petrick, Jr. It is concerned with pig iron rather than steel. The ratio between pig iron (hot metal) and steel is actually increasing for pig iron because of the worldwide substitution of BOF for open hearth furnaces. It is therefore rather ominous that the Bureau of Mines estimate for the annual growth rate for pig iron for the United States, 1964–80, is only 1.8 percent, compared to the BDSA estimate of 2.9 to 3.9 percent, indicated above.

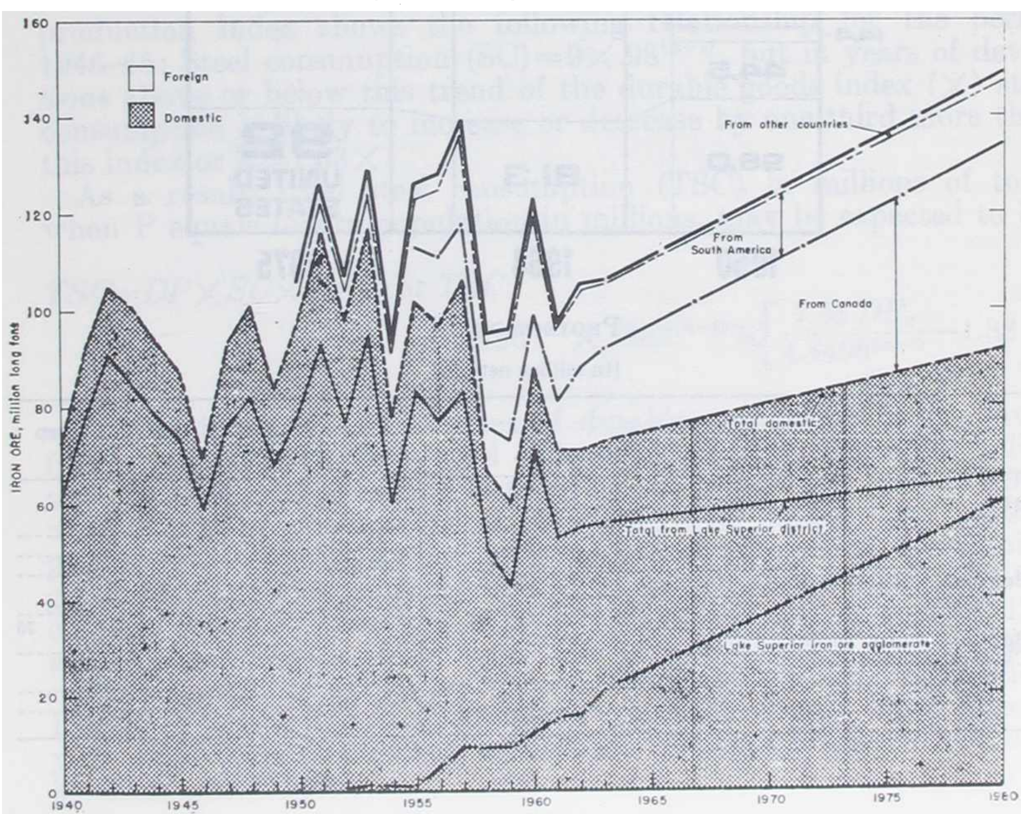
A previous estimate of steel demand in the United States for the years 1975 and 1980 was published by the Bureau of Mines in the chapter on "Steel" by Robert A. Whitman in "Minerals: Facts and Problems," 1965 edition. This projection is based on an annual growth in demand "at a rate slightly above that for the U.S. population" or 1.6 percent a year. The forecast is for 137 million net tons of raw steel in 1975 and 150 million by 1980, with pig iron production at 93 million net tons in 1980, and scrap use at 75 million net tons.

Chart B–6 shows estimated iron ore requirements up to 1980 and expected sources of supply.

The following tables summarize these projections and another presented by P. J. James, vice president, Chase Manhattan Bank, September 14, 1966:

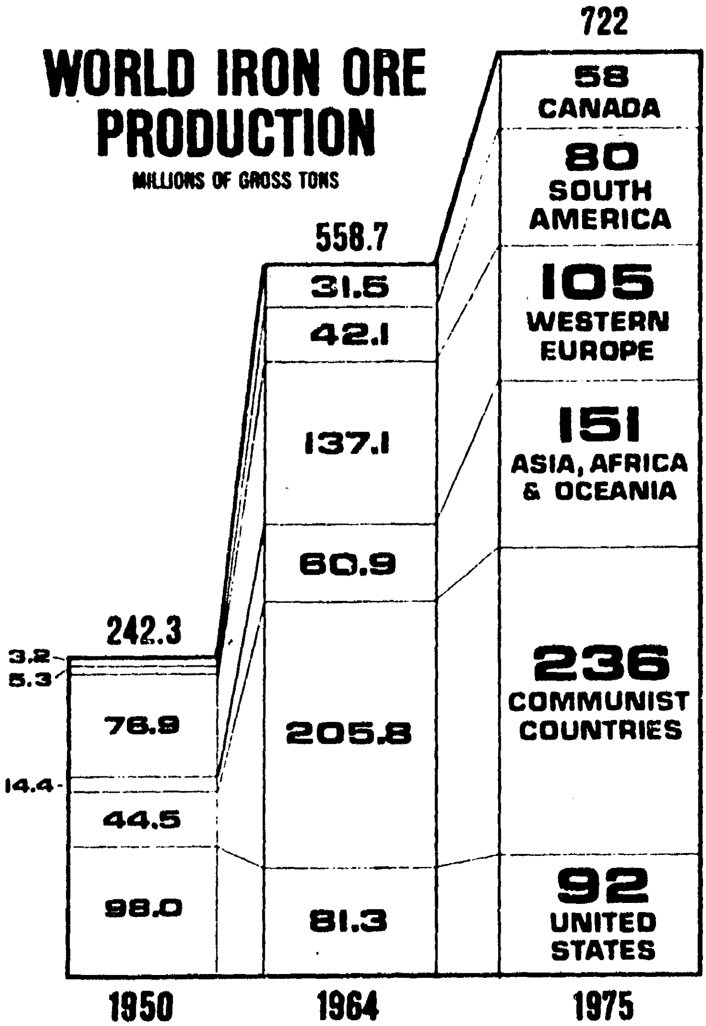
Chart B–7 shows estimated iron ore requirements up to 1975 and expected sources of supply, as estimated by H. S. Harrison.

CHART B–6. Past trends and projections, 1940–80, for U.S. iron ore consumption



From Bureau of Mines, *Mineral Facts and Problems*, chapter on iron.

CHART B-7



PROJECTION IV

[In million net tons]

	Raw steel	Steel mill products	Iron	Scrap
BDSA:				
1970	152-158			
1975	174-187			
1980	197-222			
Bureau of Mines (Whitman):				
1975	137			
1980	150		93	75
Bureau of Mines (Petrick): 1980			121	
Chase Manhattan Bank:				
1970	150	105		
1975	170	119		

U.S. projected annual compounded growth rate

[Percentages]

	Raw steel	Steel mill products	Iron	Scrap
BDSA:[1]				
1964 to 1970	2.6-3.3			
1970 to 1975	2.7-3.5			
1975 to 1980	2.5-3.4			
Bureau of Mines (Whitman): 1964 to 1980	1.6			
Bureau of Mines (Petrick): 1965 to 1980			1.8	
Chase Manhattan Bank:[1]				
1965 to 1970	2.7	2.5		
1965 to 1975	2.6	2.5		

[1] FRB index industrial production, 1965-70, 4.3 percent; 1965-75, 4.4 percent. Steel industry net profits, 1965-70, 6.5-8 percent; 1970-75, 6.5-8 percent.

An extrapolation, published July 1967 in "Perspective" (Calvin Bullock), became available after this study was prepared in galley proof. Its median projection is for a 2-percent annual growth rate or slightly below that assumed in this study.

The long-term trend of durable production in terms of points of the Federal Reserve Board industrial production index (1957–59=100) per million of population shows the following relationship for the period 1946–66: Durable production (DP)$=(.432\times1.03)^{(n-1)}$. On the basis of postwar correlations, in two-thirds of the cases, actual production will be within 9 percent of the formula level.

Steel consumption in millions of tons per index point of the durable production index shows the following relationship for the period 1946–66: Steel consumption (SC)$=9\times.98^{(n-1)}$, but in years of deviations above or below this trend of the durable goods index ($\times$) steel consumption is likely to increase or decrease by one-third more than this index or $Z=1.33\times$.

As a result, total steel consumption (TSC) in millions of tons, when P equals future population in millions, may be expected to be:

$$TSC=DP\times SC\times Z\times P \text{ or } TSC$$
$$=4.4496^{n-1}\times\ .882^{(n-1)}\times\left[\frac{1.33\,DP_a}{4.4496^{(n-1)}}-1.33\right]P$$

with DP_a being the FRB index of durable production in any given future year. On this basis steel consumption which was 101.4 million tons in 1966 and is expected to be about 96 million tons in 1967, would be 100.7 million tons in 1970 and 115.8 million tons in 1975, providing these years are median years not characterized by a capital goods boom or a depression. Assuming a high and low range for 1970 consumption may be as low as 88.6 million tons and as high as 112.8 million tons, with a 1975 range of a low 101.9 and a high of 129.7 million tons. The above mentioned statistics refer to consumption. Domestic production and shipments would, of course, differ in each year as a result of imports, exports and changes in inventories held by steel consumers.

World projected annual compounded growth rates, 1964–80

[In percent]

	Free world	Total world, excluding United States
BDSA	2.9–3.9	
Bureau of Mines (Petrick)		5.1

For this study, the staff's own projections of steel consumption which incidentally are in no way based on striking an average between the above-quoted projection are 2 to 2.5 percent compounded from 1966 forward for the United States, and 4 to 5 percent for the rest of the world.

Excerpts from Petrick's paper follow:

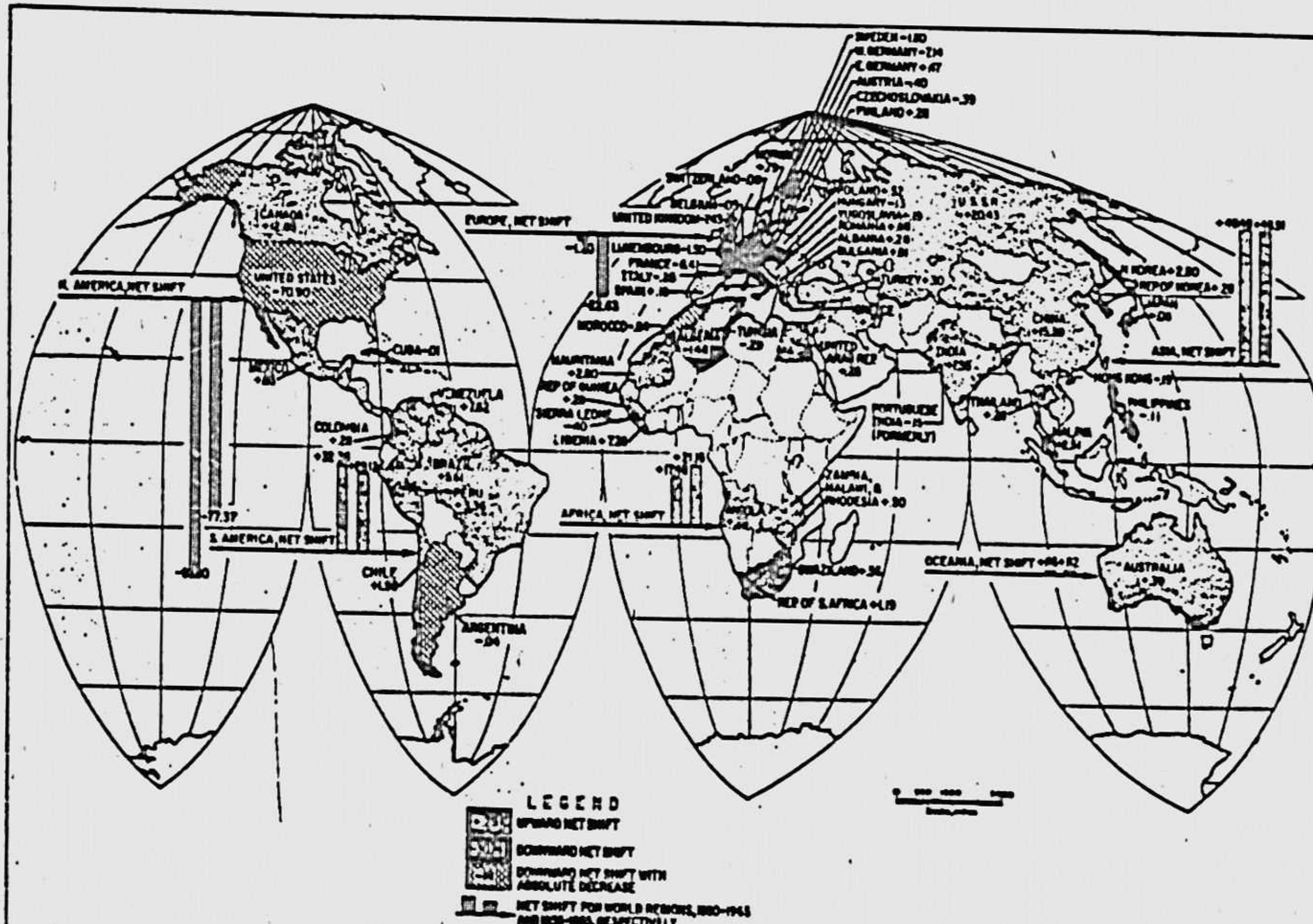
Since World War II, a complex and constantly changing world economy has demanded an almost fantastic expansion in mineral output. And the end is not yet. Current trends indicate that by 1980 world demand for copper, zinc, and iron ore will nearly double. Aluminum demand will increase fourfold. Burgeoning energy demand—will more than double fuel requirements, and to satisfy the need for higher crop yields, a threefold to fivefold expansion of the fertilizer industry will be required. To sustain such broad-scale expansion, a strong and viable mineral industry is indispensable.

Shift analysis divides the countries of the world into two groups, those with increased output of a given commodity at a rate faster than the world average and who thus have upward net shifts, and those with increased output at a rate slower than the world average and who thus have downward net shifts. The group designation for a particular country was determined by calculation of its "net shift" in output. To calculate the net shift, each country's production in 1950 (or 1955) was multiplied by the percentage increase in world production of that commodity over the 1950–65 (1955–65) period. This gives the expected output for the country if it had grown at the world rate. This expected output was compared with actual output in 1965. If the actual output is higher than the expected output, the difference is termed a net upward shift. If actual output is lower than expected output, the difference is termed a net downward shift. The total net upward and the total net downward shifts were obtained by adding separately the net upward and net downward shifts for all countries of the world.

Figures shown on the shift analysis maps are the individual country's percentage share of either all net upward shifts or all net downward shifts. The analysis, therefore, measures more than just growth rates; the percentage net shift depends on growth rate and the scale of operations. For example, a country with large-scale production growing slightly more rapidly than the world rate may account for a larger share of the world net upward shift than a country with smaller production growing much more rapidly. This explains why the big producers often were responsible for the major shifts.

IRON AND IRON ORES

The world pig iron production projection for 1980 is 701 million tons, almost double the 1965 level of 370 million tons. The more fully developed U.S. iron industry is expected to expand at a slower rate (1.8 percent annually) than world iron output (4.4 percent annually). The world and the U.S. projections appear to be consistent with historical trends, industry forecasts, and expansion of world industrial production.



Net shift in iron ore production, 1950-65, per cent.

International developments in iron ore production during the 1950–65 period (see map) are characterized by a shift from North America to South America, Asia, and Africa, reflecting the major changes in known resources, markets and technology that have taken place since World War II. U.S. iron ore production more than tripled between 1938 and 1942 as our country moved from depression to wartime economic activity. The maintenance of a near 100-million-ton level of output during the war years and requirements of the postwar boom rapidly depleted our limited reserves of medium-grade direct shipping ores in the Lake Superior region. American and foreign producers responded to the challenge with a worldwide search for high-grade ores. Results included important new discoveries in Canada, Venezuela, and Liberia. Significantly, these four countries are the principal suppliers of foreign ore to the U.S. iron industry. Significant, too, is the fact that these countries account for 30 percent of the world's net upward shift.

In South America important additions to iron ore resources and productivity capability were realized after 1950. Venezuelan production moved from near zero in 1950 to 17 million metric tons in 1965. Resource estimates indicate 3.5 billion tons of high-grade (58- to 65-percent iron) ores and over 300 million tons of medium-grade (40- to 50-percent iron) ores. Resources of medium- to high-grade ores (40 to 69 percent) expanded to 1 billion tons in Peru and 1 billion tons in Chile. Brazil has 2.5 billion tons of ore containing more than 66-percent iron and 25 billion tons containing more than 40-percent iron.

In Africa, Liberia expanded known resources to 400 million long tons of grade 56- to 68-percent iron and 300 million tons of grade 37-plus-percent iron. Iron ore production increased from zero in 1950 to 15.9 million tons per year in 1965, becoming the base of the mineral economy and accounting for 90 percent of Liberian mineral exports.

Concurrent with the search for foreign sources of direct shipping ores, a technological revolution in iron ore treatment got underway. Large beneficiation plants producting high-grade concentrates and pellets became feasible, extending our concept of economic reserves to lower grade ores. This development affected the industry world wide and led directly to a rapid shift from the use of direct shipping ores at steel mills to preference for concentrates. Today the United States includes in its resource potential the taconite ores—more than 100 billion tons of low-grade (22 to 30-plus-percent) iron ores in the Lake Superior district alone. In Canada, the Federal Department of Energy, Mines, and Resources estimates a potential of 30 billion tons of ore having a metallic iron content in excess of 10.5 billion tons.

The U.S.S.R. and mainland China are responsible for 36 percent of the world net upward shift. Behind these gains is the enormously complex story of the development of the world's most populous nation, mainland China, and the world's largest political unit, the Union of Soviet Socialist Republics. Together these two Communist nations have a population of close to a billion people, nearly one-third of the human race, and command some 13 million square miles, four times the size of the United States and nearly one quarter of the world's land area. The potential in terms of land and people is tremendous. In spite of some exaggerated, incomplete, or unreliable statistics on the mineral industries of these countries, it takes little imagination to project an enormous mineral potential.

What counts most about Soviet industrialization is the pace of development. Between 1950 and 1965, the 9.7-percent annual growth of Soviet gross domestic product was accompanied by an annual growth of 12 percent in industrial production. Soviet industrial expansion has been persistent and steady since the first 5-year plan in 1928.

The Soviet iron and steel industry was well developed in 1950. Its continued expansion between 1950 and 1965 resulted in a more than threefold increase in iron ore output. Iron ore production in the U.S.S.R. exceeded U.S. output after 1958 and by 1965 was 1.7 times U.S. iron ore production. These figures, although not directly comparable because of differences in grade and efficiency of metallurgical facilities, do give an order of magnitude to the changes underway.

The boom in Siberia with its immense resources of iron and coal is part of the explanation of Russian iron ore expansion. Magnitogorsk, named after a mountain of iron ore, is one of the principal iron and steel centers in the Urals of western Siberia. This center long depended for raw materials on local iron ores and the coals of the Kuznetsk Basin, 1,250 miles deeper in Siberia. More recent discoveries of coal in European Russia reduced the laborious and expensive coal haul. Discoveries of iron ore and mine development in the Ukraine, the Urals, and Siberia indicate a potential for additional expansion. Reserves, reported in 1963, included 50 billion tons averaging 40- to 60-percent iron and an additional 32.7 billion tons averaging less than 50-percent iron. Usable iron ore reserves were estimated at 5 billion tons in 1941, 57.7 billion tons in 1956, and 103 billion tons in 1964. The rapid expansion is a response to exploration, technological change and market growth. Like the United States, the Soviet Union has vast reserves of low-grade ores that are being mined by open pit methods and beneficiated.

The decade and a half between 1950 and 1965 corresponds with the period of transformation in China—a transformation without precedent in modern history. From the beginning of their rule in 1949, the Communist Chinese dreamed of transforming their country into a major industrial nation. The approach included massive transfusions of Soviet knowledge, machinery, and trained manpower and the diversion of China's enormous labor force from agriculture to industrial production. It seems reasonable to infer that these efforts had a lot to do with the dramatic upward shift in iron ore production.

The "Great Leap Forward" program after 1957 was based on two policies—one in industry, one in agriculture. The attempt to increase agricultural productivity through communes is common knowledge. In industry, large modern factories such as the giant Anshan Steel Plant, designed and built by the Soviet Union, was coupled with an attempt to utilize China's enormous labor force in small- and medium-sized factories. Primitive furnaces using local ore, coal, and other available mineral resources increased iron output but quality and productivity were extremely low. However, the backyard iron production program seemed to set the stage for growth of small industries and later business consolidation. The production statistics tell us that between 1950 and 1965, mainland China's production of iron ore rose from near 0 to 39 million tons per year. Prior to the most recent crisis, working conditions, technical competence, and management seemed to be improving. Exploration and drilling continued on a large scale resulting in the discovery of many new iron ore deposits. A workable reserve of 5 billion tons appears to be a reasonable estimate.

Vast Australian iron ore resources have been discovered and developed since World War II. Prior to the 1950's, the Australians considered their iron ore resources to be limited. In fact, the Commonwealth Government placed an embargo on iron ore exports in 1939 to conserve resources for the development of a domestic iron and steel industry. New discoveries boosted Australian resource estimates, however, and brought the embargo to an end in 1960. In 1963, Australian resources were estimated at 16 billion tons of 55- to 68-percent iron ore. New legislation permits the export of up to 50 percent of the ore contained in iron ore deposits discovered after 1960. Since 1960 Australian production has expanded at an annual rate of 9.7 percent, compared to 5.9 percent annually between 1950 and 1960.

Methodology Used in Steel Consumption Projections, BDSA, July 1967

The method used for these projections in tables A10-1 to A10-7 was to establish a relationship between per capita steel consumption and per capita gross national product (GNP) for certain areas and then to use projections of population and GNP to derive projections of steel consumption from this relationship.

The relationship between per capita steel consumption and per capita GNP took the form of the following logarithmic regression equation:

$$\log(\text{steel consumption per capita}) = .70359 \log(\text{GNP per capita}) + .30099$$

The correlation coefficient was 0.94 and the standard error was 0.06965. The data used for this regression were steel consumption per capita and GNP per capita[1] for each of Japan, the European Economic Community (EEC), the United Kingdom, and the United States, for the years 1955-64, giving 40 pairs of numbers for the regression. GNP was selected as the independent variable partly because it provided a good fit, and partly because historical data and projections of the future were available on a worldwide basis. By combining data for all four areas, the upward bias caused by the cyclical upswing of any individual area in recent years was avoided.

Simple application of this regression equation to projections of GNP per capita would have resulted in elimination of all differences between countries other than level of per capita GNP. The slope of this regression equation was used, but in order to retain some element of other differences between countries a separate

[1] GNP data in 1965 U.S. dollars were obtained from AID, Office of Program Coordination, gross national product by region and country (Mar. 31, 1967).

intercept was calculated for each country or area. This intercept was obtained by putting the 1964 data into the regression equation and solving the equation for the intercept.

Population projections were obtained from the U.N.,[2] using the "medium" projection. GNP projections were obtained by applying rates of growth of gross domestic product (substantially the same as GNP) projected by the U.N.[3] to 1964 GNP's. These rates of growth are necessarily given as a range rather than as a single number. Consequently the steel consumption projections take the form of ranges. They do not take into account the effect of technological changes, such as continuous casting.

In the case of Africa it was not believed to be worth while to use this procedure because data were available for only five countries. The projections for Africa were obtained by arbitrarily assuming that steel consumption would increase at an annual rate of 3.5 to 4.5 percent.

TABLE B-8.—*Population projections, free world*

[In millions]

	1964	1970	1975	1980
Free world [1]	1,559	1,751	1,936	2,144
North America [2]	211	229	247	267
United States	192	208	223	241
Europe [3]	339	349	359	369
EEC	180	184	189	195
United Kingdom	54	55	56	57
Japan	97	101	106	111
Other Asia [4]	679	782	890	1,008
Latin America [5]	219	275	318	368
Oceania [6]	14	15	16	18

[1] Includes only the countries specified.
[2] United States and Canada.
[3] Excludes Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania, and U.S.S.R.
[4] Ceylon, India, Israel, Pakistan, Philippines, Taiwan, and Turkey.
[5] Excludes Cuba and Haiti.
[6] Australia and New Zealand.

Source: United Nations, Department of Social Affairs, "World Population Prospects." (Population studies, No. 41, 1966).

TABLE B-9.—*Gross national product projections, free world, at 1965 prices*

[In billions of U.S. dollars]

	1964 [1]	1970	1975	1980
Free world [1]	1,451	1,786-1,929	2,125-2,454	2,489-3,130
North America [2]	688	831-886	973-1,093	1,128-1,349
United States	643	777-823	909-1,011	1,054-1,241
Europe [3]	488	600-646	712-817	830-1,038
EEC	287	353-382	419-486	486-617
United Kingdom	97	112-121	127-146	144-178
Japan	81	115-132	154-199	187-285
Other Asia [4]	85	104-114	122-147	146-195
Latin America [5]	84	105-117	127-155	155-208
Oceania [6]	25	31-34	37-43	43-55

[1] Includes only the countries specified.
[2] United States and Canada.
[3] Excludes Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania, and U.S.S.R.
[4] Ceylon, India, Israel, Pakistan, Philippines, Taiwan, and Turkey.
[5] Excludes Cuba and Haiti.
[6] Australia and New Zealand.

Source: AID—1964 GNP; UNFAO—Rates of GDP growth.

[2] United Nations, Department of Social Affairs, "World Population Prospects" (Population Studies, No. 41, 1966).

[3] United Nations, Food and Agriculture Organization, "Agricultural Commodities—Projections for 1975 and 1985," vol. II (1966).

TABLE B-10.—*Average annual percentage change in gross national product, free world*

	1964–75	1975–80	1964–80
Free world [1]	3.5–4.9	3.2–5.0	3.4–4.9
North America [2]	3.2–4.3	3.0–4.3	3.1–4.3
United States	3.2–4.2	3.0–4.2	3.1–4.2
Europe [3]	3.5–4.8	3.1–4.9	3.3–4.8
EEC	3.5–4.9	3.0–4.9	3.3–4.9
United Kingdom	2.5–3.8	2.5–4.0	2.5–3.9
Japan	6.0–8.5	4.0–7.5	5.3–8.2
Other Asia [4]	3.4–5.1	3.5–5.9	3.4–5.2
Latin America [5]	3.9–5.8	4.0–6.0	3.9–5.8
Oceania [6]	3.4–5.0	3.4–5.0	3.4–5.0

[1] Includes only the countries specified below.
[2] United States and Canada.
[3] Excludes Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania, and U.S.S.R.
[4] Ceylon, India, Israel, Pakistan, Philippines, Taiwan, and Turkey.
[5] Excludes Cuba and Haiti.
[6] Australia and New Zealand.

NOTE.—Assume same rates of growth for 1964–75 as FAO rates for 1965–75, and same rates of growth for 1975–80 as FAO rates for 1975–85.

TABLE B-11.—*Gross national product per capita projections, free world*

[U.S. dollars at 1965 price]

	1964	1970	1975	1980
Free world [1]	$931	$1,020–$1,102	$1,098–$1,268	$1,161–$1,460
North America [2]	3,256	3,624–3,863	3,940–4,428	4,219–5,048
United States	3,347	3,742–3,964	4,077–4,534	4,375–5,155
Europe [3]	1,437	1,721–1,855	1,986–2,279	2,246–2,810
EEC	1,600	1,919–2,081	2,218–2,571	2,496–3,171
United Kingdom	1,787	2,042–2,201	2,265–2,601	2,517–3,110
Japan	839	1,132–1,301	1,448–1,871	1,684–2,568
Other Asia [4]	125	132–146	138–165	144–194
Latin America [5]	382	382–427	400–488	420–565
Oceania [6]	1,868	2,072–2,273	2,267–2,681	2,445–3,121

[1] Includes only the countries specified.
[2] United States and Canada.
[3] Excludes Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania and U.S.S.R.
[4] Ceylon, India, Israel, Pakistan, Philippines, Taiwan, and Turkey.
[5] Excludes Cuba and Haiti.
[6] Australia and New Zealand.

TABLE B-12.—*Steel consumption projections, free world* [1] *(ingot equivalent in millions of short tons)*

	1964	1970	1975	1980
Free world	340	405–427	465–518	532–629
North America	140	163–171	185–203	212–240
United States	130	152–158	174–187	197–222
Europe	126	148–155	168–185	188–222
EEC	77	90–95	101–114	115–136
United Kingdom	26	30–31	32–35	35–41
Japan	34	45–50	55–66	65–87
Other Asia	15	19–20	22–24	25–31
Latin America	12	15–16	18–21	22–26
Africa	6	7	8–9	10–11
Oceania	7	8	9–10	10–12

[1] Data adjusted to cover all countries in free world.

TABLE B-13.—*Average annual percentage change in steel consumption, free world*[1]

[In percent]

	1964-70	1970-75	1975-80	1964-80
Free world	3.0-3.9	2.8-4.0	2.7-4.0	2.9-3.9
North America	2.6-3.4	2.7-3.5	2.6-3.4	2.6-3.4
United States	2.6-3.3	2.7-3.5	2.5-3.4	2.6-3.4
Europe	2.7-3.6	2.6-3.6	2.4-3.7	2.6-3.6
EEC	2.5-3.5	2.6-3.6	1.9-3.6	2.5-3.6
United Kingdom	1.6-2.8	1.9-2.9	1.9-2.9	1.9-2.8
Japan	4.4-6.1	4.5-6.2	3.1-5.5	4.0-5.9
Other Asia	3.1-4.2	3.2-4.4	3.3-4.8	3.2-4.5
Latin America	3.9-5.2	3.7-6.0	3.7-5.1	3.7-5.1
Africa	3.5-4.5	3.5-4.5	3.5-4.5	3.5-4.5
Oceania	2.9-3.9	2.7-4.0	3.1-4.1	2.9-4.0

[1] Covers all countries in free world.

TABLE B-14.—*Projections of steel consumption per capita, selected areas in free world*

[Ingot equivalent in pounds]

	1964	1970	1975	1980
North America[1]	1,321	1,424-1,490	1,510-1,640	1,585-1,797
United States	1,356	1,466-1,528	1,556-1,678	1,636-1,836
Europe[2]	741	847- 893	937-1,032	1,023-1,197
EEC	862	979-1,036	1,065-1,204	1,179-1,396
United Kingdom	966	1,060-1,118	1,142-1,257	1,228-1,426
Japan	714	882- 972	1,049-1,276	1,166-1,570
Latin America[3]	110	110- 119	115- 132	119- 146
Oceania[4]	955	1,027-1,096	1,093-1,230	1,153-1,371

[1] United States and Canada.
[2] Excluding Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania, Turkey, and U.S.S.R.
[3] Excluding Cuba and Haiti.
[4] Australia and New Zealand.

APPENDIX C

U.S. Government and International Agency Financial Assistance to Foreign Steel Industries

Table C-1.—*Country by year*

[In millions of dollars]

Country	Year	Eximbank	IBRD	IADB	IFC	AID and predecessor programs	Total
Argentina	1955	$60.00					$60.00
	1958	.09					.09
	1959	2.41					2.41
	1960	21.33			$3.66		24.99
	1961	.41					.41
	1962	.69					.69
	1964			$0.20			.20
	1965	22.48					22.48
Total		107.40		.20	3.66		111.26
Australia	1950		$1.75				1.75
	1952		1.77				1.77
	1954		.35				.35
	1955		5.28				5.28
	1956		4.20				4.20
Total			13.35				13.35
Austria	1949					$18.74	18.74
	1950					6.38	6.38
	1957	28.15				1.73	29.88
	1958					1.42	1.42
Total		28.15				28.27	56.42
Belgium	1949		12.10			5.48	17.58
	1950					2.87	2.87
Total			12.10			8.34	20.44
Brazil	1950	25.00					25.00
	1952	2.19					2.19
	1955	5.05					5.05
	1956	35.13					35.13
	1957	4.88					4.88
	1958	12.50					12.50
	1961					6.83	6.83
	1964			30.10		7.09	37.19
	1965	6.00		.20	5.05		11.25
Total		90.74		30.30	5.05	13.92	140.01
Canada	1948	5.70					5.70
Chile	1951	59.15					59.15
	1956	3.55					3.55
	1957	16.00					16.00
	1960	15.57					15.57
	1962	8.30					8.30
	1964	11.30					11.30
Total		113.87					113.87
Colombia	1963		30.00				30.00
	1965	3.95					3.95
Total		3.95	30.00				33.95
France	1949					71.34	71.34
	1950					4.13	4.13
	1960	7.42					7.42
	1961	.84					.84
Total		8.26				75.48	83.74

TABLE C-1.—*Country by year*—Continued

[In millions of dollars]

Country	Year	Eximbank	IBRD	IADB	IFC	AID and predecessor programs	Total
Germany	1956	$10.00					$10.00
India	1952		$29.20				29.20
	1956		94.90				94.90
	1957		32.50				32.50
	1961		19.50				19.50
	1962					$1.37	1.37
	1963				$3.45		3.45
	1964					1.00	1.00
	1966		30.00				30.00
Total			206.10		3.45	2.37	211.92
Italy	1947	28.29					28.29
	1949					49.20	49.20
	1950					5.57	5.57
	1951		1.92				1.92
	1955	7.00					7.00
	1956	4.85					4.85
	1958	13.50					13.50
	1962	25.00					25.00
	1963	55.00					55.00
	1964	1.65					1.65
	1965	28.50					28.50
Total		163.79	1.92			54.77	220.48
Jamaica	1964	.50					.50
Japan	1955		5.13				5.13
	1956		22.39				22.39
	1957	36.30					36.30
	1958	7.10	72.87				79.97
	1959		44.00				44.00
	1960	3.00	13.00				16.00
	1961	22.70					22.70
	1962	52.60					52.60
	1964	15.00					15.00
Total		136.70	157.39				294.09
Korea	1955					1.99	1.99
	1956					.23	.23
Total						2.23	2.23
Liberia	1949	4.00					4.00
	1960	41.63					41.63
Total		45.63					45.63
Mexico	1948	1.50					1.50
	1951	5.00					5.00
	1952	8.10					8.10
	1955	3.40					3.40
	1956	46.51					46.51
	1957	16.00					16.00
	1960	6.87			.28		7.15
	1961	1.57					1.57
	1962	1.85			5.07		6.92
	1963	16.90					16.90
	1964	28.00			6.45		34.45
	1966				5.88		5.88
Total		135.70			17.68		153.38
Netherlands	1949					14.94	14.94
Pakistan	1958				.63		.63
Peru	1953	2.50					2.50
	1957	10.00					10.00
	1961	6.50					6.50
	1962	7.95					7.95
	1963	1.25					1.25
	1964	13.80					13.80
Total		42.00					42.00

TABLE C-1.—*Country by year*—Continued

[In millions of dollars]

Country	Year	Eximbank	IBRD	IADB	IFC	AID and predecessor programs	Total
Philippines	1958	$0.06					$0.06
	1959	.31					.31
	1960	.10					.10
	1961	62.30					62.30
	1962	5.00					5.00
Total		67.76					67.76
Portugal	1949					$0.85	.85
Republic of China	1955					.47	.47
	1957					.23	.23
Total						.70	.70
Spain	1952					.85	.85
	1954	1.20				7.56	8.76
	1958	6.80					6.80
	1959	4.40					4.40
	1960	7.80					7.80
	1961	31.00					31.00
	1962	6.60					6.60
	1964	20.10					20.10
	1966	40.00					40.00
Total		117.90				8.41	126.31
Turkey	1954	15.00				129.60	144.60
	1964					13.89	13.89
	1965					5.56	5.56
Total		15.00				149.05	164.05
United Kingdom	1949					27.22	27.22
Uruguay	1954	2.48					2.48
	1961	.10					.10
Total		2.58					2.58
Venezuela	1960				$3.00		3.00
	1963				.14		.14
	1964	10.50					10.50
Total		10.50			3.14		13.64
Yugoslavia	1953		$8.70				8.70
	1958					5.61	5.61
	1961	15.00				8.50	23.50
	1963					3.47	3.47
	1964					33.33	33.33
	1966					13.31	13.31
Total		15.00	8.70			64.22	87.92
European Coal and Steel Community	1954					100.00	100.00
Latin American Iron and Steel Institute	1962			$0.05			.05
Agency totals (all countries)		1,121.13	429.56	30.55	33.61	550.77	
Grand total (all agencies, all countries)							2,165.62

NOTES

Columns may not add to totals, due to rounding.
Eximbank—Export-Import Bank of Washington.
IBRD—International Bank for Reconstruction and Development (World Bank).
IADB—Inter-American Development Bank.
IFC—International Finance Corporation.
AID—Agency for International Development.

Table C-2.—*Year by countries*

[In millions of dollars]

Year and country	Eximbank	IBRD	IADB	IFC	AID and predecessor programs	Total
1947—Italy	$28.29					$28.29
1948—Canada	5.70					5.70
Mexico	1.50					1.50
Total	7.20					7.20
1949—Austria					$18.74	18.74
Belgium		$12.10			5.48	17.58
France					71.34	71.34
Italy					49.20	49.20
Liberia	4.00					4.00
Netherlands					14.94	14.94
Portugal					.85	.85
United Kingdom					27.22	27.22
Total	4.00	12.10			187.77	203.87
1950—Australia		1.75				1.75
Austria					6.38	6.38
Belgium					2.87	2.87
Brazil	25.00					25.00
France					4.13	4.13
Italy					5.57	5.57
Total	25.00	1.75			18.95	45.70
1951—Chile	59.15					59.15
Italy		1.92				1.92
Mexico	5.00					5.00
Total	64.15	1.92				66.07
1952—Australia		1.77				1.77
Brazil	2.19					2.19
India		29.20				29.20
Mexico	8.10					8.10
Spain					.85	.85
Total	10.29	30.97			.85	42.11
1953—Peru	2.50					2.50
Yugoslavia		8.70				8.70
Total	2.50	8.70				11.20
1954—Australia		.35				.35
Spain	1.20				7.56	8.76
Uruguay	2.48					2.48
European Coal and Steel Community					100.00	100.00
Total	3.68	.35			107.56	111.59
1955—Argentina	60.00					60.00
Australia		5.28				5.28
Brazil	5.05					5.05
China					.47	.47
Italy	7.00					7.00
Japan		5.13				5.13
Korea					1.99	1.99
Mexico	3.40					3.40
Total	75.45	10.41			2.46	88.32
1956—Australia		4.20				4.20
Brazil	35.13					35.13
Chile	3.55					3.55
Germany	10.00					10.00
India		94.90				94.90
Italy	4.85					4.85
Japan		22.39				22.39
Korea					.23	.23
Mexico	46.51					46.51
Total	100.04	121.49			.23	221.76

TABLE C-2.—*Year by countries*—Continued

[In millions of dollars]

Year and country	Eximbank	IBRD	IADB	IFC	AID and predecessor programs	Total
1957—Austria	$28.15				$1.73	$29.88
Brazil	4.88					4.88
Chile	16.00					16.00
China					.23	.23
India		$32.50				32.50
Japan	36.30					36.30
Mexico	16.00					16.00
Peru	10.00					10.00
Total	111.33	32.50			1.96	145.79
1958—Argentina	.09					.09
Austria					1.42	1.42
Brazil	12.50					12.50
Italy	13.50					13.50
Japan	7.10	72.87				79.97
Pakistan				$0.63		.63
Philippines	.06					.06
Spain	6.80					6.80
Yugoslavia					5.61	5.61
Total	40.05	72.87		.63	7.03	120.58
1959—Argentina	2.41					2.41
Japan		44.00				44.00
Philippines	.31					.31
Spain	4.40					4.40
Turkey	15.00				129.60	144.60
Total	22.12	44.00			129.60	195.72
1960—Argentina	21.33			3.66		24.99
Chile	15.57					15.57
France	7.42					7.42
Japan	3.00	13.00				16.00
Liberia	41.63					41.63
Mexico	6.87			.28		7.15
Philippines	.10					.10
Spain	7.80					7.80
Venezuela				3.00		3.00
Total	103.72	13.00		6.94		123.66
1961—Argentina	.41					.41
Brazil					6.83	6.83
France	.84					.84
India		19.50				19.50
Japan	22.70					22.70
Mexico	1.57					1.57
Peru	6.50					6.50
Philippines	62.30					62.30
Spain	31.00					31.00
Uruguay	.10					.10
Yugoslavia	15.00				8.50	23.50
Total	140.42	19.50			15.33	175.25
1962—Argentina	.69					.69
Chile	8.30					8.30
India					1.37	1.37
Italy	25.00					25.00
Japan	52.60					52.60
Mexico	1.85			5.07		6.92
Peru	7.95					7.95
Philippines	5.00					5.00
Spain	6.60					6.60
Latin American Iron and Steel Institute			$0.05			.05
Total	107.99		.05	5.07	1.37	114.48
1963—Colombia		30.00				30.00
India				3.45		3.45
Italy	55.00					55.00
Mexico	16.90					16.90
Peru	1.25					1.25
Venezuela				.14		.14
Yugoslavia					3.47	3.47
Total	73.15	30.00		3.59	3.47	110.21

TABLE C-2.—*Year by countries*—Continued

[In millions of dollars]

Year and country	Eximbank	IBRD	IADB	IFC	AID and predecessor programs	Total
1964—Argentina			$0.20			$0.20
Brazil			30.10		$7.09	37.19
Chile	$11.30					11.30
India					1.00	1.00
Italy	1.65					1.65
Jamaica	.50					.50
Japan	15.00					15.00
Mexico	28.00			$6.45		34.45
Peru	13.80					13.80
Spain	20.10					20.10
Turkey					13.89	13.89
Venezuela	10.50					10.50
Yugoslavia					33.33	33.33
Total	100.85		30.30	6.45	55.31	192.91
1965—Argentina	22.48					22.48
Brazil	6.00		.20	5.05		11.25
Colombia	3.95					3.95
Italy	28.50					28.50
Turkey					5.56	5.56
Total	60.93		.20	5.05	5.56	71.74
1966—India		$30.00				30.00
Mexico				5.88		5.88
Spain	40.00					40.00
Yugoslavia					13.31	13.31
Total	40.00	30.00		5.88	13.31	89.19
Agency totals (all years)	1,121.13	429.56	30.55	33.61	550.77	
Grand total (all agencies, all years)						2,165.62

NOTES

Columns may not add to totals, due to rounding.
Eximbank—Export-Import Bank of Washington.
IBRD—International Bank for Reconstruction and Development (World Bank).
IADB—Inter-American Development Bank.
IFC—International Finance Corporation.
AID—Agency for International Development.

TABLE C-3.—*Government ownership and control of free world steel producers*

A. LATIN AMERICA

Country	Company	Latest annual raw steel production, net tons	Percent of national production	Degree of government control
Argentina	Sociedad Mixta Siderurgia Argentina (SOMISA)	880,000	58	Almost wholly government-owned, except for nominal number of shares held by private steel companies and individuals.
	Altos Hornos de Zapla	170,000	11	Government owned under administration of war secretariat.
Brazil	Acos Finos Piratini S/A	45,000	(1)	Owned 75 percent by Federal Government, 20 percent by State government, and 5 percent by private shareholders.
	Companhia Ferro e Aco de Vitoria	110,000	9	Banco Nacional de Desenvolvimento Economico, a government entity is the main shareholder.
	Usinas Siderurgicas de Minas Gerais S.A. (USIMINAS).	670,000	26	Owned 25 percent by Banco Nacional de Desenvolvimento Economico, 24 percent by the Minas Gerais State government, and 51 percent by various private foreign (Japanese) and Brazilian interests.
	Companhia Siderurgica Nacional—Volta Redonda.	1,385,000	42	Federal government holds 87 percent equity interest.
	Cia. Siderurgica Belgo Mineira	500,000	15	Owned by private foreign interests (Belgium-Luxembourg) and Minas Gerais State government.
	Companhia Siderurgica Paulista (COSIPA)	175,000	15	Owned 48 percent by Banco Nacional de Desenvolvimento Economico and State government of São Paulo, the balance by private foreign and Brazilian interests.
Chile	Compania de Acero del Pacifico	600,000	93	Government holds a minority interest.
Colombia	Acerias Paz del Rio, S.A	225,500	84	Owned 24 percent by Banco de La Republica, a government entity, 1 percent by the national government and various municipalities, and 75 percent by private firms and individuals.
Mexico	Altos Hornos de Mexico, S.A	1,300,000	48	Controlled by Nacional Financiera, S.A., a Federal government financing agency.
	Toyoda de Mexico, S.A	(1)	(1)	Controlled by Federal Government.
Peru	Corporacion Peruana del Santa "Chimbote"	100,000	97	Owned 75 percent by government but self-operating under name of Sogesa—a semiautonomous government agency.
Venezuela	CVG Siderurgica del Orinoco C.A. (Sidor)	600,000	87	Government owned.

B. EUROPE

Country	Company	Latest annual raw steel production, net tons	Percent of national production	Degree of government control
Austria	VOEST—Vereinigte Oster-Reichische Eisen-Und Stahlwerke, A.G.	1,920,000	54	Government owned.
	Oesterreichisch-Alpine Montangesellschaft	1,060,000	30	Do.
	Steirische Gusstahlwerke, A.G	(1)	(1)	Government owned (controlled by Alpine-Montan).
	Karntnerische Eisen-Und Stahlwerks A.G	(1)	(1)	Do.
	Gebr. Bohler & Co. Aktiengesellschaft	(1)	(1)	Government holds substantial interests.

See footnotes at end of table, p. 308.

TABLE C-3.—*Government ownership and control of free world steel producers*—Continued

B. Europe—Continued

Country	Company	Latest annual raw steel production, net tons	Percent of national production	Degree of government control
Finland	Rautaruukki Oy	Nil	Nil	Owned 75 percent by government and 25 percent by private companies.
West Germany	Salzgitter Huttenwerk A.G	2,500,000	6	Government owned.
	Ilseder Hutte	1,100,000	3	State of lower Saxony holds 25-percent interest.
	Schwabische Huttenwerke Gmb H	(1)	(1)	State of Baden-Wurtenberg holds 50-percent interest.
Ireland	Irish Steel Holdings, Ltd	22,000	100	Sponsored and controlled by government which has small equity interest.
Italy	FINSIDER Group	8,100,000	58	Government (through Instituto per la Ricostruzione Industriale, I.R.I.) holds 54-percent interest.
	Societa Nazionale per Azioni—(Cogne)	250,000	2	Government-owned, but not part of FINSIDER.
	Stabilimenti di Sant' Eustacchio S.p.A	(1)	(1)	Government holds 51-percent interest.
Netherlands	Koninklijke Nederlandsche Hoogovens en Staalfabricken N.V.	3,100,000	89	Owned 40 percent by government and city of Amsterdam and 60 percent by private interests.
Norway	A/S Norsk Jernverk	540,000	71	Government owned.
Spain	Siderurgica Asturiana, S.A	75,000	2	Government (through Instituto Nacional de Industria, I.N.I.) holds 33-percent interest.
	Empresa Nacional Siderurgica, S.A. (ENSIDESA).	660,000	17	Government (through Instituto Nacional de Industria, I.N.I.) holds 90-percent interest.
Portugal	Siderurgica Nacional	301,000	100	Government owns 15 percent.
Sweden	Norrbottens Jarnverk Aktiebolag	550,000	11	Government has interests.
Turkey	Turkiye Demir ve Celik Isletmeleri Genel Mudurlugu (Karabuk).	450,000	47	Government owned through Sumer Bank.
	Eregli Iron and Steel Mills	173,000	25	Government owns 51 percent of company with remainder belonging to private foreign (American) interests.
	Celik, Ltd	(1)	(1)	Government controls 49 percent of company with remainder belonging to German interests.
	Mannesmann-Sumer Bank Boru Endustrisi T.A.S.	(1)	(1)	Government-run Sumer Bank owns 43 percent of company, with remainder belonging to German interests.
United Kingdom	Richard Thomas & Baldwin, Ltd	3,690,000	12	Government owned.
	Colvilles, Ltd	2,970,000	10	Upon nationalization, June 28, 1967, will be government owned.
	Consett Iron Co., Ltd	1,180,000	4	Do.
	Dorman, Long & Co., Ltd	2,170,000	7	Do.
	English Steel Corp., Ltd	720,000	2	Do.
	G.K.N. Steel Co., Ltd	2,300,000	8	Do.
	John Summers & Sons, Ltd	1,740,000	6	Do.
	The Lancashire Steel Corp., Ltd	740,000	2	Do.
	Park Gate Iron & Steel Co., Ltd Round Oak Steel Works, Ltd	900,000	3	Do.

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	South Durham Steel & Iron Co., Ltd	1,650,000	5	Do.
	The Steel Co. of Wales, Ltd	3,060,000	10	Do.
	Stewarts & Lloyds, Ltd	2,220,000	7	Do.
	The United Steel Cos., Ltd	3,700,000	12	Do.
Yugoslavia	Zeljezara Zenica	[2] 880,000	(1)	Government owned.
	Zelezarna Jesenice	[2] 468,000	(1)	Do.
	Zeljezara Sisak	[2] 313,500	(1)	Do.
	Zelezarna Ravne	[2] 99,000	(1)	Do.
	Zelezarna Store	[2] 38,000	(1)	Do.
	Zeljezara "Boris Kidric"	[2] 165,000	(1)	Do.
	Rudnici i Zelezara Skopje	[2] 630,000	(1)	Do.
		C. AFRICA		
Algeria	Acilor	(1)	(1)	Government owned.
	Societe Nationale de Siderurgie	(1)	(1)	Do.
Ghana	Kwame Nkrumah Steelworks Corp	30,000	100	Do.
Nigeria	Nige steel Co., Ltd	(1)	(1)	Government controls 49 percent (through the Eastern Region Government Development Corp.) and 51 percent belongs to an Italo-Greek finance group.
Republic of South Africa	South African Iron & Steel Industrial Corp., Ltd. (ISCOR).	3,100,000	89	Government holds 99-percent interest.
	The Union Steel Corp. (of South Africa), Ltd.	(1)	(1)	Government has controlling interest.
Rhodesia/Nyasaland	The Rhodesian Iron & Steel Co., Ltd	125,000	100	Government has a participating interest.
Tunisia	El Fouladh	40,000	100	Government owned.
Uganda	Steel Corp. of East Africa, Ltd	20,000	100	Government interests held by the Uganda Development Corp.
		D. MIDDLE EAST		
Egypt	The Egyptian Iron & Steel Co	(1)	(1)	Government has controlling interest.
	Delta Steel Mill, S.A.A	(1)	(1)	Government controlled by Egyptian General Organization for the Metallurgical Industries.
	The National Metal Industries, S.A.E	(1)	(1)	Do.
Israel	Israeli Steel Mills, Ltd	(1)	(1)	These companies are controlled by Koor Industries & Crafts Co. Ltd., and are owned by the Histadrut labor unions and other investment groups; government has a possible minority equity.
	Middle East Tube Co., Ltd., and Joint Pipe Industries, Ltd.	(1)	(1)	

(See footnotes at end of table, p. 308.)

TABLE C-3.—*Government ownership and control of free world steel producers*—Continued

E. FAR EAST

Country	Company	Latest annual raw steel production, net tons	Percent of national production	Degree of government control
Burma	Ywama Steel Works	22,000	100	Owned by Industrial Development Corporation, a government agency.
Ceylon	Ceylon Steel Corp	Nil	Nil	Government owned.
India	Bhilai Steel Plant	761,491	16	Government owned and operated by Hindustan Steel, Ltd., a government entity.
	Rourkela Steel Plant	797,052	16	Do.
	Durgapur Steel Plant	571,313	12	Do.
	The Mysore Iron & Steel Works	50,376	1	Owned by government and State of Mysore.
Malaysia	Malaya-Wata	(3)	(3)	Owned 51 percent by government and 49 percent by Japanese interests.
Pakistan	Chittagong Works	Nil	Nil	Government has a majority interest through the East Pakistan Industrial Development Co. The Japanese firm, Kobe Steel, also has some interests.
Philippines	National Shipyards & Steel Corp	20,000	20	Government owned.
Singapore	National Iron & Steel Mills, Ltd	(1)	(1)	Owned 60 percent by joint government and local interests and 40 percent by Japanese interests.
South Korea	Inchon Heavy Industry Corp	100,000	50	Government owned.
Taiwan	Tang Eng Iron Works, Ltd	(1)	(1)	Owned 60 percent by government and 40 percent by private interests.

[1] Not available. [2] Not available, estimated capacity. [3] Nil; will commence production in 1967.

Tariff Reduction Under the Kennedy Round

AUGUST 10, 1967.

Re Steel Under the Kennedy Round.

To: Mr. I. W. Abel, Mr. Walter Burke, Mr. Joseph Molony, and all district directors.

From: Meyer Bernstein.

As a result of the Kennedy Round General Agreement on Tariffs and Trade (GATT) negotiations, import duties in the steel sector will be reduced by a weighted average of 12.8 percent over a period of 5 years beginning January 1, 1968.

This total reduction—divided into five equal annual installments—represents a drop from a weighted average steel import rate of 7.44 percent in 1966 to 6.49 percent in 1972. Average annual reductions, therefore, will be 2.56 percent of the 1966 base or less than two-tenths of a percentage point per year. Put another way, steel with a value of $100 a ton in the exporting country now has an average duty of $7.44. For each of the next 5 years the duty will be cut by 19 cents. The final concession rate will be $6.49 on that $100 foreign value.

The steel sector, as understood by U.S. representatives at Geneva, consists of 115 categories. It is wider than what we normally call steel products, for it also includes pig iron, sponge iron, iron and steel powders, and a few finished items like foil. It excludes, however, certain wire products.

Forty-three of the 115 categories will not be reduced at all under the agreement. These include some of the steels most heavily imported in 1966. The import value of steels on which there will be no rate reduction whatever under the Kennedy Round amounted to $499,962,000 in 1966, or 40.4 percent of the $1,238,658,000 total imports last year. The highest normal cuts of 50 percent (or just over that because of rounding) were made on eight categories with a total value of $4,640,000, or 0.4 percent of total imports in 1966.

On two categories in which the tariff is a negligible amount; namely, pig iron with a rate of 20 cents a ton and sponge iron and powder with a rate of 62½ cents a ton, the reduction was 100 percent. The total value of these two products in 1966 was $46,646,000 or 3.7 percent of the total.

The reductions can be recapitulated as follows:

Group	Number of categories	Value of 1966 imports	Percent of total 1966 imports
Abolition of negligible rate	2	$46,646,000	3.7
50-percent reduction	8	4,646,000	.4
40 to 49.9 percent	11	41,573,000	3.4
30 to 39.9 percent	6	11,856,000	1.0
20 to 29.9 percent	21	193,651,000	15.6
10 to 10.9 percent	18	156,442,000	12.5
0.1 to 9.9 percent	6	283,888,000	22.9
No reduction	43	499,962,000	40.4
Total	115	1,238,430,000	

It is clear that the Kennedy Round will have little effect upon steel imports. In most cases the tariff changes represent only a fraction of the normal price fluctuations occasioned by market conditions.

A word should be said about methods used in calculating the tariff rates and reductions.

It would be simple if all rates were on an ad valorem basis; that is, as a percentage of the value abroad. A reduction, for example, from 8 percent ad valorem to 7 percent ad valorem would amount to 12½ percent.

But many tariff rates are not expressed in that way. Some are based on so much per pound and others have a combination of a cent per pound rate plus ad valorem rate, and in still other cases in steel, there is a cent per pound plus an ad valorem plus a duty on the value of the alloys in the steel.

Such rates can only be computed by comparison with the value at a given time in the exporting countries. The figures contained in this report were gathered by comparing the value of the individual steel categories abroad as a whole with the actual duties collected on those categories. The year used was 1966. The same process had earlier been used for 1964, and because the product mix was different in the 2 years, the percentages came out differently. In each case, of course, the figure was correct for the particular year used as a basis, but in order to come up with a figure showing the reduction under the Kennedy Round, it was necessary to assume a product mix and a value for 1972. This, of course, can only be estimated, and the best estimate available was to use the product mix and prices for 1966. Should these change radically by 1972, the reductions under the Kennedy Round might turn out to be somewhat different from those here computed. In any event, however, the variation will not be a significant one. This is because more than 40 percent of the rates won't be changed at all under the Kennedy Round and because most of the other rates will undergo only relatively small changes.

Attached is a table showing the current rate of duty; the concession rate in the final state; that is, after the full reduction in 5 years, the percentage the full reduction cut represents on the current rate, and the value of imports in 1966.

It should be noted that the figure for the cut in reference to alloy steels is based only on the cut in the steel rate. It does not take into account the additional cut of 50 percent which is to be made on the alloy content.

STEEL UNDER THE KENNEDY ROUND

Total reductions after 5 annual stages

TSUS No.	Product	Current rate of duty	Concession rate, final stage	Cut, final stage (percent)	Value of imports, 1966
608.84	Plates and sheets, not cut, etc., not pickled	8 percent ad valorem	7.5 percent ad valorem	6.3	$210,891,000
608.87	Plates and sheets, not cut, etc., pickled or cold rolled	0.1 cent per pound plus 8 percent ad valorem.	8 percent ad valorem	20.0	150,841,000
609.80	Angles, shapes, and sections, not worked	0.1 cent per pound	0.1 cent per pound	([1])	122,042,000
610.32	Pipes and tubes, 0.375 inch or more in O.D	0.3 cent per pound	0.3 cent per pound	([1])	103,329,000
608.95	Plates and sheets, coated, other than tin or terne	0.1 cent per pound plus 8 percent ad valorem.	9 percent ad valorem	4.8	69,350,000
608.70	Wire rods, not treated, value not over 4 cents per pound	0.1 cent per pound	0.1 cent per pound	([1])	54,374,000
608.40	Bars, concrete reinforcing, value not over 5 cents per pound	8.5 percent ad valorem	7.5 percent ad valorem	11.8	49,291,000
608.88	Plates and sheets, not coated, pickled or cold rolled, alloy	0.1 cent per pound plus 12 percent plus duty on alloy.	10 percent ad valorem plus duty on alloy.	18.8	37,610,000
607.15	Pig iron	20 cents ton	Free	100.0	45,531,000
608.71	Wire rods, valued over 4 cents per pound	0.25 cent per pound	0.25 cent per pound	([1])	35,114,000
608.45	Bars, valued not over 5 cents per pound	7 percent ad valorem	7 percent ad valorem	([1])	34,503,000
609.41	Round wire, 0.06 inch or more in diameter, low carbon	0.3 cent per pound	0.3 cent per pound	([1])	27,251,000
608.18	Ingots, blooms, billets, slabs, sheet bars, alloy	14.5 percent ad valorem plus duty on alloy.	8 percent ad valorem plus duty on alloy.	44.8	26,112,000
609.43	Wire, 0.6 inch or more in diameter, other than low carbon	8.5 percent ad valorem	8.5 percent ad valorem	([1])	22,408,000
608.92	Plates and sheets, tin plate	0.8 cent per pound	8 percent ad valorem	11.7	22,086,000
608.52	Bars, alloy	14.5 percent plus duty on alloy	10.5 percent ad valorem plus duty on alloy.	27.6	19,330,000
609.40	Round wire, under 0.6 inch in diameter	8.5 percent ad valorem	8.5 percent ad valorem	([1])	19,530,000
610.42	Pipes and tubes, threaded	7.5 percent ad valorem	7.5 percent ad valorem	([1])	14,618,000
610.49	Pipes and tubes not suitable for use in ball bearings	10.5 percent ad valorem	10.5 percent ad valorem	([1])	14,443,000
609.45	Round wire alloy	12.5 percent ad valorem plus duty on alloy.	10.5 percent ad valorem plus duty on alloy.	16.0	12,967,000
609.84	Angles, shapes and sections, drilled, etc	7.5 percent ad valorem	6.5 percent ad valorem	13.3	11,610,000
608.78	Wire rods (alloy) tempered or treated	0.375 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.375 cent per pound plus 4 percent ad valorem plus duty on alloy.	([1])	11,132,000
610.52	Pipes and tubes, not suitable for ball bearings (alloy)	14.5 percent ad valorem plus duty on alloy.	13 percent ad valorem plus duty on alloy.	10.3	9,936,000
608.46	Bars, value over 5 cents per pound	10.5 percent ad valorem	7 percent ad valorem	33.3	9,708,000
610.80	Pipe, tube fittings other than cast iron	19 percent ad valorem	11 percent ad valorem	42.1	9,361,000
608.15	Ingots, blooms, billets, slabs, and sheet bars, value not over 5 cents.	8.5 percent ad valorem	6 percent ad valorem	29.4	7,940,000
609.03	Strip, not cut, over 0.01, but not over 0.05	do	8.5 percent ad valorem	([1])	6,681,000
609.06	Strip, alloy, not over 0.01 inch	10 percent ad valorem plus duty on alloy.	8 percent ad valorem plus duty on alloy.	20.0	5,103,000
609.07	Strip, alloy, over 0.1 but not over 0.05	12.5 percent ad valorem plus duty on alloy.	10.5 percent ad valorem plus duty on alloy.	16.0	4,654,000

See footnotes at end of table, p. 314.

Total reductions after 5 annual stages—Continued

TSUS No.	Product	Current rate of duty	Concession rate, final stage	Cut, final stage (percent)	Value of imports, 1966
608.75	Wire rods, value over 4 cents per pound	0.375 cent per pound	0.375 cent per pound	(1)	$4,636,000
610.39	Pipes, tubes, not threaded, etc	0.1 cent per pound	0.1 cent per pound	(1)	4,211,000
609.96	Angles, shapes and sections, sheet pilings	do	do	(1)	4,079,000
608.50	Bars, cold formed	10.5 percent ad valorem plus 0.625 cent per pound.	8.5 percent ad valorem	25.4	3,238,000
609.04	Strip, over 0.05 in thickness	9.5 percent ad valorem	9.5 percent ad valorem	(1)	2,912,000
608.76	Wire rods, alloy, not tempered	0.25 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.25 cent per pound plus 4 percent ad valorem plus duty on alloy.	(1)	2,762,000
610.46	Pipes and tubes, other than oil well, alloy	16 percent ad valorem plus duty on alloy.	13 percent ad valorem plus duty on alloy.	18.8	2,636,000
609.02	Strip, not over 0.01 inch in thickness	6 percent ad valorem	6 percent ad valorem	(1)	2,626,000
609.21	Wire, flat, over 0.1 inch, but not over 0.5	8.5 percent ad valorem	8 percent ad valorem	5.9	2,543,000
609.82	Angles, shapes and sections, hot rolled or cold formed, alloy.	90.1 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.1 cent per pound plus 4 percent ad valorem plus duty on alloy.	45.2	2,201,000
608.85	Plates and sheets, not cut, not coated, other than black plate	12 percent ad valorem plus duty on alloy.	9.5 percent ad valorem plus duty on alloy.	20.8	2,114,000
608.04	Sponge iron and powder, alloy	62½ cents ton plus duty on alloy	31 cents ton plus duty on alloy	50.4	2,111,000
608.27	Forgings, not machined, alloy	14.5 percent ad valorem plus duty o alloy.	percent ad valorem plus duty on alloy.	44.8	1,989,000
609.13	Plates, sheet and strip value over 8 cents per pound	9.5 percent ad valorem	8 percent ad valorem	15.8	1,948,000
610.20	Rails	0.05 cent per pound	0.06 cent per pound	(1)	1,868,000
610.65	Pipe and tube fittings, cast iron	3 percent ad valorem	3 percent ad valorem	(1)	1,832,000
610.37	Pipes and tubes, 0.375 inch or more in diameter	0.3 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.3 cent per pound plus 4 percent ad valorem plus duty on alloy.	(1)	1,689,000
610.74	Pipe and tube fittings, cast iron	22.5 percent ad valorem	11 percent ad valorem	51.1	1,553,000
609.20	Wire not coated, not over 0.01 inch	6 percent ad valorem	6 percent ad valorem	(1)	1,488,000
610.56	Cast iron pipes and tubes	10 percent ad valorem	10 percent ad valorem	(1)	1,413,000
609.08	Strip, alloy, over 0.05 inch	13.5 percent ad valorem plus duty on alloy.	11.5 percent plus duty on alloy	14.8	1,260,000
608.05	Iron and steel powders, not alloy (other than sponge)	0.3 cent per pound	0.3 cent per pound	(1)	1,258,000
609.30	Wire, flat, alloy	10 percent ad valorem plus duty on alloy.	8 percent ad valorem plus duty on alloy.	20.0	1,206,000
609.26	Wire, flat, coated, over 0.01 inch but not over 0.05 inch	0.1 cent per pound plus 8.5 percent ad valorem.	0.05 cent per pound plus 8 percent ad valorem.	10.2	1,178,000
608.02	Sponge iron and powder	62½ cents per ton	Free	100.0	1,115,000
608.16	Ingots, blooms, slabs, sheet bars, valued over 5 cents per pound.	10.5 percent ad valorem	6 percent ad valorem	42.9	1,101,000
610.51	Pipes and tubes, alloy hollow bars	15.5 percent ad valorem plus duty on alloy.	13 percent ad valorem plus duty on alloy.	16.1	1,063,000
608.61	Hollow drill steel, valued over 8 cents per pound	10.7 percent ad valorem	7.5 percent ad valorem	29.9	1,020,000
608.62	Hollow drill steel, alloy	14.7 percent ad valorem plus duty on alloy.	9.5 percent plus duty on alloy	35.3	1,012,000
608.48	Bars, not cold formed, coated, or plated	0.1 cents per pound plus 10.5 percent ad valorem.	8 percent ad valorem	2.8	981,000

610.43	Pipes and tubes, alloy	11.5 percent—duty on alloy	11 percent plus duty on alloy	4.3	913,000
609.15	Plates, sheets and strip, alloy	13 percent ad valorem plus duty on alloy.	10 percent ad valorem plus duty on alloy.	23.1	897,000
608.82	Plates and sheets, not coated, other than corrugated	8 percent ad valorem	8 percent ad valorem	(1)	851,000
609.70	Wire, not round, not coated	12.5 percent ad valorem	9 percent ad valorem	28.0	708,000
610.62	Pipe and tube fittings, cast iron	10 percent ad valorem	10 percent ad valorem	(1)	703,000
609.12	Plates, sheets, and strip, not valued over 8 cents per pound	8 percent ad valorem	8 percent ad valorem	(1)	632,000
609.31	Wire, flat, alloy, over 0.01 in., but not over 0.05 in	12.5 percent plus duty on alloy	10 percent plus duty on alloy	20.0	598,000
688.30	Pipes or tubes, conduit	10 percent ad valorem	10 percent ad valorem	(1)	427,000
607.18	Pig iron, alloy	56¼ cents ton plus duty on alloy	28 cents ton plus duty on alloy	50.2	372,000
609.17	Plates, sheets, strip, coated with other than tin, lead, or zinc	19 percent ad valorem	9.5 percent ad valorem	50.0	354,000
608.10	Grit, shot, and pellets	0.3 cent per pound	0.3 cent per pound	(1)	325,000
688.35	Pipes and tubes, fittings	19 percent ad valorem	10 percent ad valorem	47.3	279,000
609.22	Wire, flat, over 0.06 ad valorem	10 percent ad valorem	8 percent ad valorem	20	236,000
609.86	Angles, shapes and sections, drilled, alloy	11.5 percent ad valorem plus duty on alloy.	8.5 percent ad valorem plus duty on alloy.	26.1	224,000
642.97	Milliner's wire, not galvanized	15 percent ad valorem	8.5 percent ad valorem	43.3	224,000
604.41	Re-bars, valued over 5 cents per pound	12.5 percent ad valorem	7.5 percent ad valorem	40.0	195,000
608.96	Plates and sheets, coated, alloy	0.1 cents per pound plus 12 percent ad valorem plus duty on alloy.	11 percent ad valorem plus duty on alloy.	10.7	179,000
642.96	Milliner's wire, galvanized	0.25 cent per pound	0.25 cent per pound	(1)	165,000
644.22	Foil	18 percent ad valorem	9 percent ad valorem	50.0	159,000
609.75	Wire, other than round, alloy	16.5 percent ad valorem plus duty on alloy.	11 percent ad valorem plus duty on alloy.	33.3	151,000
608.30	Bars, wrought iron	0.5 cent per pound	0.5 cent per pound	(1)	138,000
608.06	Stainless steel powders	0.3 cent per pound	0.3 cent per pound	(1)	172,000
610.48	Pipes and tubes, not for ballbearings, hollow	11 percent ad valorem	11 percent ad valorem	(1)	126,000
610.25	Rails, joint bars and tie plates	0.125 cent per pound	0.125 cent per pound	(1)	117,000
608.25	Forgings	10.5 percent ad valorem	6 percent ad valorem	42.9	109,000
610.70	Pipe and tube fittings, cast iron	8 percent ad valorem	8 percent ad valorem	(1)	83,000
609.32	Wire, alloy, over 0.05 inch	14 percent plus duty on alloy	10 percent plus duty on alloy	28.6	77,000
608.90	Plates and sheets, clad	24 percent ad valorem	12 percent ad valorem	50.0	68,000
609.25	Wire, flat, coated, not over 0.01 inch	0.1 cent per pound plus 6 percent ad valorem.	0.05 cent per pound plus 6 percent ad valorem.	5.6	62,000
609.72	Wire, not round, coated	0.1 cent per pound plus 12.5 percent ad valorem.	0.05 cent per pound plus 9 percent ad valorem.	29.2	59,000
609.36	Wire, flat, alloy over 0.01 inch, but not over 0.05 inch	0.1 cent per pound plus 12.5 percent ad valorem plus duty on alloy.	0.05 cent per pound plus 10 percent ad valorem plus duty on alloy.	21.7	48,000
610.45	Pipes and tubes, for use in ball bearings	12 percent ad valorem	11 percent ad valorem	8.3	29,000
610.31	Pipes and tubes, 0.25–0.375 in.	0.625 cent per pound	0.625 cent per pound	(1)	25,000
610.40	Pipes and tubes, not threaded, alloy	0.1 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.1 cent per pound plus 4 percent ad valorem plus duty on alloy.	(1)	23,000
644.32	Foil, cut	18 percent ad valorem	9 percent ad valorem	50.0	19,000
608.93	Plates and sheets, terne plate	1 cent per pound	0.9 cent per pound	10.0	11,000
610.63	Pipe and tube fittings, alloy cast iron	14 percent ad valorem plus duty on alloy.	12 percent ad valorem plus duty on alloy.	14.3	10,000
610.66	Pipe and tube fittings, not for cast iron pipe alloy cast iron	7 percent ad valorem plus duty on alloy.	5 percent ad valorem plus duty on alloy.	28.6	7,000
608.73	Wire rods treated, value not over 4 cents per pound	0.2 cent per pound	0.2 cent per pound	(1)	5,000
609.27	Wire, flat over 0.05 in.	0.1 cent per pound plus 10 percent ad valorem.	0.05 cent per pound plus 8 percent ad valorem.	21.5	5,000

See footnotes at end of table, p. 314.

Total reductions after 5 annual stages—Continued

TSUS No.	Product	Current rate of duty	Concession rate, final stage	Cut, final stage (percent)	Value of imports, 1966
610.21	Rails, joint bars, tie plate, alloy	0.05 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.05 cent per pound plus 4 percent ad valorem plus duty on alloy.	([1])	$5,000
610.36	Pipes and tubes, welded 0.25–0.375	0.625 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.625 cent per pound plus 4 percent ad valorem plus duty on alloy.	([1])	5,000
609.76	Wire, round, coated, alloy	0.1 cent per pound plus 16.5 percent ad valorem plus duty on alloy.	0.05 cent per pound plus 11 percent ad valorem plus duty on alloy.	33.4	4,000
608.06	Other powders, alloy	19 percent ad valorem	9.5 percent ad valorem	50.0	4,000
610.30	Pipes and tubes, under 0.25 inch	0.875 cent per pound	0.875 cent per pound	([1])	4,000
609.88	Angles, shapes, and sections, cold turned	8.5 percent ad valorem	7.5 percent ad valorem	11.8	3,000
608.42	Bars, alloy	16.5 percent ad valorem plus duty on alloy.	9.5 percent ad valorem plus duty on alloy.	42.4	2,000
610.35	Pipes and tubes, alloy, under 0.25 inch	0.875 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.875 cent per pound plus 4 percent ad valorem plus duty on alloy.	([1])	2,000
608.32	Bars, alloy wrought iron	0.5 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.5 cent per pound plus 2 percent ad valorem plus duty on alloy.	[2] 28.5	([3])
609.35	Wire, flat, alloy, not over 0.01 inch	0.1 cent per pound plus 10 percent ad valorem plus duty on alloy.	0.05 cent per pound plus 8 percent ad valorem plus duty on alloy.	[2] 22.2	([3])
609.37	Wire, flat, alloy, not over 0.05 inch	0.1 cent per pound plus 14 percent ad valorem plus duty on alloy.	0.05 cent per pound plus 10 percent ad valorem plus duty on alloy.	[2] 30.0	([3])
609.90	Angles, shapes, sections, alloy, cold formed	12.5 percent ad valorem plus duty on alloy.	8.5 percent ad valorem plus duty on alloy.	[2] 24.0	([3])
609.98	Sheet piling, alloy	0.1 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.1 cent per pound plus 2 percent ad valorem plus duty on alloy.	[2] 40.0	([3])
610.26	Rails, joint bars and tie plates, alloy	0.125 cent per pound plus 4 percent ad valorem plus duty on alloy.	0.125 cent per pound plus 4 percent ad valorem plus duty on alloy.	([1])	([3])
610.58	Pipes and tubes, alloy cast iron	14 percent ad valorem plus duty on alloy.	12 percent ad valorem plus duty on alloy.	[2] 14.3	([3])
610.71	Pipe and tube fittings, alloy cast iron	12 percent ad valorem plus duty on alloy.	10 percent ad valorem plus duty on alloy.	[2] 16.7	([3])

[1] No reduction. [2] Estimated. [3] No imports.

TABLE C-4.—*Cost of entry comparison of duties, taxes, and other charges (excluding freight, insurance, handling, etc.) per $100 of product*

NORTH AMERICA

	Canada	United States
Tariff	Percent on selling price in market of exporting country.	Specific duties or ad valorem duties assessed on f.o.b. value.
Sales tax	Percent on duty-paid value all goods manufactured or produced in Canada or imported into Canada unless specifically exempted from the tax under the Excise Tax Act. The tax is not levied at the time of importation when goods are imported by manufacturers, wholesalers, or jobbers licensed to pay the sales tax at the time of the final sale of the goods by them. Many specified products and materials are exempt from the sales tax if consumed or expanded directly in the manufacture or production of goods.	

Europe

EUROPEAN FREE TRADE ASSOCIATION

	United Kingdom	Norway	Sweden	Denmark	Austria	Portugal	Switzerland
Tariff	Specific or ad valorem (c.i.f.) duties.	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	Specific duties	Specific duties.
Turnover tax		Percent on duty-paid value.	Percent on duty-paid value.	Percent on duty-paid value.	Percent on duty-paid value.		
Sales tax							Percent on cost, insurance and freight duty-paid value.
Statistical tax							Percent on total customs charges.
Transactions tax						Percent on duty-paid value.	
Import licenses						X	
Exchange controls						X	

EUROPEAN ECONOMIC COMMUNITY

	France	Italy	West Germany	Belgium	Luxembourg	Netherlands
Tariff	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value.
Sales tax	25 percent on the duty-paid value.	4 percent on duty-paid value.				
Customs stamp tax	2 percent on duty alone.					
Compensatory import tax		4.8 percent or 7.8 percent on duty-paid value.				
Administrative fee	0.2 percent of total customs charges.	0.5 percent on c.i.f.				
Turnover equalization tax			2 percent to 9.5 percent on duty-paid value.		3 percent on duty- and tax-paid value.	0 percent to 11 percent on duty-paid value.
Transmission tax				7 percent to 19 percent on duty-paid value.		
Import tax					3 percent on duty-paid value f.o.b. Luxembourg.	

HOT ROLLED AND COLD ROLLED SHEETS (CARBON STEEL)

Charges	From the United States to—					
	Belgium		France		West Germany	
	Hot rolled sheets	Cold rolled sheets	Hot rolled sheets	Cold rolled sheets	Hot rolled sheets	Cold rolled sheets
Duty (c.i.f. value)	$5.72	$11.23	$10.30	$11.23	$10.30	$11.23
Sales tax			31.21	30.91		
Stamp tax			.21	.23		
Turnover equalization tax					11.85	11.74
Transmission tax	8.41	8.65				
Total charges, ex dock foreign port	14.13	19.88	41.72	42.37	22.15	22.97

Charges	To the United States from—					
	Belgium		France		West Germany	
	Hot rolled sheets	Cold rolled sheets	Hot rolled sheets	Cold rolled sheets	Hot rolled sheets	Cold rolled sheets
Duty (f.o.b. value), total charges, ex dock, New York	$8.00	$9.91	$8.00	$9.91	$8.00	$9.91

PLATES AND HOT ROLLED BARS (CARBON STEEL)

Charges	From the United States to—					
	Belgium		France		West Germany	
	Plates	Hot rolled bars	Plates	Hot rolled bars	Plates	Hot rolled bars
Duty (c.i.f. value)	$5.77	$10.16	$10.39	$10.16	$10.39	$10.16
Sales tax			31.47	30.74		
Stamp tax			.21	.20		
Turnover equalization tax					10.69	10.47
Transmission tax	8.48	8.62				
Total charges, ex dock foreign port	14.25	18.78	42.07	41.10	21.08	20.63

Charges	To the United States from—					
	Belgium		France		West Germany	
	Plates	Hot rolled bars	Plates	Hot rolled bars	Plates	Hot rolled bars
Duty (f.o.b. value), total charges, ex dock New York	$8.00	$7.00	$8.00	$7.00	$8.00	$7.00

WELDED PIPE (CARBON STEEL)

Charges	From the United States to—		
	Belgium	France	West Germany
Duty (c.i.f. value)	$14.34	$18.99	$15.94
Sales tax		37.95	
Customs stamp tax		.38	
Transmission tax	16.19		
Turnover equalization tax			14.13
Total charges, ex dock foreign port	30.53	57.32	30.07

Charges	To the United States from—		
	Belgium	France	West Germany
Duty (specific rate), total charges ex dock New York Port	$12.50	$12.50	$12.50

Middle East and North Africa

	Morocco	Algeria	Libya	Tunisia	United Arab Republic	Turkey	Pakistan
Tariff	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value.
Import licenses	X			X	X	X	X.
Exchange controls	X			X	X	X	X.
Special tax	X						
Stamp tax	X					X	
Sales tax	X						X.
Quotas	X				X	X	
Customs tax				X		X	
Consumption tax				X			
Marking requirements.				X			X.
Statistical tax					X		
Dock tax					X		
Surtax						X	
Production tax						X	
Regulatory duty							X.
Prohibited						Some steel products.	

	Saudi Arabia	Syria	Kuwait	Lebanon	Jordan	Iraq	Israel
Tariff	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	Cost and freight value	C.i.f. value.
Import licenses		X	X		X	X	X.
Exchange controls		X			X		X.
Stamp tax		X					
License taxes		X					
Statistical tax		X					
Consumption tax		X					
Defense tax		X					
School tax		X					
Dock and harbor taxes.		X			X		
Marking requirements.		X					
Surtax	X						
Other taxes					X		
Quotas						X	
Purchase tax							X.
Municipal tax				X			

Africa (south of the Sahara)

	Ghana	Liberia	Republic of the Congo (Léopoldville)	Chad	Gabon	Cameroon	Republic of the Congo (Brazzaville)
Tariff	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value.
Import license	X		X	X	X	X	X.
Exchange controls	X		X	X	X	X	X.
Purchase tax	Percent on f.o.b. plus assembly.						
Sales tax	Percent on duty-paid value.						
Surtax		Percent on duty paid.					
Highway fund levy		Percent on c.i.f. value.			Percent on c.i.f. value.		
Quota			X				
Statistical tax			X				
Import tax				C.i.f. value or government-decreed market price.	C.i.f. value or government-decreed market price.	C.i.f. value or government-decreed market price.	C.i.f. value or government-decreed market price.
Turnover tax				Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on duty-paid value plus import tax.
Stamp tax				Percent on c.i.f. value plus all taxes.	Percent on all taxes and duty (excluding road tax).		
Customs service tax				X	X	X	
Transactions tax						Percent on c.i.f. value.	
Municipal tax						X	X.
Solidarity tax							Percent on c.i.f. value.
River and port tax				X			X.

Africa (south of the Sahara)—Continued

	Dahomey	Ivory Coast	Mali	Mauritania	Niger	Senegal	Upper Volta
Tariff	Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on c.i.f. value.	Percent on c.i.f. value.
Fiscal import duty	do	do	do	do	do	do	Do.
Statistical tax	do	do	Amount/unit	Amount/unit	do	Amount/unit	Do.
Standard tax	Percent on c.i.f. duty-paid value.		Percent on c.i.f. duty-paid value plus taxes.	Percent on c.i.f. duty-paid value.	Percent on duty-paid value plus taxes.	Percent on c.i.f. duty-paid value.	
Turnover tax	Percent on duty-paid value and all taxes.			Percent on c.i.f. duty-paid value plus standard tax.		Percent on c.i.f. duty-paid value plus standard tax.	
Special import duty		Percent on c.i.f. duty-paid value plus taxes.	Percent on c.i.f. value.				
Value-added tax		Percent on c.i.f. duty-paid value plus taxes.					
Duty on business and services.			Percent on c.i.f. value.				
Conditioning tax							Do.
Forfeiture import tax							Percent on c.i.f. duty-paid value plus statistical tax.
Development tax							Percent on c.i.f. value.
Stamp tax							Do.
Price control support tax.							Do.
Exchange controls	X	X	X	X	X	X	X.

Africa (south of the Sahara)—Continued

	Nigeria	South Africa	Togo	Rhodesia	Nyasaland	Sudan	Somali Republic
Tariff	Specific or c.i.f. value.	F.o.b. export	None	F.o.b. export	F.o.b. export	C.i.f. value	C.i.f. value plus additional charges.
Import licenses		X				X	X.
Exchange controls		X	X			X	
Quotas		X					
Fiscal import duty			Percent on c.i.f. value.				
Statistical tax			do				
Transactions tax			Percent on c.i.f. value plus all taxes.				
Lighthouse tax			Amount/unit				
Wharf tax			do			Percent on c.i.f. value.	
Chamber of Commerce benefit tax.			do				
Surtax							Percent on duty.

	Kenya	Tanzania	Uganda	Rwanda	Burundi	Malagasy	Ethiopia
Tariff	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value	C.i.f. value plus 1 percent.
Import licenses	X	X	X	X	X	X	
Exchange controls	X	X	X	X	X		
Statistical tax				X	X		
Trade tax		X					
Quotas						X	
Municipality tax							X.

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Central America

	Bahamas	Costa Rica	Guatemala	Haiti	Honduras	El Salvador	Mexico
Tariff	Specific or c.i.f. value.	Specific and c.i.f. value.	Specific and c.i.f. value.	Specific and/or c.i.f. value.	Specific and c.i.f. value.	Specific and c.i.f. value.	Specific and percent on invoice or Mexican value.
Emergency tax	Percent ad valorem						
Amended import tax	do						
Import licenses							
Exchange controls							X.
Stamp tax		X					
Surtax				Percent customs value.			
Marking		X					
Consular fee					Percent on freight alongside ship value.		
Sales tax							Percent ad valorem.

	Jamaica	Trinidad	Tobago	Panama	Nicaragua
Tariff	Duty free or c.i.f. value	C.i.f. value	C.i.f. value	Free or specific or f.o.b. value.	Specific plus c.i.f. value.
Tonnage tax	Specific rates				
Surtax	Percent of duty			Percent on f.o.b. value	
Stamp tax				X	
Marking				X	
Quotas				X	
Consular fee					Percent on f.o.b. .value.
Import deposits					X.

South America

	Argentina	Bolivia	Brazil	Chile	Colombia	Venezuela
Tariff	C.i.f. value	C.i.f. value	C.i.f. value	Specific duties plus additional tax (percent on c.i.f. value).	C.i.f. value	Specific duties.
Import licenses				Import registration applications.	X	X.
Exchange controls	X		X	X		
Sales tax	Percent on duty-paid value.	Percent on duty-paid value.		Percent ad valorem		
Statistical tax	do.					
Steel fund tax	Amount/unit					
Marking	X			X		
Consular fee		Percent on c.i.f. value				Percent on f.o.b. value.
Stamp tax		X				
Surtax			Percent on c.i.f. value.	Percent on c.i.f. value	Percent on f.o.b.	
Merchant marine improvement tax.			Percent on freight			
Port improvement tax			Percent on c.i.f. value.			
Consumption tax			Percent on duty-paid cruzeiro value.			
Import deposits				X	X	
Prohibition				X		
Excise tax					Percent ad valorem	

	Uruguay	Paraguay	Ecuador	Guyana	Peru
Tariff	C.i.f. value	Specific plus additional tax (percent on c.i.f. value).	Specific plus percent on c.i.f. value.	C.i.f. value	Specific plus percent on c.i.f. value.
Import licenses	X		X		
Exchange controls			X		
Surcharge	Percent on c.i.f. value	Percent on c.i.f. value			
Sales tax	Percent ad valorem	Percent ad valorem			
Consular fees	X	X			X.
Marking	X				
Prior deposit	X	X	X		
Analysis fee	Percent on total taxes and duty-paid value.				
Merchant marine surcharge.	Percent on c.i.f. value if goods are not shipped in Uruguayan-flag vessels.				
Maritime freight tax					Percent on freight.
Stamp tax					Percent ad valorem.
Import deposits	X	X	X		

Oceania

	Australia	New Zealand
Tariff	The greater of either f.o.b. value or current domestic value	Current domestic value in country of export.
Primage duty	Percent on value	
Sales tax	Percent on the value in Australian currency plus duty (including primage) increased by 1/5 of the total.	Percent on the dutiable value in New Zealand currency plus percent of the total.
Import licenses		X.

Asia

	Japan	Taiwan	Malaysia	Singapore	Indonesia	Hong Kong
Tariff	C.i.f. value	Wholesale market value—percent on: 1 plus duty rate plus 0.14.	C.i.f. value	Free port	C.i.f., rupiah value	Free port.
Import licenses	X	X		X	X	
Exchange controls	X	X			X	
Harbor dues		Percent on duty-paid value.				
Defense surtax		Percent of duty				
Import surcharge					Rp. 1,350/U.S. dollar	
National monument fund					Percent cost and freight, rupiah value.	
Transaction tax					Percent on rupiah value.	

	Ceylon	Korea	Burma	Cambodia	India
Tariff	Percent on wholesale market value in Ceylon.	C.i.f. value	C.i.f. value plus landing charges.	C.i.f. value	Percent on duty-paid wholesale cash price in India.
Import licenses	X				X.
Exchange controls	X				X.
Quotas	X				X.
Commodity tax		Percent on duty-paid value			
Sales tax			Percent on duty-paid value		
Turnover tax				Percent on c.i.f. on duty-paid plus percent of profit.	
Excise tax					X.

Steel Cartels

DEPARTMENT OF JUSTICE,
Washington, March 22, 1967.

Dr. ROBERT M. WEIDENHAMMER,
Senate Committee on Finance,
New Senate Office Building, Washington, D.C.

DEAR DR. WEIDENHAMMER: This responds to your letter of March 10, 1967, to Mr. Fugate, in which you inquire whether European cartels in the past used their market power to hold up domestic prices while cutting export prices and whether there are indications that the present trend in the steel industry toward setting up sales cartels in Germany and toward corporate mergers may have similar results.

Several studies have been made on the activities of cartels during the period between the First and Second World Wars. Among the most interesting are two books by George W. Stocking and Myron W. Watkins: "Cartels in Action" (1946), which describes the operations of cartels in eight different industries, and "Cartels or Competition" (1948), which analyzes the economic consequences of cartels

In "Cartels or Competition," the authors concluded that cartel restrictions led to higher prices, promoted price rigidity and fostered price discrimination between different buyers. Since many cartel agreements provided that the domestic market of the parties would be protected from competition by other members of the cartel, high prices could be charged and so-called monopoly profits obtained domestically as long as there was no effective competition from outsiders. With regard to foreign markets the situation was different. Not only might there be competition from domestic sources which were not members of the cartel, but also in the distribution of the quotas, cartel members, after reserving home markets for themselves, sometimes apportioned such large quotas for third countries that they were able to command only relatively low prices there.

In their case study of the international steel cartel, Stocking and Watkins in "Cartels in Action" discuss American association with the cartel during the 1930's. Citing the TNEC Hearings, 76th Congress, second session, pursuant to Public Resolution No. 113 (75th Cong.) part XX, page 10933 and following pages, the authors indicate that one of the reasons why American producers agreed to respect the domestic markets of other cartel members, was that the cartel made it clear that if American producers did not cooperate, cartel members would sell large quantities of foreign steel on the American market at very low prices.

Generally, cartel agreements are entered into to prevent not "dumping" but all price competition. In such international cartel cases as *Timken* (*U.S.* v. *Timken Roller Bearing Co.*, 341 U.S. 593 (1951)), and *Carboloy* (*U.S.* v. *General Electric Co.*, 80 F. Supp. 989 (S.D.N.Y. 1948)), the foreign producers agreed to sell in the home market of the other parties only at the prices fixed by the domestic producers. The reported agreement, concluded in 1962, between the British and ECSC steel producers is apparently expressly to this effect. (See London Times, Feb. 27, 1963.)

We have seen no indications that the proposed establishment of four sales cartels in Germany and the trend toward corporate mergers in the steel industry in Europe will result in the use of this market power to hold prices domestically in order to enable the same producers to sell at much lower prices on the American market. The ability to carry out such a policy presupposes no effective competition on the domestic market enabling the domestic producers to achieve so-called monopoly profits. It is true that the steel markets in Europe are oligopolistic in character; agreements and arrangements serving to restrict competition between these enterprises are, however, generally prohibited. The Paris Treaty establishing the European Coal and Steel Community contains provisions to curb cartels, industrial concentration, and restrictive practices. (See the study on "Cartelization in Western Europe" by Corwin Edwards for a discussion of the treaty.) Moreover, not only is there competition between various enterprises in the Community, but there is also active competition from outside the Community, especially Japan and Eastern Europe. For example, on December 2, 1966, an article in the Wall Street Journal mentioned that a downward trend had been forced on producers in the European Coal and Steel Community by cheap imports of raw steel from Eastern Europe. Finally, if European producers did try to "dump" steel on the U.S. market the United States does have antidumping legislation (as allowed by art. 6 of the General Agreement on Tariffs and Trade) to counter such price discrimination. In fact, you are doubtless familiar with the complaints brought by U.S. steel producers against European steel producers under our Antidumping Act. (See e.g. Hot-Rolled Carbon Steel Wire Rods from Belgium, 28 Fed. Reg. 6474 (1963); from Luxembourg, 28 Fed. Reg. 6476 (1963); from West Germany, 28 Fed. Reg. 6606 (1963); from France, 28 Fed. Reg. 7368 (1963).)

Please let us know if we can be of further assistance to you in your study of steel imports.

Sincerely yours,

DONALD F. TURNER,
Assistant Attorney General, Antitrust Division.

DEPARTMENT OF STATE,
Washington, April 3, 1967.

DR. ROBERT WEIDENHAMMER,
Member of the Staff of the Senate Finance Committee,
New Senate Office Building, Washington, D.C.

DEAR BOB: Enclosed is the material on Japanese steel export cartels which our Embassy in Tokyo sent to us. I hope you will find it useful.

Sincerely yours,

MARION W. WORTHING,
Assistant Chief, Industrial and Strategic Materials Division.

JAPANESE STEEL EXPORT CARTELS

The Japanese steel export cartel was formed in June 1966 by nine [1] steel manufacturers with the approval of the Ministry of International Trade and Industry (MITI) and of the Fair Trade Commissiou pursuant to the provisions of Article 5(3) of the Export and Import Trading Law. Twelve types of ordinary mill products (rails, shapes, bars, wire rods, plates, cold rolled sheets, hot rolled sheets, strips, hoops, electric sheets, tinplate, and pipes and tubes) fall within the purview of the cartel. Its effective term is from June 1, 1966 (retroactive) to March 31, 1967. The cartel applies only to exports to the United States.

OPERATION OF THE CARTEL

1. The total quota for each of the 12 items shall be determined every quarter by a meeting of directors in charge of the export operations of the nine member companies. Actual exports in Japanese fiscal year 1965 (April 1965 through March 1966), which amounted to about 4 million metric tons, and growth trends in the U.S. market shall be key factors in setting the quota for each item.
2. Member company shares of the quota (by item) shall be allocated according to the member's share of previous exports of individual items to the United States (Criteria not available).
3. The quarterly quota established by the cartel shall be subject to MITI approval.

SIZE OF QUOTA

No public announcement of the first year goal of the cartel was ever made, and it is unlikely that it will be in the future since the quota is determined on a quarterly basis. The figures reported previously and quoted in the Department's instruction appear to have been misconstrued and should not be identified as the goal of the cartel. In Japanese fiscal year 1965, total exports of iron and steel to the United States amounted to 4,435,957 metric tons. Ordinary steel exports for the same period (the concern of the cartel) were 3,787,483 metric tons.

The announced goal (industry and MITI) for Japanese fiscal year 1966 for total exports of iron and steel was 10,000,730 metric tons. The practice of announcing individual country goals was discontinued several years ago. The consistent response of industry sources queried about the level of exports to the United States in fiscal year 1966 is that it will be "approximately equal" to the fiscal year 1965 level. A similar projection is made for fiscal year 1967.

Some calendar year comparisons, shown in tables I and II of enclosure 2, reveal a modest upward trend in ordinary steel exports to the United States. However, to measure the cartel's performance, fiscal year data should be used, and this is shown in table III of enclosure 2. Through December 31, ordinary steel exports to the United States totaled 3,206,533 metric tons. January 1967 exports to all

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[1] Fuji Iron & Steel Co., Kawasaki Steel Corp., Kobe Steel Works, Nippon Kokan K.K., Nisshin Steel Co., Osaka Steel Manufacturing Co., Sumitomo Metal Industries, Tokai Iron & Steel Co., Yawata Iron & Steel Co. These nine companies account for about 85 percent of the total Japanese production of ordinary steel mill products.

countries are reportedly down 40 percent from the previous month's level, and a continuation of the falloff is expected for February and March. If the level of yearend shipments to the United States is projected with a 40 percent reduction, the fiscal year total of ordinary steel shipments to the United States will be approximately 3,700,000 metric tons, or almost identical with the previous year. If shipments continue at either the same rate, or at the level prevailing in the final quarter of fiscal year 1965, the fiscal year total will approach 4 million metric tons. Based on available information, the Embassy believes the 3,700,000 level is more likely to be the case.

It is anticipated that the cartel will be extended for a 1-year period.

The quantitative ordinary steel export cartel is only one facet of a multisided, industry-organized, Government-approved cartel system designed to maintain orderly export marketing of steel products. A summary table of other currently effective cartels in this field is appended as enclosure No. 1.

[Enclosure 1]

CURRENTLY EFFECTIVE STEEL EXPORT CARTELS

1. ROLLED ORDINARY STEEL EXPORT CARTEL

Type of products: Bars, shapes, plates, hot rolled sheets, and cold rolled sheets of ordinary steel.

Members: 27 producers including the major six.[1]

Agreement: On floor price, and announcement of inquiries.

Country of destination: United States of America and Canada.

Date of establishment: May 1, 1960.

Current effective term: July 15, 1966, to July 14, 1967.

2. WIRE ROD AND WIRE ROD PRODUCTS EXPORT CARTEL

Type of products: Wire rods, iron wire, galvanized iron wire, barged iron wire, and common nail.

Members: Yawata, Fuji, Sumitomo, Kobe, Osaka Steel Mfg. and Azuma Steel Works.

Agreement: On floor price, and announcement of inquiries.

Country of destination: All countries.

Date of establishment: April 1, 1958.

Current effective term: April 1, 1966, to March 31, 1967.

3. GALVANIZED IRON SHEET EXPORT CARTEL

Type of products: Galvanized iron sheets.

Members: 24 producers including the major six.

Agreement: On floor price, and announcement of inquiries.

Country of destination: All countries.

Date of establishment: October 1, 1958.

Current effective term: October 16, 1966, to October 15, 1967.

4. STEEL TUBES AND PIPES EXPORT CARTEL

Type of products: Steel tubes and pipes for gas use, 2 inches or less in diameter.

Members: Nippon Kokan, Kawasaki, Sumitomo, Yawata Steel Tube, Fuji Sanki Pipe & Tube, Maruichi Kokan, and Nippon Pipe.

Agreement: On floor price, and announcement of inquiries.

Country of destination: West coast of the United States of America.

Date of establishment: April 1, 1963.

Current effective term: April 1, 1966, to March 31, 1967.

5. STAINLESS STEEL SHEET EXPORT CARTEL

Type of products: Stainless steel plates and sheets.

Members: Nippon Stainless Steel, Nippon Metal Industry, Nippon Yakin Kogyo, Yawata, Kawasaki, Nissan Steel Co.

Agreement: On floor price, and announcement of inquiries.

Country of destination: All countries.

Date of establishment: October 25, 1962.

Current effective term: October 19, 1966, to October 18, 1967.

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[1] Yawata, Fuji, Nippon Kokan, Kawasaki, Sumitomo, Kobe.

[Enclosure 2]

TABLE I.—*Total iron and steel exports*

[In metric tons]

	Calendar year 1965	Calendar year 1966
All destinations	9,908,800	9,895,110
United States only	4,348,696	4,700,147

Source: Japan Iron and Steel Federation.

TABLE II.—*Ordinary steel exports*

	Calendar year		
	1965	1966	1966 over 1965
	Metric tons	*Metric tons*	*Percent*
All destinations	8,236,465	8,431,331	102.0
United States only	3,726,837	3,994,246	107.2

Source: Japan Iron and Steel Federation.

TABLE III.—*Exports*

[In metric tons]

	To United States		All countries	
	Ordinary steel	Total	Ordinary steel	Total
1966:				
April	421,482	482,482	812,156	930,696
May	336,728	399,410	723,748	846,296
June	358,765	417,494	688,926	801,434
July	411,864	471,283	752,401	870,180
August	323,870	386,222	660,101	792,875
September	420,417	485,696	756,772	885,367
October	290,958	347,058	680,254	797,119
November	280,262	332,111	668,575	776,494
December	362,187	427,019	780,218	916,577
Total	3,206,533	3,748,775	6,523,151	7,617,038
1967: January (preliminary)			473,056	497,208

Source: Japan Iron and Steel Federation.

CARTELS FENCE IN EUROPEAN STEEL [1]

FRENCH AND GERMAN PRODUCERS ARE FORMING BLOCS TO REGULATE COMPETITION AND FEND OFF U.S. GIANTS—TREND IS AN OUTGROWTH OF NEW NATIONALISM THAT THREATENS ECONOMIC UNITY

Europe's cartels, those blocs of big business bent on regulating production, prices, and markets, are reappearing. They aren't quite the same as the prewar ones, but they have the same basic aim—limiting competition.

The trend is becoming increasingly evident:

Two weeks ago, the German steel industry announced that 31 steel producers would group themselves into four marketing cartels. Competition would be eliminated among the member companies of each cartel.

France already has a secret cartel operating in steel. The Government now intends to group more than 12 producers into two giant units, eliminating competition among members of each one.

[1] From Business Week, Sept. 3, 1966.

There is a similar, though less clearly defined, drift toward cartel-like operations in Itlay. Italian steel men say that a de facto steel cartel exists in that country—if only because the industry is dominated by the Government's big Finsider group. All these developments, including even the projected nationalization of Britain's steel industry, pose a threat to the economic unification of Europe. Because they are laid down along national lines, they run counter to the whole concept of a European community. They represent a resurgence of nationalism in Europe that could dilute the authority of the European Coal and Steel Community.

Concern.—The new cartels in Europe are distinct from corporate mergers, which both the Common Market and the Coal and Steel Community are trying to encourage. Combining smaller companies to form larger ones generally is accepted in Europe now as the best way to gain the economy and efficiency of larger scale production, thereby strengthening Europe's ability to compete against the American giants.

By contrast, the new trend toward cartelism involves the classic pattern of setting production quotas, fixing domestic and export prices, and imposing severe penalties on companies that violate the cartel agreements. It is reminiscent of the maneuvering that led to the establishment of the International Steel Cartel, the Entente Internationale de l'Acier, in Brussels in 1926.

The U.S. steel industry is so concerned about the effect on international markets that earlier this year it commissioned a private, independent study of the whole world steel situation. The U.S. delegation to the Kennedy Round of tariff talks in Geneva also is greatly concerned. It has been quizzing the U.S. industry regarding the impact that the new resurgence of cartelism may have on the United States.

The trend toward national steel cartels is gathering steam now because the world's steel industry is in serious trouble. The postwar race to expand production has outdistanced consumption; world markets are glutted with the largest steel surplus in history. Most of it is moving in international trade at cutrate prices which sometimes fall below the cost of production (Business Week, June 4, 1966, p. 58).

I. French plan

Dividing up world trade by secret agreements to reduce competition is one solution to the steel glut. Last fall, reportedly, a group of European and Japanese steel executives met secretly in Zurich, Switzerland, and agreed that Japan would be allowed to become the No. 1 steel exporter to the United States. Producers in Europe, while continuing to export to the United States, would not attempt to crowd the Japanese out of their favored position in that market. In return, Japan agreed to stay out of the European market.

The secret French steel cartel, however, is perhaps a better example of European response to the steel problem. In a sense, it is nothing new. French steel executives for years have met regularly to discuss their companies' operations, usually in the offices of the French steel association, the Chambre Syndicale de la Siderurgie, at 5 Rue de Madrid, in Paris. These meetings are dominated by the chief executive officers of leading producers.

Secrecy.—Once a month, they work out company quotas on production, markets, and prices for both domestic and export production. No records are kept of their discussions or decisions. The meetings are, of course, completely secret; even the fact that they have taken place never has been publicly admitted.

Until recently, the Chambre Syndicale has been exclusive intermediary and arbiter within the French steel industry. It has been a collecting house for all technical data relating to steel companies' operations. The Chambre employs more than 200 persons and has powerful committees for supply, marketing, domestic and foreign sales, investment, and energy.

Enforcement.—Penalties for violating the quotas and price levels have varied during the last few years, but they are of critical importance to the existence of a cartel. It is only by the threat of penalties, and its ability to apply them, that the French cartel can enforce its decisions.

Some penalties have been ineffective, because they relied on voluntary compliance. One of these stated that if an "offending" company's orders exceeded its quotas, it must turn over its "surplus" orders to the cartel for assignment to other producers. Another penalty, also unsuccessful, was a requirement that any company exceeding its quota compensate the cartel at a fixed fee for each ton in excess of the quota.

Early this year, however, the French conceived a foolproof penalty system. So certain were they of its effectiveness, and so convinced were they that Europe's ailing steel industry needed a strong remedy, that they proposed it at a secret meeting of European steel producers in Brussels.

Blank check.—The meeting included steel executives from the six nations of the European Coal and Steel Community: Germany, Italy, Belgium, the Netherlands, Luxembourg, and, of course, France. These also are allied in an informal organization known as the Brussels Convention, which has a president and a secretary but, naturally, no records.

The French proposed that:

Production ceilings be set for the entire ECSC at roughly 95 percent of 1965 output, measured in liquid steel, with separate quotas for domestic, intracommunity, and export production.

Minimum price levels be established for all three categories of production.

A penalty system for violation of the quotas and price levels be built into the agreement. Each producer would deposit with his national steel association a blank check, made out to the association. If the producer broke the agreement, an amount would be written into the check and the check deposited as a "fine" against the offender.

The French proposal was rejected by the other European producers as a violation of the 1951 Treaty of Paris, which established the European Coal and Steel Community. The French then went home and put at least part of the proposal into effect in their own country. There are conflicting reports as to whether the "blank check" penalty is in operation. A sampling of highly qualified steel sources in Paris supports the view that is has been and probably still is. However, as far as anyone in a position to know says, no company's blank check ever has been cashed.

Quid pro quo.—Strong as it is, the French steel cartel doesn't think it can solve the French industry's problems on its own. Two years ago, the Chambre Syndicale asked the Government to help it finance modernization. Out of their joint talks emerged plans for a structural reorganization of the French steel industry that goes far beyond the quota, price, and penalty system of the French cartel.

With the industry facing declining sales, falling prices, and over-capacity, the Government was eager to help. But it was also eager to rationalize the scattered, splintered industry. Last July 28, it came up with a quid pro quo answer. In exchange for $600 million in Government loans at 3 to 4 percent interest, plus authorization for the industry to raise another $600 million on the open bond market, France's dozen or so major steel producers will be reorganized into two geographical groups. One will be in the north, the other in the east.

Details of how existing companies will be fitted into the two new groups still are being worked out. But each giant will have a fixed share of the market, which means that there will be no completely free competition between them. Riding herd over the new arrangement will be an all-powerful steel board to be formed later this year from members of the government's steel planning office, the Chambre Syndicale and the individual companies.

Breakdown.—It is assumed that the northern group will consist of the recently merged Usinor-Lorraine Escaut companies which will control around 30 percent of the nation's output. Other companies, including Sollac, Mosellane, and Neuves-Maison, are expected to gravitate toward an eastern group headed by De Wendel and Sidelor, with about 40 percent of the market. The remaining 30 percent will be scattered among specialty steel producers such as Ugine and Schneider.

The significance of the new French plan lies in the fact that individual steel companies will have less to say in the running of the French steel business. Conversely, the prestige and influence of both the Chambre Syndicale and the Government will become greater.

II. German control

The German steel industry's plan for regrouping 31 steel companies into four marketing cartels is similar to the French plan, except that it is the industry's own idea. No Government participation is involved.

If approved by the High Authority of the Coal and Steel Community in October, the four cartels would come into existence as corporate entities early next year. They would group the sales functions of the 31 producers geographically into a Cartel North, a Cartel East and a Cartel West in the Ruhr, and a Cartel South in the Saar.

In addition to the marketing functions, the four cartels would also determine the investment policies of their members and set areas of specialization and rationalization.

Similarity.—On the surface, there is economic justification for concentration in the ailing German steel industry. Since 1960 the labor cost per ton of German steel has gone up 44 percent, while profits have declined 11 percent. Overpriced

German coal, supported by Government subsidies, also is to blame for soaring costs of German steel.

But the German plan contains much of what the French proposed at Brussels. Among the still-secret details:

The marketing cartels will control all production of their members.

Production quotas will be allocated by each cartel to its members, based on an agreed percentage of the expected annual sales of the group. If a company exceeds its quota, it will be fined double the list price of each ton overproduced.

If a company breaks the line on prices published by the group and approved by the Coal and Steel Community, it also will be fined.

Cartel members will have one basic vote, plus one vote for each 1,000 tons of steel produced. The big companies thus will be able to outvote the smaller ones.

The claimed virtue of the German steel industry's plan is that the cartels would compete among themselves. But there are skeptics, both in and out of Germany, who wonder just how much competition will remain. If 31 competing companies can unanimously, and simultaneously, agree to reduce the marketplace to four competitors, they reason, there is little to prevent the four "competitors" from reaching additional agreement about the degree of competition. The influential newspaper Frankfurter Allgemeine last week made a sharp attack on the scheme, saying it could spell trouble for the whole economy.

III. How strong is ECSC

All of these do-it-yourself reorganizations of national steel industries in Europe raise important questions about the role of the Coal and Steel Community's High Authority. A Belgian steel executive, for example, is concerned that the influence of the whole ECSC is being diluted. "How much initiative and supranationalism is left in the High Authority if each country tries to go it alone?" he asks.

Open and closed.—Under the Treaty of Paris, the High Authority should determine the legality of the proposed regroupings, for example. The German steel industry says it will submit its plan to the High Authority next month. Last week, an official of the Authority in Luxembourg said that in his opinion the proposed German sales cartels aren't in themselves illegal. But production controls definitely would be, he said emphatically.

The French steel industry, on the other hand, has concealed its tightly controlled cartel from the High Authority. Even the new French Government plan for regrouping the industry is going into effect without the explicit approval of the ECSC. Ardhitects of the French plan kept the High Authority informed throughout discussion of it; and ECSC approval may be needed on specific implementation of it. However, the High Authority already has declared that it regards the French plan as not falling under the anticartel provisions of the Treaty of Paris.

In the meantime, it is clear that the national steel associations in France and Germany, the chief instruments for the formation of the European cartels in the 1920's and 1930's, are gaining influence in their industries, and that individual companies are the losers. In France, the Chambre Syndicale and the Government are now united in a strong alliance.

No surprise.—In any event, developments in European steel come as no great shock to U.S. steel companies. One U.S. executive says he is well aware of what has been going on.

"I've been invited to meetings of the 'club' in Germany and Belgium any number of times," he said. "I turn them all down. We learned to live with the Justice Department a long time ago."

But the U.S. steel industry is nonetheless concerned, and so is Congress. Senator Philip A. Hart, Democrat, of Michigan, chairman of the Senate Antitrust Subcommittee, this week proposed the establishment of an international anticartel agency to "ride herd" on antitrust problems.

During 2 days of subcommittee hearings in Washington, Hart urged the Government to endorse the idea of the next meeting of the Restrictive Practices Committee of the Organization for Economic Cooperation and Development (OECD). The proposed agency would have only investigative, not enforcement, powers.

Assistant Secretary of State for Economic Affairs, Anthony M. Solomon, said the State Department would give Hart's proposal serious consideration.

Although opinions obviously differ as to the meaning of this rebirth of cartel-like associations, the possibility certainly cannot be ruled out that they might follow historical precedence by returning to their prewar practices: to hold up domestic prices by alloting sales quotas to their members. With their financial position thereby improved, they could afford even better than today to export into the world market at a lower price.

APPENDIX D

TABLE D-1.—*U.S. foreign trade in selected raw materials and in steel products, year 1965, by principal steel exporting countries*

[Value in thousands of dollars]

	All countries	Japan	Canada	Belgium	West Germany	France	United Kingdom	Sweden	Italy	All other countries
U.S. imports:										
Iron ore and concentrates	443,807		264,378			3		1,108		178,318
Iron and steel scrap	8,236	23	6,768		762	312	56	16	1	298
Manganese ore and concentrates	110,281	14								110,267
Coal and coke	3,148	1	2,960		176					11
Subtotal of above	565,472	38	274,106		938	315	56	1,124	1	288,894
Iron and steel products (including pig iron, ferroalloys, and rough forgings and castings)	1,231,404	497,685	117,842	158,555	126,464	95,414	89,296	34,253	30,476	81,419
Grand total, above imports	1,796,876	497,723	391,948	158,555	127,402	95,729	89,352	35,377	30,477	370,313
U.S. exports:										
Iron ore and concentrates	80,418	25,425	54,399		553					41
Iron and steel scrap	197,459	73,991	33,903		752	140	1,962	1,994	20,651	64,066
Manganese ore and concentrates	1,387		733							654
Coal and coke	493,110	76,586	141,223	21,406	43,748	20,429	72	8,522	83,791	97,333
Subtotal of above	772,374	176,002	230,258	21,406	45,053	20,569	2,034	10,516	104,442	162,094
Iron and steel products (including pig iron, ferroalloys, and rough forgings and castings	628,614	4,325	202,589	12,310	12,804	5,397	19,937	3,858	9,698	357,696
Grand total, above exports	1,400,988	180,327	432,847	33,716	57,857	25,966	21,971	14,374	114,140	519,790
U.S. trade balance (plus or minus):										
Raw materials shown	+206,902	+175,964	−43,848	+21,406	+44,115	+20,254	+1,978	+9,392	+104,441	−126,800
Iron and steel products	−602,790	−493,360	+84,747	−146,245	−113,660	−90,017	−69,359	−30,395	−20,778	+276,277
Combined total	−395,888	−317,396	+40,899	−124,839	−69,545	−69,763	−67,381	−21,003	+83,663	+149,477

Source: U.S. Department of Commerce, Bureau of Census, Repts. FT-125 and FT-410 including all iron ore and concentrates, group code 281; all iron and steel scrap, group code 282; all manganese ore and concentrates, subcode 283.7 of group code 283; regular coal and coke, imports: Subcodes 321.4 and 321.8 of group code 321; exports: Subcodes 321.3 and 321.8 of group code 321; iron and steel products (including pig iron, ferroalloys and rough forgings and castings) division code 67.

Comments on Tables 31 and 34 (see Text)

The AISI calculated tables 31 and 34 at the request of the committee staff, but submitted the following comments in a letter dated June 23, 1967: "We realize that your purpose in including indirect steel trade as well as raw materials in this analysis stems from the arguments raised by importers. We would like to express again, however, our reservations about the validity of this approach * * * particularly with regard to the inclusion of raw materials in the analysis. The basis of our concern is explained in the following extract from the original report on the trade balance in steelmaking raw materials which AISI sent to you on March 23:

In order to understand the effect of imports and exports of steel products on the national balance of trade and payments, it is necessary to consider the appropriate trade elements. In the context of the steel import problem, the most relevant trade factors are the inflow and outflow of the primary products of the steel industry itself: those which are customarily referred to as "steel mill products." The production and sale of these products are the reason for the industry's existence in the United States.

To bring into consideration the international trade in the steel industry's raw material inputs such as iron ore and metallurgical quality coal is to confuse the discussion of the steel import situation, since such materials are not products of the industry but inputs to the production process. This is also a valid objection to consideration of trade in ferrous scrap, another input to the steel industry, even though it is true that in a remote sense, such scrap represents past output of the industry. Likewise it is irrelevant to consider exports and imports of end-use items made of steel—the so-called indirect steel trade—in attempting to isolate the steel industry's international trade position and its effect on the national trade and payments position. The factors that determine whether an automobile will be exported or imported are very numerous and complex; but the relative cost and quality of steel—which typically accounts for about one-tenth of the car's value—are not foremost among them.

As to the outlook for the U.S. balance of trade in steel making raw materials, the AISI had these pessimistic comments:

From the standpoint of the raw materials shown, the outlook is for a continuing decline in the overall favorable balance of trade. In iron and manganese ores, the United States is a large net importer on balance and this situation will continue.

On scrap, where the United States has been a large net exporter, there has been a decline in exports since 1964 and this is expected to continue. The trend to increased usage of BOF furnaces for melting steel abroad decreases the proportion of scrap utilized. In addition, the increase in "per capita steel usage" throughout the world has increased scrap availability and resulted in organized local collection, processing, and usage of scrap in many countries where this previously was not feasible.

With respect to coal and coke, U.S. exports in the period shown have been relatively stable in spite of increased steel production in the purchasing countries. This is due to the decreased usage of coal and coke per ton of steel produced through technological advances, but even more importantly, to the development of other world sources of coking coal, particularly in Australia and Africa. It is unlikely that there will be any significant increase in U.S. exports of these materials, particularly with apparent agreements within the ECSC to subsidize local production. There may be an actual long-term decrease.

TABLE D-2.—*Distribution of steel exports by country*

[In thousands of net tons]

Destination	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Canada	1,619	1,010	611	580	406	317	358	714	592	417
Total, Latin America	1,446	765	431	641	424	329	333	431	578	514
Argentina	100	68	52	113	75	36	25	133	264	162
Total, Europe	890	446	213	1,009	313	265	277	865	401	182
Total, ECSC	293	227	121	363	192	136	137	261	89	98
United Kingdom	341	106	30	360	14	12	18	234	22	21
Total, Asia	981	350	203	549	749	999	1,164	1,318	806	489
India	59	25	7	151	131	241	302	230	181	43
Pakistan	------	------	14	16	197	418	513	836	395	165
All other	241	116	50	200	98	102	91	107	119	122
Grand total	5,177	2,687	1,508	2,979	1,990	2,012	2,223	3,435	2,496	1,724
	Percent									
Canada	31.3	37.6	40.5	19.4	20.4	15.8	16.1	20.8	23.7	24.2
Total, Latin America	27.9	28.5	28.6	21.5	21.3	16.3	15.0	12.5	23.2	29.8
Argentina	1.9	2.5	3.5	3.8	3.7	1.8	1.2	3.9	10.6	9.4
Total, Europe	17.2	16.6	14.1	33.9	15.7	13.2	12.5	25.2	16.1	10.6
Total, ECSC	5.7	8.4	8.1	12.2	9.7	6.8	6.2	7.6	3.6	5.7
United Kingdom	6.6	4.0	2.0	12.1	.7	.6	.8	6.8	.9	1.2
Total, Asia	18.9	13.0	13.4	18.4	37.6	49.6	52.3	38.4	32.3	28.3
India	1.1	.9	.5	5.1	6.6	11.9	13.6	6.7	7.3	2.5
Pakistan	0	0	.9	.6	9.9	20.8	23.1	24.3	15.8	9.6
All other	4.7	4.3	3.2	6.7	4.9	5.1	4.1	3.1	4.8	7.1

Source: American Iron & Steel Institute.

TABLE D-3.—*U.S. imports of steel mill products by category, 1957–66*

[In thousands of net tons]

Steel mill products	1957		1958		1959		1960		1961	
	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total
Semifinished products	62	5.4	199	11.7	540	12.4	477	14.2	631	19.9
Shapes and plates	291	25.2	171	10.0	798	18.3	529	15.8	330	10.4
Rails and accessories	5	.5	5	.2	10	.2	10	.3	23	.7
Bars and tool steel	263	22.7	649	38.0	1,339	30.6	840	25.0	906	28.7
Pipe and tubing	191	16.5	200	11.7	533	12.2	480	14.3	521	16.5
Wire and wire products	301	26.1	432	25.3	703	16.1	547	16.3	562	17.8
Tin mill products	-------	0	-------	0	67	1.5	39	1.2	19	.6
Sheet and strip	41	3.6	50	2.9	386	8.8	436	13.0	171	5.4
Total	1,154	100.0	1,707	100.0	4,396	100.0	3,358	100.0	3,163	100.0

Steel mill products	1962		1963		1964		1965		1966	
Semifinished products	819	20.0	1,066	19.6	1,298	20.2	1,566	15.1	1,374	12.8
Shapes and plates	525	12.8	833	15.3	1,110	17.2	1,703	16.4	1,898	17.7
Rails and accessories	12	.3	12	.2	14	.2	24	.2	26	.2
Bars and tool steel	995	24.3	1,081	19.8	1,174	18.2	1,641	15.8	1,718	16.0
Pipe and tubing	665	16.0	778	14.3	790	12.3	930	9.0	1,058	9.8
Wire and wire products	665	16.0	755	13.9	809	12.6	866	8.3	862	8.0
Tin mill products	56	1.4	94	1.7	88	1.4	145	1.4	134	1.2
Sheet and strip	383	9.4	827	15.2	1,167	18.1	3,507	33.8	3,683	34.3
Total	4,100	100.0	5,446	100.0	6,450	100.0	10,382	100.0	10,753	100.0

Source: U.S. Department of Commerce.

TABLE D-4.—*Imports of steel mill products as percent of domestic markets 1957-66*

[In percent [1]]

Steel mill product	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Semifinished products	1.9	7.9	16.0	15.1	21.1	24.8	27.4	28.2	29.0	28.5
Shapes and plates	1.8	1.8	7.4	4.6	3.1	4.7	6.4	7.2	9.5	10.8
Rails and accessories	.2	.6	.9	.9	3.1	1.3	1.2	1.0	1.6	1.5
Bars and tool steel	2.3	7.0	11.3	7.4	8.3	8.4	8.5	8.3	10.3	10.6
Pipe and tubing	1.9	3.2	6.4	6.5	7.1	8.7	10.3	9.1	9.9	10.6
Wire and wire products	8.3	12.5	17.4	15.7	15.7	17.6	19.9	21.0	20.1	20.0
Tin mill products	------	------	1.2	.7	.3	1.0	1.7	1.5	2.2	2.4
Sheets and strip	.2	.2	1.4	1.6	.7	1.4	2.6	3.4	8.9	9.5
Total	1.4	2.8	6.3	4.7	4.8	5.8	7.7	7.6	11.2	11.9

[1] Based on data in tons.

Source: U.S. Department of Commerce.

TABLE D-5.—*U.S. exports of steel mill products by category, 1957-66*

[In thousands of net tons]

Steel mill products	1957		1958		1959		1960		1961	
	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total
Semifinished products	721	13.5	124	4.4	35	2.1	129	4.3	185	9.3
Shapes and plates	1,075	20.1	554	19.6	306	18.2	386	13.0	320	16.1
Rails and accessories	235	4.4	165	5.8	82	4.9	134	4.5	109	5.5
Bars and tool steel	215	4.0	123	4.4	68	4.0	85	2.8	91	4.6
Pipe and tubing	1,185	22.2	623	22.1	266	15.9	195	6.6	211	10.6
Wire and wire products	39	0.7	35	1.2	26	1.5	29	1.0	26	1.3
Tin mill products	802	15.0	495	17.5	460	27.4	686	23.0	481	24.2
Sheet and strip	1,075	20.1	703	24.9	435	26.0	1,333	44.8	566	28.5
Total	5,347	100.0	2,822	100.0	1,678	100.0	2,977	100.0	1,989	100.0

Steel mill products	1962		1963		1964		1965		1966	
Semifinished products	281	14.0	331	15.2	920	28.0	696	27.9	352	20.4
Shapes and plates	279	13.8	301	13.8	426	13.0	361	14.5	198	11.5
Rails and accessories	117	5.8	81	3.7	58	1.8	53	2.1	46	2.7
Bars and tool steel	103	5.1	118	5.4	175	5.3	170	6.8	106	6.1
Pipe and tubing	192	9.5	252	11.6	286	8.7	240	9.6	266	15.4
Wire and wire products	47	2.3	76	3.5	54	1.6	45	1.8	39	2.3
Tin mill products	394	19.6	413	19.0	411	12.5	306	12.3	325	18.9
Sheet and strip	600	29.8	608	27.9	950	29.0	625	25.0	392	22.7
Total	2,013	100.0	2,180	100.0	3,280	100.0	2,496	100.0	1,724	100.0

Source: U.S. Department of Commerce.

TABLE D-6.—*U.S. imports—Steel mill products by countries of origin*

	1966		1965		1964		1963		1962	
	Net tons	Percent	Net tons	Percent	Net tons	Percent	Net tons	Percent	Net tons	Percent
European Coal and Steel Community	3,840,958	35.7	4,191,327	40.4	2,584,543	40.1	2,245,278	41.2	2,086,513	50.9
Belgium-Luxembourg	1,612,256	15.0	1,751,068	16.9	1,384,014	21.5	1,279,326	23.5	1,246,367	30.4
France	764,417	7.1	858,238	3.3	440,305	6.8	358,805	6.6	299,247	7.3
West Germany	1,220,180	11.3	1,178,293	11.3	676,352	10.5	539,438	9.9	460,343	11.2
Netherlands	73,968	.7	132,712	1.3	48,735	.8	47,417	.8	51,296	1.3
Italy	170,117	1.6	271,016	2.6	35,137	.5	20,292	.4	29,260	.7
United Kingdom	748,410	7.0	720,148	6.9	285,393	4.4	349,431	6.4	249,954	6.1
Norway	14,755	.1	27,520	.3	23,140	.4	15,311	.3	13,303	.3
Sweden	75,282	.7	65,118	.6	66,018	1.0	56,969	1.0	54,783	1.3
Yugoslavia	10,421	.1	16,230	.2	16,339	.3	23,684	.4	24,113	.6
Poland	86,538	.8	83,719	.8	63,434	1.0	11,648	.2	5,461	.1
Canada	691,671	6.4	644,393	6.2	692,076	10.7	582,932	10.7	367,168	9.0
Mexico	118,124	1.1	123,599	1.2	97,403	1.5	128,530	2.4	27,565	.7
Argentina	27,252	.3	18,142	.2	60,782	1.0	44,879	.8	104	----------
Republic of South Africa	36,509	.3	28	----------	26,431	.4	112,885	2.1	46,151	1.1
Japan	4,850,997	45.1	4,417,641	42.5	2,446,373	38.0	1,802,552	33.1	1,070,744	26.1
Australia	147,002	1.4	28,578	.3	34,425	.5	38,142	.7	113,574	2.8
Other	105,103	1.0	46,578	.4	43,278	.7	34,085	.7	40,606	1.0
Total	10,753,022	100.0	10,383,021	100.0	6,439,635	100.0	5,446,326	100.0	4,100,039	100.0

Source: Department of Commerce, Census Bureau.

TABLE D-7.—*The U.S. balance of payments*

[Annual data in billions of dollars]

Year	Goods and services: Exports: Goods	Goods and services: Exports: Services	Goods and services: Imports: Goods	Goods and services: Imports: Services: Total	Goods and services: Imports: Services: Military	Private capital: Long-term (net)	Private capital: Short-term (net)	Government grants and loans (net)	Balance: Goods (trade balance)	Balance: Goods and services	Balance: Liquidity	Balance: Official settlements	Gold stock (end of period)
1947	16.0	3.7	6.0	2.2	0.5	−1.2	−0.2	−6.2	10.0	11.5	+4.2	----------	22.87
1948	13.2	3.6	7.6	2.8	.8	−1.1	−.1	−4.9	5.6	6.4	+.8	----------	24.40
1949	12.1	3.6	6.9	2.7	.6	−.7	+.2	−5.8	5.3	6.1	+.1	----------	24.56
1950	10.1	3.7	9.1	2.9	.6	−1.0	−.1	−3.7	1.0	1.8	−3.5	----------	22.82
1951	14.1	4.6	11.2	3.9	1.3	−.4	−.1	−3.3	2.9	3.7	0	----------	22.87
1952	13.3	4.7	10.8	4.9	2.1	−1.1	−.1	−2.5	2.5	2.2	−1.2	----------	23.25
1953	12.3	4.7	11.0	5.6	2.6	−.4	+.2	−2.2	1.3	.4	−2.2	----------	22.09
1954	12.8	5.0	10.4	5.6	2.6	−.7	−.7	−1.7	2.4	1.8	−1.5	----------	21.79
1955	14.3	5.5	11.5	6.3	2.9	−.7	−.3	−2.4	2.8	2.0	−1.2	----------	21.75
1956	17.4	6.2	12.8	6.8	2.9	−2.0	−.5	−2.5	4.6	4.0	−1.0	----------	22.06
1957	19.4	7.1	13.3	7.5	3.2	−2.9	−.2	−2.7	6.1	5.7	+.6	----------	22.86
1958	16.3	6.8	13.0	7.9	3.4	−2.5	−.2	−2.8	3.3	2.2	−3.4	----------	20.58
1959	16.3	7.2	15.3	8.0	3.1	−1.6	−.1	−2.2	1.0	.1	−3.9	----------	19.51
1960	19.5	7.8	14.7	8.6	3.1	−2.1	−1.4	−3.0	4.8	4.0	−3.9	−3.4	17.80
1961	20.0	8.7	14.5	8.6	3.0	−2.1	1.4	−3.0	5.4	5.5	−2.4	−1.3	16.95
1962	20.6	9.7	16.2	9.1	3.1	−1.7	−.7	−3.3	4.4	5.0	−2.2	−2.7	16.06
1963	22.1	10.4	17.0	9.6	2.9	−3.0	−.8	−3.8	5.1	5.9	−2.7	−2.0	15.60
1964	25.3	11.8	18.6	10.0	2.9	−3.8	−2.0	−3.8	6.7	8.5	−2.8	−1.5	15.47
1965	26.2	12.9	21.5	10.7	2.9	−4.4	+.9	−3.7	4.8	6.9	−1.3	−1.3	14.06
1966	29.2	13.9	25.5	12.4	3.7	−1.5	−.1	−3.8	3.7	5.1	−1.4	+.2	13.23

Source: U.S. Department of Commerce.

TABLE D-8.—*Liquidity balance in balance of payments and balance in steel trade*

[In billions of dollars]

Year	Balance of payments liquidity	Steel trade balance	Steel trade balance including end-use items and raw materials
1966	−1.4	−.899	−.499
1965	−1.3	−.842	−.324
1964	−2.8	−.314	+.327
1963	−2.7	−.304	+.352
1962	−2.2	−.143	
1961	−2.4	.041	
1960	−3.9	.159	
1959	−3.9	−.154	
1958	−3.4	.481	
1957	+.6	.742	

TABLE D-9.—*U.S. imports of steel, by major points of entry, 1965-66*

	Thousands of tons, 1965	Percent of total imports	Thousands of tons, 1966	Percent of tons, 1966
North Atlantic coast	1,708	16.4	1,573	14.6
New York	764	7.3	667	6.3
Philadelphia	645	6.2	571	5.3
Massachusetts	173	1.7	181	1.7
Connecticut	126	1.2	144	1.3
South Atlantic coast	1,307	12.6	1,281	11.9
Florida	493	4.7	443	4.1
Maryland	431	4.1	406	3.8
North Carolina and South Carolina	193	1.9	266	2.5
Virginia	101	1.0	84	.8
Georgia	89	.9	82	.7
Gulf coast	2,109	20.3	2,145	20.0
Galveston	1,094	10.5	1,305	12.2
New Orleans	660	6.4	648	6.0
Mobile	221	2.1	192	1.8
Pacific coast	1,704	16.4	1,890	17.6
Los Angeles	1,068	10.2	1,178	11.0
Oregon and Washington	347	3.3	399	3.7
San Francisco	291	2.8	313	2.9
Canadian border and seaway	3,307	31.9	3,563	33.1
Michigan	1,638	15.8	1,581	14.7
Chicago	750	7.2	1,033	9.6
Ohio	567	5.5	611	5.7
Buffalo	192	1.8	144	1.3
All other	160	1.5	194	1.8
Offshore United States [1]	248	2.4	300	2.8
Total imports	10,383	100.0	10,753	100.0

[1] Includes Puerto Rico, Hawaii, and Alaska.

Source: AISI.

TABLE D-10.—*Steel ingot production, 1947–65, U.S. and major steel producing centers*

	Millions of tons									
	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
United States	84.89	88.64	77.98	96.84	105.20	93.17	111.61	88.31	117.04	115.22
4th district	40.19	41.27	35.36	43.95	48.02	42.35	49.14	36.47	49.35	48.53
Other than 4th district	44.60	47.09	42.46	52.94	57.18	50.71	62.37	51.95	67.64	66.41
Chicago	17.16	17.75	15.60	19.12	20.48	17.55	22.04	18.92	23.60	22.63
Pittsburgh	22.30	22.94	19.78	24.20	26.30	23.36	26.72	19.99	26.30	25.67
Northeast coast	10.31	11.01	9.75	12.12	13.38	11.56	14.35	11.70	16.17	16.44
Youngstown	11.17	11.52	9.40	12.05	13.29	11.43	12.85	8.69	12.67	12.32
Detroit	3.12	3.45	3.34	4.65	4.81	4.60	5.14	4.10	6.02	6.24
Western	4.33	4.69	4.27	5.43	6.16	5.73	6.64	5.36	6.46	6.64
Southern	4.01	4.35	3.96	4.92	5.03	4.58	5.88	5.20	6.22	5.43
Buffalo	4.21	4.37	4.06	4.87	5.38	4.82	6.04	4.77	6.55	6.29
Cleveland	4.01	4.06	3.67	4.59	4.92	4.49	5.99	4.68	6.08	5.75
Cincinnati	2.71	2.75	2.52	3.11	3.50	3.07	3.58	3.11	4.29	4.80
St. Louis	1.45	1.48	1.48	1.84	1.95	1.86	2.2	1.89	2.63	2.74

	Millions of tons									Average annual rates of growth (percent)
	1957	1958	1959	1960	1961	1962	1963	1964	1965	
United States	112.72	85.26	93.45	99.28	98.01	98.33	109.26	127.08	131.19	+1.5
4th district	45.09	32.56	38.34	37.85	36.43	37.07	41.24	38.89	50.29	+.1
Other than 4th district	67.53	52.76	55.13	61.18	61.63	61.37	67.97	77.49	80.89	+2.5
Chicago	22.34	18.34	17.94	20.68	20.68	21.07	23.02	25.94	26.38	+1.8
Pittsburgh	24.83	18.31	19.99	19.99	19.15	19.57	21.67	25.25	25.97	−.3
Northeast coast	16.30	12.40	13.10	14.35	14.07	13.65	14.77	17.69	18.20	+2.4
Youngstown	10.46	7.09	9.04	8.33	7.80	7.98	8.93	10.90	11.35	−1.5
Detroit	6.24	4.54	5.63	6.51	6.67	7.11	8.42	9.41	9.66	+5.6
Western	7.01	5.73	5.55	6.16	6.77	6.10	7.01	7.80	8.41	+2.6
Southern	6.67	5.09	5.20	5.65	5.71	5.71	6.22	7.23	7.70	+2.7
Buffalo	6.45	4.06	4.72	5.18	4.72	4.77	5.43	6.04	7.11	+1.4
Cleveland	5.79	3.86	4.83	5.55	5.12	5.36	5.84	7.19	6.73	+2.4
Cincinnati	4.01	3.30	4.48	3.97	4.36	4.17	4.80	5.54	6.24	+4.0
St. Louis	2.63	2.60	2.99	2.66	3.01	2.96	3.10	3.37	3.42	+4.9

Sources: American Iron & Steel Institute and Federal Reserve Bank of Cleveland.

TABLE D-11.—*Shares of total steel ingot output produced by major steel centers, 1947–65*

[In percent]

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
4th district	47.4	46.7	45.4	45.4	45.6	45.5	44.1	41.2	42.2	42.2	40.0	38.2	41.0	38.2	37.2	37.7	37.8	38.7	38.3
Other than 4th district	52.6	52.3	54.6	54.6	54.4	54.5	55.9	58.8	57.8	57.8	60.0	61.8	59.0	61.8	62.8	62.3	62.2	61.3	61.7
Chicago	20.2	20.1	20.1	19.7	19.5	18.9	19.7	21.4	20.2	19.7	19.8	21.5	19.2	20.9	21.1	21.4	21.1	20.5	20.1
Pittsburgh	26.3	26.0	25.4	25.0	25.0	25.1	24.0	22.6	22.5	22.3	22.0	21.5	21.3	20.2	19.5	19.9	19.9	20.0	19.8
Northeast coast	12.1	12.5	12.5	12.5	12.7	12.4	12.9	13.3	13.8	14.3	14.5	14.5	14.0	14.5	14.3	13.9	13.5	14.0	13.9
Youngstown	13.2	13.0	12.1	12.5	12.6	12.3	11.5	9.8	10.8	10.7	9.3	8.3	9.7	8.4	8.0	8.1	8.2	8.6	8.6
Detroit	3.7	3.9	4.3	4.8	4.6	4.9	4.6	4.6	5.1	5.4	5.5	5.3	6.0	6.6	6.8	7.2	7.7	7.4	7.4
Western	5.1	5.3	5.5	5.6	5.9	6.2	6.0	6.1	5.5	5.8	6.2	6.7	5.9	6.2	6.9	6.2	6.4	6.2	6.4
Southern	4.7	4.9	5.1	5.1	4.8	4.9	5.3	5.9	5.3	4.7	5.9	6.0	5.6	5.7	5.8	5.8	5.7	5.7	5.9
Buffalo	5.0	4.9	5.2	5.0	5.1	5.2	5.4	5.4	5.6	5.5	5.7	4.8	5.1	5.2	4.8	4.8	5.0	4.8	5.4
Cleveland	4.7	4.6	4.7	4.7	4.7	4.8	5.4	5.3	5.2	5.0	5.1	4.5	5.2	5.6	5.2	5.5	5.3	5.7	5.1
Cincinnati	3.2	3.1	3.2	3.2	3.3	3.3	3.2	3.5	3.7	4.2	3.6	3.9	4.8	4.0	4.5	4.2	4.4	4.4	4.8
St. Louis	1.7	1.7	1.9	1.9	1.8	2.0	2.0	2.1	2.2	2.4	2.4	3.1	3.2	2.7	3.1	3.0	2.8	2.7	2.6

Sources: American Iron & Steel Institute and Federal Reserve Bank of Cleveland.

APPENDIX E

TABLE E–1.—*Comparison of major industries: sales, 1947–65*

[Dollar amounts in billions]

Industry	1947	1965	Index	
			1947	1965
Primary iron and steel	$9.8	$24.5	100	250
Food and kindred products	31.0	69.1	100	223
Motor vehicles and equipment	10.7	48.3	100	451
Petroleum refining and related industries	12.2	41.4	100	339
Electrical machinery and equipment	7.0	40.5	100	579
Chemicals and allied products	10.9	40.1	100	368
Transportation equipment, except motor vehicles	3.4	21.0	100	618
Textile mill products	9.0	18.0	100	200
Paper and allied products	5.4	15.2	100	281
Primary nonferrous metals	3.8	13.3	100	350
Stone, clay, and glass products	3.7	12.9	100	349
Rubber and miscellaneous plastic products	3.4	12.5	100	368

Source: Securities and Exchange Commission and Federal Trade Commission.

TABLE E–2.—*Federal income taxes, 1947–65*

[Dollar amounts in billions]

Industry	1947	1965	Index	
			1947	1965
Primary iron and steel	$0.42	$1.01	100	240
Food and kindred products	.91	1.54	100	169
Motor vehicles and equipment	.50	3.04	100	608
Petroleum refining and related industries	.45	.78	100	173
Electrical machinery and equipment	.29	1.64	100	566
Chemicals and allied products	.59	2.38	100	403
Transportation equipment, except motor vehicles	.09	.62	100	689
Textile mill products	.49	.58	100	118
Paper and allied products	.36	.52	100	144
Primary nonferrous metals	.22	.60	100	273
Stone, clay, and glass products	.14	.55	100	289
Rubber and miscellaneous plastic products	.15	.38	100	253

Source: Securities and Exchange Commission and Federal Trade Commission.

TABLE E-3.—*Cash dividends, 1947–65*

[Dollar amounts in billions]

Industry	1947	1965	Index	
			1947	1965
Primary iron and steel	$0.24	$0.58	100	242
Food and kindred products	.49	.84	100	171
Motor vehicles and equipment	.24	1.96	100	817
Petroleum refining and related industries	.42	2.23	100	531
Electrical machinery and equipment	.15	.78	100	520
Chemicals and allied products	.44	1.56	100	355
Transportation equipment, except motor vehicles	.08	.25	100	312
Textile mill products	.24	.20	100	83
Paper and allied products	.15	.35	100	233
Primary nonferrous metals	.19	.45	100	237
Stone, clay, and glass products	.13	.34	100	262
Rubber and miscellaneous plastic products	.08	.17	100	212

Source: Securities and Exchange Commission and Federal Trade Commission.

TABLE E-4.—*Total assets, 1947–65*

[Dollar amounts in billions]

Industry	1947	1965	Index	
			1947	1965
Primary iron and steel	$7.8	$22.9	100	294
Food and kindred products	11.8	31.2	100	264
Motor vehicles and equipment	6.1	29.6	100	485
Petroleum refining and related industries	13.0	55.4	100	426
Electrical machinery and equipment	4.2	27.3	100	650
Chemicals and allied products	8.7	35.4	100	407
Transportation equipment, except motor vehicles	3.1	12.5	100	403
Textile mill products	5.6	11.1	100	198
Paper and allied products	3.9	13.0	100	333
Primary nonferrous metals	3.6	13.3	100	369
Stone, clay, and glass products	2.9	11.4	100	393
Rubber and miscellaneous plastic products	2.0	8.4	100	420

Source: Securities and Exchange Commission and Federal Trade Commission.

TABLE E-5.—*Capital expenditures, 1947–65*

[Dollar amounts in billions]

Industry	1947	1965	Index	
			1954 [1]	1965
Primary iron and steel	$0.70	$1.71	100	244
Food and kindred products	.79	1.46	100	185
Motor vehicles and equipment	.73	1.24	100	170
Petroleum refining and related industries	.67	.60	100	90
Electrical machinery and equipment	.34	1.04	100	306
Chemicals and allied products	.93	2.52	100	271
Transportation equipment, except motor vehicles	.19	.43	100	226
Textile mill products	.23	.64	100	278
Paper and allied products	.53	1.16	100	219
Primary nonferrous metals	.16	.53	100	331
Stone, clay, and glass products	.30	.74	100	247
Rubber and miscellaneous plastic products	.13	.49	100	377

[1] Earliest census data available.

Source: Bureau of the Census.

TABLE E-6.—*Value added by manufacture, 1947-65*

[Dollar amounts billions]

Industry	1947	1965	Index 1947	Index 1965
Primary iron and steel	$4.3	$13.6	100	316
Food and kindred products	9.0	23.4	100	260
Motor vehicles and equipment	3.8	16.5	100	434
Petroleum refining and related industries	1.7	4.2	100	247
Electrical machinery and equipment	3.9	20.2	100	518
Chemicals and allied products	5.4	19.7	100	365
Transportation equipment, except motor vehicles	2.1	11.2	100	533
Textile mill products	5.3	7.5	100	142
Paper and allied products	2.9	8.4	100	290
Primary nonferrous metals	1.2	4.8	100	400
Stone, clay, and glass products	2.3	7.9	100	343
Rubber and miscellaneous plastic products	1.3	5.7	100	438

Source: Bureau of the Census.

TABLE E-7.—*Total employment, 1947-65*

Industry	1947	1965	Index 1947	Index 1965
Primary iron and steel	890,000	902,000	100	101
Food and kindred products	1,442,000	1,635,000	100	113
Motor vehicles and equipment	701,000	822,000	100	117
Petroleum refining and related industries	173,000	144,000	100	83
Electrical machinery and equipment	801,000	1,604,000	100	200
Chemicals and allied products	632,000	776,000	100	123
Transportation equipment, except motor vehicles	481,000	910,000	100	189
Textile mill products	1,233,000	892,000	100	72
Paper and allied products	450,000	606,000	100	135
Primary nonferrous metals	215,000	317,000	100	147
Stone, clay, and glass products	462,000	599,000	100	130
Rubber and miscellaneous plastic products	259,000	461,000	100	178

Source: Bureau of the Census.

TABLE E-8.—*Total payroll, 1947-65*

[Dollar amounts in billions]

Industry	1947	1965	Index 1947	Index 1965
Primary iron and steel	$2.78	$6.83	100	245
Food and kindred products	3.79	9.12	100	241
Motor vehicles and equipment	2.21	6.61	100	299
Petroleum refining and related industries	.62	1.11	100	179
Electrical machinery and equipment	2.27	10.30	100	454
Chemicals and allied products	1.91	5.57	100	292
Transportation equipment, except motor vehicles	1.51	7.01	100	464
Textile mill products	2.84	3.92	100	138
Paper and allied products	1.28	3.87	100	302
Primary nonferrous metals	.65	2.20	100	338
Stone, clay, and glass products	1.21	3.56	100	294
Rubber and miscellaneous plastic products	.78	2.80	100	359

Source: Bureau of the Census.

TABLE E-9.—*Net profit after taxes, 1947-65*

[Dollar amounts in billions]

Industry	1947	1965	Index	
			1947	1965
Primary iron and steel	$0.65	$1.40	100	215
Food and kindred products	1.31	1.90	100	145
Motor vehicles and equipment	.64	3.50	100	547
Petroleum refining and related industries	1.33	4.50	100	338
Electrical machinery and equipment	.44	1.93	100	439
Chemicals and allied products	.95	3.19	100	336
Transportation equipment, except motor vehicles	.01	.72	100	720
Textile mill products	.74	.69	100	93
Paper and allied products	.57	.75	100	132
Primary nonferrous metals	.33	.97	100	294
Stone, clay, and glass products	.30	.76	100	253
Rubber and miscellaneous plastic products	.15	.53	100	353

TABLE E-10.—*U.S. apparent steel consumption, population, GNP, per capita consumption, and GNP per capita, 1947-1966*

	Apparent steel consumption (million net tons)	Population (million)	GNP (billion 1958 dollars)	Per capita steel consumption (net tons)	Per capita GNP (1958 dollars)
1966	99.0	196.8	647.8	0.503	3,292
1965	100.6	194.6	614.4	.517	3,157
1964	87.9	192.1	580.0	.458	3,019
1963	78.8	189.4	551.0	.416	2,909
1962	72.6	186.7	529.8	.389	2,838
1961	67.3	183.8	497.2	.366	2,706
1960	71.5	180.7	487.8	.396	2,700
1959	72.1	177.8	475.9	.406	2,677
1958	58.8	174.9	447.3	.336	2,557
1957	75.7	172.0	452.5	.440	2,631
1956	80.2	168.9	446.1	.475	2,641
1955	81.6	165.9	438.0	.492	2,640
1954	61.1	163.0	407.0	.375	2,497
1953	78.9	160.2	412.8	.493	2,577
1952	65.2	157.6	395.1	.414	2,507
1951	78.0	154.9	383.4	.504	2,475
1950	70.6	152.3	355.3	.464	2,333
1949	54.1	149.8	324.1	.361	2,164
1948	62.2	147.2	323.7	.423	2,199
1947	57.2	144.7	309.9	.395	2,142

Source: Apparent consumption, AISI; population, Statistical Abstracts of the United States, 1966, p. 5; GNP, Economic Indicators, March 1967, p. 2; Economic Report of the President, January 1967, p. 214.

TABLE E-11.—*Steel industry: Shipments of steel mill products related to durable goods production*

Year	Shipments of steel mill products (million short tons)	Durable goods production (FRB index 1957-59=100)	Steel shipments per point of durable goods production index (million short tons)
1966	90.0	165.1	0.545
1965	92.7	148.4	.625
1964	84.9	133.5	.636
1963	75.6	124.5	.607
1962	70.6	117.9	.599
1961	66.1	107.0	.618
1960	71.1	108.5	.655
1959	69.4	105.6	.657
1958	59.9	90.3	.663
1957	79.9	104.0	.768
1956	83.3	104.0	.801
1955	84.7	101.9	.831
1954	63.2	88.4	.715
1953	60.2	99.9	.603
1952	68.0	88.5	.768
1951	78.9	83.5	.945
1950	72.2	74.1	.974
1949	58.1	60.9	.954
1948	66.0	67.0	.985
1947	63.1	64.3	.981

TABLE E-12.—*National income originating in the iron and steel industry, in total manufacturing, and in all industries*

[Dollar amounts in millions]

Years	Iron and steel	Total manufacturing	All industries (total national income)	Iron and steel as percent of— Total manufacturing	Iron and steel as percent of— All industries
1948	$4,843	$68,707	$224,178	7.0	2.2
1949	4,369	64,767	217,494	6.7	2.0
1950	5,758	76,223	241,074	7.6	2.4
1951	7,346	90,230	277,978	8.1	2.6
1952	6,807	92,490	291,380	6.7	2.1
1953	7,491	100,355	304,734	7.5	2.5
1954	6,121	94,583	303,138	6.5	2.0
1955	8,216	107,868	331,018	7.6	2.5
1956	8,523	113,072	350,799	7.5	2.4
1957	9,177	116,251	366,096	7.9	2.5
1958	7,218	107,741	367,762	6.7	2.0
1959	8,127	124,040	400,025	6.6	2.0
1960	8,391	125,822	414,522	6.7	2.0
1961	7,644	125,051	427,341	6.1	1.8
1962	7,890	136,988	457,687	5.8	1.7
1963	8,528	143,839	481,927	5.9	1.8
1964	9,883	155,078	517,281	6.4	1.9
1965	11,031	170,408	559,020	6.5	2.0
1966 [1]	11,500	188,200	609,900	6.1	1.9

[1] Preliminary.

NOTE.—National income estimates for 1964-66 will be revised in July 1967.

Source: U.S. Department of Commerce, Office of Business Economics.

TABLE E-13.—*Distribution of finished steel to consuming industries 1923–66*

[In thousands of net tons]

Year	Total		Agriculture		Aircraft		Automotive		Construction and maintenance [1]		Containers		Machinery and tools [2]		Oil, gas, water, mining [3]		Pressing, forming, stamping [4]		Railroads		Shipbuilding		Exports		All others [5]	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
1923	37,270	100	1,503	4.1	(6)	(6)	4,684	12.6	5,527	14.8	1,350	3.6	1,168	3.1	3,923	10.5	(6)	(6)	9,435	25.3	325	0.9	1,901	5.1	7,450	20.0
1924	31,457	100	988	3.1	(6)	(6)	3,339	10.6	5,376	17.1	1,355	4.3	1,127	3.6	2,880	9.2	(6)	(6)	8,059	25.6	259	.8	1,703	5.4	6,371	20.3
1925	37,393	100	1,254	3.4	(6)	(6)	5,472	14.6	6,203	16.6	1,593	4.3	1,514	4.0	3,192	8.5	(6)	(6)	8,746	23.4	341	.9	1,672	4.5	7,391	19.8
1926	39,755	100	2,020	5.1	(6)	(6)	6,144	15.4	7,027	17.7	1,509	3.8	1,273	3.2	3,973	10.0	(6)	(6)	8,574	21.5	344	.9	2,103	5.3	6,783	17.1
1927	36,825	100	1,987	5.4	(6)	(6)	5,482	14.9	7,781	21.1	1,577	4.3	1,170	3.2	3,256	8.8	(6)	(6)	6,980	19.0	445	1.2	1,953	5.3	6,194	16.8
1928	42,182	100	2,978	7.1	(6)	(6)	7,799	18.5	7,907	18.7	1,813	4.3	1,807	4.3	3,191	7.6	565	1.3	6,853	16.2	202	.5	2,311	5.5	6,757	16.0
1929	45,998	100	3,031	6.7	(6)	(6)	7,353	16.0	8,643	18.8	1,912	4.1	2,028	4.4	4,117	8.9	700	1.5	8,163	17.8	346	.8	2,477	5.4	7,198	15.6
1930	33,055	100	1,709	5.2	(6)	(6)	4,935	14.9	7,355	22.2	1,871	5.7	1,342	4.1	3,240	9.8	643	1.9	5,241	15.9	371	1.1	1,582	4.8	4,766	14.4
1931	21,477	100	1,349	6.3	(6)	(6)	3,527	16.4	4,589	21.4	1,585	7.4	791	3.7	1,722	8.0	412	1.9	3,035	14.1	224	1.0	810	3.8	3,433	16.0
1932	11,705	100	605	5.2	(6)	(6)	2,088	17.9	2,693	23.0	1,161	9.9	441	3.8	718	6.1	187	1.6	1,176	10.0	102	.9	359	3.1	2,175	18.5
1933	17,171	100	1,016	5.9	(6)	(6)	3,621	21.1	2,713	15.8	1,805	10.5	716	4.2	1,045	6.1	531	3.1	1,351	7.9	105	.6	568	3.3	3,700	21.5
1934	19,515	100	1,133	5.8	(6)	(6)	4,219	21.6	3,266	16.7	1,602	8.2	758	3.9	1,320	6.8	612	3.1	2,337	12.0	214	1.1	993	5.1	3,061	15.7
1935	24,763	100	1,823	7.4	(6)	(6)	6,217	25.1	3,981	16.1	2,107	8.5	1,007	4.1	1,484	6.0	1,168	4.7	1,809	7.3	191	.8	970	3.9	4,006	16.1
1936	34,927	100	2,035	5.9	(6)	(6)	6,935	19.8	5,967	17.1	2,537	7.3	1,550	4.4	2,476	7.1	1,460	4.2	3,766	10.8	266	.8	1,237	3.5	6,668	19.1
1937	38,315	100	2,174	5.7	(6)	(6)	7,276	18.9	5,623	14.7	2,998	7.8	1,680	4.4	2,825	7.4	1,391	3.6	4,364	11.4	354	.9	2,745	7.2	6,905	18.0
1938	21,356	100	1,006	4.7	(6)	(6)	3,672	17.2	3,985	18.7	1,936	9.1	753	3.5	1,649	7.7	786	3.7	1,308	6.1	353	1.7	1,703	8.0	4,205	19.6
1939	34,955	100	1,271	3.6	(6)	(6)	5,284	15.1	5,458	15.6	2,664	7.6	1,306	3.7	1,648	4.7	1,648	4.7	2,908	8.3	463	1.3	2,354	6.7	9,951	28.7
1940	45,966	100	1,540	3.3	48	.1	7,524	16.4	6,552	14.3	2,915	6.3	2,201	4.8	1,795	3.9	2,169	4.7	3,796	8.3	945	2.1	7,617	16.5	8,864	19.3
1941	60,943	100	1,646	2.7	549	.9	9,629	15.8	9,995	16.4	4,510	7.4	3,291	5.4	2,864	4.7	3,596	5.9	5,850	9.6	2,864	4.7	6,112	10.0	10,037	16.5
1942	60,591	100	1,131	1.9	(7)	(7)	[7] 3,491	5.8	10,397	17.3	3,950	6.4	2,767	4.6	1,539	2.5	2,700	4.4	4,269	7.1	10,062	16.6	6,763	11.1	13,522	22.3
1943	62,210	100	1,435	2.3	(7)	(7)	[7] 3,395	5.4	6,515	10.4	4,220	6.8	3,214	5.2	1,867	3.0	2,786	4.5	5,075	8.1	13,068	21.0	6,622	10.6	14,013	22.7
1944	64,193	100	1,990	3.1	(7)	(7)	[7] 4,750	7.4	6,291	9.8	3,916	6.1	3,274	5.1	2,503	3.9	1,926	3.0	6,163	9.6	12,068	18.8	5,449	8.5	15,863	24.7

1945	57,242	100	2,462	4.3	(7)	(7)	[7] 5,553	9.7	8,415	14.7	4,350	7.6	4,751	8.3	2,690	4.7	3,835	6.7	5,266	9.2	3,377	5.9	4,354	7.6	12,189	21.3
1946	48,776	100	2,100	4.3	32	.1	7,379	15.1	8,130	16.7	4,749	9.7	4,438	9.1	2,480	5.1	3,127	6.4	4,764	9.8	320	.6	4,375	9.0	6,882	14.1
1947	63,057	100	2,422	3.8	44	.1	10,292	16.3	10,039	15.9	5,596	8.9	5,648	9.0	3,833	6.1	3,770	6.0	5,999	9.5	373	.6	5,919	9.4	9,122	14.4
1948	65,973	100	2,743	4.2	39	.1	11,330	17.2	10,157	15.4	5,844	8.9	5,337	8.1	5,080	7.7	4,256	6.5	5,866	8.9	716	1.1	3,950	6.0	10,655	15.9
1949	58,104	100	2,644	4.6	44	.1	11,880	20.5	10,020	17.2	5,026	8.6	4,274	7.4	5,455	9.4	3,124	5.4	4,038	6.9	722	1.2	4,344	7.5	6,533	11.2
1950	72,232	100	3,094	4.3	56	.1	15,746	21.8	12,363	17.1	6,409	8.9	5,812	8.0	6,619	9.2	4,601	6.4	4,796	6.6	355	.5	2,639	3.6	9,742	13.5
1951	78,929	100	3,281	4.2	167	.2	14,488	18.4	14,184	18.0	7,242	9.2	7,033	8.9	6,735	8.5	4,617	5.8	6,558	8.3	981	1.2	3,051	3.9	10,592	13.4
1952	68,004	100	2,764	4.1	153	.2	12,232	18.0	11,749	17.3	6,218	9.2	6,131	9.0	5,973	8.8	3,640	5.3	4,575	6.7	1,152	1.7	3,918	6.1	9,499	13.6
1953	80,152	100	2,547	3.2	180	.2	16,506	20.6	14,225	17.8	6,769	8.5	7,307	9.1	7,211	9.0	4,994	6.2	5,454	6.8	976	1.2	2,907	3.6	11,076	13.8
1954	63,153	100	2,417	3.8	97	.2	12,959	20.5	12,906	20.4	6,427	10.2	5,802	9.2	6,097	9.6	3,828	6.1	2,780	4.4	549	.9	2,659	4.2	6,632	10.5
1955	84,717	100	2,802	3.3	107	.1	20,834	24.6	15,611	18.4	7,462	8.8	7,854	9.3	7,336	8.7	5,295	6.3	3,989	4.7	667	.8	3,871	4.5	8,889	10.5
1956	83,251	100	2,456	2.9	153	.2	15,952	19.1	16,734	20.1	7,650	9.2	8,466	10.2	7,620	9.2	5,347	6.4	4,815	5.8	853	1.0	4,157	5.0	9,048	10.9
1957	79,894	100	2,236	2.8	110	.1	15,788	19.8	16,514	20.7	6,895	8.6	7,355	9.2	8,384	10.5	4,076	5.1	4,665	5.8	1,412	1.8	5,176	6.5	7,283	9.1
1958	59,914	100	2,232	3.8	68	.1	11,303	18.8	13,683	22.8	7,290	12.3	5,563	9.3	4,524	7.5	4,052	6.7	1,703	2.8	886	1.5	2,687	4.5	5,923	9.9
1959	69,377	100	2,348	3.4	79	.1	15,932	22.9	13,648	19.7	7,008	10.1	7,055	10.2	6,088	8.8	4,395	6.3	2,654	3.8	712	1.0	1,563	2.3	7,895	11.4
1960	71,149	100	1,965	2.8	95	.1	16,350	23.0	14,640	20.6	7,125	10.0	7,020	9.9	5,134	7.2	4,620	6.5	2,945	4.1	700	1.0	2,830	4.0	7,725	10.9
1961	66,126	100	2,080	3.1	96	.1	14,150	21.4	14,440	21.8	7,360	11.1	6,690	10.1	5,410	8.2	4,465	6.8	1,860	2.8	770	1.2	1,890	2.9	6,915	10.5
1962	70,552	100	2,099	3.0	97	.1	16,883	23.9	14,613	20.7	7,417	10.5	7,355	10.4	5,254	7.5	4,736	6.7	2,334	3.3	764	1.1	1,812	2.6	7,186	10.2
1963	75,555	100	2,265	3.0	87	.1	18,835	24.9	15,978	21.1	7,205	9.5	7,827	10.4	5,108	6.8	4,853	6.4	2,983	4.0	784	1.0	2,038	2.7	7,592	10.1
1964	84,945	100	2,525	3.0	82	.1	20,810	24.5	17,619	20.7	7,313	8.6	9,301	11.1	5,978	7.0	5,356	6.3	4,060	4.8	909	1.1	2,989	3.5	8,003	9.4
1965	92,666	100	2,721	2.9	107	.1	22,760	24.6	18,829	20.3	8,115	8.8	10,332	11.1	6,114	6.6	5,515	6.0	4,382	4.7	1,165	1.3	2,295	2.5	10,331	11.1
1966	89,995	100	3,140	3.5	150	.1	20,355	22.6	18,525	20.6	7,330	8.1	10,325	11.5	6,215	6.9	5,675	6.3	5,075	5.7	1,150	1.3	1,735	1.9	10,320	11.5

[1] Includes construction, contractors' products; excludes oil and gas construction (pipelines).
[2] Includes both electrical and nonelectrical machinery.
[3] Includes oil and gas drilling, oil and gas construction, mining.
[4] Includes appliances and other domestic and commercial equipment.
[5] Ordnance, conversion, forgings, BNR, unclassified.
[6] Included in "All others."
[7] Tonnage and percent are total for "Aircraft" and "Automotive," not shown separately.

NOTE.—1923-32 are based on the production of hot rolled iron and steel products, 1933-66 are based on shipments of finished steel.

TABLE E-14.—*Durable goods and structures, 1955–66*

	Durable goods [1]	Structures (construction) [1]	Total [1]	Index, 1955=100
1955	96.5	54.3	150.8	100.0
1956	96.5	54.0	150.5	99.8
1957	96.2	52.6	148.8	98.7
1958	83.6	53.1	136.7	90.6
1959	94.0	57.0	151.0	100.1
1960	97.8	55.0	152.8	101.3
1961	94.9	55.8	150.7	99.9
1962	107.0	58.8	165.8	109.9
1963	114.0	60.2	174.2	115.5
1964	123.1	61.7	[2] 184.8	[2] 122.5
1965	[2] 135.5	[2] 64.8	[2] 200.3	[2] 132.8
1966	150.8	64.1	214.9	142.5

[1] Billions of 1958 dollars.
[2] Revised.

Source: Steel shipments, net imports: American Iron and Steel Institute, "Annual Statistical Report"; 1966 data: "Metal Working Facts and Figures," Steel, Mar. 27, 1967. Durable goods output and structures: Department of Commerce, Office of Business Economics, "Survey of Current Business," August and October 1965; April 1967.

TABLE E-15.—*Prices of steel and competitive materials 1955–66*

[Average annual price—Index 1955=100]

	Steel mill products	Cement	Structural clay products	Primary aluminum	Plastic materials
1955	100.0	100.0	100.0	100.0	100.0
1956	108.4	106.3	105.6	109.6	90.9
1957	118.8	111.7	110.0	116.0	90.9
1958	123.0	114.6	111.8	113.2	89.7
1959	124.9	115.7	114.3	112.8	85.8
1960	124.8	118.0	115.5	118.7	85.5
1961	124.3	117.8	115.6	116.4	81.7
1962	124.0	117.6	115.9	109.1	81.4
1963	124.7	115.7	116.0	103.2	79.7
1964	125.7	115.2	116.9	108.2	79.0
1965	126.2	115.4	117.8	111.9	75.0
1966	127.8	115.7	119.2	111.9	79.0

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Prices: A Chartbook, 1953–62" and wholesale prices and price indexes for later data (all on base of 1957–59=100; then converted to base of 1955=100).

The Aluminum Association, Annual Statistical Review, percent change in output, 1955–66: Plastics, 424; primary aluminum, 95; cement, 30; structural clay products, 21; and steel, 15.

Federal Reserve Board, industrial production indexes.

TABLE E-16.—*Steel output lags behind output of major consuming industries*

AUTOMOTIVE

	Total passenger car and truck production (in thousands)	Index 1955=100	Steel shipments to automotive (in thousands of net tons)	Index 1955=100
1955	9,169	100.0	18,772	100.0
1956	6,920	75.5	14,142	75.3
1957	7,220	78.7	14,227	75.8
1958	5,135	56.0	10,125	53.9
1959	6,728	73.4	14,214	75.7
1960	7,869	85.8	14,610	77.8
1961	6,677	72.8	12,594	67.1
1962	8,173	89.1	15,181	80.9
1963	9,101	99.3	16,889	90.0
1964	9,292	101.3	18,384	97.9
1965	11,057	120.6	20,123	107.2
1966	10,371	113.1	17,984	95.8

TABLE E-16.—*Steel output lags behind output of major consuming industries*—Cont.

CONSTRUCTION

	Value of new construction (1957-59 dollars)—Index 1955=100	Steel shipments to construction and contractors' products—Index 1955=100
1955	100.0	100.0
1956	104.0	106.2
1957	109.1	116.2
1958	106.2	89.2
1959	105.8	88.5
1960	110.3	97.1
1961	113.5	96.0
1962	116.3	98.6
1963	120.1	105.3
1964	127.5	114.4
1965	140.0	123.3
1966	150.2	123.2

METAL CANS

	Output		Shipments of steel for cans and closures (in thousands of net tons)	Index 1955=100
	FRB index 1957-59=100	Index 1955=100		
1955	94.1	100.0	4,947	100.0
1956	100.2	106.5	5,026	101.6
1957	96.5	102.6	4,831	97.7
1958	99.7	106.0	5,252	106.2
1959	103.8	110.3	5,010	101.3
1960	100.5	106.8	4,976	100.6
1961	104.6	111.3	5,272	106.6
1962	108.5	115.3	5,327	107.7
1963	103.4	109.9	5,101	103.1
1964	107.6	114.3	[1] 5,321	[1] 105.7
1965	112.3	119.3	5,867	118.6
1966	117.1	124.4	[2] 5,300	107.1

MACHINERY AND EQUIPMENT

	Machinery output		Shipments of steel for machinery (agricultural, industrial, electrical) (in thousands of short tons)	Index, 1955=100
	FRB index, 1957-59=100	Index, 1955=100		
1955	96.5	100.0	8,328	100.0
1956	107.1	111.0	8,552	102.7
1957	104.2	108.0	7,696	92.4
1958	88.8	92.0	6,146	73.8
1959	107.1	111.0	7,475	89.8
1960	110.8	114.8	7,039	84.5
1961	110.4	114.4	6,778	81.4
1962	123.5	128.0	7,471	89.7
1963	129.2	133.9	8,007	96.1
1964	141.4	146.5	9,361	112.4
1965	160.4	166.2	10,341	124.2
1966	183.8	190.5	10,473	125.8

Footnotes at end of table, p. 354.

TABLE E-16.—*Steel output lags behind output of major consuming industries*—Cont.

RAILROAD EQUIPMENT

	Output		Shipment of steel for rail transportation (in thousands of net tons)	Index 1955=100
	FRB index 1957-59=100	Index 1955=100		
1955	82.4	100.0	3,521	100.0
1956	122.1	148.2	4,227	120.1
1957	141.4	171.6	4,149	117.8
1958	77.5	94.1	1,472	41.8
1959	81.1	98.4	2,357	66.9
1960	93.1	113.0	2,525	71.7
1961	68.7	83.4	1,594	45.3
1962	92.8	112.6	2,029	57.6
1963	101.9	123.7	2,563	72.8
1964	132.5	160.8	3,469	98.5
1965	151.6	184.0	3,805	108.1
1966	166.1	201.6	4,332	123.0

APPLIANCES

	Output		Shipments of steel for appliances (in thousands of net tons)	Index 1955=100
	FRB index 1957-59=100	Index 1955=100		
1955	93.2	100.0	2,199	100.0
1956	103.8	111.4	2,129	96.8
1957	94.6	101.5	1,559	70.9
1958	93.2	100.0	1,590	72.3
1959	112.3	120.5	1,829	83.2
1960	111.5	119.6	1,760	80.0
1961	110.7	118.8	1,749	79.5
1962	121.4	130.3	1,866	84.9
1963	130.6	140.1	2,010	91.4
1964	141.1	151.4	2,168	98.6
1965	153.3	164.5	2,179	99.1
1966	166.7	178.9	2,311	105.1

[1] Revised.
[2] Estimated.

NOTES

Output indexes: (1) Automobile and truck production, Automotive News. (2) Construction: Based on value of new private and public nonresidential construction, public utilities, sewer and water systems, and highways put in place, in constant 1957-59 dollars, U.S. Department of Commerce, Bureau of the Census, "Value of New Construction Put in Place, 1946-63," supp. C30-61 to Construction Reports, Construction Activity, October 1964. 1964 data: Construction Activity, C30-65, Janaury 1966. 1965-66 data: Construction Activity C30-67-3, March 1967. (3) All other output indexes based on Federal Reserve Board Industrial production indexes—as indicated on 1957-59 base of 100; then converted to base of 1955 as 100.

TABLE E-17.—*Comparison of steel ingot production with output of major competing materials*

Year	Steel ingots and steel for castings	Portland cement		Primary aluminum	Plastics and resin materials
	Million short tons	*Million barrels produced*	*Million barrels shipped*	*Thousand short tons*	*Thousand short tons*
1947	84.9	186.5	187.4	572	626
1948	88.6	205.4	204.3	623	742
1949	78.0	209.9	206.2	603	746
1950	96.8	226.0	227.8	719	1,076
1951	105.2	246.1	241.2	837	1,220
1952	93.2	249.1	251.1	937	1,167
1953	111.6	264.0	260.9	1,252	1,388
1954	88.3	271.3	274.1	1,461	1,414
1955	117.0	296.8	296.3	1,566	1,870
1956	115.2	316.5	308.8	1,679	1,988
1957	112.7	297.8	289.1	1,648	2,170
1958	85.3	311.3	307.0	1,566	2,259
1959	93.4	338.5	335.1	1,954	2,932
1960	99.3	319.1	312.2	2,014	3,072
1961	98.0	323.4	320.0	1,904	3,354
1962	98.3	336.3	332.0	2,118	3,971
1963	109.3	353.3	349.3	2,313	4,484
1964	127.1	367.6	366.3	2,553	5,052
1965	131.5	(1)	373.6	2,754	5,840
1966	134.1		380.7	2,967	6,700
Average annual rate of growth (in percent):					
1948-62	.7	3.6	3.5	9.1	12.7
1948-66	2.3		3.5	9.1	13.0
1962-66	8.1		3.5	8.8	14.0

[1] NLR.

Source: Steel production, American Iron & Steel Institute; cement and aluminum, Department of the Interior; plastics, U.S. Tariff Commission.

APPENDIX F

Table F-1.—*Steel prices, United States and selected foreign countries, 1951–66*

[1952=100[1]]

Year	United States[2]	Belgium[3]	France[4]	Germany[5]	Japan[6]	United Kingdom[7]
1966	151.1	123.2	122.4	119.2	70.6	91.1
1965	149.1	123.2	122.4	119.5	74.1	91.1
1964	148.3	123.2	122.4	119.5	79.0	90.5
1963	147.2	123.2	122.4	119.5	79.0	87.8
1962	146.4	124.3	119.0	119.5	80.4	87.8
1961	146.8	126.8	113.5	118.3	83.9	87.8
1960	147.4	126.6	111.1	113.8	86.7	88.0
1959	147.6	121.8	104.6	113.8	38.2	88.9
1958	145.2	123.5	93.0	113.8	81.1	101.1
1957	140.3	133.2	98.6	109.4	133.6	121.9
1956	128.0	125.9	110.9	104.4	132.2	109.5
1955	118.2	114.2	102.3	101.8	99.3	86.1
1954	112.8	98.0	102.0	100.5	82.5	77.4
1953	107.9	100.9	103.7	104.2	90.9	99.6
1952	100.0	100.0	100.0	100.0	100.0	100.0
1951	97.9	95.5	81.4	72.7	....	74.0

[1] Based on price indexes converted to U.S. dollars. Reflects French devaluation of 1958 and German revaluation of 1961.
[2] Steelmill products.
[3] Bessemer billets, domestic/export price, f.o.b. border.
[4] Heavy sections, domestic/export price, I.P.N. (80–260 mm.).
[5] Bessemer bars, domestic/export price.
[6] Mild steel plates, ¼ inch by 4 feet by 8 feet, export price, f.o.b.
[7] Plates 3/16 inch and over, export price, f.o.b.

Note.—This table was provided by the BLS, U.S. Department of Labor, but the BLS exposes its doubts as to the comparability of these data.

Sources: Department of Labor and United Nations.

Table F-2.—*Comparison of finished steel product prices with all commodities and industrial commodities, 1946–66*

[Index, 1940=100]

	Finished steel product prices	Industrial commodities	All commodities
Year:			
1966	280.7	223.7	246.3
1965	276.9	219.0	238.4
1964	275.6	216.2	233.7
1963	273.5	215.2	233.3
1962	271.8	215.4	234.0
1961	272.7	215.4	233.3
1960	273.7	216.5	234.2
1959	274.3	216.5	234.0
1958	269.7	212.6	233.5
1957	260.6	212.0	230.2
1956	238.1	206.2	223.7
1955	219.6	197.4	216.7
1954	209.7	193.2	216.0
1953	201.1	192.5	215.6
1952	186.9	191.0	218.6
1951	182.8	195.5	224.9
1950	169.2	177.1	201.9
1949	161.1	170.9	194.2
1948	148.8	174.6	204.4
1947	130.8	160.9	188.8
1946	112.1	131.8	153.7
Percent change:			
1946–66	150.4	69.7	60.2
1946–57	132.5	60.8	49.8
1957–66	7.7	5.5	7.0

Source: U.S. Department of Labor, Bureau of Labor Statistics.

TABLE F-3.—*Comparison of change in price indexes of steel mill products, gross national product (deflator), Consumer Price Index and Wholesale Price Index, 1946-66*

[1957-59 = 100]

Year	Finished steel mill products	Gross national product deflator	Consumer Price Index	Wholesale Price Index
1966	104.7	114.2	113.1	105.8
1965	103.3	110.9	109.9	102.5
1964	102.8	108.9	108.1	100.5
1963	102.0	107.2	106.7	100.3
1962	101.4	105.8	105.4	100.6
1961	101.7	104.6	104.2	100.3
1960	102.1	103.3	103.1	100.7
1959	102.3	101.6	101.5	100.6
1958	100.6	100.0	100.7	100.4
1957	97.2	97.5	98.0	99.0
1956	88.8	94.0	94.7	96.2
1955	81.9	90.9	93.3	93.2
1954	78.2	89.6	93.6	92.9
1953	75.0	88.3	93.2	92.7
1952	69.7	87.5	92.5	94.0
1951	68.2	85.6	90.5	96.7
1950	63.1	80.2	83.8	86.8
1949	60.1	79.1	83.0	83.5
1948	55.5	79.6	83.8	87.9
1947	48.8	74.6	77.8	81.2
1946	41.8	66.7	68.0	66.1

Sources: Department of Commerce, Office of Business Economics; Department of Labor, Bureau of Labor Statistics.

TABLE F-4.—*Changes in raw steel yields and steel prices*

Year	Annual yield (percent) [1]	Yield (percent) adjusted for mill inventory changes [2]	Index of improvement in steel quality [3]	BLS index of finished steel prices (1959 = 100)
1967 (3 months)	67.54	68.48	103.8	103.3+
1966	67.12	69.06	102.9	102.3
1965	70.49	69.42	102.4	101.4
1964	66.92	69.13	102.8	[4] 100.5
1963	69.15	69.97	101.5	99.7
1962	71.75	70.53	100.8	99.1
1961	67.46	70.75	100.5	99.4
1960	71.66	70.91	100.2	99.8
1959	74.26	71.07	100.0	100.0
1958	70.28	71.24		
1957	70.88	71.42		
1956	72.26	71.57		
1955	72.39	71.74		
1954	71.51	71.91		
1953	71.81	72.38		
1952	72.99	73.21		
1951	75.03	74.04		
1950	74.59	74.50		
1949	74.51	74.50		
1948	74.43	74.50		
1947	74.28	74.50		

[1] Mill shipments divided by raw steel production. AISI data.
[2] 1947-61 calculated from trend of 36-month moving averages of shipments and raw steel production; 1962-67 calculated on basis of mill inventory data published by Bureau of Census. (See table E-5.)
[3] Inverted index of yield loss from the 1959 level, but change in product mix may have accounted for part of the decline in yield.
[4] Year end prices were at a level of 100.0 after declining through most of 1964.

TABLE F-5.—*Percent change in U.S. imports of steel and in wholesale steel prices in foreign supplier countries* [1]

	Percent changes from 1960 to 1962		Percent changes from 1962 to 1964		Percent changes from 1964 to 1966	
	Value of U.S. steel imports from specified countries	Index of steel prices in specified countries	Value of U.S. steel imports from specified countries	Index of steel prices in specified countries	Value of U.S. steel imports from specified countries	Index of steel prices in specified countries
Japan	+61.7	−7.3	+128.7	−1.7	+94.9	−6.2
Belgium	+4.6	−1.8	+10.8	−.9	+15.9	0
United Kingdom	+4.6	−.2	+3.3	+3.1	+98.2	+.7
France	−22.1	+7.1	+61.8	+2.9	+59.8	0
Germany	−27.7	+5.0	+28.6	0	+70.5	0

[1] These list prices do not necessarily reflect transactions prices.
[2] September 1966.

Source: Imports from basic data of Census Bureau; wholesale price indexes from United Nations Monthly Bulletin of Statistics.

TABLE F-6.—*Export prices of selected products in selected countries, January 1963 to March 1966*

[In U.S. dollars per ton [1]]

	ECSC export prices—Actually obtainable prices, f.o.b. Antwerp				United Kingdom export prices, f.o.b. United Kingdom port				U.S. export price, f.o.b. Atlantic port				Japan export price, f.o.b. Japanese ports			
	Merchant bars	Heavy sections	Heavy plates	Cold-reduced sheets	Merchant bars	Heavy sections	Heavy plates	Cold-reduced sheets	Merchant bars	Heavy sections	Heavy plates	Cold-reduced sheets	Merchant bars	Heavy sections	Heavy plates	Cold-reduced sheets
January 1963	81	80-81	90	115	114.70	109.80	114.65	132.25	134.25	126.30	118.60	140.20	80.00	100.00	115.00	129.00
February	80-81	80	87-88	112-114												
March	79-80	77-78	85	112												
April	78-79	78-79	85	112-113								145.70				
May	80	76-78	85-86	114									84.00	105.00		
June		77-78	87	114-115												
July	81	78		112-113												
August	82-83			112									86.00	110.00		
September	83		86													
October	82		85	107-108					139.75	130.75	124.10		82.00			
November	81-82			105-106												
December	82			108									89.00			
January 1964	84		92	130												
February	87-88		100-102													
March	90-91	84	110	130-132		113.0	119.20									
April	91-92	84-86														
May	93-94	86-88	116													
June		88	116-117	130-131												
July		87	115	128												
August		87-88	113-114	124-125												
September		86-87	112-113	117-118												
October			107	111-112									95.00	112.00	110.00	
November			103	112-114									100.00	115.00		
December	95	84-85	98	110												
January 1965	95		100	113-114											113.00	

February	95-96	85-86	99-100	114												
March			98	110-112									98.00			
April	95		96-97										96.00			
May		85	95	108-109											111.00	
June	94		93	106-107									93.00		108.00	
July	.90	83	90	107												
August	89-90												88.00			
September	86-87	82-83	88	109												
October	84	77-78	85	106-107											100.00	
November	81-82	75-76	82	101-102												
December		74	83-84	104											94.00	
January 1966	83-84		84-85							133.80						
February	85-86	76	86-87	106												
March	87	77	87													

[1] Original prices converted at official current exchange rates.

NOTE.—For ECSC countries, prices refer to Thomas quality, excluding taxes. Prices for merchant bars exported from the United Kingdom vary according to sizes. Product definitions.

Sources: Export prices: For ECSC export prices Usine Belge, Brussels, "Prix de bas à la grande expertation." Also official information supplied to the secretariat, For the United Kingdom, Metal Bulletin, London, "official" nominal prices. For the United States, Metal Bulletin, London. Prices shown are current indications, with freight included, to New York, Philadelphia, or Baltimore, of base prices quoted by the larger steel companies, disregarding current lists of extras. For Japan, Metal Bulletin, London. F.o.b. Japanese ports (commission excluded), as published by Mitsui & Co. Ltd.

TABLE F-7.—*Comparison of home trade prices in the main producing countries, June 1967*

[Per ton]

Product	Size	Quality of a size, tons	United Kingdom	United States	Germany		France		Belgium		Japan
			Open hearth steel		Steel to specification		Basic bessemer	Open hearth	Basic bessemer	Open hearth	(See note)
					Group 1	Group 2					
			£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
Billets	4-in. square	50	34 1 6	41 5 0	33 5 0	37 7 6	29 16 0	34 0 6	33 10 6	38 12 0	
Angles	5 by 5 by ½ in	5	44 2 6	55 17 0	40 17 6	45 4 6	39 2 0	43 0 0	36 18 0	43 1 6	£47 7s. 0d. (6 by 6 in. by ½ in.).
Joists	12-in. web	5	43 18 6	56 13 0	37 8 6	41 6 6	38 0 6	41 19 6	35 0 6	41 4 0	£56 9s. 0d. (14 in.).
Plates (structural)	20 ft. by 60 in. by ¼ in.	10	47 15 0	56 13 0	43 16 6	46 16 6	44 10 0	48 11 0	47 19 6	53 15 6	£36 6s. 0d. (8 by 4 ft. by ¼ in.).
Plates (ship)	20 ft by 6 in. by ⅝ in.	10	49 7 6	54 13 0	—	50 12 6	—	53 13 0	—	57 16 0	
Rails	90 lb/yd	500	44 3 0	50 8 0	46 15 0	—	42 6 6	—	45 16 6	—	
Bars	1½-in. diameter	50	43 1 6	55 13 0	38 17 6	43 4 6	38 4 0	42 2 0	35 19 6	42 3 0	£50 8s. 0d. (2 in.).
Reinforcing bars	⅝-in. diameter	50	43 19 0	—	34 5 0	—	37 9 0	41 7 0	35 16 6	—	£38 6s. 0d. (¾ in.).
Strip, hot rolled	3½ by 0.104 in. in coil.	10	47 0 0	57 9 0	45 8 0	48 0 6	42 8 6	46 19 0	43 11 0	47 11 0	£49 18s. 0d. (4 by 0.06 in.).
Sheets, cold reduced	6 ft. by 36 in. by 20 g.	25	58 14 6	62 17 0	56	19 6	59	12 6	60	17 0	£45 17s. 0d. (6 ft. by 36 in. by 20 g.)
Tinplate, electrolytic (per s.a.t.).	33 by 26 in. E. 50 0.0099 in.	100	9 19 1	10 7 3½	10	12 4	10	9 7	10	16 1	

NOTES

The general basis of comparison is tested steel delivered to consumer's station.

The German prices include 4 percent turnover tax (on German pricing system this is included in the basis price). Specification group 1 is equivalent to basic bessemer steel and group 2 to open hearth steel.

Owing to the operation of alinement the actual prices obtained by producers in the ECSC countries may be lower than those shown.

Japanese prices: These prices are from the Japan Metal Daily and are described as wholesale prices. Because of the complete lack of detail available from Japan they must not be taken as comparable with sizes, qualities etc., shown for the other countries.

[1] This table was supplied on June 27, 1967, by Mr. James Driscoll of the British Iron & Steel Federation with the following comments: "The prices shown are published prices for the particular quantities and qualities shown and actual prices may diverge from these—almost invariably downward—in certain circumstances. Indeed, in really weak market conditions, the situation becomes such that it might be more meaningful to put that footnote as the main item on the page and show the published prices as a footnote. What actual, as distinct from published, prices are in any of the countries concerned at any given moment is very difficult indeed to assess. In Britain, where the deviations have tended to be only marginal, the authorities have a reasonable adequate volume of confidential data on deviations; but in the ECSC, they are only just beginning to get round to the problem of measuring alinements on Community prices, (as distinct from alinements on import prices where they have some data), and in Japan I understand that there is virtually no data available to anyone. I am afraid, therefore, that I cannot attempt to go beyond the table of published prices as it stands; indeed, we should very much like to know the answers ourselves."

APPENDIX G

U.S. DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington, D.C., March 24, 1967.

Mr. ROBERT M. WEIDENHAMMER,
Senate Finance Committee,
Old Senate Office Building,
Washington, D.C.

DEAR MR. WEIDENHAMMER: In answer to your letter of March 10, 1967, we have carefully considered your request for special analysis with respect to the steel industry. I certainly agree that your study would benefit from the quantification of the import, substitution and direct price elasticities of demand for steel. However, it would be impossible for us to estimate these measures by your April deadline.

Considerably more time, perhaps a year, would be required to make these estimates. More data are likely to be needed. Also, because the competition facing the U.S. steel industry appears to be undergoing structural change, it would be necessary to rigorously determine the reliability of the elasticities derived from the regression technique. When structural change is of recent vintage, rapid, and likely to alter in rate in the future, care is required before concluding that the elasticities estimated accurately reflect past relationships and are suitable for extrapolation.

Perhaps some other type of analysis might be helpful in answering the question you have raised. We will be glad to work with you in further discussions to help uncover other possible approaches to this problem.

Sincerely yours,

ARTHUR M. ROSS,
Commissioner.

U.S. DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington, D.C., April 11, 1967.

Mr. ROBERT M. WEIDENHAMMER,
Senate Finance Committee,
Old Senate Office Building, Washington, D.C.

DEAR MR. WEIDENHAMMER: In response to your letter of March 24 and your subsequent discussion with Arnold Chase and his staff, we have investigated the availability of the information on steel prices which you are seeking. I regret to say that none of it is immediately available, nor can it be supplied within the next few months.

It is possible with more time, however, to design and conduct a study that would answer two important questions integral to formulating policy relevant to the U.S. steel industry. These questions are:

(1) How much of its market lost to steel substitutes could the steel industry recapture if it lowered its prices relative to those of the substitutes or if the prices of substitutes rose relative to those of steel?

(2) How much of its market lost to foreign imports could the steel industry recapture if it lowered its prices relative to those of foreign suppliers or if the prices charged by foreign suppliers rose (because of market forces or the imposition of tariffs) relative to those charged by domestic producers?

It does not seem possible to design a study that would measure further market losses to the steel industry resulting from future adverse shifts in the ratios of U.S. steel prices to those of substitute inputs or foreign imports. Such losses would depend on the extent to which technology changes to facilitate more substitution, or steel users become more willing to purchase foreign steel. Only judgment can be applied in assessing the possibility of such developments in the future.

The analysis appropriate to the two answerable questions must focus on the behavior of steel users. It is necessary to analyze their production techniques in detail sufficient to distinguish, at least broadly, the various types of steel they use. Domestic commodities are not equally good substitutes for all types of steel nor does foreign steel compete equally with all domestic types.

Each of the two questions involves analysis of different time dimensions. The possibilities for the substitution of other products for steel depends on technological changes that occur slowly over time. Technological change between 2 years may be imperceptible. Therefore the study would focus on 1954, 1958, and 1963, years for which detailed data, including perhaps those for individual establishments, are available from the census of manufactures. These data would have to be supplemented by other information such as prices for those years. In addition, results and procedures obtained from those who prepare the input-output tables would be utilized.

In analyzing steel import competition, more recent evidence reflecting current trends in the use of foreign steel needs to be considered. The import question would be answered on the basis of 1963-66 data. The answer would obviously require data on import prices which would take a while to collect.

The comprehensive study would take at least 1 year to complete. No shortcut methods would appear to yield answers sufficiently reliable for policy decisions in this important area. Furthermore, the ability of the Bureau of Labor Statistics to conduct such a study would depend upon our obtaining additional resources from some source.

Please let me know whether results obtained a year or more from now might still be useful in your investigation.

Sincerely yours,

ARTHUR M. ROSS, *Commissioner.*

COMMITTEE STAFF QUESTIONNAIRE

Because the committee staff could not wait a year or longer for the BLS to obtain the needed information on the differentials between the costs to U.S. buyers of identical steel products sold by U.S. producers or by importers, the committee staff sent a questionnaire to major domestic steel producers to obtain this information. The data received were turned over to the BLS for analysis which is reproduced below.

JULY 14, 1967.

Memorandum.

To: Dr. Robert M. Weidenhammer, U.S. Senate Committee on Finance.

From: Arnold E. Chase, Assistant Commissioner, Prices and Living Conditions.

Subject: Tabulation of domestic versus import steel prices and differentials from your survey of producers.

In response to your letter of June 1 and as agreed in subsequent meetings, I am attaching the tabulations and charts which summarize the data furnished by domestic steel producers in answer to your request to them of May 25, 1967.

The summary table lists the products for which data were reported, the number of price comparisons for each, the reported domestic low and high prices of the items, the reported low and high prices for the imported corresponding item, and the range of low to high of the dollar differentials per net ton. As requested in your most recent meeting with my staff, the differentials of import prices below domestic prices for all individual comparisons were converted to a percentage of the domestic price. The low and high of these percentage differentials are also shown for all items on the summary table.

The individual product tables show the price comparisons ranked for individual companies from highest to lowest as well as the import values and dollar differentials. For a selected list of carbon steel products the differentials are also shown as a percentage of domestic price. Company codes were assigned to avoid identifying the company furnishing the data. The individual companies cannot be identified from the tabulations but a key to the codes is given separately.

Two sets of scatter charts were prepared as agreed. The first set for 14 products has the dollars per net ton of domestic price on the vertical scale and the differential above import price on the horizontal scale. The second set for nine carbon steel items uses the percentage of the differential rather than the dollar amount.

We have not provided an analysis of the survey results, because there is no way to ascertain from the reported data whether the reports for the same product are comparable company-to-company. The precise product specifications are not given, the country of origin was not indicated for most of the import prices, and it is not known whether or not coverage from all important foreign sources is adequate. The class of customer was indicated for only a small part of the total number of price comparisons and, it is not known to what extent the various classes of customers are represented.

There is some indication that the price comparisons include instances where domestic producers lost sales to imports. It cannot be ascertained to what extent domestic producers retained their customers by fully or partially meeting the import competition, or were able to continue selling at full published prices. The terms of sale of the import prices vary extensively, with wharfage and handling charges included in some instances and not in others. Delivery terms vary as customers may pick up shipments at the dock in some instances, and have them delivered to plants in others. The tonnage of each transaction is not known and there is no basis for evaluating quantity extras. There were too few price quotations for a number of products particularly for some which are important in the import picture.

It is our understanding that some domestic mills are meeting or are attempting to meet import price competition, at least in some regions, for concrete reinforcing bars, nails, galvanized fence, and barbed wire. This is not evident from the prices reported to you.

The collection forms and accompanying transmittal letters you furnished for our use in tabulating these data are returned herewith.

TABLE G-1.—*Delivered prices for selected steel-mill products (domestic, imported, and differential)*

Item	Number of price comparisons	Domestic price per net ton		Import price per net ton		Difference per net ton		Percent difference [1]	
		Low	High	Low	High	Low	High	Low	High
Hot-rolled carbon steel sheets	119	$120.00	$160.60	$91.00	$135.40	$6.00	$54.30	4.5	35.7
Cold-rolled carbon steel sheets	122	141.50	175.28	115.00	151.00	6.30	43.28	4.0	24.9
Electrical steel sheets	4	179.50	496.00	162.67	444.00	14.50	52.00	8.1	12.8
Cold-rolled stainless steel sheets	43	945.00	1,528.00	669.00	1,488.00	31.00	436.00	2.2	39.5
Hot-rolled stainless steel rods	8	915.00	1,390.00	700.00	1,070.00	195.00	400.00	20.7	36.4
Wire rods	27	122.00	200.00	99.00	175.00	6.00	54.50	4.2	32.9
Galvanized standard pipe	32	207.22	254.83	166.55	214.11	21.25	70.00	10.3	29.4
Black standard pipe	29	173.80	218.00	146.00	184.94	17.23	57.00	9.8	27.7
Carbon steel plate	42	119.00	186.50	99.00	161.70	14.30	47.00	10.1	30.9
Hot-rolled stainless steel plate	8	888.00	1,489.00	790.00	1,273.00	98.00	216.00	9.6	14.8
Hot-rolled carbon steel bars and bar shapes	39	131.50	175.40	87.57	128.20	19.90	63.80	13.5	36.4
Carbon steel structural shapes	54	130.00	179.39	98.00	148.80	14.10	44.39	8.7	29.8
Carbon steel drawn bright wire	21	147.20	252.00	117.90	199.00	12.00	68.00	5.7	27.0
Carbon steel drawn galvanized wire	8	179.20	205.00	138.10	156.00	27.20	57.20	14.9	27.9
Stainless steel drawn wire	10	1,030.00	2,290.60	990.00	1,333.20	18.00	957.40	1.4	41.8
Carbon steel drawn cold heading wire	3	215.00	264.00	175.00	204.00	40.00	60.00	18.6	22.8
Spring wire	2	193.00	326.10	174.00	270.00	19.00	56.10	9.8	17.2
Uncoated round steel wire	1	181.00		172.60		8.40		4.6	
Galvanized steel sheets	62	174.00	240.98	150.00	215.90	.80	41.88	.4	19.7
Reinforcing bars	2	119.00	133.00	90.60	99.60	28.40	33.40	23.9	25.1
Stainless steel seamless hollows	3	1,900.00	2,780.00	1,340.00	1,900.00	560.00	880.00	29.5	31.7
Carbon steel pipe casings	4	251.00	288.00	215.00	236.00	34.00	63.00	13.5	22.7
Stainless steel billets	4	785.00	1,235.00	624.00	885.00	161.00	350.00	20.5	28.3
Tool steel billets	5	990.00	1,815.00	458.00	785.00	470.00	1,030.00	40.2	56.7
Tool steel bars	17	680.00	3,200.00	480.00	2,880.60	200.00	920.00	10.0	45.8
Hot-rolled stainless steel bars	9	869.00	1,508.00	477.00	1,153.00	243.00	613.00	19.7	56.2
Stainless steel strip	2	857.20	1,195.60	710.00	942.80	147.20	252.80	17.2	21.1
Barbed wire	7	195.50	212.06	126.54	169.63	42.43	73.40	20.0	36.7
Cold finished carbon steel bars	9	206.10	277.00	150.60	254.00	14.00	57.60	5.9	27.7
Cold finished stainless steel bars	6	1,126.00	1,491.00	853.00	1,042.00	273.00	449.00	24.2	31.7
Wire fence	6	220.05	225.15	149.13	167.00	55.41	71.89	25.2	32.5
Hot-rolled carbon steel strip	1	153.20		114.00		39.20		25.6	
Cold-rolled carbon steel strip	1	1,200.00		600.00		600.00		50.0	
High-strength, low alloy sheets	1	207.40		190.00		17.40		8.4	
Total	711								

[1] Import price differential as a percent of domestic price.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

TABLE G-2.—*Delivered prices for hot-rolled carbon steel sheets (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Louisiana	$160.60	$114.10	$46.50	29.0
California	158.78	124.00	34.78	21.9
Washington	156.78	131.60	25.18	16.1
California	156.50	127.00	29.50	18.8
Do	155.70	109.00	46.70	30.0
Texas	155.60	124.60	31.00	19.9
Oregon	154.78	125.20	29.58	19.1
New Jersey	154.30	115.00	39.30	25.5
Texas	153.60	127.60	26.00	16.9
California	152.78	121.00	31.78	20.8
New Jersey	152.30	98.00	54.30	35.7
California	150.50	126.00	24.50	16.3
Do	149.78	102.40	47.38	31.6
Michigan	148.90	107.00	41.90	28.1
Louisiana	147.50	114.10	33.40	22.6
Do	147.40	114.10	33.30	22.6
Do	147.40	114.10	33.30	22.6
Texas	147.03	107.60	39.43	26.8
Pennsylvania	146.40	107.00	39.40	26.9
Texas	145.60	109.40	36.20	24.9
Do	144.60	108.60	36.00	24.9
Louisiana	144.40	114.10	30.30	21.0
Oregon	144.20	130.90	13.30	9.2
Texas	143.60	107.40	36.20	25.2
Ohio	142.80	118.00	24.80	17.4
Texas	142.60	107.60	35.00	24.5
California	142.50	122.50	20.00	14.0
Illinois	141.80	135.40	6.40	4.5
Texas	141.65	117.00	24.65	17.4
Do	141.65	117.00	24.65	17.4
Do	141.60	99.60	42.00	29.7
Do	140.60	99.60	41.00	29.2
Do	140.60	99.60	41.00	29.2
Kentucky	140.49	115.00	25.49	18.1
Oregon	140.20	125.90	14.30	10.2
Ohio	140.00	114.00	26.00	18.6
New Jersey	139.80	110.00	29.80	21.3
Ohio	139.40	115.40	24.00	17.2
Pennsylvania	138.90	113.00	25.90	18.6
California	138.50	120.50	18.00	13.0
Ohio	138.40	110.40	28.00	20.2
Michigan	138.00	110.00	28.00	20.3
Florida	137.90	118.20	19.70	14.3
Texas	137.20	106.60	30.60	22.3
Do	137.20	99.60	37.60	27.4
Do	137.00	105.00	32.00	23.4
California	136.50	120.50	16.00	11.7
Ohio	136.40	109.40	27.00	19.8
Texas	136.03	99.00	37.03	27.2
Tennessee	136.00	119.20	16.80	12.4
Missouri	136.00	114.20	21.80	16.0
New Jersey	135.80	110.00	25.80	19.0
California	135.50	112.00	23.50	17.3
Florida	135.20	110.40	24.80	18.3
Michigan	135.00	119.00	16.00	11.9
Ohio	134.40	110.40	24.00	17.9
New York	134.00	114.00	20.00	14.9
Pennsylvania	134.00	109.00	25.00	18.7
Do	133.90	113.00	20.90	15.6
New Jersey	133.80	110.00	23.80	17.8

TABLE G-2.—*Delivered prices for hot-rolled carbon steel sheets (domestic, imported, and differential)*—Continued

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
New Jersey	$133.80	$110.00	$23.80	17.8
Massachusetts	133.40	105.00	28.40	21.3
Pennsylvania	133.20	115.20	18.00	13.5
Do	133.20	115.20	18.00	13.5
Do	133.00	115.00	18.00	13.5
Texas	132.90	100.40	32.50	24.5
Do	132.90	107.00	25.90	19.5
Ohio	132.40	115.40	17.00	12.8
Michigan	132.00	109.00	23.00	17.4
(1)	132.00	107.60	24.40	18.5
(1)	132.00	107.60	24.40	18.5
Michigan	131.80	119.30	12.50	9.5
Ohio	131.40	109.40	22.00	16.7
Louisiana	131.40	98.00	33.40	25.4
(1)	131.00	113.00	18.00	13.7
(1)	131.00	113.00	18.00	13.7
Texas	131.00	104.00	27.00	20.6
Illinois	130.80	108.00	22.80	17.4
Michigan	130.00	100.00	30.00	23.1
Pennsylvania	129.30	102.40	26.90	20.8
Ohio	128.40	103.80	24.60	19.2
Do	128.40	101.00	27.40	21.3
Michigan	128.00	105.00	23.00	18.0
Do	128.00	102.00	26.00	20.3
Do	127.90	102.40	25.50	19.9
Do	127.80	96.00	31.80	24.9
Louisiana	127.50	98.00	29.50	23.1
Ohio	127.40	103.80	23.60	18.5
Michigan	125.80	113.30	12.50	9.9
Missouri	125.00	105.80	19.20	15.4
Ohio	124.40	98.40	26.00	20.9
Do	124.40	101.80	22.60	18.2
Illinois	124.00	107.00	17.00	13.7
Pennsylvania	123.90	101.00	22.90	18.5
Ohio	123.40	107.40	16.00	13.0
Do	123.40	107.40	16.00	13.0
Do	123.40	107.40	16.00	13.0
Illinois	123.16	94.00	29.16	23.7
Michigan	123.00	101.00	22.00	17.9
Do	123.00	100.00	23.00	18.7
Do	123.00	100.00	23.00	18.7
Do	123.00	100.00	23.00	18.7
Do	123.00	100.00	23.00	18.7
Pennsylvania	122.70	111.00	11.70	9.5
California	122.60	109.00	13.60	11.0
Ohio	122.40	101.00	21.40	17.5
Do	122.40	101.80	20.60	16.8
Do	122.40	98.40	24.00	19.6
Michigan	122.00	99.00	23.00	18.9
Do	122.00	101.00	21.00	17.2
Do	122.00	101.00	21.00	17.2
Do	122.00	101.00	24.00	17.2
Do	122.00	100.00	21.00	18.0
Do	122.00	100.00	22.00	18.0
Do	122.00	100.00	22.00	18.0
Do	121.00	91.00	30.00	24.8
Florida	121.00	115.00	6.00	5.0
Pennsylvania	120.00	107.00	13.00	10.8
Ohio	120.00	104.00	16.00	13.3

[1] Not indicated.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

TABLE G-3.—*Delivered prices for cold-rolled carbon steel sheets (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
California	$175.28	$132.00	$43.28	24.7
Do	173.28	134.00	39.28	22.7
Texas	170.53	135.60	34.93	20.5
California	168.28	131.80	36.48	21.7
Oregon	166.30	147.00	19.30	11.6
Michigan	164.90	146.90	18.00	10.9
Do	164.90	146.90	18.00	10.9
Texas	164.40	144.10	20.30	12.3
Ohio	164.40	132.00	32.40	19.7
Texas	164.10	126.60	37.50	22.9
Do	163.10	126.60	36.50	22.4
New York	163.00	135.00	28.00	17.2
Ohio	162.90	137.00	25.90	15.9
New York	162.80	136.40	26.40	16.2
Michigan	160.90	142.90	18.00	11.2
California	160.60	131.00	29.60	18.4
Oregon	160.30	142.00	18.30	11.4
Texas	159.90	126.60	33.30	20.8
Georgia	159.80	142.60	17.20	10.8
Texas	158.90	126.60	32.30	20.3
California	158.60	131.00	27.60	17.4
Texas	158.53	119.00	39.53	24.9
New York	158.30	134.30	24.00	15.2
Oregon	157.30	151.00	6.30	4.0
New York	157.00	135.00	22.00	14.0
Louisiana	157.00	134.00	23.00	14.6
Connecticut	155.50	128.00	27.50	17.7
(1)	155.50	142.40	13.10	8.4
New York	155.30	134.50	20.80	13.4
Do	155.30	131.30	24.00	15.5
Do	155.30	131.30	24.00	15.5
Louisiana	155.00	134.00	21.00	13.5
Michigan	154.50	137.00	17.50	11.3
Missouri	154.50	139.20	15.30	9.9
Pennsylvania	154.40	142.40	12.00	7.8
California	154.00	132.00	22.00	14.3
Louisiana	153.00	134.00	19.00	12.4
Ohio	152.90	135.20	17.70	15.6
Do	152.90	131.00	21.90	14.3
California	152.90	132.20	20.70	13.5
Pennsylvania	152.70	144.60	8.10	5.3
(1)	152.50	139.40	13.10	8.6
New York	152.30	132.50	19.80	13.0
Do	152.30	128.30	24.00	15.8
California	152.00	132.00	20.00	13.2
Wisconsin	151.80	136.00	15.80	10.4
Pennsylvania	151.40	134.00	17.40	11.5
Illinois	151.30	128.00	23.30	15.4
New Jersey	151.30	130.00	21.30	14.1
Texas	151.15	125.80	25.35	16.8
New York	151.00	134.00	17.00	11.3
California	150.90	132.20	18.70	12.4
Michigan	150.30	125.80	24.50	16.3
Do	150.30	135.20	[2] 15.10	10.0
Do	150.30	124.00	26.30	17.5
California	150.00	140.00	10.00	6.7
Ohio	149.90	130.40	19.50	13.0
Do	149.90	135.20	14.70	9.8
Do	149.90	131.00	18.90	12.6
Do	149.90	131.00	18.90	12.6
Do	149.90	129.60	20.30	13.5
Michigan	149.50	132.00	17.50	11.7
(1)	149.50	136.40	13.10	8.8
New York	149.30	125.30	24.00	16.1
Mississippi	149.10	135.78	13.32	8.9
Kentucky	148.99	128.00	20.99	14.1
(1)	148.50	130.40	18.10	12.2
(1)	148.50	130.40	18.10	12.2

See footnotes at end of table p. 371.

TABLE G-3.—*Delivered prices for cold-rolled carbon steel sheets (domestic, imported, and differential)*—Continued

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Missouri	$148.50	$133.20	$15.30	10.3
Michigan	148.50	124.00	24.50	16.5
New Jersey	148.30	128.00	20.30	13.7
Do	148.30	129.00	19.30	13.0
Michigan	148.30	125.80	22.50	15.2
Do	148.30	133.20	[2] 15.10	10.2
Pennsylvania	148.20	124.20	24.00	16.2
Ohio	147.90	127.40	20.50	13.9
Pennsylvania	147.50	125.80	21.70	14.7
([1])	147.50	129.40	18.10	12.3
Pennsylvania	147.50	126.40	21.10	14.3
Michigan	147.30	125.80	21.50	14.6
New Yrok	147.30	124.90	22.40	15.2
Do	147.30	123.30	24.00	16.3
Do	147.30	129.10	18.20	12.4
Do	147.00	130.00	17.00	11.6
Ohio	146.90	129.60	17.30	11.8
Do	146.90	124.00	22.90	15.6
Do	146.90	128.40	18.50	12.6
Do	146.90	131.00	15.90	10.8
Do	146.90	124.80	22.10	15.0
Pennsylvania	146.70	138.60	8.10	5.5
Ohio	146.50	124.00	22.50	15.4
Michigan	146.50	122.00	24.50	16.7
Pennsylvania	146.40	118.00	28.40	19.4
New Jersey	146.30	126.00	20.30	13.9
Do	146.30	126.00	20.30	13.9
Do	146.30	126.00	20.30	13.9
Do	146.30	128.00	18.30	12.5
New York	146.30	125.50	20.80	14.2
Ohio	145.90	125.40	20.50	14.1
Do	145.80	122.00	23.80	16.3
Pennsylvania	145.70	132.60	13.10	9.0
Do	145.70	132.60	13.10	9.0
Michigan	145.50	123.50	22.00	15.1
Do	145.50	121.00	24.50	16.8
Pennsylvania	145.50	126.40	19.10	13.1
Ohio	145.50	125.00	20.50	14.1
New Jersey	145.30	126.00	19.30	13.3
Ohio	144.90	124.80	20.10	13.9
Do	144.90	127.40	17.50	12.1
Do	144.90	126.40	18.50	12.8
California	144.90	132.20	12.70	8.8
Pennsylvania	144.70	131.60	13.10	9.1
Florida	144.50	126.50	18.00	12.5
Michigan	144.50	120.00	24.50	17.0
Ohio	144.30	129.00	15.30	10.6
California	144.00	127.00	17.00	11.8
New York	143.90	124.00	19.90	13.8
Ohio	143.90	125.40	18.50	12.9
Do	143.90	126.40	17.50	12.2
Michigan	143.50	120.00	23.50	16.4
New York	143.00	120.60	22.50	15.7
Michigan	141.50	119.50	22.00	15.5
Do	141.50	115.00	26.50	18.7

[1] Not indicated.
[2] Reported by company as $14.90.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

CHART G-4

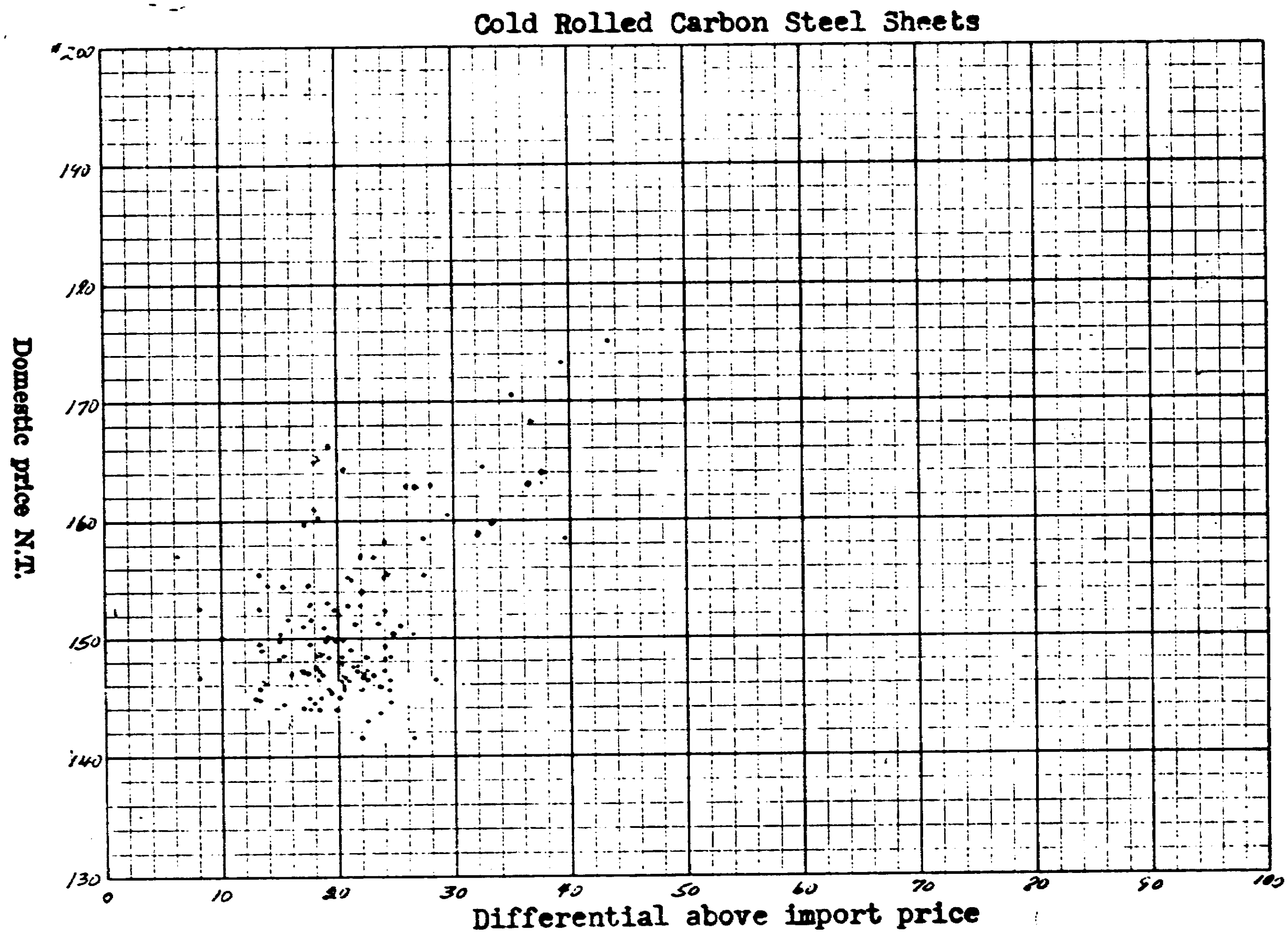

Cold Rolled Carbon Steel Sheets
Domestic price N.T.
Differential above import price
$200
190
180
170
160
150
140
130
0
10
20
30
40
50
60
70
80
90
100

CHART G-5

Cold Rolled Carbon Steel Sheets

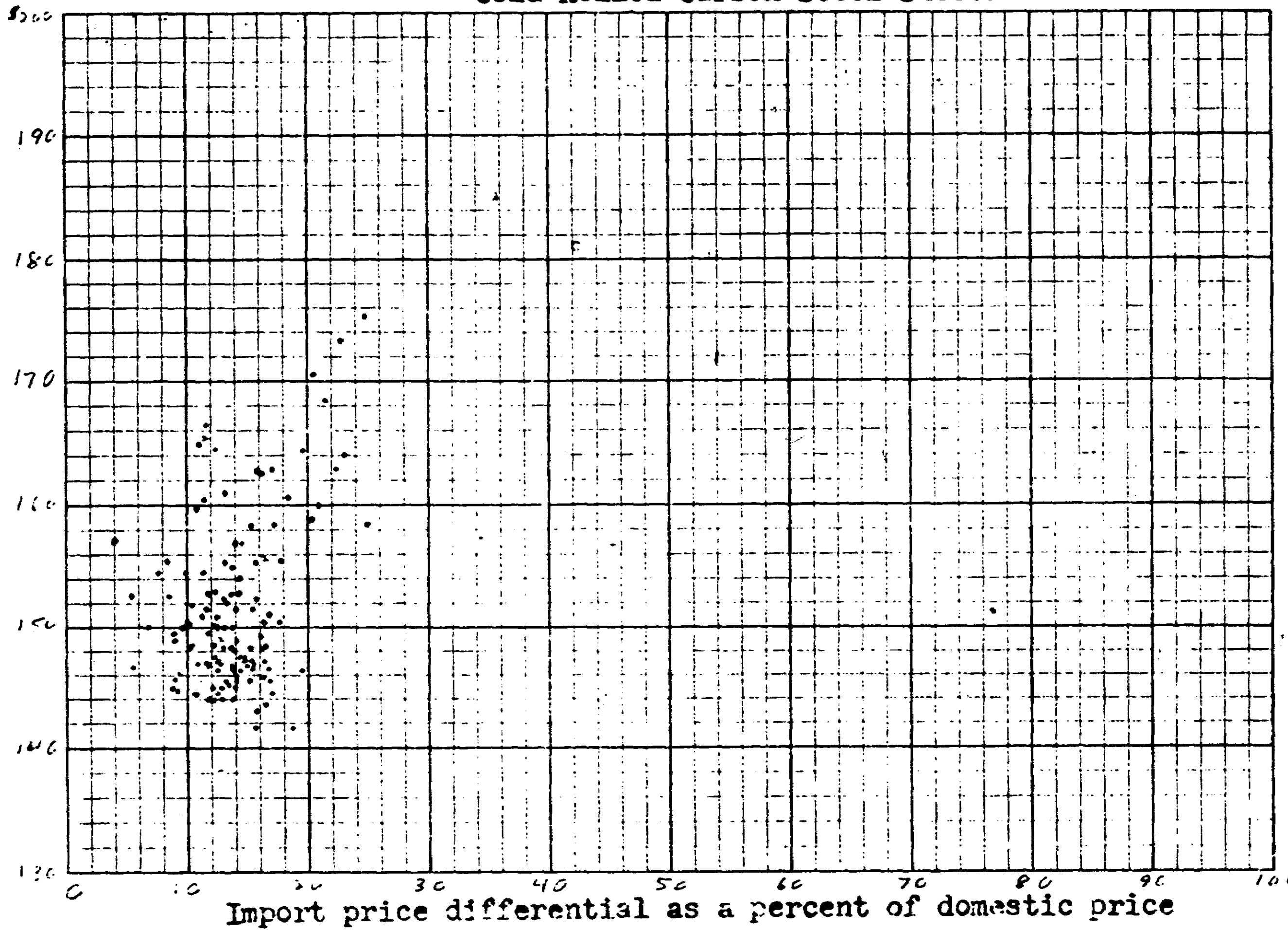


TABLE G-6.—*Delivered prices for cold-rolled stainless steel sheets (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference per net ton
California	$1,528	$1,488.00	$40.00
Michigan	1,508	1,208.00	300.00
California	1,456	1,030.00	426.00
Do	1,442	1,409.00	33.00
Do	1,395	1,364.00	31.00
Illinois	1,360	1,064.00	296.00
California	1,357	987.00	370.00
Illinois	1,230	959.00	271.00
Do	1,195	919.00	276.00
(1)	1,190	962.60	227.40
California	1,148	923.00	225.00
Wisconsin	1,148	860.00	288.00
Kentucky	1,145	718.00	427.00
Illinois	1,135	866.00	269.00
Texas	1,131	860.00	271.00
Illinois	1,120	863.00	257.00
(1)	1,120	914.20	205.80
New Jersey	1,120	900.00	220.00
Illinois	1,110	844.00	266.00
Do	1,110	817.00	293.00
Kentucky	1,105	669.00	436.00
(1)	1,095	896.60	198.40
Wisconsin	1,086	877.00	209.00
California	1,086	966.00	120.00
Illinois	1,080	826.00	254.00
Do	1,070	817.00	253.00
(1)	1,065	999.80	65.20
Illinois	1,045	829.00	216.00
Do	1,020	810.00	210.00
Do	1,020	807.00	213.00
(1)	1,015	842.60	172.40
California	1,000	887.00	113.00
Illinois	995	786.00	209.00
Do	995	786.00	209.00
New Jersey	995	850.00	145.00
Illinois	995	786.00	209.00
(1)	975	813.80	161.20
Illinois	970	761.00	209.00
Do	970	761.00	209.00
(1)	965	889.80	75.20
California	962	742.00	220.00
Do	953	842.00	111.00
(1)	945	790.40	154.60

[1] Not indicated.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending May 1967.

CHART G-7

Cold Rolled Stainless Steel Sheets

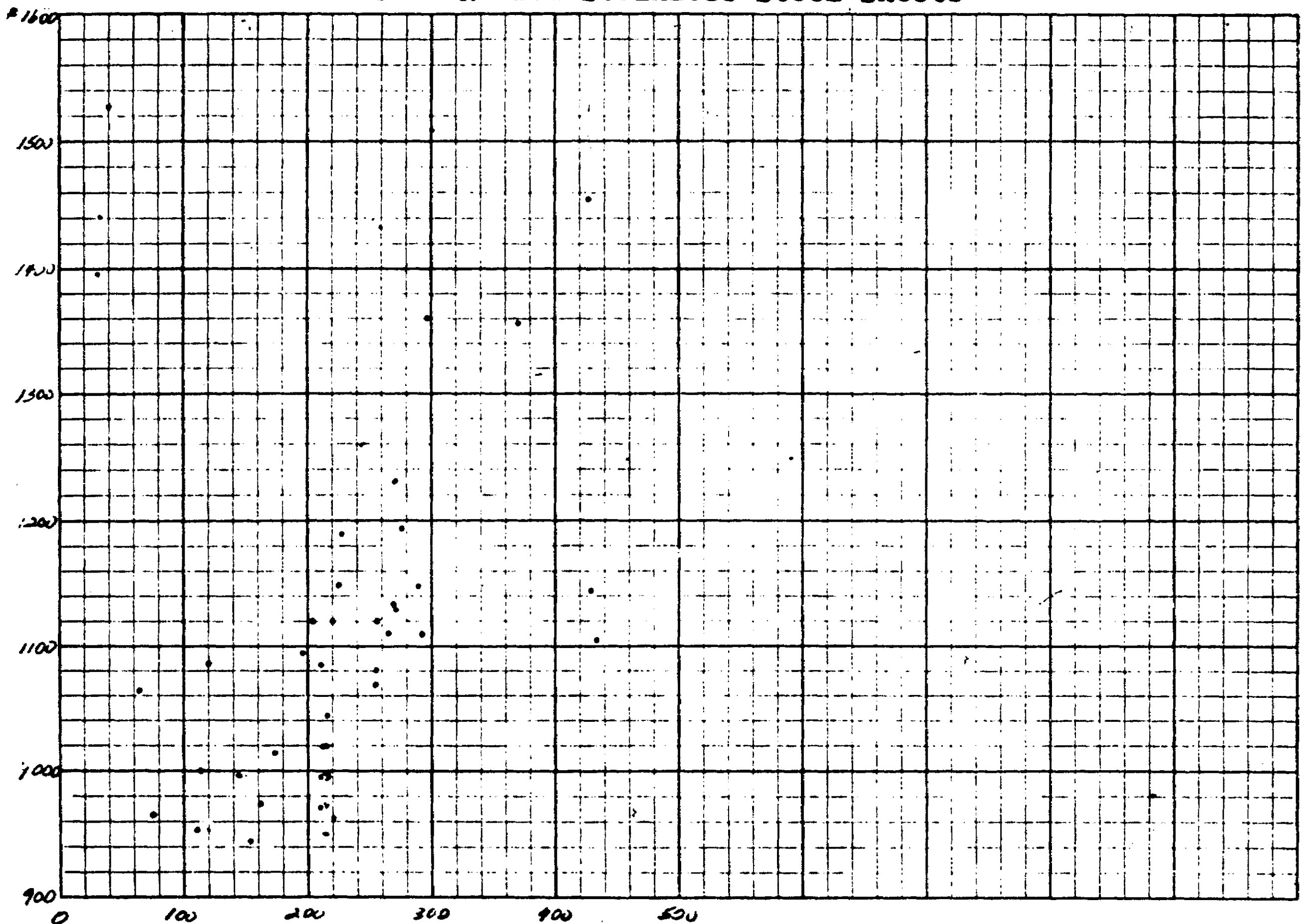
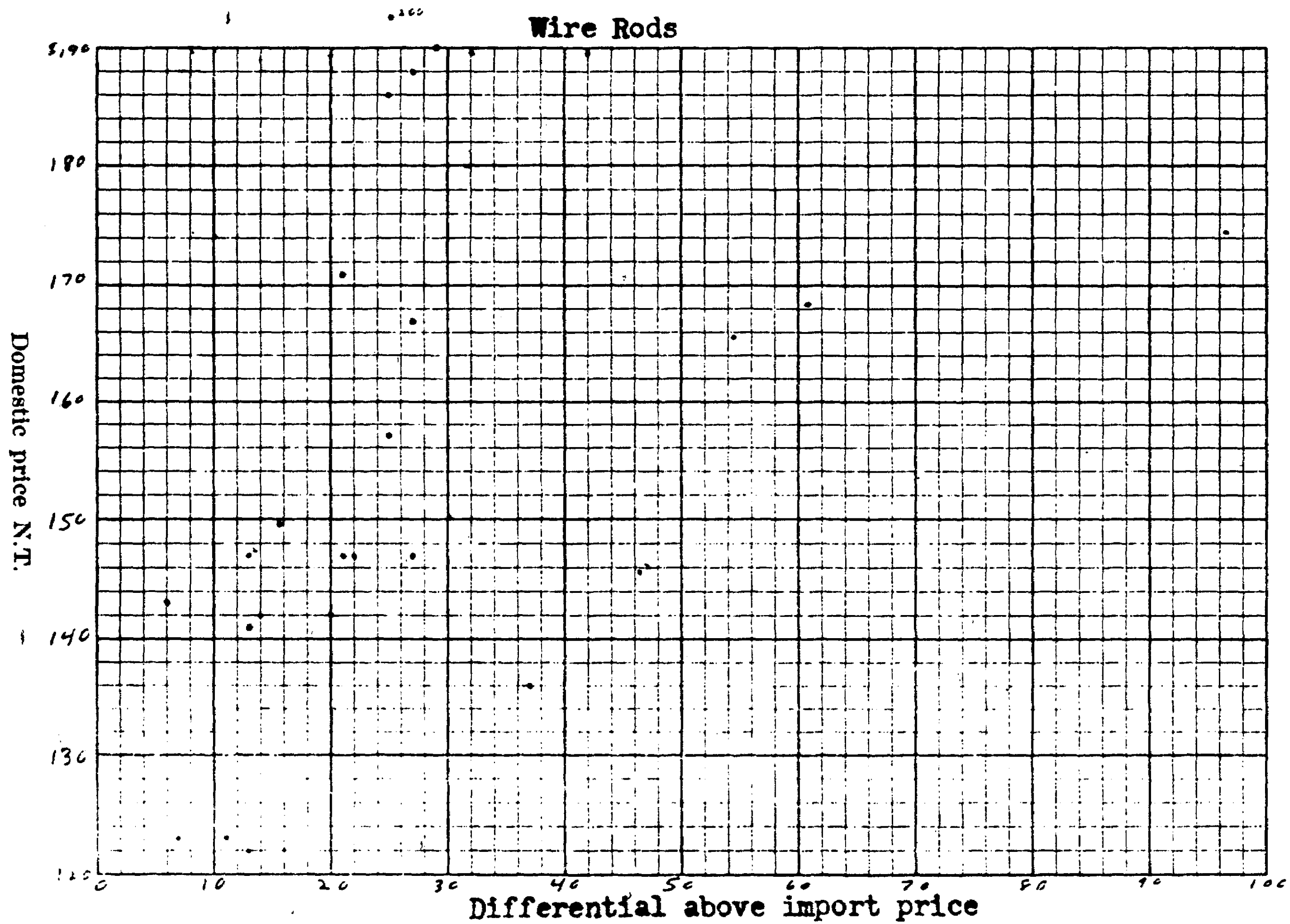


TABLE G-8.—*Delivered prices for wire rods (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference per net ton
Michigan	$200.00	$175.00	$25.00
California	190.00	161.00	29.00
North Carolina	189.40	147.50	41.90
Do	189.40	157.50	31.90
California	188.00	161.00	27.00
Do	186.00	161.00	25.00
Ohio	171.00	150.00	21.00
Do	167.00	140.00	27.00
Oregon	165.50	111.00	54.50
Pennsylvania	157.00	132.00	25.00
Ohio	150.10	120.00	30.10
Do	149.40	134.00	15.40
Do	147.00	126.00	21.00
Do	147.00	120.00	27.00
Michigan	147.00	134.00	13.00
Do	147.00	125.00	22.00
Ohio	147.00	134.00	13.00
Texas	145.50	99.00	46.50
Do	145.50	99.00	46.50
Ohio	143.00	137.00	6.00
California	142.00	128.00	14.00
Michigan	142.00	122.00	20.00
California	141.00	128.00	13.00
Texas	136.00	99.00	37.00
Ohio	123.00	112.00	11.00
Do	123.00	116.00	7.00
Do	122.00	109.00	13.00

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.



Wire Rods
Domestic price N.T.
$190
180
170
160
150
140
130
120
0
10
20
30
40
50
60
70
80
90
100
Differential above import price

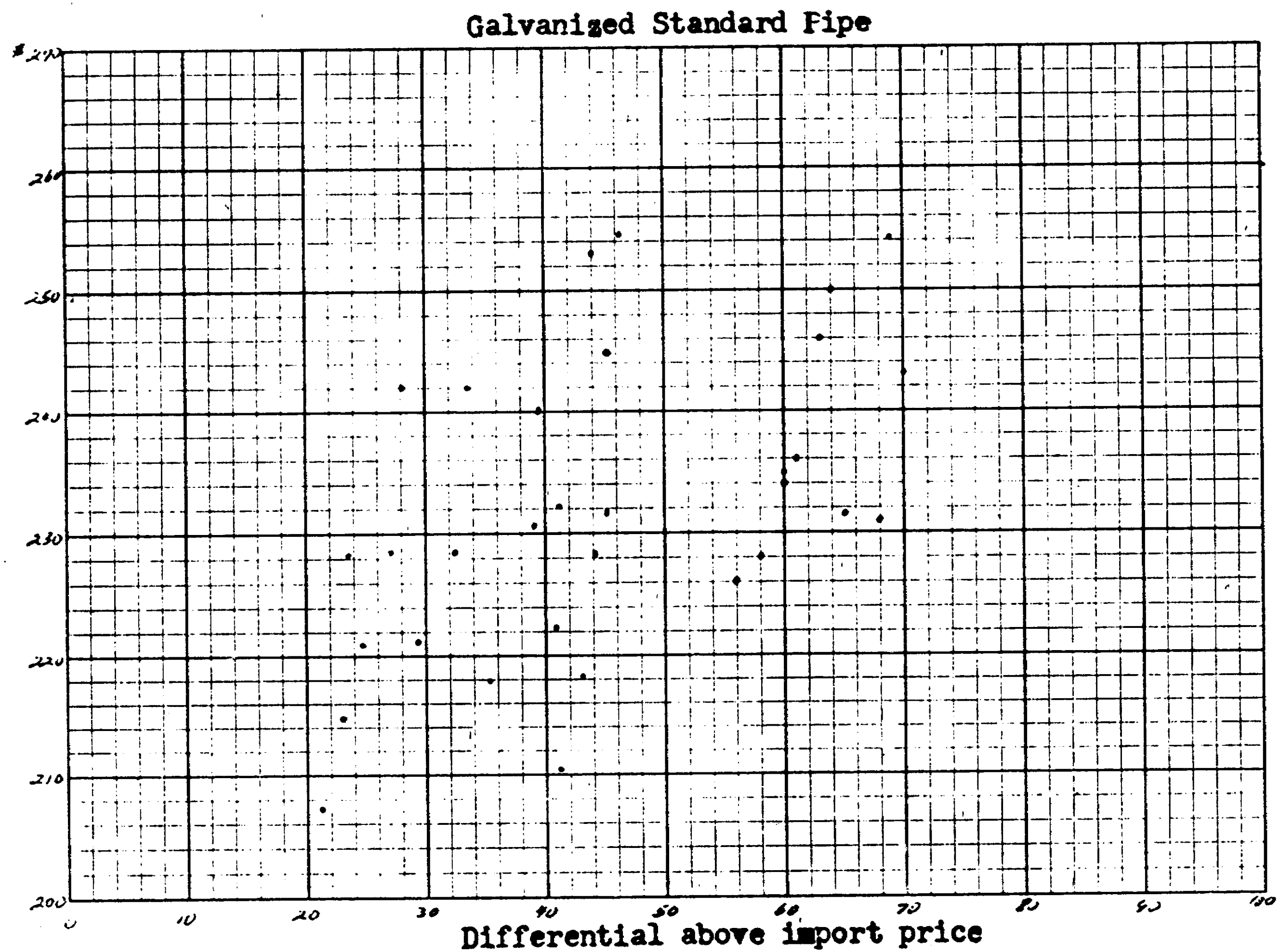
CHART G-9

TABLE G-10.—*Delivered prices for galvanized standard pipe (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Texas	$254.83	$208.48	$46.35	18.2
Florida	254.12	185.18	68.94	27.1
Georgia	253.18	209.18	44.00	17.4
Tennessee	250.00	186.00	64.00	25.6
Do	246.00	183.00	63.00	25.6
Wisconsin	244.71	199.53	45.18	18.5
Tennessee	243.00	173.00	70.00	28.8
Texas	242.11	208.47	33.64	13.9
Louisiana	242.11	214.11	28.00	11.6
California	240.24	200.71	39.53	16.5
Tennessee	236.00	175.00	61.00	25.8
Do	235.00	175.00	60.00	25.5
Mississippi	234.00	174.00	60.00	25.6
Texas	232.37	191.28	41.09	17.7
California	231.80	186.58	45.22	19.5
Florida	231.50	166.55	64.95	28.1
Tennessee	231.00	173.00	68.00	29.4
Georgia	230.70	191.79	38.91	16.9
Texas	228.45	196.19	32.26	14.1
Louisiana	228.45	201.42	27.03	11.8
California	228.23	204.47	23.76	10.4
Do	228.12	183.89	44.23	19.4
Tennessee	228.00	170.00	58.00	25.4
Do	226.00	170.00	56.00	24.8
Wisconsin	222.26	181.46	40.80	18.4
Texas	220.97	191.57	29.40	13.3
Louisiana	220.97	196.46	24.51	11.1
California	218.16	175.23	42.93	19.7
Do	217.97	182.63	35.34	16.2
Do	214.76	191.90	22.86	10.6
Do	210.58	169.61	40.97	19.5
Do	207.22	185.97	21.25	10.3

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

CHART G-11


Galvanized Standard Pipe
Domestic price N.T.
Differential above import price
$270
260
250
240
230
220
210
200
0
10
20
30
40
50
60
70
80
90
100

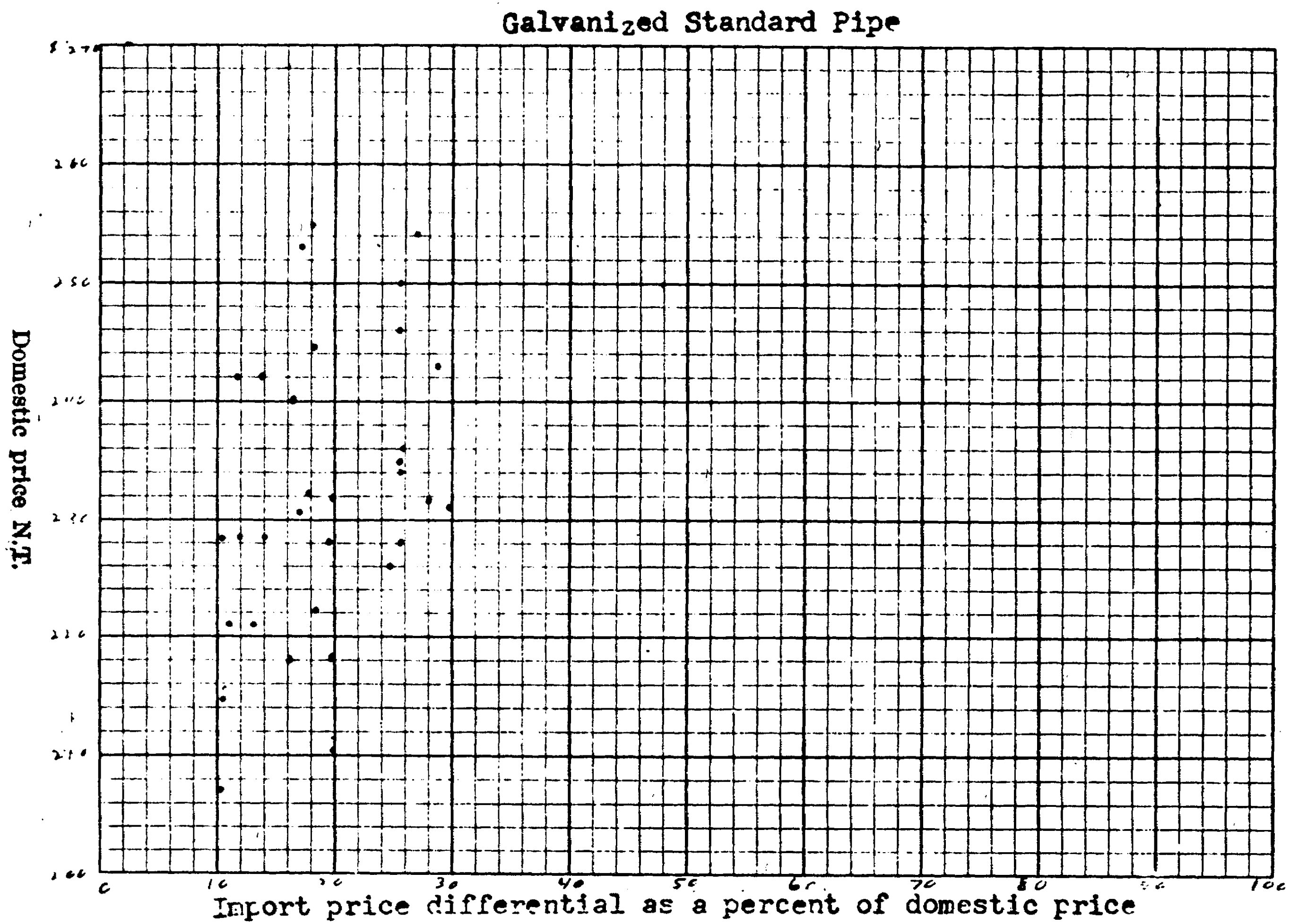

Galvanized Standard Pipe
Domestic price N.T.
Import price differential as a percent of domestic price

CHART G-12

TABLE G-13.—*Delivered prices for black standard pipe (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Mississippi	$218.00	$167.00	$51.00	23.4
Louisiana	216.00	178.00	38.00	17.6
Mississippi	215.00	160.00	55.00	25.6
Louisiana	214.00	177.00	37.00	17.3
Tennessee	211.00	160.00	51.00	24.2
Do	209.00	158.00	51.00	24.4
Louisiana	206.82	184.94	21.88	10.6
Tennessee	206.00	149.00	57.00	27.7
Louisiana	206.00	170.00	[1] 36.00	17.5
Texas	205.41	180.00	25.41	12.4
Louisiana	205.41	184.94	20.47	10.0
Tennessee	201.00	153.00	48.00	23.9
Louisiana	199.00	169.00	30.00	15.1
Do	198.00	163.00	35.00	17.7
Mississippi	196.00	151.00	45.00	23.0
Louisiana	196.00	176.00	20.00	10.2
Do	195.35	169.41	25.94	13.3
Do	195.35	176.07	19.28	9.9
Tennessee	195.00	148.00	47.00	24.1
Louisiana	194.00	161.00	33.00	17.0
Tennessee	193.00	146.00	47.00	24.4
Do	192.00	146.00	46.00	24.0
California	191.52	172.70	18.82	9.8
Tennessee	189.00	146.00	43.00	22.8
Mississippi	189.00	148.00	41.00	21.7
Texas	187.50	164.51	22.99	12.3
Louisiana	187.50	168.96	18.54	9.9
California	181.66	163.45	18.21	10.0
Do	173.80	156.57	17.23	9.9

[1] Reported by company as $46.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

Black Standard Pipe

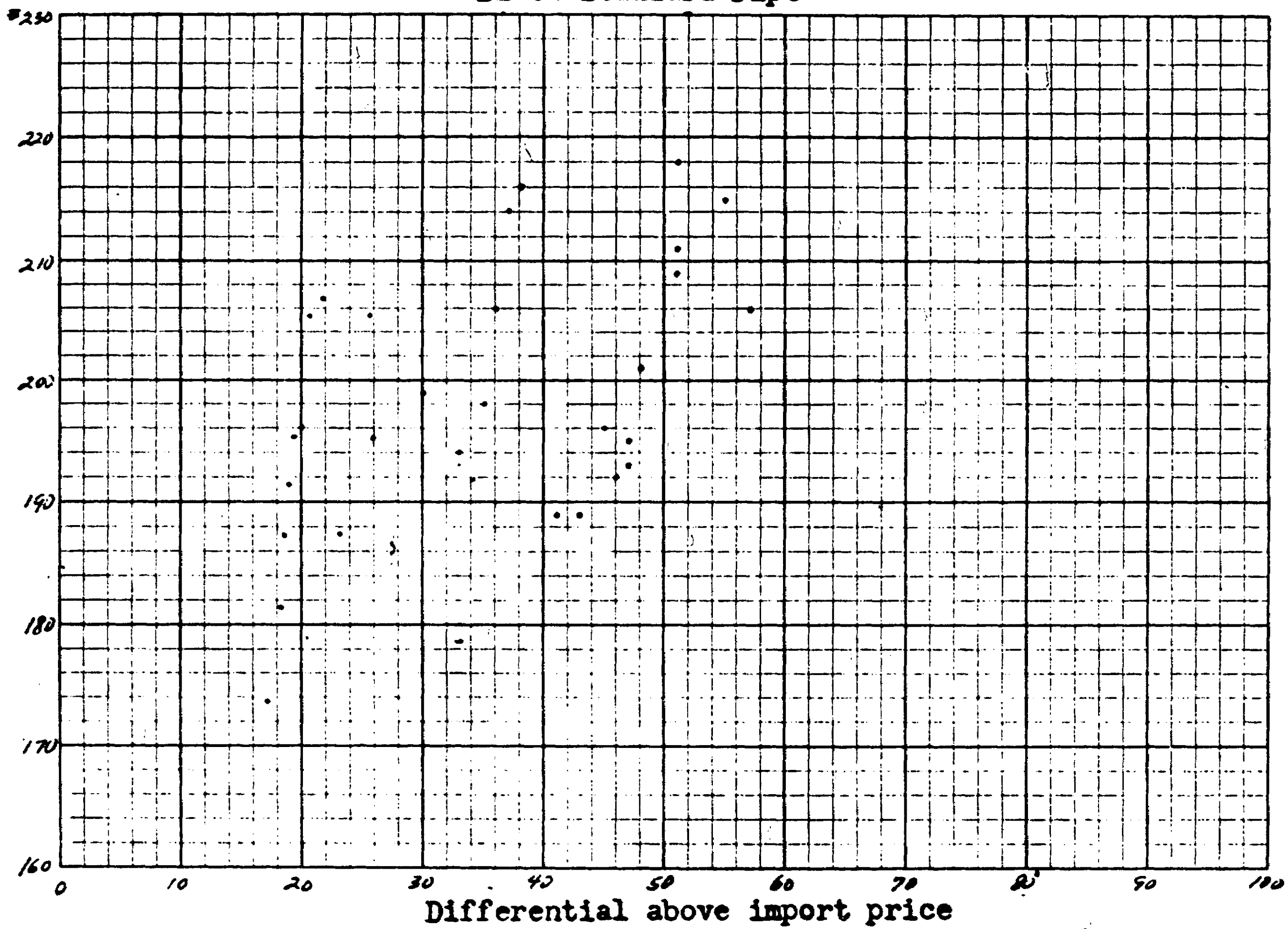


CHART G-14

Chart G-15

Black Standard Pipe

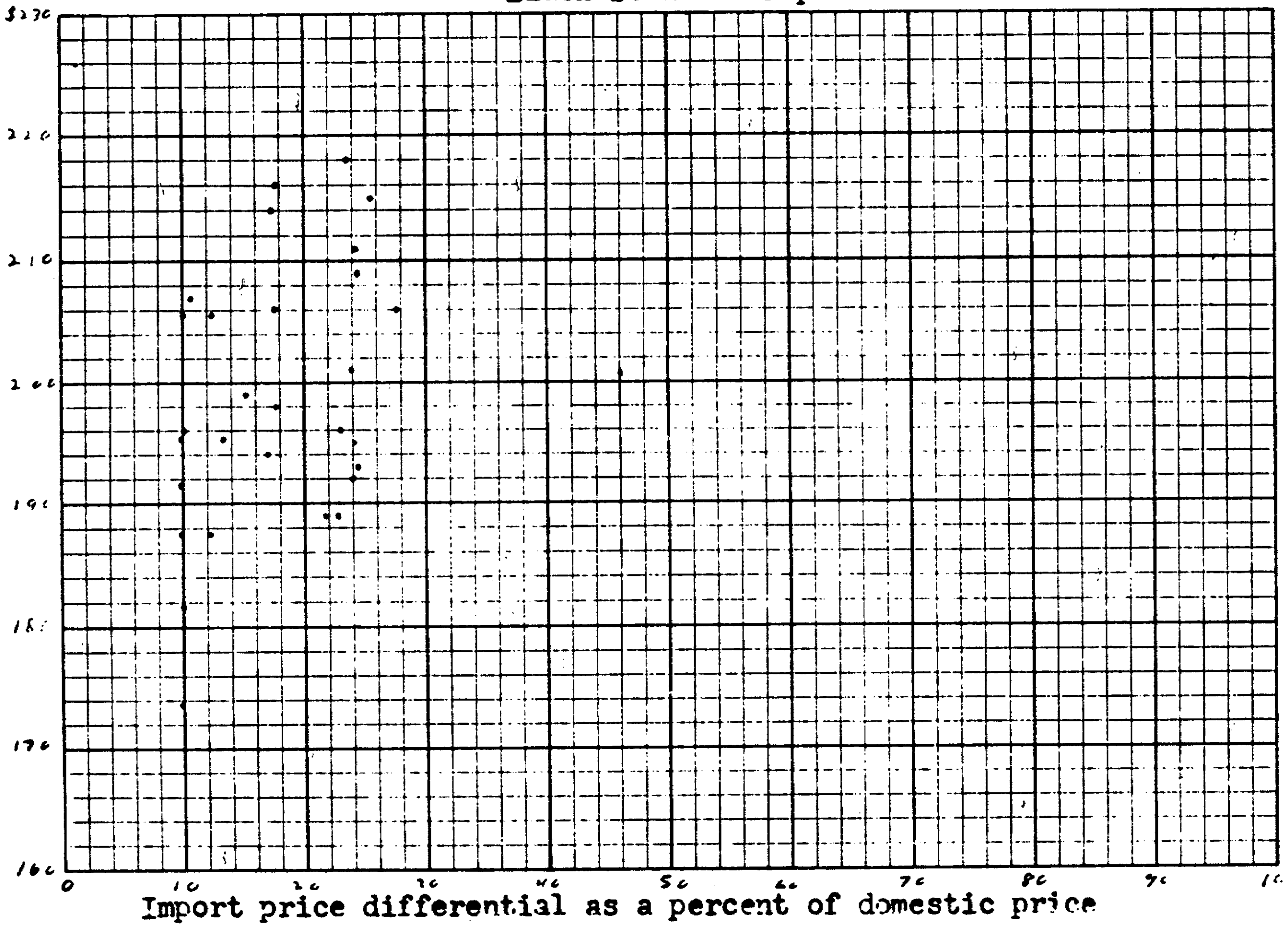


TABLE G-16.—*Delivered prices for carbon steel plate (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Pennsylvania	$186.50	$161.70	$24.80	13.3
Ohio	175.90	133.20	42.70	24.3
Texas	168.00	151.00	17.00	10.1
California	167.93	122.20	45.73	27.2
Do	159.93	120.60	39.33	24.6
Do	159.93	122.00	37.93	23.7
Do	159.20	141.10	18.10	11.4
Texas	158.95	129.41	29.54	18.6
Washington	157.20	130.40	26.80	17.0
Do	157.20	130.40	26.80	17.0
Do	154.80	126.60	28.20	18.2
California	154.20	136.10	18.10	11.7
Do	153.00	129.00	24.00	15.7
New York	152.00	105.00	47.00	30.9
Do	152.00	118.00	34.00	22.4
Do	151.00	110.00	41.00	27.2
Washington	151.00	126.10	24.90	16.5
Massachusetts	150.70	110.40	40.30	26.7
Washington	149.20	127.20	22.00	14.7
Do	419.20	127.20	22.00	14.7
California	148.20	128.10	20.10	13.6
Florida	147.90	119.80	28.10	19.0
Louisiana	146.90	120.50	26.40	18.0
Washington	143.80	120.40	23.40	16.3
Texas	142.60	107.80	34.80	24.4
Florida	140.42	123.00	17.42	12.4
Do	139.40	122.70	16.70	12.0
Do	138.40	122.70	15.70	11.3
California	137.50	116.50	21.00	15.3
Florida	137.20	105.20	32.00	23.3
New York	137.00	115.00	22.00	16.1
Washington	136.70	107.80	28.90	21.1
Texas	136.60	107.80	28.80	21.1
Florida	135.40	121.10	14.30	10.6
Ohio	134.00	112.00	22.00	16.4
Michigan	131.50	101.00	30.50	23.2
New York	130.00	105.00	25.00	19.2
Texas	129.95	109.00	20.95	16.1
Florida	128.90	107.00	21.90	17.0
New York	127.00	106.00	21.00	16.5
Do	125.00	99.00	26.00	20.8
Michigan	119.00	103.00	16.00	13.4

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

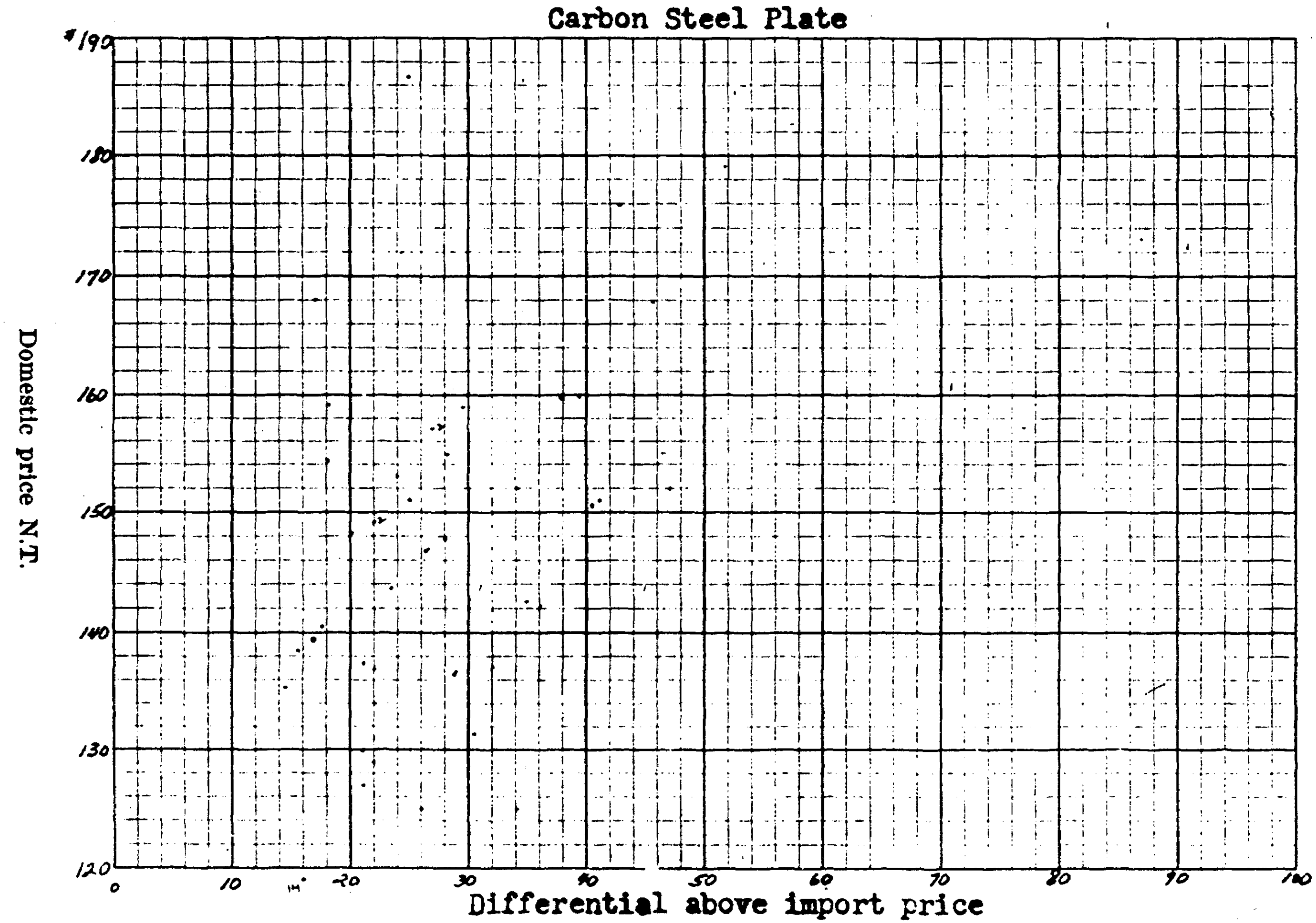

Carbon Steel Plate
$190
180
170
160
150
140
130
120
0
10
20
30
40
50
60
70
80
90
100
Domestic price N.T.
Differential above import price

CHART G-17

CHART G-18

Carbon Steel Plate

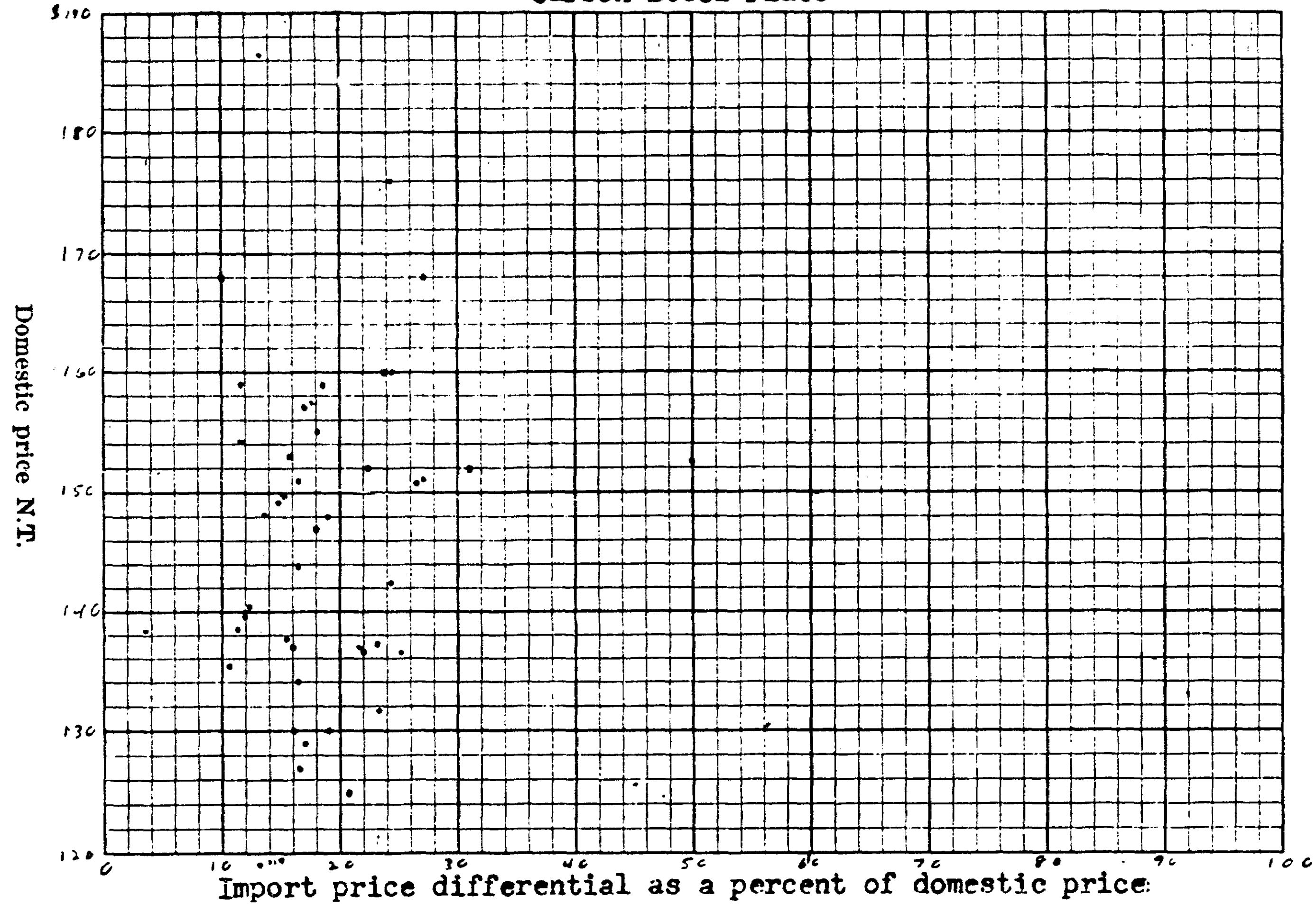


TABLE G-19.—*Delivered prices for hot-rolled carbon steel bars and bar shapes (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Texas	$175.40	$111.60	$63.80	36.4
Minnesota	156.10	127.80	28.30	18.1
New York	154.00	121.40	32.60	21.2
California	153.00	128.10	24.90	16.3
Texas	152.95	107.60	45.35	29.7
California	152.50	121.60	30.90	20.3
Alabama	152.00	111.00	41.00	27.0
Louisiana	151.00	111.20	39.80	26.4
Do	151.00	109.20	41.80	27.7
Do	150.00	103.00	47.00	31.3
Alabama	150.00	110.00	40.00	26.7
Louisiana	150.00	113.00	37.00	24.7
Ohio	149.50	128.20	21.30	14.2
Louisiana	149.00	109.20	39.80	26.7
New York	147.00	119.40	27.60	18.8
Louisiana	147.00	109.20	37.80	25.7
California	147.00	127.10	19.90	13.5
Texas	146.90	109.60	37.30	25.4
Pennsylvania	146.20	105.60	40.60	27.8
South Carolina	145.20	103.20	42.00	28.9
Do	145.20	105.60	39.60	27.3
Louisiana	145.00	116.00	29.00	20.0
Pennsylvania	144.00	109.00	35.00	24.3
Louisiana	144.00	105.20	38.80	26.9
Do	144.00	105.20	38.80	26.9
Do	144.00	105.20	38.80	26.9
Do	144.00	105.20	38.80	26.9
Do	144.00	105.20	38.80	26.9
Texas	143.40	101.20	42.20	29.4
California	140.50	115.60	24.90	17.7
Texas	139.95	96.40	43.55	31.1
California	139.50	115.60	23.90	17.1
Minnesota	139.15	110.90	28.25	20.3
Pennsylvania	138.40	96.20	42.20	30.5
Ohio	137.50	117.20	20.30	14.8
Do	136.60	100.40	36.20	26.5
California	136.50	115.60	20.90	15.3
Louisiana	132.50	87.57	44.93	33.9
Ohio	131.50	98.00	33.50	25.5

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

CHART G-20

Hot Rolled Carbon Steel Bars and Bar Shapes

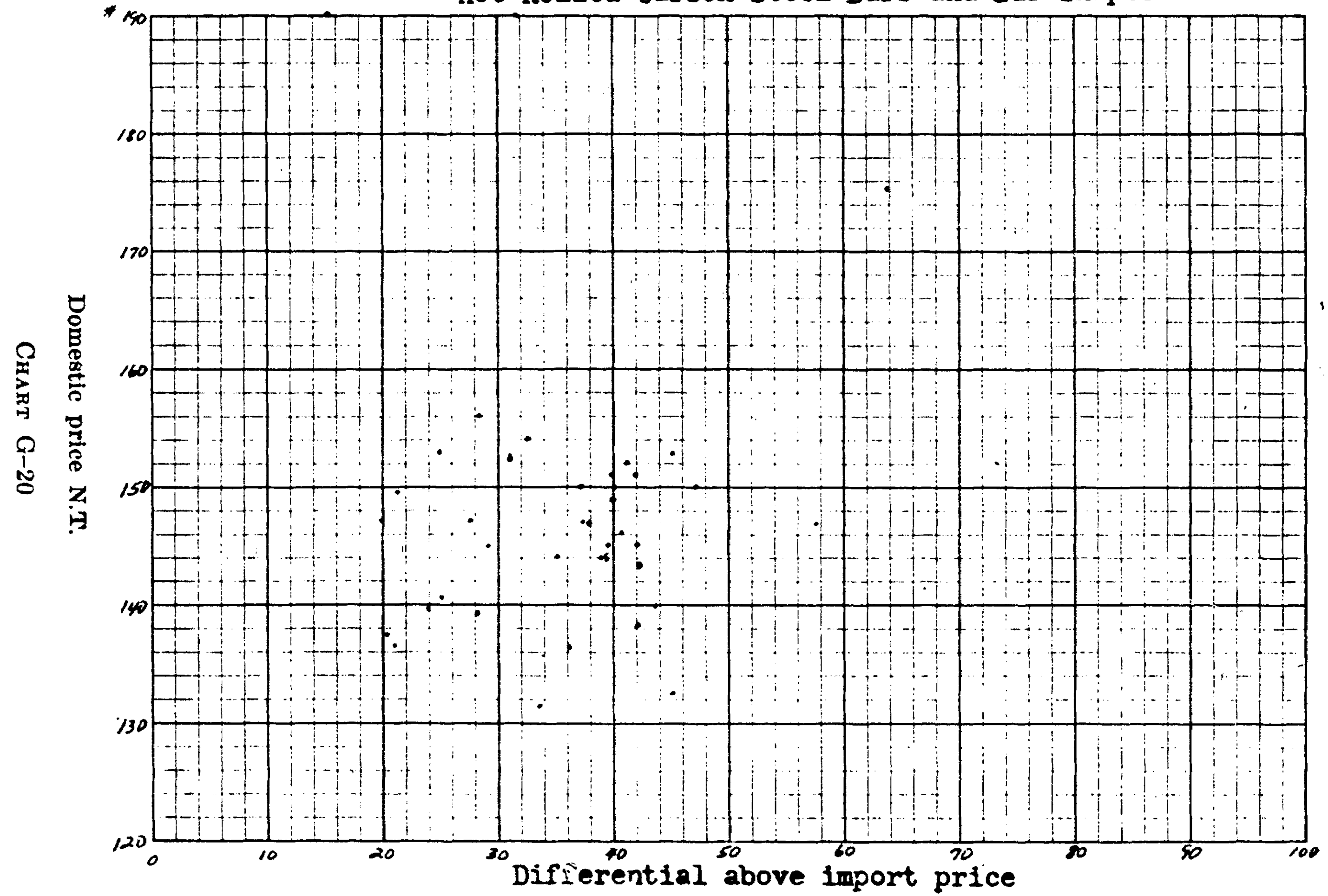
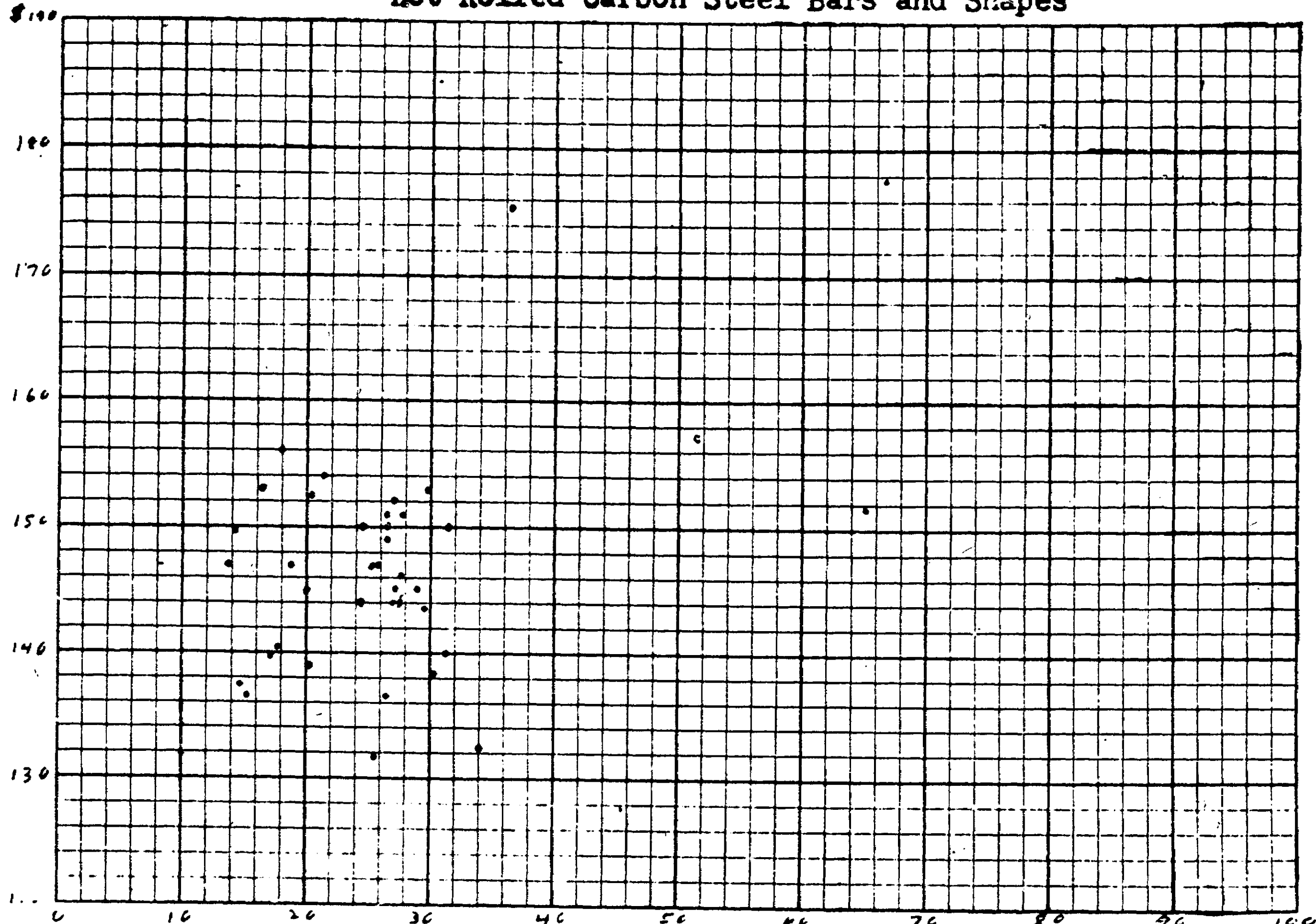


CHART G-21

Hot Rolled Carbon Steel Bars and Shapes



Domestic price N.T.

Import price differential as a percent of domestic price

TABLE G-22.—*Delivered prices for carbon steel structural shapes (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Michigan	$179.39	$135.00	$44.39	24.7
Massachusetts	162.90	148.80	14.10	8.7
Oregon	162.20	127.00	35.20	21.7
Florida	159.25	140.00	19.25	12.1
Oregon	158.20	122.00	36.20	22.9
Do	157.20	120.40	36.80	23.4
Minnesota	156.70	115.40	41.30	26.4
Tennessee	155.60	126.40	29.20	28.8
Do	155.60	122.60	33.00	21.2
Louisiana	154.50	116.20	38.30	24.8
California	154.48	133.70	27.78	13.5
Florida	153.25	134.60	18.65	12.2
Oregon	152.20	124.00	28.20	18.5
Tennessee	151.60	122.60	29.00	19.1
California	151.48	135.48	16.00	10.6
South Carolina	150.80	119.20	31.60	21.0
Louisiana	150.50	116.20	34.30	22.8
California	150.48	134.48	16.00	10.6
Oregon	150.20	110.20	40.00	26.6
Minnesota	150.10	107.80	42.30	28.2
Louisiana	150.00	107.40	42.60	28.4
Tennessee	149.60	121.40	28.20	18.9
Minnesota	149.10	106.00	43.10	28.9
Louisiana	148.00	107.40	40.60	27.4
California	147.00	123.00	24.00	16.3
Massachusetts	146.90	131.40	15.50	10.6
South Carolina	145.80	114.60	31.20	21.4
Pennsylvania	145.30	115.80	29.50	20.3
Minnesota	145.10	105.00	40.10	27.6
Do	145.10	119.60	25.50	17.6
Texas	145.00	108.60	36.40	25.1
Minnesota	144.10	103.20	40.90	28.4
Tennessee	143.60	121.40	22.20	15.5
Do	143.60	118.40	25.20	17.5
Do	143.60	116.00	27.60	19.2
Texas	143.00	110.00	33.00	23.1
Do	143.00	105.80	37.20	26.0
Louisiana	142.50	106.20	36.30	25.5
South Carolina	142.30	112.20	30.10	21.2
Do	141.80	112.00	29.80	21.0
Do	141.30	99.20	42.10	29.8
Texas	141.00	104.80	36.20	25.7
Do	140.25	111.00	29.25	20.9
Minnesota	140.10	115.00	25.10	17.9
Florida	138.20	108.80	29.40	21.3
Texas	137.45	108.60	28.85	21.0
New Jersey	137.40	98.00	39.40	28.7
Oklahoma	137.00	113.40	23.60	17.2
Do	137.00	113.40	23.60	17.2
Minnesota	136.10	111.40	24.70	18.1
Texas	135.45	106.80	28.65	21.2
Oklahoma	134.00	109.80	24.20	18.1
Do	131.00	107.00	24.00	18.3
Do	130.00	106.20	23.80	18.3

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

Carbon Steel Structural Shapes

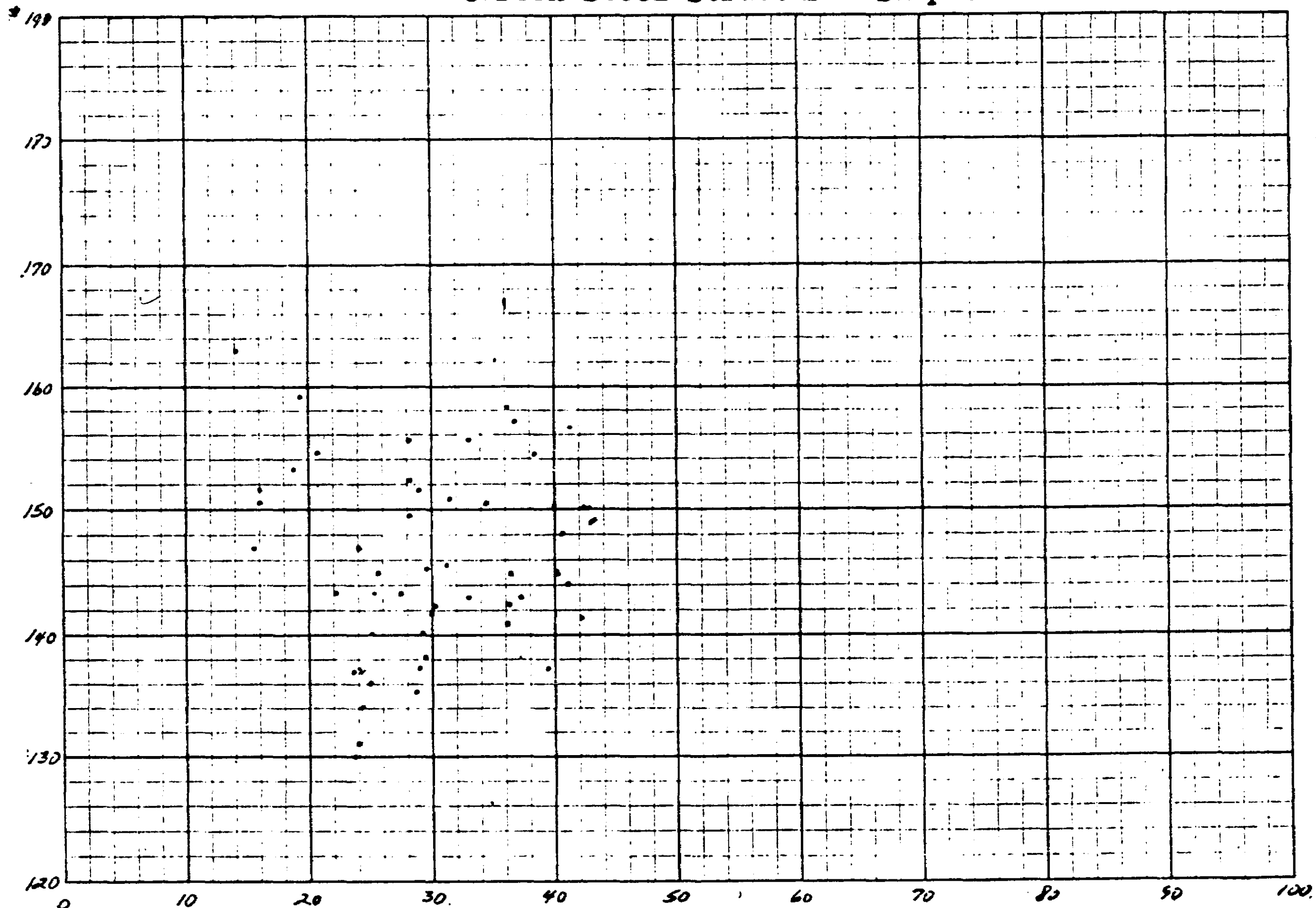
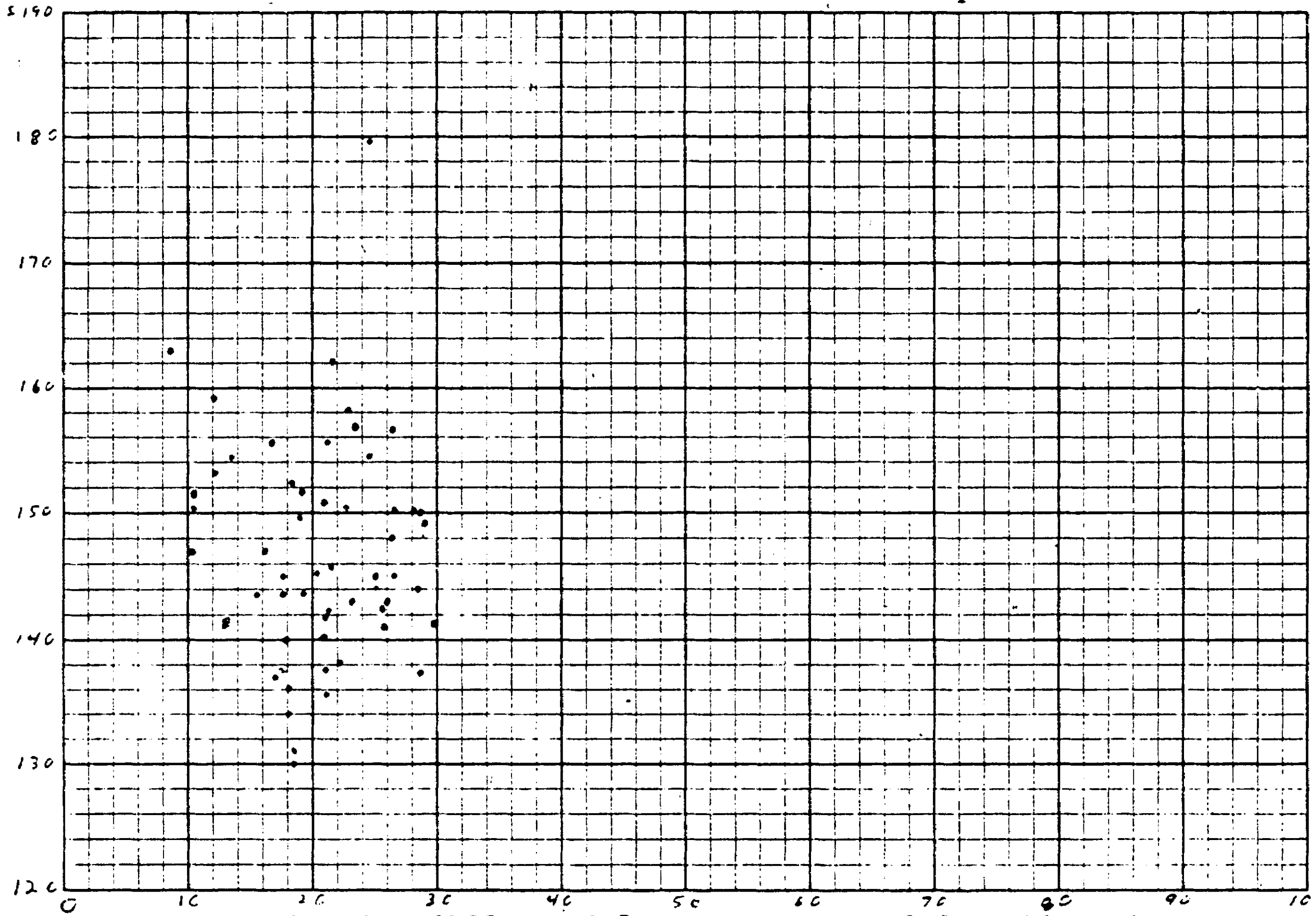


CHART G-23

CHART G-24

Carbon Steel Structural Shapes



Domestic price N.T.

Import price differential as a percent of domestic price

TABLE G-25.—*Delivered prices for carbon steel drawn bright wire (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Michigan	$252.00	$184.00	$68.00	27.0
Illinois	211.00	199.00	12.00	5.7
Do	206.00	194.00	12.00	5.8
Washington	188.00	146.00	42.00	22.3
Do	184.00	146.00	38.00	20.7
Pennsylvania	182.00	145.00	37.00	20.3
Do	180.00	136.00	44.00	24.4
Wisconsin	177.30	131.70	45.60	25.7
Michigan	176.00	135.00	41.00	23.3
Wisconsin	175.30	131.70	43.60	24.9
Pennsylvania	174.00	129.00	45.00	25.9
Do	172.00	130.00	42.00	24.4
Ohio	155.00	133.00	22.00	14.2
Do	154.00	129.00	25.00	16.2
Alabama	153.20	123.10	30.10	19.6
Ohio	152.00	130.00	22.00	14.5
Do	151.00	131.00	20.00	13.2
Alabama	150.20	121.10	29.10	19.4
Ohio	150.00	130.00	20.00	13.3
Do	150.00	128.00	22.00	14.7
Alabama	147.20	117.90	29.30	19.9

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

Carbon Steel Drawn Bright Wire

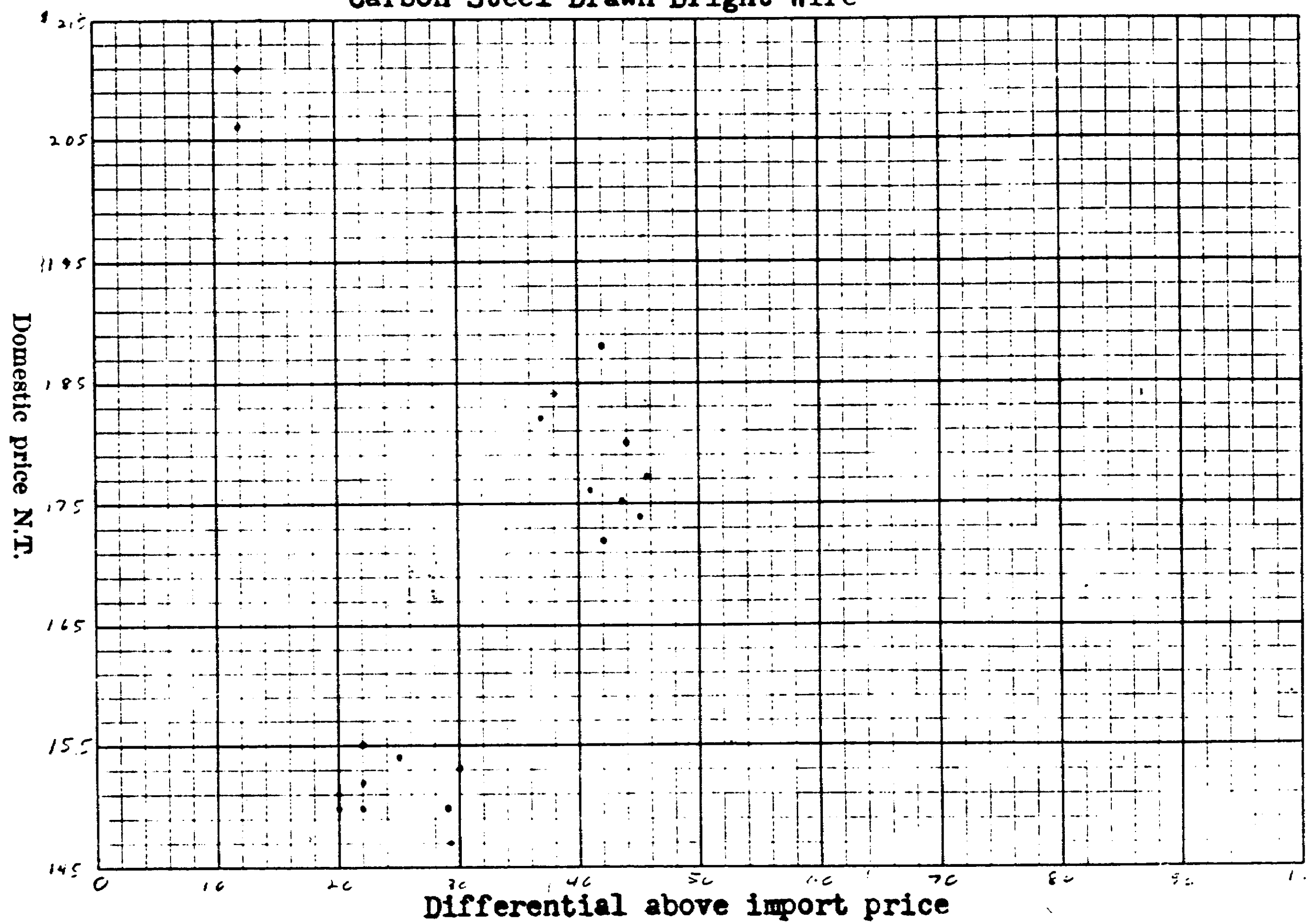


CHART G-26

CHART G-27

Carbon Steel Drawn Bright Wire

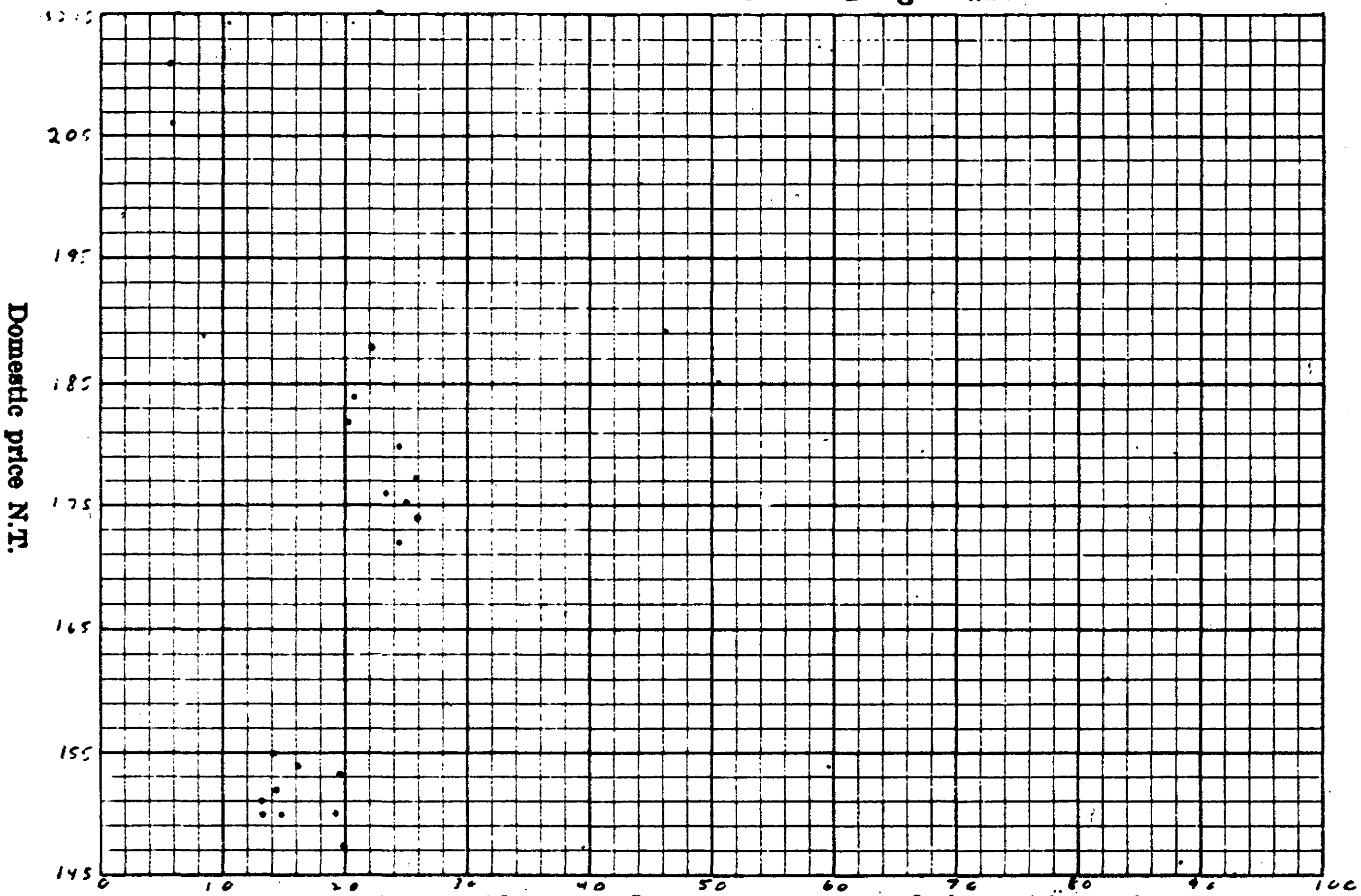


TABLE G-28.—*Delivered prices for stainless steel drawn wire (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference per net ton
Oregon	$2,290.60	$1,333.20	$957.40
Michigan	1,532.00	1,302.00	230.00
Illinois	1,336.00	1,318.00	18.00
Oregon	1,265.60	1,013.40	252.20
Illinois	1,219.00	1,179.00	40.00
Washington	1,212.00	1,053.00	159.00
Illinois	1,188.00	1,125.00	63.00
Michigan	1,178.00	1,032.00	146.00
Oregon	1,161.00	1,013.00	148.00
Illinois	1,030.00	990.00	40.00

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

CHART G-20

Stainless Steel Drawn Wire

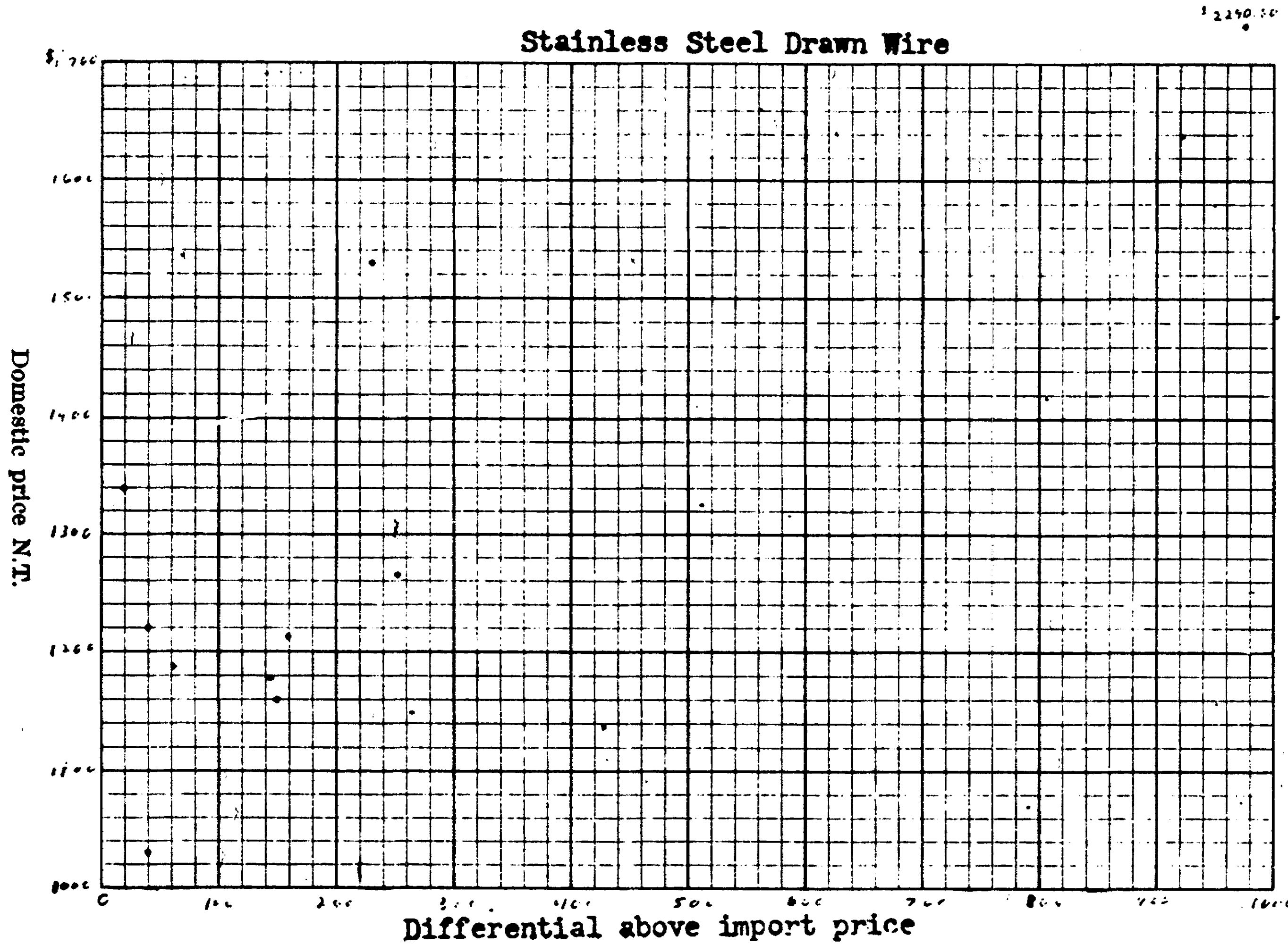


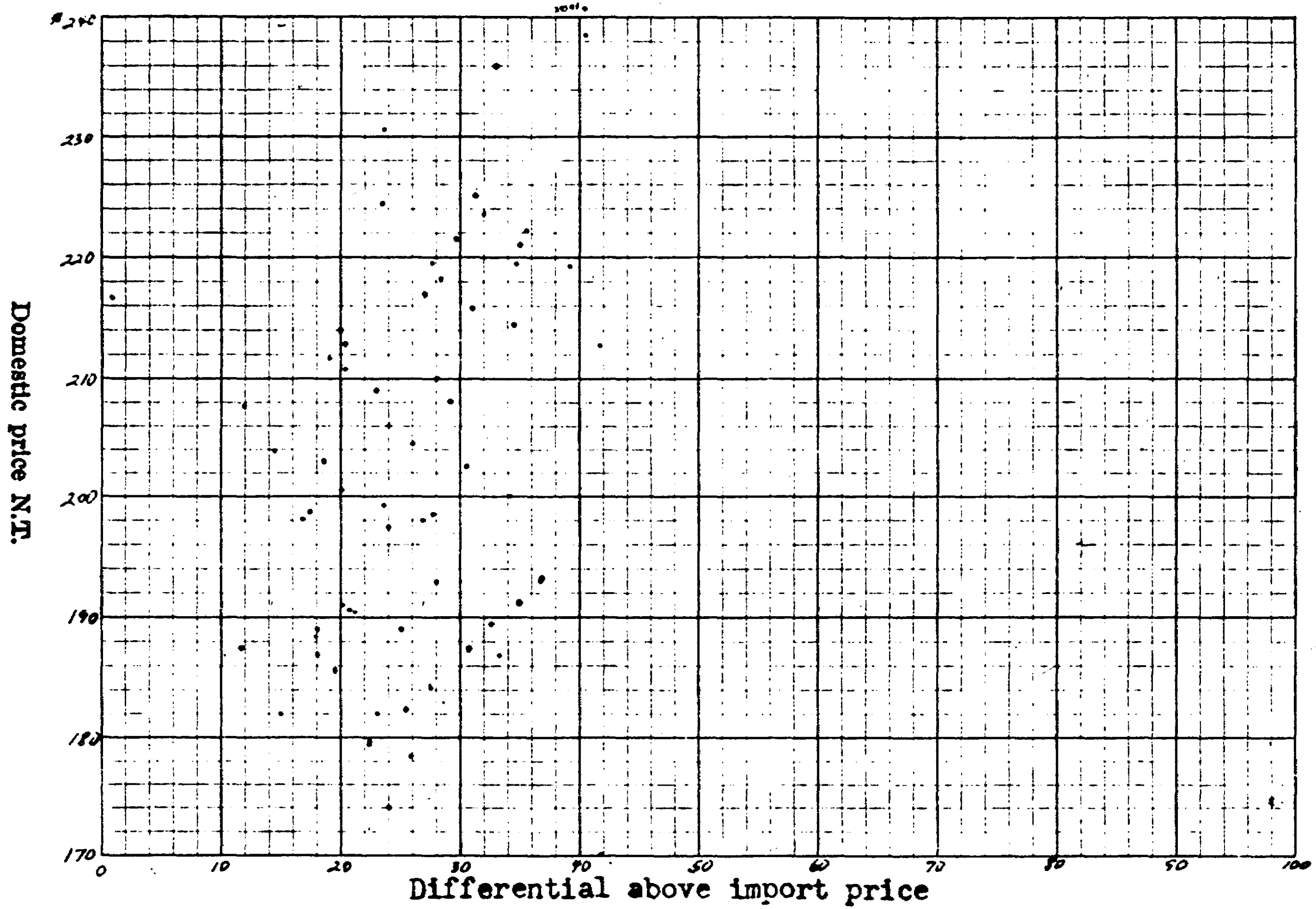
TABLE G-30.—*Delivered prices for galvanized steel sheets (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference (col. 2 minus col. 3) per net ton	Percent difference (col. 4 over col. 2)
Arkansas	$240.98	$200.70	$40.28	16.7
California	238.60	198.20	40.40	16.9
Louisiana	236.00	203.00	33.00	14.0
Oregon	230.50	207.00	23.50	10.2
Texas	225.15	193.80	31.35	13.9
Arkansas	224.50	200.70	23.80	10.6
Pennsylvania	223.60	191.60	32.00	14.3
Oregon	222.30	186.80	35.50	16.0
Texas	221.52	192.00	29.53	13.3
Do	221.00	186.00	35.00	15.8
Oregon	219.50	184.70	34.80	15.9
Washington	219.50	191.80	27.70	12.6
Oregon	219.30	180.00	39.30	17.9
Do	218.50	190.00	28.50	13.0
Texas	217.15	190.20	26.95	12.4
Florida	216.70	215.90	.80	.4
Massachusetts	215.90	185.00	30.90	14.3
Oregon	214.30	180.00	34.30	16.0
Louisiana	214.00	194.00	20.00	9.3
Oregon	212.90	192.40	20.50	9.6
Louisiana	212.88	171.00	41.88	19.7
New York	211.80	192.80	19.00	9.0
Do	210.80	190.60	20.20	9.6
Do	210.00	182.00	28.00	13.3
Louisiana	209.00	186.00	23.00	11.0
Texas	208.16	179.00	29.16	14.0
Indiana	207.80	195.80	12.00	5.8
California	206.00	182.00	24.00	11.7
Do	204.60	178.70	25.90	12.7
Oregon	203.90	189.60	14.30	7.0
Louisiana	203.00	184.40	18.60	9.2
New York	202.80	172.40	30.40	15.0
Do	200.50	180.40	20.10	10.0
Texas	200.00	166.00	34.00	17.0
Pennsylvania	199.40	176.00	23.40	11.7
Nebraska	198.50	181.10	17.40	8.8
Oregon	198.50	170.70	27.80	14.0
California	198.10	181.40	16.70	8.4
Louisiana	198.00	171.10	26.90	13.6
California	197.50	173.60	23.90	12.1
Texas	193.30	156.60	36.70	19.0
Louisiana	193.00	165.00	28.00	14.5
Texas	191.30	156.60	34.70	18.1
California	191.00	170.90	20.10	10.5
Do	190.60	170.20	20.40	10.7
Nebraska	190.50	169.20	21.30	11.2
Texas	189.30	156.60	32.70	17.3
California	189.10	171.00	18.10	9.6
New York	189.00	164.00	25.00	13.2
California	188.50	170.60	17.90	9.5
Louisiana	187.50	176.00	11.50	6.1
Texas	187.30	156.60	30.70	16.4
California	187.00	168.90	18.10	9.7
Ohio	186.90	153.64	33.26	17.8
California	185.70	166.00	19.70	10.6
Texas	184.30	156.60	27.70	15.0
Do	182.30	156.60	25.70	14.1
Michigan	182.00	159.00	23.00	12.6
Do	182.00	167.00	15.00	8.2
Texas	179.30	156.60	22.70	12.7
Do	178.15	152.20	25.95	14.6
Louisiana	174.00	150.00	24.00	13.8

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

CHART G-31

Galvanized Steel Sheets



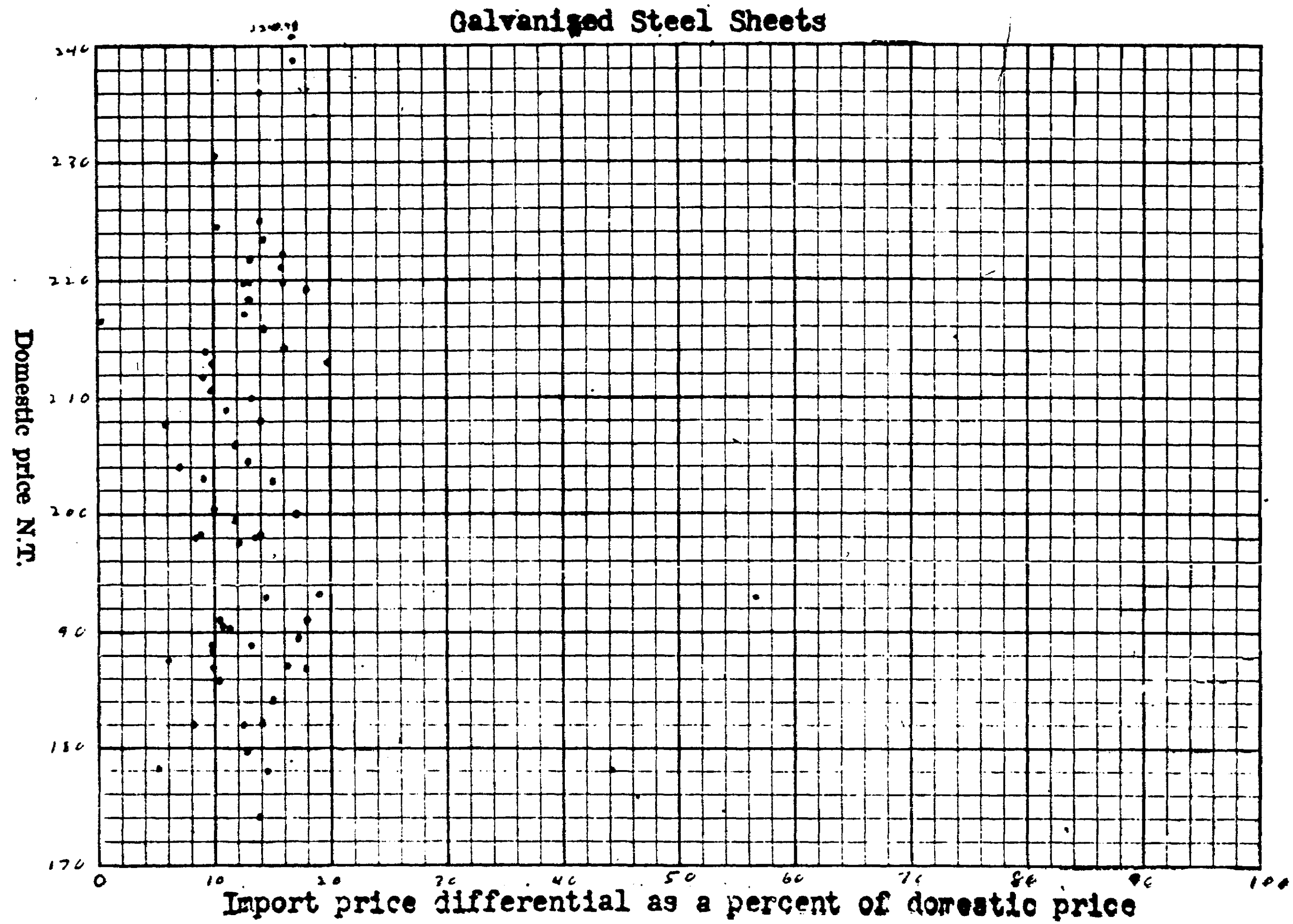

Galvanized Steel Sheets
Domestic price N.T.
Import price differential as a percent of domestic price

CHART G-32

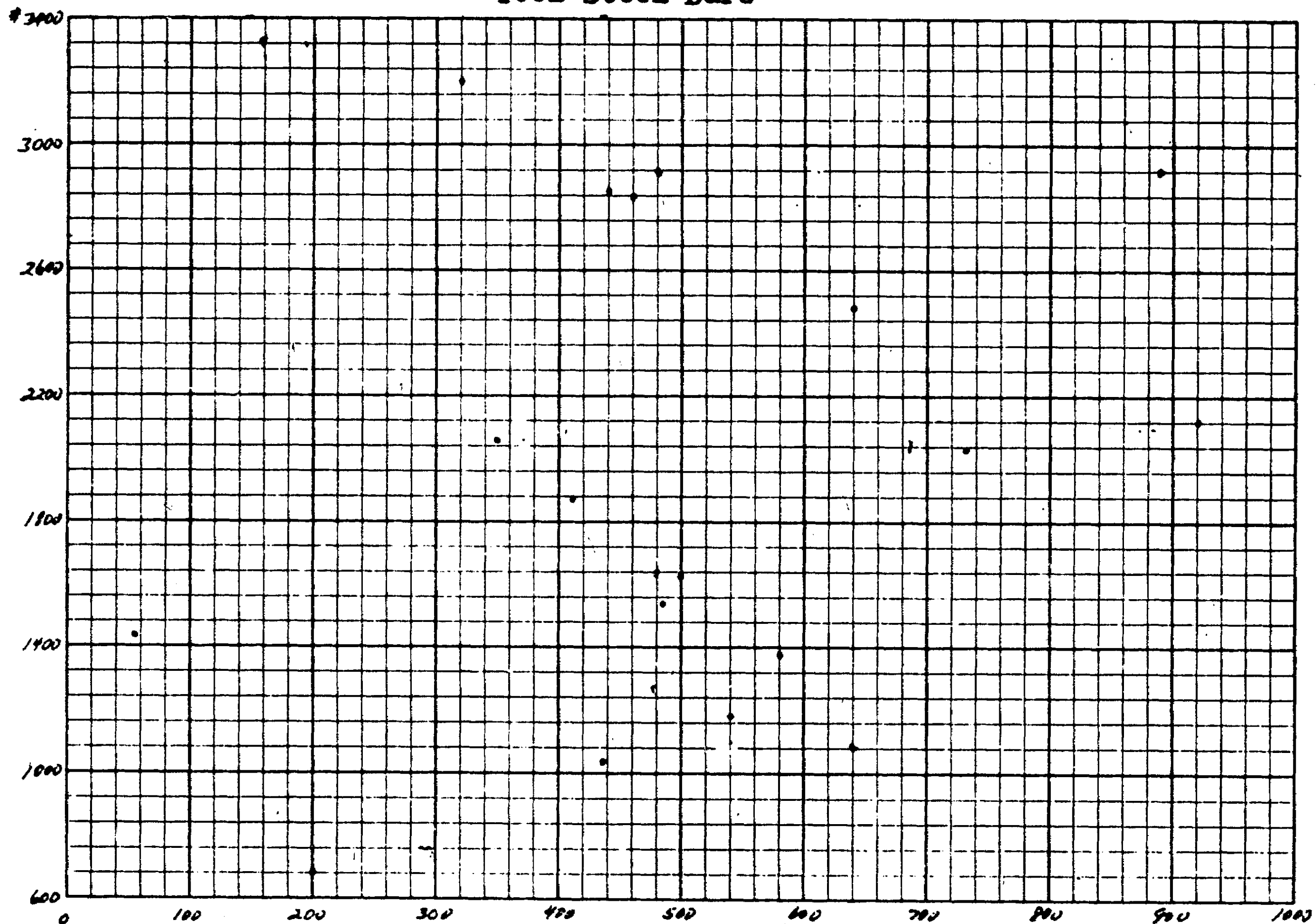
TABLE G-33.—*Delivered prices for tool steel bars (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference per net ton
Michigan	$3,200	$2,880	$320
Do	2,920	2,030	[1] 890
Do	2,920	2,440	480
Ohio	2,860	2,420	440
Michigan	2,840	2,380	460
Indiana	2,490	1,850	640
Ohio	2,120	1,200	920
Indiana	2,060	1,710	[2] 350
New York	2,030	1,300	730
Ohio	1,870	1,460	410
New York	1,640	1,160	480
Ohio	1,630	1,130	500
New York	1,540	1,055	485
Ohio	1,380	800	580
Do	1,180	640	540
New York	1,040	605	435
Michigan	680	480	200

[1] Reported by the company as $610.
[2] Reported by the company as $370.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

Tool Steel Bars



Differential above import price

Domestic price N.T.

CHART G-34

TABLE G-35.—*Delivered prices for hot-rolled stainless steel bars (domestic, imported, and differential)*

Delivery point	Domestic price per net ton	Import price per net ton	Difference per net ton
Wisconsin	$1,508.00	$1,153.00	$355.00
Do	1,369.00	1,099.00	270.00
California	1,125.00	882.00	243.00
Wisconsin	1,103.00	775.00	328.00
California	1,090.00	477.00	613.00
Do	1,027.00	477.00	550.00
Wisconsin	964.00	640.00	324.00
California	924.00	477.00	[1] 447.00
Do	869.00	485.00	384.00

[1] Reported by company as $448.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year end in May 1967.

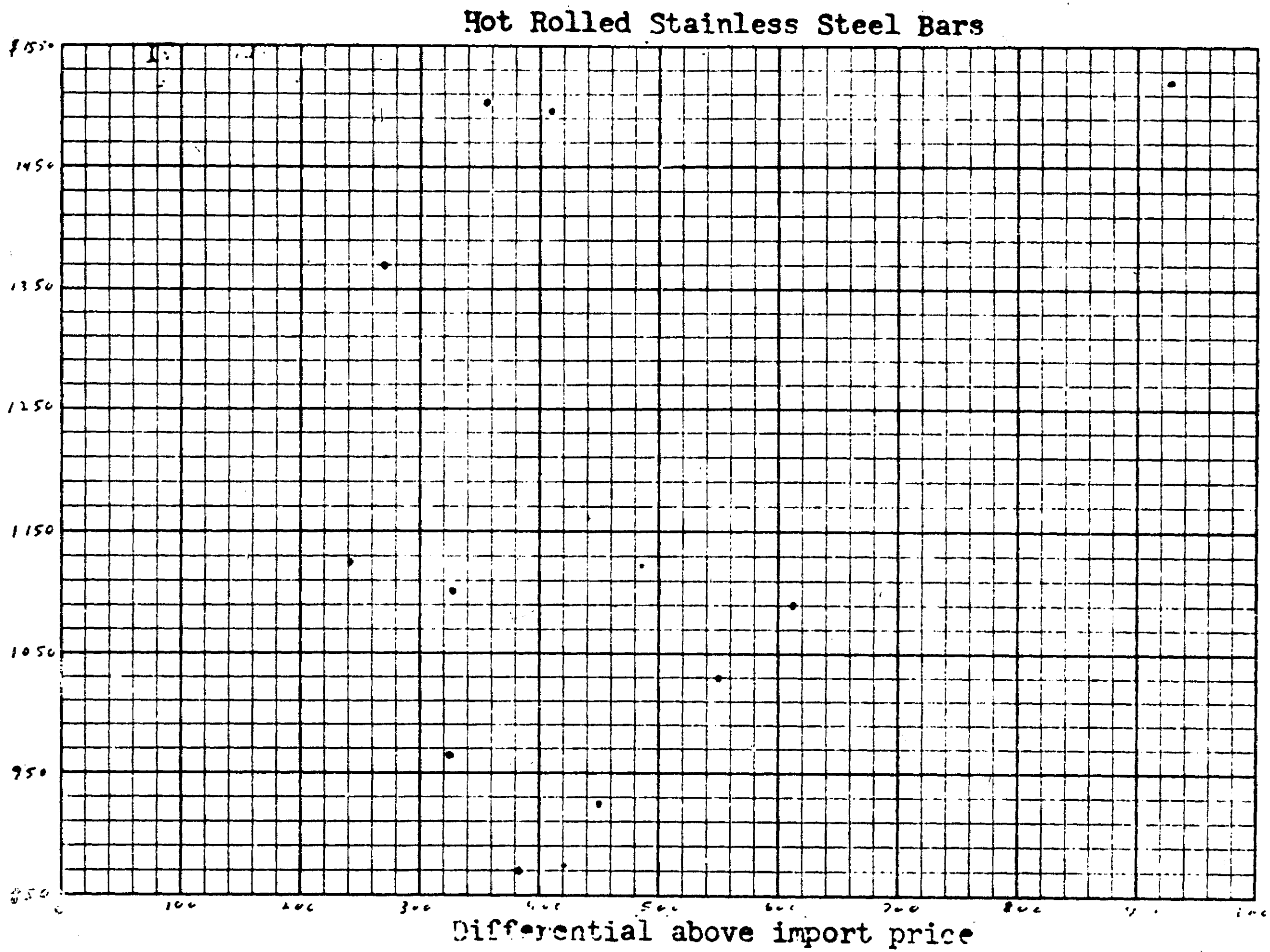

Hot Rolled Stainless Steel Bars
Domestic price N.T.
Differential above import price
1450
1350
1250
1150
1050
950

CHART G-36

TABLE G-37.—*Delivered prices for other steel mill products (domestic, imported, and differential)*

Product	Domestic price per net ton	Import price per net ton	Difference per net ton	Delivery point
Carbon steel drawn galvanized wire	$205.00	$147.80	$57.20	California.
	202.00	156.00	46.00	Ohio.
	190.20	155.00	35.20	Texas.
	186.20	144.90	41.30	Alabama.
	182.20	141.30	40.90	Do.
	182.20	155.00	27.20	Texas.
	182.20	155.00	27.20	Do.
	179.20	138.10	41.10	Alabama.
Barbed wire	212.06	169.63	42.43	California.
	208.59	136.06	72.53	Florida.
	204.10	158.22	45.88	California.
	202.24	158.18	44.06	Do.
	199.94	126.54	73.40	Texas.
	199.59	128.42	71.17	Do.
	195.50	142.67	52.83	Tennessee.
Reinforcing bars	133.00	99.60	33.40	Texas.
	119.00	90.60	28.40	Do.
Cold-finished carbon steel bars	277.00	254.00	23.00	Michigan.
	260.00	222.00	38.00	Do.
	248.00	232.00	16.00	Do.
	243.00	212.60	30.40	Do.
	238.00	224.00	14.00	Do.
	234.00	215.00	19.00	Do.
	209.00	178.00	31.00	Ohio
	208.20	150.60	57.60	Florida.
	206.10	177.20	28.90	Massachusetts.
Electrical steel sheets	496.00	444.00	52.00	Do.
	219.00	191.00	28.00	New Jersey.
	180.00	162.67	17.33	Massachusetts.
	179.50	165.00	14.50	Michigan.
Stainless steel billets	1,235.00	885.00	350.00	Wisconsin.
	1,120.00	825.00	295.00	Do.
	900.00	687.00	213.00	Do.
	785.00	624.00	161.00	Do.
Hot-rolled stainless steel plate	1,489.00	1,273.00	216.00	New Jersey.
	1,436.00	1,235.00	201.00	Do.
	1,339.00	1,210.00	129.00	Do.
	1,285.00	1,160.00	125.00	Do.
	1,086.00	930.00	156.00	Do.
	1,033.00	880.00	153.00	Do.
	941.00	830.00	111.00	Do.
	888.00	790.00	98.00	Do.
Stainless steel seamless hollows	2,780.00	1,900.00	880.00	Do.
	2,100.00	1,480.00	620.00	Do.
	1,900.00	1,340.00	560.00	Do.
Cold-finished stainless steel bars	1,491.00	1,042.00	449.00	California.
	1,387.00	947.00	440.00	Do.
	1,365.00	940.00	425.00	Do.
	1,310.00	993.00	317.00	Ohio.
	1,302.00	862.00	440.00	California.
	1,126.00	853.00	273.00	Wisconsin.
Hot-rolled stainless steel rods	1,390.00	1,070.00	320.00	Connecticut.
	1,100.00	700.00	400.00	Do.
	1,046.00	830.00	216.00	Do.
	1,032.00	700.00	332.00	Maryland.
	970.00	750.00	220.00	Connecticut.
	922.00	720.00	202.00	Do.
	915.00	710.00	205.00	Michigan.
	915.00	720.00	195.00	Do.
High-strength, low-alloy sheets	207.40	190.00	17.40	Pennsylvania.
Carbon steel pipe casing	288.00	236.00	52.00	California.
	278.00	215.00	63.00	Tennessee.
	257.00	231.00	[1] 46.00	Do.
	251.00	217.00	34.00	California.
Spring wire	326.10	270.00	56.10	Do.
	193.00	174.00	19.00	Pennsylvania.
Uncoated round steel wire	181.00	172.60	8.40	California.
Carbon cold-rolled steel strip	1,200.00	600.00	600.00	Massachusetts.
Hot-rolled carbon steel strip	153.20	114.00	39.20	Florida.
Carbon steel drawn (cold heading) wire	264.00	204.00	60.00	Georgia.
	226.80	175.00	51.80	Connecticut.
	215.00	175.00	40.00	Do.
Tool steel billets	1,815.00	785.00	1,030.00	Illinois.
	1,334.00	720.00	614.00	Do.
	1,256.00	740.00	516.00	Oregon.
	1,170.00	700.00	470.00	Illinois.
	990.00	458.00	532.00	Do.

[1] Reported by company as $86.

TABLE G-37.—*Delivered prices for other steel mill products (domestic, imported, and differential)*—Continued

Product	Domestic price per net ton	Import price per net ton	Difference per net ton	Delivery point.
Wire fence	$225.15	$167.00	$58.15	Florida.
	223.02	164.45	58.57	North Carolina.
	222.22	163.76	58.46	Do.
	221.02	149.13	71.89	Do.
	220.77	151.90	68.87	Do.
	220.05	164.64	55.41	Do.
Stainless steel strip	1,195.60	942.80	252.80	California.
	857.20	710.00	147.20	Connecticut.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

In order to obtain a more explicit presentation of the differentials between imported and domestic steel prices there is added a median differential of the foreign price advantage. In about three-fourths of the price comparisons with ten or more quotations, the median is insignificantly lower than the arithmetic mean. The arrangement avoids the overlapping of the high import prices and low domestic prices for nonidentical products.

The tables illustrate the range of price differentials in dollars, and the corresponding domestic price for the recorded import transaction which generated the given price differential. In addition to the range of the differential, the median value has also been provided. (The percent differential was also tabulated but in most instances corresponds quite closely with the transaction that represented the range of actual dollar differences and hence was not included in the tabulations.)

Table I lists the items for which there were more than 10 price comparisons made available. It is believed that a smaller sample size has very little validity and that even some of the smaller sample sizes listed in table I may be of questionable validity. Table II lists those products for which 10 or fewer comparisons were available. These include most of the stainless and tool steel products.

A set of charts was also prepared. These charts reflect the percent of the sample delivered at the indicated differential or percent below the domestic price. The summary chart has combined the 10 largest samples of carbon grades and presents them as a frequency distribution. The lower chart is a cumulative distribution of the same data. By choosing a point on the horizontal scale and proceeding vertically to the curve, one is able to read directly the percent of sample whose percent difference was equal to or less than the initially chosen value. For example, at a 22-percent difference, the intersection of the curve is at about 78 percent; thus, 78 percent of the sample had a price difference of 22 percent or less.

Frequency distributions were also prepared for some of the major products. These are also attached and include hot rolled, cold rolled, and galvanized sheets, plates, and structural shapes in the carbon steel grades, and cold rolled sheets in the stainless steel grades.

The data used to prepare the various charts are also being provided in tabular form.

TABLE G-38.—*Comparison of actual delivered price differentials for domestic versus imported (sample size, more than 10 comparisons per product)*

Product	Grade	Number of price comparisons	Range of foreign price advantage (dollars per net ton)			Corresponding import and domestic prices for high, low, and median foreign price advantage (dollars per net ton)					
						High		Low		Median	
			High	Low	Median [1] [2]	Domestic	Imported	Domestic	Imported	Domestic	Imported
Cold-rolled sheets	Carbon	123	43.28	6.30	20.30	175.28	132.00	157.30	151.00	146.30	126.00
Hot-rolled sheets	do	119	54.30	6.00	24.50	152.30	98.00	121.00	115.00	150.50	126.00
Galvanized sheets	do	62	41.88	.80	25.90 25.70	212.88	171.00	216.70	215.90	204.60 182.30	178.70 156.60
Structural shapes	do	54	44.39	14.10	29.25 29.40	179.39	135.00	162.90	148.80	140.25 138.20	111.00 108.80
Plates	do	42	47.00	14.30	24.90	152.00	105.00	135.40	121.10	151.00	126.10
Hot-rolled bars and bar shapes	do	39	63.80	19.90	38.80	175.40	111.60	147.00	127.10	144.00	105.20
Galvanized standard pipe	do	32	70.00	21.25	44.00 42.93	243.00	173.00	207.22	185.97	253.18 218.16	209.18 175.23
Black standard pipe	do	29	57.00	17.23	36.00	206.00	149.00	173.80	156.57	206.00	170.00
Wire rods	do	27	54.50	6.00	25.00	165.50	111.00	143.00	137.00	157.00	132.00
Drawn bright wire	do	21	68.00	12.00 12.00	30.10	252.00	184.00	211.00 206.00	199.00 194.00	153.20	123.10
Cold-rolled sheets	Stainless	43	436.00	31.00	213.00	1,105.00	669.00	1,395.00	1,364.00	1,020.00	807.00
Bars	Tool	17	920.00	200.00	480.00	2,120.00	1,200.00	680.00	480.00	2,920.00	2,440.00

[1] Represents the center or middle item in the array when data are listed in descending order of the foreign price advantage.

[2] Since an even number of price comparisons were reported for some products, the median is based on the 2 central or middle items, and both values are shown for those products.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

Source. Price comparisons provided by individual steel companies to Senate Finance Committee.

TABLE G-39.—*Comparison of actual delivered price differentials for domestic versus imported (sample size, 10 or fewer comparisons per product)*

Product	Grade	Number of price comparisons	Range of foreign price advantage (dollars per net ton)			Corresponding import and domestic prices for high, low, and median foreign price advantage (dollars per net ton)					
						High		Low		Median	
			High	Low	Median [1] [2]	Domestic	Imported	Domestic	Imported	Domestic	Imported
Cold finished steel bars	Carbon	9	57.60	14.00	28.90	208.20	150.60	238.00	224.00	206.10	177.20
Drawn galvanized wire	do	8	57.20	27.20	41.10 40.90	205.00	147.80	182.20	155.00	179.20 182.20	138.10 141.30
Barbed wire	do	7	73.40	42.43	52.83	199.94	126.54	212.06	169.63	195.50	142.67
Wire fence	do	6	71.89	55.41	58.57 58.46	221.02	149.13	220.06	164.64	223.02 222.22	164.45 163.76
Electric steel sheets	do	4	52.00	14.50	28.00 17.33	496.00	444.00	179.50	165.00	219.00 180.00	191.00 162.67
Drawn cold heading wire	do	3	60.00	40.00	51.80	264.00	204.00	215.00	175.00	226.80	175.00
Spring wire	do	2	56.10	19.00		326.10	270.00	193.00	174.00		
Reinforcing bars	do	2	33.40	28.40		133.60	99.60	119.00	90.60		
Uncoated round steel wire	do	1			8.40					181.00	172.60
Hot-rolled strip	do	1			39.20					153.20	114.00
Cold-rolled strip	do	1			600.00					1,200.00	600.00
High strength low alloy sheets	do	1			17.40					207.40	190.00
Drawn wire	Stainless	10	957.40	18.00	148.00 146.00	2,290.60	1,333.20	1,336.00	1,318.00	1,161.00 1,178.00	1,013.00 1,032.00
Hot-rolled bars	do	9	613.00	243.00	355.00	1,090.00	477.00	1,125.00	882.00	1,508.00	1,153.00
Hot-rolled rods	do	8	400.00	195.00	220.00 216.00	1,100.00	700.00	915.00	720.00	970.00 1,046.00	750.00 830.00
Hot-rolled plates	do	8	216.00	98.00	153.00 129.00	1,489.00	1,273.00	888.00	790.00	1,033.00 1,339.00	880.00 1,210.00
Cold finished bars	do	6	449.00	273.00	440.00 425.00	1,491.00	1,042.00	1,126.00	853.00	1,302.00 1,365.00	862.00 940.00
Billets	Tool	5	1,030.00	470.00	532.00	1,815.00	785.00	1,170.00	700.00	990.00	458.00
Do	Stainless	4	350.00	161.00	295.00 213.00	1,235.00	885.00	785.00	624.00	1,120.00 900.00	825.00 687.00
Seamless hollows	do	3	880.00	560.00	620.00	2,780.00	1,900.00	1,900.00	1,340.00	2,100.00	1,480.00
Strip	do	2	252.80	147.20		1,195.60	942.80	857.20	710.00		

[1] Represents the center or middle item in the array when data are listed in descending order of the foreign price advantage.

[2] Since an even number of price comparisons were reported for some products, the median is based on the 2 central or middle items, and both values are shown for those products.

NOTE.—Based on competitive specifications considered typical and reported by domestic steel producers during the year ending in May 1967.

Source: Price comparisons provided by individual steel companies to Senate Finance Committee.

Distribution of delivered price percent differentials, domestic versus imported

[Data for chart]

	Products																						
	Sheets						Structural shapes		Plates		Bars and shapes	Pipe		Wire rods	Drawn wire	All		Cumulative		Stainless cold-rolled sheets	
	Hot-rolled		Cold-rolled		Galvanized							Galvanized	Black								
	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	n	n	n	n	n	Percent	n	Percent	n	Percent
Percent difference:																					
0					1	1.61										1	0.18	1	0.18		
1																		1	.18		
2																		1	.18	2	4.64
3																		1	.18	1	2.32
4			1	0.81										1		2	.37	3	.55		
5	2	1.68	1	.81												3	.55	6	1.10		
6			1	.81	2	3.23								1	2	6	1.10	12	2.19	1	2.32
7			1	.81	1	1.61										2	.37	14	2.56		
8			2	1.63	2	3.23										4	.73	18	3.29	1	2.32
9	1	.84	7	5.69	4	6.45	1	1.85						4		17	3.10	35	6.39		
10	4	3.36	6	4.88	7	11.29			1	2.38		2	7	2		29	5.29	64	11.68		
11	2	1.68	9	7.32	6	9.68	3	5.56	3	7.14		2	1	1		27	4.93	91	16.61	2	4.64
12	3	2.52	16	13.01	4	6.45	3	1.85	3	7.14		2	2	1		32	5.84	123	22.45	1	2.32
13	6	5.04	14	11.38	8	12.90	1	1.85	2	4.76		1	1	2	2	37	6.75	160	29.20		
14	8	6.72	19	15.45	9	14.52	1	1.85	1	2.38	2	2		3	1	46	8.40	206	37.60		
15	2	1.68	10	8.13	4	6.45			3	7.14	2		1	2	2	26	4.75	232	42.34	1	2.32
16	4	3.36	15	12.20	5	8.07	2	3.70	5	11.90	1	1		2	1	36	6.57	268	48.91	1	2.32
17	13	10.92	6	4.88	4	6.45	2	3.70	5	11.90	1	3	2	1		37	6.75	305	55.66	2	4.64
18	12	10.08	3	2.44	3	4.84	7	12.96	2	4.76	2	3	3	1		36	6.57	341	62.23	2	4.64
19	16	13.44	2	1.63	1	1.61	5	9.26	3	7.14	1	2			1	31	5.66	372	67.89	2	4.64

Distribution of delivered price percent differentials, domestic versus imported—Continued

[Data for chart]

	Products																				
	Sheets						Structural shapes		Plates		Bars and shapes	Pipe		Wire rods	Drawn wire	All		Cumulative		Stainless cold-rolled sheets	
	Hot-rolled		Cold-rolled		Galvanized							Galvanized	Black								
	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	n	n	n	n	n	Percent	n	Percent	n	Percent
Percent difference—Cont.																					
20	9	7.56	2	1.63	1	1.61	1	1.85			3	3		1		23	4.20	395	72.09	3	6.97
21	7	5.88	2	1.63			9	16.67	3	7.14	1				3	23	4.20	418	76.29	6	13.94
22	2	1.68	2	1.63			1	1.85	1	2.38			1	1	1	9	1.64	427	77.93	4	9.29
23	6	5.04	2	1.63			4	7.41	2	4.76			3		1	18	3.29	445	81.21	3	6.97
24	1	1.84							3	7.14	1		6		1	13	2.37	458	83.59	5	11.62
25	8	6.12	2	1.63			3	5.56	1	2.38	2	2			2	19	3.47	477	87.05	1	2.32
26	1	.84					3	5.56			3	5	1		1	15	2.74	492	89.79	1	2.32
27	4	3.36					3	5.56	3	7.14	10	1		1	2	23	4.20	515	93.99	1	2.32
28	1	.84					4	7.41			2	1	1		1	9	1.64	524	95.63		
29	3	2.52					2	3.70			2	2				9	1.64	533	97.27	1	2.32
30	2	1.68					1	1.85			1					4	.73	537	98.00		
31									1	2.38	3					3	.73	541	98.73		
32	1	.84												2		3	.55	544	99.28		
33														1		1	.18	545	99.46		
34											1					1	.18	546	99.65		
35																		546	99.65		
36	1	.84									1					2	.37	548	100.01		
37																				1	2.32
38																					
39																					
40																				1	2.32
Total n	119		123		62		54		42		39	32	29	27	21	548				43	

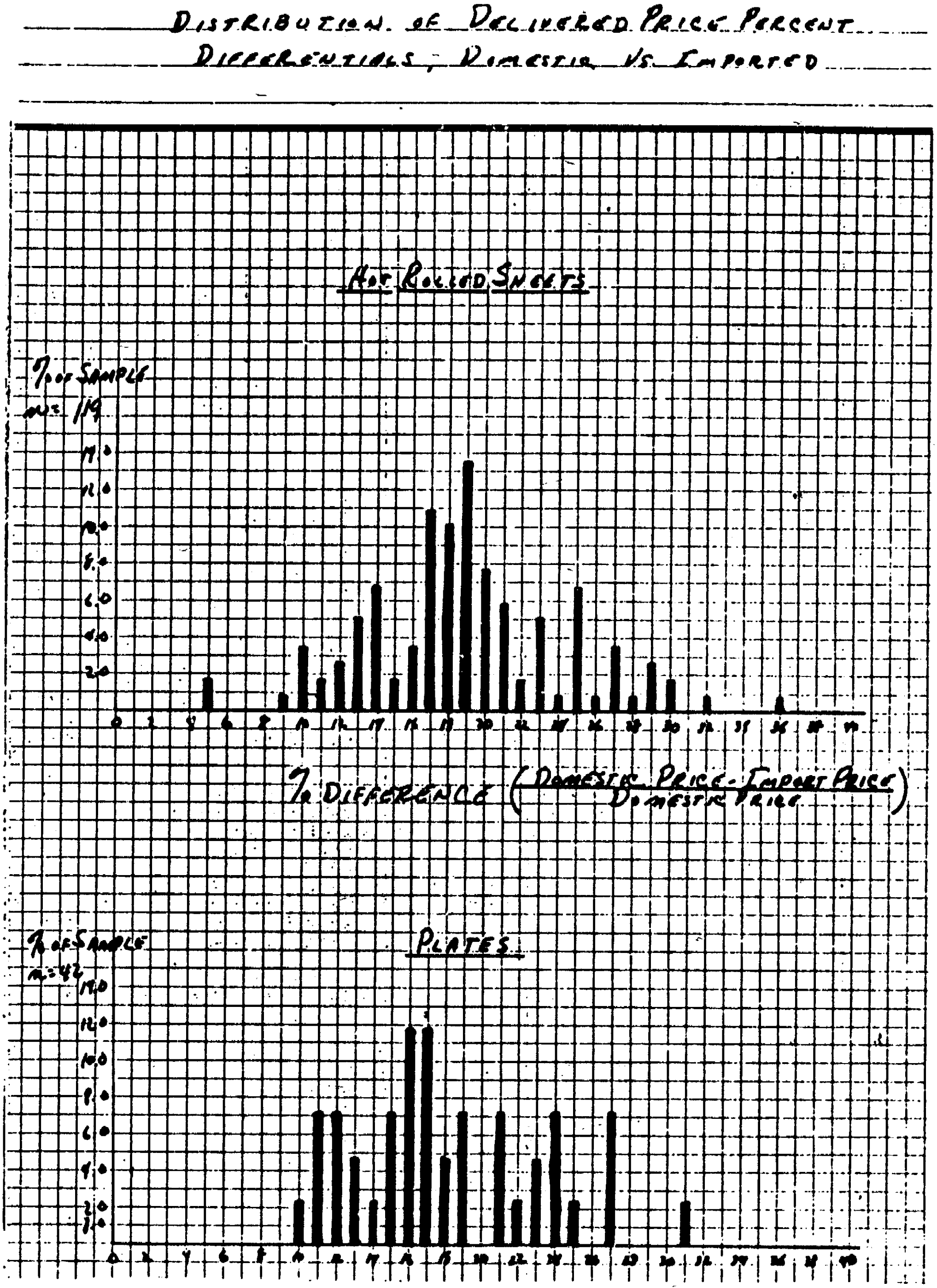
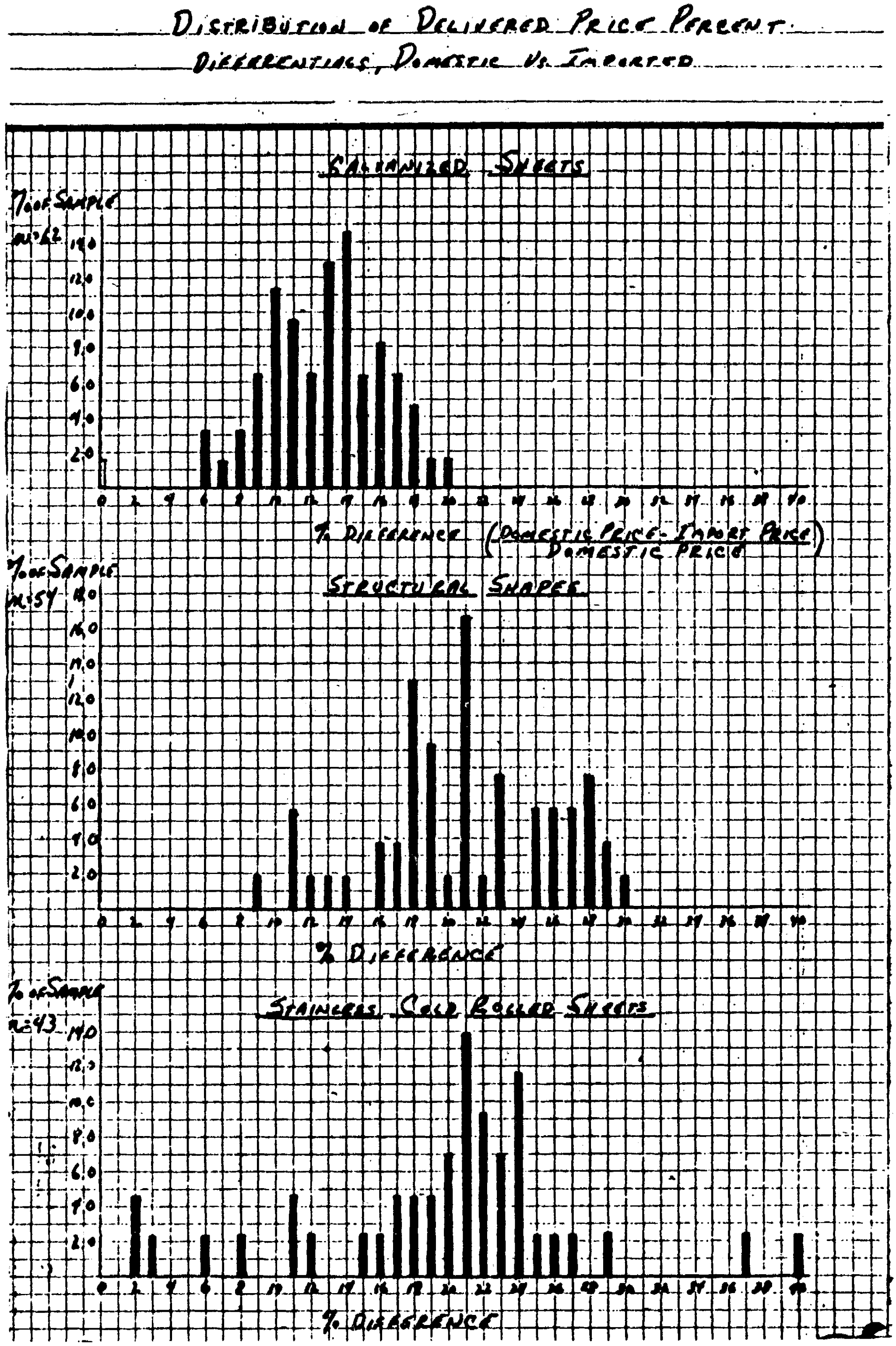

DISTRIBUTION OF DELIVERED PRICE PERCENT DIFFERENTIALS; DOMESTIC VS. IMPORTED
HOT ROLLED SHEETS
% OF SAMPLE
N = 119
% DIFFERENCE (DOMESTIC PRICE - IMPORT PRICE / DOMESTIC PRICE)
PLATES
% OF SAMPLE
N = 42

CHART G–40



Distribution of Delivered Price Percent Differentials, Domestic vs. Imported
Galvanized Sheets
% of Sample n=62
% Difference (Domestic Price - Import Price / Domestic Price)
Structural Shapes
% of Sample n=57
% Difference
Stainless Cold Rolled Sheets
% of Sample n=43
% Difference

CHART G-41

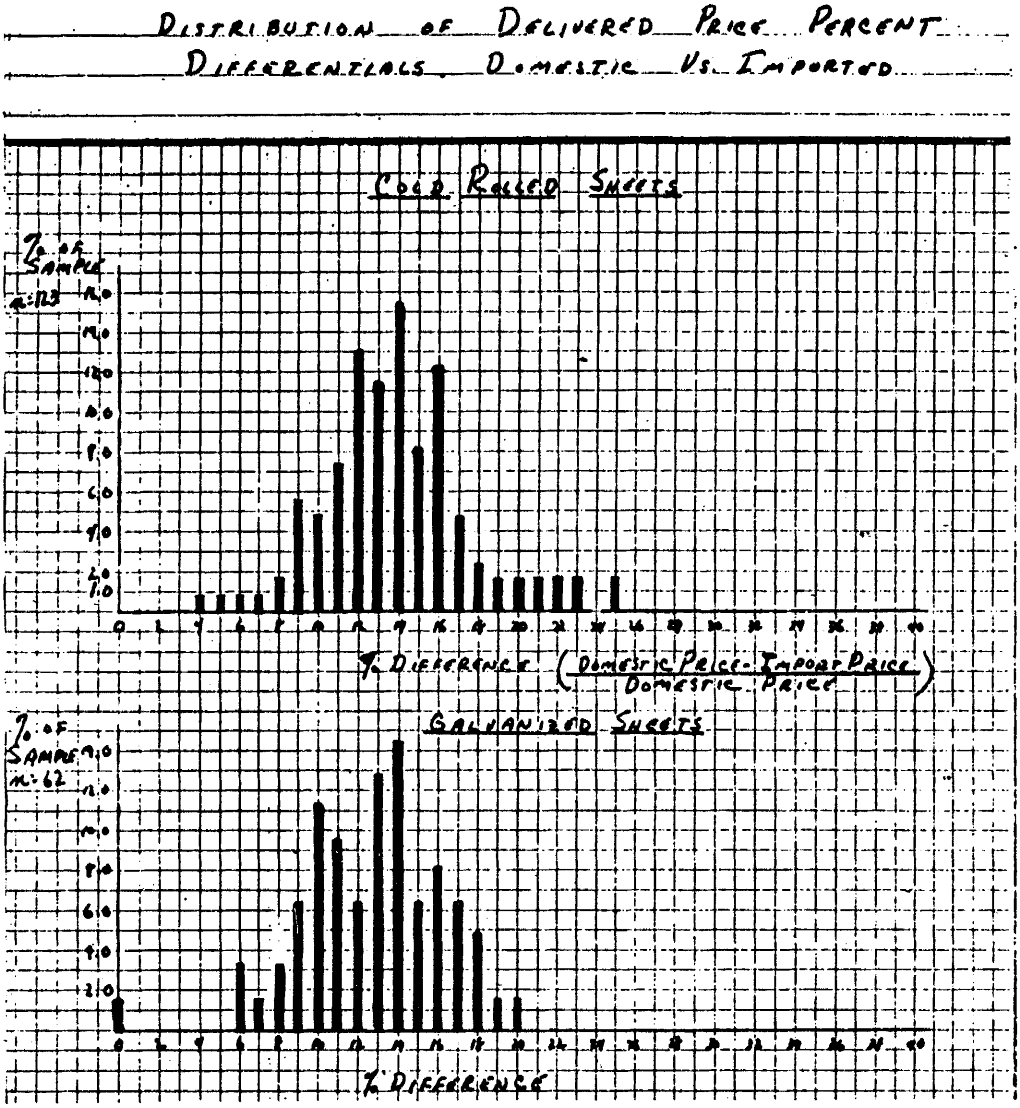

Distribution of Delivered Price Percent
Differentials Domestic Vs. Imported
Cold Rolled Sheets
% of Sample
% Difference (Domestic Price - Import Price / Domestic Price)
Galvanized Sheets
% of Sample
n: 62
% Difference

CHART G-42

Addendum: Ocean Freight Rates for Iron and Steel Products

The Joint Economic Committee, under the chairmanship of Senator Paul H. Douglas, held hearings through the years 1965 and 1966 on "Discriminatory Ocean Freight Rates and the Balance of Payments" in which it was concluded that the international ocean freight rate structure was weighted against U.S. exports. U.S. exports bear most of the cost of vessel operation, even in trades where imports approximate exports in value and quantity. Government sources revealed that on trade between the U.S. Pacific coast and the Far East, export rates exceeded rates on corresponding imports on 80 percent of sampled items. The same discrimination prevailed on 70 percent of the products shipped by American exporters from U.S. Atlantic and gulf ports to the Far East, and on 60 percent of the commodities shipped from the Atlantic coast to Western Europe.

In order to assess recent developments, a comparison of conference ocean freight rates as of May 31, 1967, on iron and steel products for three U.S. foreign trade routes were compiled; namely:

(1) U.S. North Atlantic ports and Western Germany;

(2) U.S. gulf ports and Mediteranean seaports;

(3) U.S. Pacific ports and Japan.

Conference rates are the nominal rates charged on the shipment of iron and steel products. But there are two qualifications; namely:

(1) In actual practice of either imports or exports the shipper would seek to negotiate a rate below the listed rate;

(2) A substantial and probably growing percentage of iron and steel shipments, both exports and imports, are handled by the use of tramps or chartered ships.

TABLE G-43.—*Comparison of conference ocean freight rates as of Mar. 31, 1967, on iron and steel products for 3 U.S. foreign trade routes*

Commodity	U.S. North Atlantic ports and Western Germany		U.S. gulf ports and Mediterranean Sea ports (except Spanish)		U.S. Pacific ports and Japan	
	Freight rates on U.S. exports [1]	Freight rates on U.S. imports [2]	Freight rates on U.S. exports [3]	Freight rates on U.S. imports [4]	Freight rates on U.S. exports [5]	Freight rates on U.S. imports [6]
Angles and beams	$37.25 (W)	Open (minimum, $23.25/$34.50 (W)) [a]. Open (minimum, $21/$32.25 (W)) [b]. Open (minimum, $19/$30.25 (W)) [c].	C—$31.75 (W/M). NC—$37.35 (W/M).	Ports 1, $28.50 (W). Ports 2, $27 (W).	C—$32.50 (W/M). NC—$37.50 (W/M).	$19 (W/M). $17.50 (W/M), 300-ton minimum. (1) $16.50 (W/M), 1,500-ton minimum. (1) $16 (W/M), 1,500-ton minimum.
Billets and blooms	$21.25 (W)	$23.75/$29 (W) [d]	No specific rate	Ports 1, $28.50 (W). Ports 2, $27 (W).	C—$35 (W/M). NC—$40.25 (W/M).	$19 (W/M). $17.50 (W/M), 300-ton minimum. (1) $16.50 (W/M), 1,500-ton minimum. (1) $16 (W/M), 1,500-ton minimum.
Bolts and nuts	$37.25 (W)	$26.25 (W)	C—$31.75 (W). NC—$37.35 (W).	$25 (W)	C—$35 (W/M). NC—$40.25 (W/M).	$30.50 (W/M) (2,000/40).
Bars	$21.25(W)	Open (minimum, $23.25/$34.50 (W)) [a]. Open (minimum, $21/$32.25 (W)) [b]. Open (minimum, $19/$30.25 (W)) [c].	C—$31.75(W). NC—$37.35(W).	Ports 1, $28.50(W). Ports 2, $27(W).	C—$32.50(W/M). NC—$37.50(W/M).	$19 (W/M). $17.50(M/W), 300-ton minimum.
Casings, oilwell, 6-in. I/D.	$36.50(W)	No specific rate	No specific rate	No specific rate	C—$35(W/M). NC—$40.25(W/M).	$21 (W/M) (less 40 ft.) $18/$29.50(W) (over 40 ft; 20 ft. range).
Castings and forgings.	$51.25(W)	$34.50(W)	C—$51.50(W/M). NC—$60.55(W/M).	Ports 1. Ports 2, $25(W).	C—$62.50(W/M). NC—$72.00(W/M).	$28.50(W/M) (2,000/40).
Girders	$37.25(W)	Open (minimum, $21/$32.25(W)) [b]. Open (minimum- $19/$30.25(W)) [c].	C—$31.75(W/M). NC—$37.35(W/M).	Ports 1, $28.50(W). Ports 2, $27(W).	C—$32.50(W/M). NC—$37.50(W/M).	No specific rate.

See footnotes at end of table, p. 417.

TABLE G-43.—*Comparison of conference ocean freight rates as of Mar. 31, 1967, on iron and steel products for 3 U.S. foreign trade routes*—Cont.

Commodity	U.S. North Atlantic ports and Western Germany		U.S. gulf ports and Mediterranean Sea ports (except Spanish)		U.S. Pacific ports and Japan	
	Freight rates on U.S. exports [1]	Freight rates on U.S. imports [2]	Freight rates on U.S. exports [3]	Freight rates on U.S. imports [4]	Freight rates on U.S. exports [5]	Freight rates on U.S. imports [6]
Pipe	$36.50 (W)	$25.50 (W)	*6-in. O/D* C—$26.50 (W) NC—$31.15 (W) *8-in. O/D* C—$27.50 (W) NC—$32.35 (W) *Over 8-in. O/D* C—$31 (W) NC—$36.45 (W)	Ports 1, $23/$40 (W) I/D range. Ports 2, $21.25/$25 (W) I/D range.	*To 6-in. I/D* C—$35 (W) NC—$40.25 (W) *Over 6-in. I/D* C—$37.35 (W) NC—$43 (W)	$21 (W/M) (less 40 ft.) $18/$29.50 (W) (over 40-ft.; 20-ft. range).
Plates, plain	$31.25 (W) $19.75 (W) 300-ton minimum.	Open (minimum, $21/$32.25 (W)[b]. Open (minimum, $19/$30.25 (W)[c].	C—$23 (W#) NC—$27.05 (W#) C—$25.25 (W##) NC—$29.70 (W##) C—$31.75 (W###) NC—$37.35 (W###)	Ports 1, $28.50 (W) Ports 2, $27 (W)	C—$28.50 (W) NC—$32.75 (W)	$19 (W/M). $17.50 (W/M), 300-ton minimum.
Rods	$32.25(W)	Open (minimum, $21 (W))[c] Open (minimum, $21.75 (W))[f]. Open (minimum, $19 (W))[g]	No specific rate	Ports 1, $28(W) Ports 2, $28.50(W)	C—35 (W) NC—$40.25(W)	$19 (W/M). $17.50(W/M), 300-ton minimum.
Rails, railway	$43.25(W)	Open (minimum, $21/$32.25 (W))[b]. Open (minimum, $19/$30.25 (W))[c].	*40-ft. lengths* C—$31.75(W) NC—$37.35(W) *60-ft. lengths* C—$43.75(W) NC—$51.45(W) *65-ft. lengths* C—$47.75(W) NC—$56.15(W)	No specific rates	C—$41.25(W) NC—$47.50(W)	$19(W/M). $17.50(W/M), 300-ton minimum.
Screws	$52.50(W)	$29(W)	C—$31.75(W) NC—$37.35(W)	Ports 1, $29(W) Ports 2, $30(W)	C—35(W/M) NC—$40.25(W/M)	$30.50(W/M) (2,000/40).
Wire, barbed	No specific rate	$28(W)	C—$31.75(W) NC—$37.35(W)	To Trieste only; $23.50 (W).	C—$38.35(W/M) NC—$44(W/M)	$25.00(W).

TARIFF AUTHORITY AND EXPLANATION OF ABBREVIATIONS AND REFERENCES APPLICABLE TO EACH OF THE 3 TRADE ROUTES

[1] Exports: North Atlantic Continental Freight Conference tariff No. (27) FMC-2. W—rates apply per ton of 2,240 pounds.

[2] Imports: Continental North Atlantic Westbound Freight Conference tariff K (FMC-1). W—rates apply per 1,000 kg. Open—agreed rates apply, subject to minimum rates as indicated:

[a] Range of a number of minimum rates, lowest to highest, applying on commodities ranging in length from 40 to 100 ft., via Holland American Line.

[b] Range of a number of minimum rates, lowest to highest, applying on commodities ranging in length from 40 to 100 ft., via Black Diamond Steamship Corp., Cunard Line, and United States Lines.

[c] Range of a number of minimum rates, lowest to highest, applying on commodities ranging from 40 to 100 ft., via others.

[d] Range of a number of minimum rates, lowest to highest, applying on commodities ranging in weight from 2 to 10 tons.

[e] Minimum rate via Black Diamond Steamship Corp. and United States Lines for Boston, Mass.

[f] Minimum rate via Holland-American Line.

[g] Minimum rate via others.

[3] Exports: Gulf and South Atlantic/Mediterranean tariff No. 10. W—rates apply per ton of 2,240 pounds, W/M—rates apply per ton of 2,240 pounds or 40 cubic feet, whichever produces the greater revenue. C—contract rate; NC—noncontract rate (dual rate system: Contract rates are available to shipper members of the conferences, who enter into an agreement for the utilization of carrier members for a given quantity of cargo and/or specific commodities for a given period. Noncontract rates apply to nonconference members). O/D—outside diameter. #—rates apply to Genoa, Leghorn, and Naples only. ##—rates apply to other Italian and Greek base ports. ###—rates apply to all other ports.

[4] Imports: "Med-Gulf" Italy, South France/U.S. Gulf Conference freight tariff No. 2, MFC-2. W—rates apply per 1,000 kg. I/D—inside diameter; ranges from 4 to 40 in. and from 6 to 12 in. Port 1—Italian port range. Port 2—French Mediterranean port range.

[5] Exports: Pacific Westbound Conference local freight tariff No. 2. W—rates apply per ton of 2,240 pounds. W/M—rates apply per ton of 2,240 pounds or 40 cubic feet, whichever produces the greater revenue. C—contract rate. NC—noncontract rate.

[6] Imports: Trans-Pacific Freight Conference of Japan. W—rates apply per ton of 2,240 pounds. W/M—rates apply per ton of 2,240 pounds or 40 cubic feet, whichever produces the greater revenue. (1)—individual carriers open rates, applying on angles, billets, and blooms, subject to stated minimum rates.

APPENDIX H

TABLE H-1.—*Construction cost and producers durable equipment indexes, 1940 and 1946-66*

[1940=100]

Year	Construction cost index [1]	Producers durable equipment index [2]
1966	421.8	243.1
1965	401.3	239.2
1964	387.0	237.6
1963	372.3	235.7
1962	360.2	235.7
1961	350.0	235.3
1960	340.3	235.5
1959	329.5	235.0
1958	313.7	230.4
1957	299.1	224.7
1956	286.1	211.5
1955	272.6	197.9
1954	259.5	193.5
1953	247.9	192.4
1952	235.3	189.4
1951	224.3	186.4
1950	210.6	173.3
1949	197.1	169.6
1948	190.4	162.0
1947	170.7	148.8
1946	143.0	132.5
1940	100.0	100.0

[1] Engineering News-Record construction cost indexes (base of 1913=100) converted to a base of 1940=100.
[2] Department of Commerce Office of Business Economics (base of 1950=100) converted to a base of 1940=100.

TABLE H-2.—*Stock market valuation of steel industry equities, 1946-66*

Year	Common stock price-earnings ratio		Stock price as percent of book value	
	All industries	Steel	All industries	Steel
1966	15.18	9.49	196.00	81.35
1965	16.82	10.64	210.64	90.66
1964	17.63	12.21	209.10	102.90
1963	17.07	13.13	187.44	88.68
1962	16.98	19.15	176.66	98.47
1961	20.41	20.74	195.84	129.07
1960	17.70	17.12	177.00	133.04
1959	17.63	20.02	188.22	154.43
1958	17.32	14.75	165.39	121.39
1957	13.49	8.87	160.66	107.90
1956	14.14	9.91	186.86	124.14
1955	11.90	7.51	169.59	107.23
1954	11.54	8.14	140.26	75.25
1953	9.67	5.01	119.30	55.29
1952	10.25	7.43	124.68	59.82
1951	8.96	6.13	121.13	67.54
1950	6.69	4.06	110.07	57.19
1949	6.99	3.88	98.09	43.54
1948	6.20	4.50	105.02	53.05
1947	7.61	5.55	117.15	56.18
1946	12.87	10.16	143.79	67.07

Source: Standard & Poor's Analysts' Handbook.

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TABLE H-3.—*U.S. steel industry profits, Federal income taxes, cash dividends, retained earnings, depreciation, cash flow, capital expenditures, 1946–66*

[In millions]

Year	Profits [1] before Federal taxes	Income taxes (Federal)	Cash dividends	Retained earnings	Depreciation depletion amortization	Cash flow	Capital expenditures	Excess of capital expenditures over cash flow
1966	$1,765.3	$689.5	$483.8	$592.0	$1,171.9	$1,763.9	$1,953.0	$189.1
1965	1,807.9	738.6	466.7	602.6	1,102.1	1,704.7	1,822.5	117.8
1964	1,692.3	700.0	462.1	530.2	1,061.9	1,592.1	1,599.5	7.4
1963	1,427.8	645.8	442.5	339.5	996.0	1,335.5	1,040.0	(295.5)
1962	1,039.4	473.0	507.5	58.9	928.7	987.6	911.4	(76.2)
1961	1,285.9	596.3	556.9	132.7	739.5	872.2	959.5	87.3
1960	1,582.8	772.0	564.2	246.6	697.7	944.2	1,520.7	576.5
1959	1,636.7	806.1	553.4	277.2	664.7	941.9	934.3	(7.6)
1958	1,523.0	735.4	539.9	247.7	672.6	920.3	1,136.9	216.6
1957	2,213.0	1,081.4	565.7	565.9	766.4	1,332.3	1,723.0	390.7
1956	2,158.9	1,045.6	507.5	605.8	748.3	1,354.1	1,310.6	(43.5)
Total, 1956–66	18,133.0	8,283.7	5,650.2	4,199.1	9,549.7	13,748.8	14,911.4	1,162.6
1955	2,203.5	1,104.9	436.5	662.1	737.0	1,399.1	713.7	(685.4)
1954	1,230.4	593.1	343.2	294.1	670.3	964.4	608.9	(355.5)
1953	1,731.8	996.9	324.4	410.5	613.5	1,024.0	987.8	(36.2)
1952	1,024.3	483.3	315.9	225.1	449.8	674.9	1,298.3	623.4
1951	1,961.0	1,278.8	311.7	370.5	374.4	744.9	1,050.9	306.0
1950	1,543.7	776.8	311.5	455.4	326.8	782.2	505.3	(276.9)
1949	905.9	377.1	222.4	306.4	277.5	583.9	483.3	(100.6)
1948	929.3	388.8	205.4	335.1	301.7	636.8	642.1	5.3
1947	693.9	282.0	184.2	227.7	239.4	467.1	553.9	86.8
1946	395.6	131.1	147.4	117.1	169.1	286.2	365.0	78.8
Total, 1946–55	12,619.4	6,412.8	2,802.6	3,404.0	4,159.5	7,563.5	7,209.2	(354.3)
Grand total, 1946–66	30,752.4	14,696.5	8,452.8	7,603.1	13,709.2	21,312.3	22,120.6	808.3

[1] Pensions and other employee benefit costs are an important item in the cost of making steel in this country. Some steel companies have large liabilities for unfunded past service costs, and some companies are paying these costs off gradually while others are merely paying interest on the liability. In the event of a recession the union would likely require employees who have reached retirement age to stop working and go on pension. This action would require the companies now operating on a terminal funding basis to pay the past service cost for these employees at a time when earnings would be reduced.

NOTE.—Covering the consolidated statements including the affiliates' interests of the parent companies rendering these reports to the AISI.

Source: AISI Annual Statistics Reports.

TABLE H-4.—*Plant and equipment expenditures, 1946–66*

[In billions of dollars]

Year	All industries	Manufacturing	Steel	Steel as a percentage of manufacturing
1966	60.56	27.01	1.95	7.2
1965	51.96	22.45	1.88	8.4
1964	44.90	18.58	1.69	9.1
1963	39.22	15.69	1.22	7.8
1962	37.31	14.68	1.10	7.5
1961	34.37	13.68	1.13	8.3
1960	35.68	14.48	1.60	11.0
1959	32.54	12.07	1.04	8.6
1958	30.53	11.43	1.19	10.4
1957	36.96	15.96	1.70	10.7
1956	35.08	14.95	1.30	8.7
1955	28.70	11.44	.86	7.5
1954	26.83	11.04	.75	6.8
1953	28.32	11.91	1.21	10.2
1952	26.49	11.63	1.51	13.0
1951	25.64	10.85	1.17	10.8
1950	20.60	7.49	.60	8.0
1949	19.28	7.15	.64	8.9
1948	22.06	9.13	.77	8.4
1947	20.61	8.70	.63	7.2
1946	14.85	6.79	(1)	(1)

[1] Not available.

NOTE.—Plant and equipment expenditures for manufacturing have increased about 1¼ times between 1960 and 1966 as compared to the near doubling for steel in spite of its new technological opportunities.

Sources: SEC and Department of Commerce (OBE) for all industries and manufacturing. AISI for the steel industry.

TABLE H-5.—*U.S. steel industry working capital, miscellaneous investments, long-term debt, net worth, and debt ratio, 1946-66*

[Dollars in millions]

Balance at end of year	Total current assets	Current liabilities	Working capital	Miscellaneous investments	Preferred stock	Long term debt	Net worth	Long term debt plus net worth	Long term debt as a percent of net worth and debt
1966 [1]	$7,284.9	$3,235.2	$4,049.7	$1,603.8	$151.2	$3,778.8	$12,052.1	$15,830.9	23.9
1965 [1]	7,180.9	2,965.0	4,215.9	1,489.7	524.8	3,120.1	12,031.9	15,152. (	20.6
1964	6,862.2	2,815.3	4,046.9	1,414.5	535.8	2,874.2	11,399.4	14,273.6	20.1
1963	6,764.3	2,481.3	4,283.0	1,081,5	639.5	2,694.8	11,008.3	13,703.1	19.7
1962	6,175.7	2,149.8	4,025.9	1,089.0	641.6	2,853.6	10,676.1	13,529.7	21.1
1961	6,353.8	2,380.8	3,973.0	1,072.1	643.5	2,968.5	10,648.9	13,617.4	21.8
1960	5,932.9	2,326.1	3,606.8	1,021.0	649.7	2,488.2	10,545.1	13,033.3	19.1
1959	6,366.2	2,607.8	3,758.4	1,213.7	665.4	2,303.2	10,248.4	12,551.6	18.3
1958	5,706.4	2,188.5	3,517.9	1,218.8	672.8	2,144.8	9,898.2	12,043.0	17.8
1957	5,655.3	2,353.9	3,301.4	1,099.9	654.2	1,801.5	9,465.6	11,267.1	16.0
1956	5,795.3	2,436.8	3,358.5	1,098.5	629.0	1,567.7	8,664.7	10.232.4	15.3
Increase (decrease), 1956-66	1,611.9	992.9	619.0	860.7	(483.8)	2,232.3	4,131.9	6,364.2	....
1955	5,673.0	2,242.3	3,430.7	743.1	635.0	1,546.5	7,920.2	9,466.7	16.3
1954	4,556.9	1,705.0	2,851.9	409.0	670.3	1,485.7	7,139.6	8,625.3	17.2
1953	4,698.9	2,453.9	2,245.0	380.9	702.0	1,326.9	6,780.9	8,107.8	16.4
1952	4,284.9	2,031.6	2,253.3	399.3	691.8	1,447.3	6,373.0	7,820.3	18.5
1951	4,727.4	2,537.3	2,190.1	607.9	684.8	1,029.6	6,037.9	7,067.5	14.6
1950	3,944.5	1,797.3	2,147.2	522.0	643.6	763.1	5,458.3	6,221.4	12.3
1949	3,156.6	1,167.3	1,989.3	393.9	651.9	681.0	4,885.1	5,566.1	12.2
1948	3,164.7	1,327.5	1,837.2	386.0	653.0	648.8	4,566.4	5,215.2	12.4
1947	2,845.2	1,103.4	1,741.8	423.2	642.8	604.7	3,927.3	4,532.0	13.3
1946	2,692.5	840.1	1,852.4	372.7	646.0	544.0	3,711.6	4,255.6	12.8
1945	2,564.6	725.6	1,839.0	483.1	683.3	484.7	3,619.7	4,104.4	11.8
Increase (decrease), 1946-55	3,108.4	1,516.7	1,591.7	260.0	(48.3)	1,061.8	4,300.5	5,362.3	....
Increase (decrease), 1946-66	4,720.3	2,509.6	2,210.7	1,120.7	(532.1)	3,294.1	8,432.4	11,726.5	....

[1] AISI Form 11 basis.

Source: AISI Yearbooks.

TABLE H-6.—*U.S. steel industry sales, net income, and uses of funds, 1946-66*

[In billions]

Sales	$263.5
Deduct—	
To suppliers for products and services	117.2
To employees	95.7
To government, taxes	19.2
Depreciation	13.7
Interest	1.6
Total	247.4
Net income	16.1
Dividends	8.5
Reinvested in business	7.6
Spent for new facilities	22.1
Less depreciation above	13.7
Total	8.4
Investments	1.1
Increased working capital	2.2
Total	11.7
Deficiency in cash flow	4.1
Met by raising funds:	
Term loans	2.8
Debentures	.5
Total	3.3
Stock	.8
Total	4.1

Source: Steel Industry—Annual Statistical Reports, American Iron and Steel Institute.

TABLE H-7.—*Source and disposition of funds, steel industry and all corporations*

[Dollars in billions]

	21-year period, 1946-66			
	Steel industry [1]		All corporations [2]	
	Amount	Percent of total	Amount	Percent of toral
Source:				
Profit	$16.1	63	[3] $471.0	[3] 58
Less dividends	8.5	33	[3] 204.3	[3] 25
Income reinvested	7.6	30	[4] 266.7	[4] 33
Depreciation	13.7	54	397.3	49
Long-term debt	3.3	13	110.0	14
Capital stock	.8	3	31.3	4
Total, sources	25.4	100	806.3	100
Disposition:				
Plant and equipment	22.1	87	647.6	80
Working capital and miscellaneous	3.3	13	158.7	20
Total, disposition	25.4	100	806.3	100

[1] Covering the consolidated statements including all the affiliated interests (fabrication, transportation, shipbuilding, cement, etc.), of the parent companies submitting AIS-11 reports and representing 90.9 to 95.4 percent of total industry ingot production.
[2] Data for all corporations excluding banks and insurance companies.
[3] Profits and dividends assumed to be proportional to totals for all private corporations.
[4] Income reinvested for all corporations includes depletion.

Source: Steel industry: Annual Statistical Reports, American Iron & Steel Institute. All corporations: U.S. Department of Commerce.

TABLE H-8.—*U.S. steel industry long-term debt and interest charges of steel companies reporting to AISI, 1946-66*

[Dollars in millions]

Year	Long-term debt	Interest charges on long-term debt	Average interest rate on debt (percent)	Interest as a percent of revenues
1966	$3,779	$177	[1] 4.7	[1] 1.0
1965	3,120	137	4.4	.8
1964	2,874	129	4.5	.8
1963	2,695	128	4.7	.9
1962	2,854	132	4.6	.9
1961	2,969	123	4.1	.9
1960	2,488	101	4.1	.7
1959	2,303	94	4.1	.6
1958	2,145	80	3.7	.6
1957	1,802	65	3.6	.4
1956	1,568	55	3.5	.4
1955	1,547	54	3.5	.4
1954	1,486	53	3.6	.5
1953	1,327	55	4.1	.4
1952	1,447	44	3.0	.4
1951	1,030	30	2.9	.3
1950	763	25	3.3	.3
1949	681	22	3.2	.3
1948	649	20	3.1	.2
1947	605	19	3.1	.3
1946	544	18	3.3	.4

[1] The stated interest charges on long-term debt and the corresponding average interest rate on debt in percent are pretax calculations. Assuming an average 40-percent Federal corporate income tax rate (the 48-percent corporate income tax is reduced by such factors as the investment credit, accelerated depreciation, and the 22-percent rate on the initial $25,000 in earnings), the real cost (after tax) of the debt burden is equal to approximately 60 percent of the interest charges on long-term debt column for the past several years and slightly higher for the years earlier in the period.

Source: Compiled from data presented in the AISI Annual Statistical Reports, 1964-66.

TABLE H-9.—*Steel industry current ratio, 1946-66*

[Dollars in millions]

	Current assets	Current liabilities	Current assets as a percent of current liabilities		Current assets	Current liabilities	Current assets as a percent of current liabilities
1966 [1]	$7,284.0	$3,235.2	225.2	1955	$5,673.0	$2,242.3	253.0
1965 [1]	7,180.9	2,965.0	242.2	1954	4,556.9	1,705.0	267.3
1964	6,862.2	2,815.3	243.7	1953	4,698.9	2,453.9	191.5
1963	6,764.3	2,481.3	272.6	1952	4,284.9	2,031.6	210.9
1962	6,175.7	2,149.8	287.3	1951	4,727.4	2,537.3	186.3
1961	6,353.8	2,380.8	266.9	1950	3,944.5	1,797.3	219.5
1960	5,932.9	2,326.1	255.1	1949	3,156.6	1,167.3	270.4
1959	6,366.2	2,607.8	244.1	1948	3,164.7	1,327.5	238.4
1958	5,706.4	2,188.5	260.7	1947	2,845.2	1,103.4	258.7
1957	5,655.3	2,353.9	240.3	1946	2,692.5	840.1	320.5
1956	5,795.3	2,436.8	237.8				

[1] AIS-11 basis.

Source: AISI Annual Statistical Reports.

TABLE H-10.—*Steel industry cash and securities as a percent of working capital, 1946-66*

[Dollars in millions]

	Cash	Securities	Total cash and securities	Working capital	Cash and securities as a percent of working capital
1966 [1]	$794.4	$1,195.5	$1,989.9	$4,049.7	49.1
1965 [1]	939.3	1,511.6	2,450.9	4,215.9	58.1
1964	854.1	1,246.6	2,100.7	4,046.9	51.9
1963	881.3	1,747.4	2,628.7	4,283.0	61.4
1962	903.2	1,214.3	2,117.5	4,025.9	52.6
1961	892.1	1,034.6	1,926.7	3,973.0	48.5
1960	917.5	1,030.5	1,948.0	3,606.8	54.0
1959	973.1	1,306.9	2,280.0	3,758.4	60.7
1958	957.7	782.4	1,740.1	3,517.9	49.5
1957	973.0	945.4	1,918.4	3,301.4	58.1
1956	929.8	1,185.8	2,115.6	3,358.5	63.0
1955	976.5	1,478.3	2,454.8	3,430.7	71.6
1954	829.3	1,002.7	1,832.0	2,851.9	64.2
1953	829.0	1,030.9	1,859.9	2,245.0	82.8
1952	836.8	741.4	1,578.2	2,253.3	70.0
1951	923.7	1,407.3	2,331.0	2,190.1	106.4
1950	857.3	939.5	1,796.8	2,147.2	83.7
1949	721.4	692.2	1,413.6	1,989.3	71.1
1948	693.0	586.9	1,279.9	1,837.2	69.7
1947	649.2	646.1	1,295.3	1,741.8	74.3
1946	684.7	655.8	1,340.5	1,852.4	72.4

[1] AIS-11 basis.

NOTE.—Manufacturing firms generally should have regard for the liquidity of their working capital, other than inventories and accounts receivable to cover uncontrollable expenses (current liabilities), such as caused by breakdowns of equipment. The difference between actual liquidity and minimum required liquidity, which may be called liquidity pressure, is measured by cash plus short-term securities minus current liabilities, excluding accounts payable. See Bennett, J. P., op. cit.

Source: AISI Annual Statistical Report.

TABLE II-11.—*Steel industry working capital, inventories, and inventories as a percent of working capital, 1946-66*

[Dollars in millions]

	Working capital	Total inventories	Inventories as percent of working capital		Working capital	Total inventories	Inventories as percent of working capital
1966 [1]	$4,049.7	$3,614.7	89.3	1955	$3,430.7	$2,090.4	60.9
1965 [1]	4,215.9	3,228.3	76.5	1954	2,851.9	1,932.5	67.8
1964	4,046.9	3,184.7	78.7	1953	2,245.0	2,027.1	90.3
1963	4,283.0	2,908.4	67.9	1952	2,253.3	1,796.0	79.7
1962	4,025.9	2,947.9	73.2	1951	2,190.1	1,578.5	72.1
1961	3,973.0	3,209.7	80.8	1950	2,147.2	1,384.3	64.5
1960	3,606.8	2,990.8	82.9	1949	1,989.3	1,229.4	61.8
1959	3,758.4	2,696.1	71.7	1948	1,837.2	1,260.2	68.6
1958	3,517.9	2,835.4	80.6	1947	1,741.8	1,041.0	59.8
1957	3,301.4	2,719.6	82.4	1946	1,852.4	938.8	50.7
1956	3,358.5	2,425.5	72.2				

[1] AIS-11 basis.

Source: AISI Annual Statistical Reports.

TABLE H-12.—*U.S. steel industry—Ratio of net working capital to sales, 1946–66*

[Dollars in millions]

Year	Sales	Net working capital	Ratio of net working capital to sales	Year	Sales	Net working capital	Ratio of net working capital to sales
1966	$18,100.4	$4,049.7	1 to 4.5	1955	$13,960.2	$3,430.7	1 to 4.1
1965	17,774.8	4,215.9	1 to 4.2	1954	10,532.9	2,851.9	1 to 3.7
1964	16,178.1	4,046.9	1 to 4.0	1953	13,091.4	2,245.0	1 to 5.8
1963	14,452.7	4,283.0	1 to 3.4	1952	10,804.0	2,253.3	1 to 4.8
1962	13,838.5	4,025.9	1 to 3.4	1951	11,782.1	2,190.1	1 to 5.4
1961	13,142.6	3,973.0	1 to 3.3	1950	9,485.4	2,147.2	1 to 4.4
1960	14,056.4	3,606.8	1 to 3.9	1949	7,391.6	1,989.3	1 to 3.7
1959	14,088.7	3,758.4	1 to 3.7	1948	8,080.7	1,837.2	1 to 4.4
1958	12,442.2	3,517.9	1 to 3.5	1947	6,674.3	1,741.8	1 to 3.8
1957	15,468.8	3,301.4	1 to 4.7	1946	4,777.6	1,852.4	1 to 2.6
1956	15,160.6	3,358.5	1 to 4.7				

Source: Compiled from data presented in the AISI Annual Statistical Reports 1946–66.

TABLE H-13.—*Total wages and salaries, and salaries as a percent of total wages and salaries, 1946–66*

Year	Total wages	Total salaries	Total wages and salaries	Salaries as a percent of total wages and salaries
1966	$3,571.6	$1,322.5	$4,894.1	27.0
1965	3,450.8	1,236.8	4,687.6	26.4
1964	3,217.0	1,159.1	4,376.1	26.5
1963	2,900.6	1,102.5	4,003.1	27.5
1962	2,783.8	1,120.3	3,904.1	28.7
1961	2,713.7	1,083.4	3,797.1	28.5
1960	2,814.0	1,075.8	3,889.8	27.7
1959	2,628.3	1,043.8	3,672.1	28.4
1958	2,406.0	964.1	3,370.1	28.6
1957	2,877.8	943.1	3,820.9	24.7
1956	2,772.9	852.2	3,625.1	23.5
1955	2,665.4	770.3	3,435.7	22.4
1954	2,100.9	684.4	2,785.3	24.6
1953	2,537.9	676.7	3,214.6	21.1
1952	2,085.0	613.1	2,698.1	22.7
1951	2,202.7	552.5	2,755.2	20.0
1950	1,785.9	451.0	2,236.9	20.2
1949	1,506.5	432.8	1,939.3	22.3
1948	1,675.9	412.8	2,088.7	19.8
1947	1,489.5	368.7	1,858.2	19.8
1946	1,133.5	317.8	1,451.3	21.9

Source: AISI Annual Statistical Reports, 1946–66.

TABLE H-14.—*Consumption of scrap by types of furnaces and percentages of scrap (reported by companies producing about 99 percent of the total output of ingots and steel for castings)*

[In millions of tons]

Year	Total production reported	Steel furnace scrap consumption	Scrap percent of total production	Open hearth production	Open hearth scrap consumption	Scrap percent of open hearth production	Basic oxygen process production	BOF scrap consumption	Scrap percent of BOF production	Electric furnace production	Electric furnace scrap consumption	Scrap percent of electric furnace production	Bessemer furnace production	Bessemer furnace scrap consumption	Scrap percent of Bessemer furnace production
1966	132.5	64.9	49.0	85.0	38.5	45.3	33.8	11.4	33.7	13.4	13.5	100.7	0.278	0.007	2.5
1965	129.9	62.9	48.5	94.0	42.7	45.4	22.9	7.77	34.0	12.5	12.5	100.0	.586	.036	6.1
1964	125.9	60.1	47.7	98.0	42.8	43.7	15.4	5.47	35.4	11.6	11.8	101.6	.857	.059	6.9
1963	108.3	52.9	48.9	88.7	39.7	44.8	8.5	2.78	32.5	10.1	10.4	102.9	.963	.072	7.5
1962	97.4	45.9	47.1	82.9	36.0	43.4	5.6	1.53	27.5	8.2	8.4	101.9	.805	.052	6.5
1961	96.9	46.0	47.5	84.2	37.0	44.0	4.0	1.06	26.8	7.8	7.8	100.8	.881	.052	5.9
1960	98.1	47.3	48.2	85.9	38.5	44.9	3.3	.96	28.7	7.7	7.7	100.1	1.189	.088	7.4
1959	92.2	45.8	49.7	80.9	37.2	46.0	1.9	.57	30.5	8.0	7.9	99.2	1.380	.124	9.0
1958	84.5	40.3	47.7	75.5	33.5	44.4	1.3	[1] .37	[1] 28.0	6.3	6.3	101.1	1.396	.103	7.4
1957	111.5	52.8	47.4	100.9	44.9	44.5	.6	[1] .17	[1] 28.0	7.5	7.6	100.7	2.475	.125	5.1
1956	113.8	57.7	50.7	101.9	49.1	48.2	.5	[1] .14	[1] 28.0	[1] 8.2	[1] 8.3	[1] 101.9	3.228	.186	5.8
1955	115.9	58.0	50.0	104.7	50.1	47.8	.3	[1] .09	[1] 28.0	7.6	7.6	100.3	3.320	.196	5.8
1954	87.6	43.4	49.5	80.0	38.1	47.6				5.1	5.1	101.0	2.548	.146	5.7
1953	111.5	56.2	50.4	100.4	48.7	48.5				7.2	7.3	101.0	3.856	.219	5.7
1952	93.0	48.7	52.4	82.8	41.7	50.4				6.6	6.8	103.0	3.524	.176	5.0
1951	105.0	53.0	50.5	93.1	45.7	49.1				7.0	7.1	100.8	4.891	.293	6.0
1950	96.6	48.7	50.4	86.1	42.5	49.3				5.9	6.0	101.2	4.535	.247	5.4
1949	77.8	38.4	49.3	70.1	34.6	49.3				3.7	3.7	98.0	3.947	.160	4.1
1948	87.7	43.8	50.0	78.6	38.7	49.3				4.9	4.9	100.2	4.243	.192	4.5
1947	84.0	41.6	49.6	76.1	37.8	49.7				3.6	3.7	101.0	4.233	.174	4.1
1946	66.1	33.8	51.1	60.3	31.2	51.8				2.4	2.4	99.0	3.328	.153	4.6

[1] Estimated.

Source: AISI Annual Statistical Reports, 1946–66.

APPENDIX I

TABLE I–1.—*Current assets as a percent of current liabilities*[1]—*9 major steel-producing countries in free world, 1959–65*

Country	1959	1960	1961	1962	1963	1964	1965
Belgium	194	189	190	173	139	134	132
Luxembourg	137	138	145	139	161	153	146
Netherlands	133	115	124	121	105	300	335
Germany	139	142	127	121	123	126	124
France	229	244	207	195	174	175	167
Italy	106	127	115	148	126	104	77
United Kingdom	227	216	217	224	235	220	221
Japan	143	145	122	127	119	120	117
United States	220	227	237	253	249	225	223

[1] Based on data compiled by C. Goudima (catalogue des bilans).

TABLE I–2.—*Profits after taxes as a percent of total assets*[1]—*9 major steel-producing countries in free world, 1959–65*

Country	1959	1960	1961	1962	1963	1964	1965
Belgium	(2)	4.3	4.8	4.3	1.3	1.3	0.5
Luxembourg	(2)	5.4	3.1	3.1	(.2)	1.6	4.9
Netherlands	(2)	11.6	8.6	6.2	5.8	5.8	4.7
Germany	(2)	4.7	4.5	2.0	1.7	2.4	1.5
France	(2)	1.0	1.4	.9	1.5	.5	.3
Italy	(2)	3.1	3.3	5.4	2.5	3.4	1.0
United Kingdom	(2)	10.0	5.3	2.4	1.9	1.7	3.8
Japan	(2)	2.8	3.1	1.4	2.7	2.8	2.0
United States	(2)	5.1	4.1	3.5	4.6	5.8	5.7

[1] Based on data compiled by C. Goudima (catalogue des bilans).
[2] Not available.

TABLE I–3.—*Total debt*[1] *as a percentage of total assets, 9 major steel-producing countries in free world, 1959–65*

[In percent]

Country	1959	1960	1961	1962	1963	1964	1965
Belgium	44.4	46.8	45.6	48.6	52.0	54.2	52.6
Luxembourg	35.2	35.0	33.8	34.5	30.1	32.7	33.6
Netherlands	24.0	16.9	12.7	12.8	13.7	24.3	20.7
Germany	52.0	51.1	52.3	55.5	57.0	59.3	59.8
France	59.9	60.9	61.9	65.6	63.3	65.1	65.4
Italy	59.3	59.7	60.0	56.0	65.1	68.6	72.8
United Kingdom	36.4	36.0	38.5	41.4	45.2	43.9	44.0
Japan	62.9	64.9	67.8	67.7	68.1	67.1	68.8
United States	33.6	32.6	34.6	32.8	32.4	33.7	34.1

[1] Debt used in this table, as suggested by Goudima, is the sum of long-term debt and current liabilities including profit for the year. Any comparison between the above ratios and long-term debt as a percent of new worth and debt, presented elsewhere in this paper, must make this distinction as well as the fact that (*a*) a different universe of companies is involved, and (*b*) "total assets" and "net worth and debt" are not synonymous, the latter excluding the portion of total assets offset by current liabilities and reserves.

Source: Data compiled by C. Goudima (catalogue des bilans).

Information Received From British Iron and Steel Federation

TABLE I-4.—*Profits, etc., of 14 major U.K. steel companies, 1956–66*

[In millions of pounds sterling]

Financial year ended in—	Profits before tax	Taxation [1]	Net dividends	Retained earnings	Normal depreciation	Revenue cash flow	Capital expenditure	Excess of capital expenditure over cash flow
1966	16.3	[2] 16.4	18.3	(18.4)	68.8	50.4	47.8	(2.6)
1965	53.9	16.2	29.2	8.5	64.7	73.2	64.3	(8.9)
1964	57.6	10.0	32.6	15.0	61.3	76.3	68.5	(7.8)
1963	32.9	17.1	21.0	(5.2)	54.5	49.3	96.4	47.1
1962	42.2	18.3	18.6	5.3	47.4	52.7	178.4	125.7
1961	87.9	44.4	21.1	22.4	42.9	65.3	206.2	140.9
1960	129.6	28.6	23.1	77.9	39.2	117.1	139.2	22.1
1959	100.6	30.2	18.3	52.1	33.6	85.7	98.7	13.0
1958	98.6	41.1	15.7	41.8	29.8	71.6	109.0	37.4
1957	102.2	30.1	17.5	54.6	27.2	81.8	105.9	24.1
1956	87.3	31.0	10.2	46.1	22.5	68.6	82.7	14.1
Total 1956–66	809.1	283.4	225.6	300.1	491.9	792.0	1,197.1	405.1

[1] On cash flow basis, including income tax (and corporation tax 1966 only) on profits of previous year.
[2] Includes £9,800,000 income tax on dividends payable to Government following the introduction of corporation tax.

TABLE I-5.—*Working capital, long-term debts, etc., of 14 major steel companies, 1956–66*

[Pounds sterling in millions]

Balance at end of financial year ended in—	Current assets	Current liabilities	Working capital	Trade investments, etc.	Preference stock	Long-term debt [1]	Net worth	Long-term debt plus net worth	Long-term debt as percent of net worth and debt
1966	£493.5	£201.8	£291.7	£28.6	£41.6	£579.1	£785.4	£1,361.5	42.4
1965	492.5	223.8	268.7	28.3	41.6	558.8	803.5	1,362.3	41.0
1964	469.9	219.0	250.9	27.9	41.6	549.4	795.1	1,344.5	40.9
1963	398.8	171.7	227.1	25.9	41.6	531.5	780.0	1,311.5	40.5
1962	379.5	175.2	204.3	19.5	41.6	455.3	785.1	1,240.4	36.7
1961	407.3	195.4	211.9	18.9	41.6	338.1	778.5	1,116.6	30.3
1960	394.2	184.1	210.1	17.4	41.6	233.5	716.4	949.9	24.6
1959	345.7	152.8	192.9	14.9	41.6	215.5	614.7	830.2	26.0
1958	313.5	152.2	191.3	13.5	41.6	201.8	560.1	761.9	26.5
1957	371.6	161.1	207.5	10.9	41.6	181.2	515.3	696.5	26.0
1956	317.2	141.7	175.5	9.4	34.8	163.7	427.2	590.9	27.7
Increase (1956-66)	176.3	60.1	116.2	19.2	6.8	415.4	358.2	773.6	....

[1] Capitalizations of loans by Iron and Steel Holding and Realization Agency to 1 company have been ignored—£50,200,000 in 1964 and £39,000,000 in 1966.

TABLE I-6.—*Income and related data, 14 major steel companies, 1956–66*

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1. Net income (after tax paid) (millions of pounds sterling)	56.3	72.1	57.5	70.4	101.0	43.5	23.9	15.8	47.6	37.7	(0.1)
3. Percent return on stockholders equity	13.2	14.0	10.3	11.5	14.1	5.6	3.0	2.0	6.0	4.7	----------
7. Operating rate—Ingot capacity (industry average overall) (percent)	97.2	96.4	82.6	83.8	94.2	83.3	74.0	78.8	88.3	87.5	78.9
8. Ingot production—Index (1956=100) (not total industry)	100.0	109.0	99.4	97.0	126.9	124.6	110.2	116.2	139.5	147.9	135.3
9. Ingot production (not total industry) (millions of tons)	16.7	18.2	16.6	16.2	21.2	20.8	18.4	19.4	23.3	24.7	22.6
12. Iron and steel price index (1956=100)	100.0	110.9	115.2	114.3	113.9	114.9	118.2	118.5	119.1	121.1	124.8
15. Normal depreciation (millions of pounds sterling)	22.5	27.2	29.8	33.6	39.2	42.9	47.4	54.5	61.3	64.7	68.8
16. Net income plus normal depreciation do	78.8	99.3	87.3	104.0	140.2	86.4	71.3	70.3	108.9	102.4	68.7
17. Net dividends—Equity and preference do	10.2	17.9	15.7	18.3	23.1	21.1	18.6	21.0	32.6	29.2	18.3
18. Net dividends as percent of net income	18.1	24.3	27.3	26.0	22.9	48.5	77.8	132.9	68.5	77.5	----------
19. Income reinvested (millions of pounds sterling)	46.1	54.6	41.8	52.1	77.9	22.4	5.3	(5.2)	15.0	8.5	(18.4)
20. Income reinvested plus normal depreciation do	68.6	81.8	71.6	85.7	117.1	65.3	52.7	49.3	76.3	73.2	50.4

TABLE I-7.—*Capital expenditure—Cost of normal depreciation, 14 major steel companies, 1956–66*

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1. Capital expenditure (millions of pounds sterling)	82.7	105.9	109.0	98.7	139.2	206.2	178.4	96.4	68.5	64.3	47.8
2. Normal depreciation (millions of pounds sterling)	22.5	27.2	29.8	33.6	39.2	42.9	47.4	54.5	61.3	64.7	68.8
5. Expenditures in excess of normal depreciation (millions of pounds sterling)	60.2	78.7	79.2	65.1	100.0	163.3	131.0	41.9	7.2	(0.4)	(21.0)
Expenditure as percent of normal depreciation:											
6. By year	367.6	389.3	365.8	293.8	355.1	480.7	376.4	176.9	111.7	99.4	69.5
7. Average 5 years ending	----	----	----	----	351.6	381.6	379.2	330.4	280.8	226.7	153.5
Expenditure as percent of normal depreciation and reinvested income:											
8. By year	120.6	129.5	152.2	115.2	118.9	315.8	338.5	195.5	89.8	87.8	94.8
9. Average of 5 years ending	----	----	----	----	126.1	156.3	186.4	194.2	190.9	193.8	150.8
Reinvested income as percent of net income:											
10. By year	81.9	75.7	72.7	74.0	77.1	51.5	22.2	----	31.5	22.5	----
11. Average of 5 years ending	----	----	----	----	76.2	72.2	67.3	59.9	49.8	27.3	4.2
12. Long term debt (at financial yearend) (millions of pounds sterling)	163.7	181.2	201.8	215.5	233.5	338.1	455.3	531.5	549.4	558.8	579.1
13. Construction cost index (1956=100)	100.0	107.8	110.0	111.0	114.6	119.6	123.3	125.6	130.1	136.5	141.6
17. Income as percent of investment [1]	10.7	11.6	8.9	9.8	11.8	5.3	3.7	3.1	5.6	5.1	2.2

[1] Investment is net worth plus long-term debt. Income is after tax paid and depreciation, but before interest.

TABLE I-8.—*Profits before tax as percent of capital employed*

[In percent]

Based on accounts published during the year ended March 31	Iron and steel	Chemical	Engineering	Ship-building	All industrial groups
1957	18.5	12.9	20.5	14.5	17.0
1958	18.2	13.3	19.4	15.6	17.2
1959	17.0	14.1	18.6	13.9	16.5
1960	15.2	11.6	17.5	13.6	15.0
1961	16.1	14.8	16.9	11.9	15.7
1962	12.8	14.5	15.2	11.2	14.7
1963	7.6	10.5	12.8	8.2	12.6
1964	5.5	11.1	11.5	5.8	12.7
1965	8.0	12.9	11.9	4.2	14.1
1966	7.9	13.0	13.3	1.7	14.2
1967	4.3	10.7	13.1	(8.6)	13.4

Source: Quarterly summaries prepared by the Economist of securities quoted on the London Stock Exchange.

TABLE I-9.—*Development expenditure and sources of finance, 14 major steel companies*

	1961-65		1966	
	Millions of pounds sterling	Percent	Millions of pounds sterling	Percent
Development expenditures, etc.:				
Land, buildings, plants, etc	613.8	89.9	47.8	67.1
Trade investments, associated companies, etc	10.7	1.6	0.3	0.4
Stocks	44.7	6.5	(4.6)	(6.4)
Net current assets, excluding stocks	13.9	2.0	27.7	38.9
Total	683.1	100.0	71.2	100.0
Sources of finance:				
Outside sources:				
Ordinary share capital and share premiums	[1] 41.0	6.0	[1]	
Debenture and loan stocks	111.6	16.4	(1.0)	(1.4)
Loan:				
Government	126.8	18.6	1.7	2.4
Iron and Steel Holding and Realisation Agency	(29.1)	(4.2)	2.0	2.8
Finance Corporation for Industry Ltd	14.5	2.1	4.0	5.6
Others	32.5	4.7	4.4	6.2
Bank overdrafts	69.0	10.0	9.7	13.6
Subtotal	366.3	53.6	20.8	29.2
Internal resources:				
Depreciation	270.8	39.6	68.8	96.6
Retained profits	46.0	6.8	(18.4)	(25.8)
Subtotal	316.8	46.4	50.4	70.8
Total	683.1	100.0	71.2	100.0

[1] Excluding £50,200,000 in 1964 and £39,000,000 in 1966 which represented capitalizations of an ISHRA loan by 1 company.

Information Received From Japanese Steel Federation

TABLE I-10.—*Debt as percent of equity, 6 major Japanese steel companies* [1]

[Yen amounts in millions]

	Japanese fiscal year						
	1960	1961	1962	1963	1964	1965	1966 (1st half)
Iron and steel industry (covering 6 major companies):							
(*a*) Debt [2]	¥401, 345	¥536, 875	¥644, 761	¥712, 145	¥720, 529	¥848, 872	¥878, 409
(*b*) Equity [3]	¥329, 608	¥403, 710	¥475, 300	¥537, 596	¥623, 773	¥644, 352	¥666, 072
Debt-equity ratio (*a*) to (*b*)	54.9:45.1	57.1:42.9	57.6:42.4	57.0:43.0	53.6:46.4	56.8:43.2	56.9:43.1
Manufacturing industries (covering about 460 companies):							
(*a*) Debt [2]	¥2, 413, 921	¥3, 125, 517	¥3, 808, 120	¥5, 042, 330	¥5, 931, 671	¥6, 665, 791	(4)
(*b*) Equity [3]	¥2, 124, 072	¥2, 667, 805	¥3, 090, 097	¥4, 071, 216	¥4, 563, 513	¥4, 699, 345	(4)
Debt-equity ratio (*a*) to (*b*)	53.2:46.8	54.0:46.0	55.2:44.8	55.3:44.7	56.5:43.5	58.7:41.3	(4)

[1] Major 6 companies: Yawata, Fuji, NKK, Kawasaki, Sumitomo, Kobe.
[2] Debt: Total of long-term debts, short-term debts and bonds.
[3] Equity: Includes reserves to be considered as surplus, such as "reserve for price fluctuation".
[4] Not available.

Source: Financial reports of the companies concerned.

TABLE I-11.—*Current assets as percent of current liabilities (current ratio), 6 major Japanese steel companies* [1]

[Yen amounts in millions]

Item	Fiscal year						
	1960	1961	1962	1963	1964	1965	1966 (1st half)
Iron and steel industry (major 6 companies):							
(*a*) Current assets [2]	¥386,348	¥538,200	¥567,087	¥643,639	¥728,397	¥811,200	¥847,526
(*b*) Current liabilities [3]	¥276,927	¥460,497	¥496,137	¥545,075	¥583,678	¥668,203	¥700,779
Current ratio (*a*) over (*b*) percent	139.5	116.9	114.3	118.1	124.8	121.4	120.9
Manufacturing industries (about 460 companies):							
(*c*) Current assets [2]	¥3,620,352	¥4,662,988	¥5,351,256	¥7,183,281	¥8,395,116	¥8,882,804	-------
(*b*) Current liabilities [3]	¥3,130,980	¥4,178,929	¥4,774,220	¥6,240,152	¥7,222,514	¥7,566,634	-------
Current ratio (*a*) over (*b*) percent	115.6	111.6	112.1	115.1	116.2	117.4	-------

[1] Major 6 companies: Yawata, Fuji, NKK, Kawasaki, Sumitomo, Kobe (representing over 80 percent of total Japanese steel ingot capacity).

[2] Current assets: Total of cash and deposits, notes and accounts receivable, securities, inventories and others, less reserve for bad debt.

[3] Current liabilities: Total of short-term debts, notes and accounts payable, provision for taxes, and others.

Source: Financial reports of the companies concerned.

TABLE I-12.—*Sources of funds for capital expenditures of Japanese steel industry (net increase)*

[Amounts in hundreds of millions of yen]

	Fiscal year													
	1960		1961		1962		1963		1964		1965		1966 (estimated)	
Number of companies		71		80		77		75		73		92		92
Items	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Total net increase	2,342	100.0	2,976	100.0	2,442	100.0	1,778	100.0	1,832	100.0	1,984	100.0	2,406	100.0
Bond issuances	662	28.3	192	6.5	101	4.1	150	8.4	134	7.3	277	14.0	229	9.5
Private banking facilities loans	501	21.4	897	30.2	648	26.5	641	36.1	375	20.5	716	36.1	753	31.1
Governmental agencies loans	14	.6	12	.4	23	.9	7	.4	16	.9	−4	−.2	17	.7
Foreign loans	238	10.2	120	4.0	141	5.8	55	3.1	−6	−.3	−118	−5.9	−121	−5.0
Total	753	32.2	1,030	34.6	812	33.3	704	39.6	385	21.0	594	29.9	649	27.0
Issuance of shares	278	11.9	1,029	34.6	919	37.6	238	13.4	545	29.7	218	11.0	88	3.7
Internal funds (retained profits and depreciation)	649	27.7	725	24.3	610	25.0	686	38.6	767	41.9	895	45.1	1,440	59.8

NOTE.—Current interest rate on loans for capital expenditures (major 6 companies):

	Percent per annum
Bond	[a] 7.3
Private banking facilities	8.2
Governmental agencies	8.2

[a] Nominal yield rate.

Source: MITI.

Financial Information, United States and Major Free World Producers of Steel[1]

METHODOLOGY

Balance sheet data of about 101 important iron and steel companies summarized by countries, were used as the main source of data for this analysis. For some categories the figures were used as published, but for other categories certain combinations were made. Data were available for the years 1959–65, inclusive, for Belgium, Luxembourg, the Netherlands, Germany, France, Italy, and Japan; and were available for the years 1959–64, inclusive, for the United Kingdom and the United States. Basic figures were compiled on worksheets in accordance with the procedure described below.

Value data in the country summaries were expressed in thousands of dollars, except for the United Kingdom where the data was expressed in English pounds which had to be converted to dollars.

PROFITS AFTER TAXES

The publication had no such specific category.

Items 15 (a) and (b), in section III, were combined (plus or minus) with annual changes in the sum of items 8 (b) and (c) under section P. This procedure was suggested by Mr. Goudima, one of the editors of the ECSC publication.

TOTAL REVENUE

Item 1—"Turnover (sales)"—in the profit and loss part of the report was used to represent the total revenue for the country of report. However, total figures for this item for all reporting companies were available only for Japan and the United States for all the years covered; and were available for Germany beginning in 1961. For the other countries, new totals were prepared based on those companies reporting this item.

TOTAL ASSETS

In the assets section of each country summary, a "Total assets" item was provided for seven countries and for each year covered. For the Netherlands and Italy, new country totals were prepared based on those companies reporting production of steel ingots.

EQUITY

Three categories in the "Liabilities" section, i.e., item 7, "Capital stock," and five subitems under item 8, "Reserves and long-term provisions," and item 9, "Carry forward," were combined. This procedure was suggested by Mr. Goudima.

TONS OF INGOTS PRODUCED

Item 16, "Production" (1,000 metric tons) on the country summary was converted to short tons and used for seven of the nine countries and all years covered. For the Netherlands and Italy, new totals were prepared based on those companies which reported production of steel ingots. The production data for the United States was in short tons and did not need to be converted from metric tons.

DIVIDENDS

Items 15(a) "dividends" on the country summary, were used for all countries except the Netherlands and Italy. For the excepted countries, new totals were prepared based on companies reporting of steel ingots.

EMPLOYMENT COSTS

In section II of the profit-and-loss statement portion of the country-summary there were two items, i.e., item 6, "Wages and salaries," and item 7, "Statutory social contributions." These were combined, if data were available, to represent employment costs. However, the figures were available from country summaries only for Germany and the United States. Where company data were available, employment costs, revenue, and tons of steel ingots produced were summed. Ratios were computed from these sums for Belgium, France, Italy, and

[1] Prepared by BDSA of the U.S. Department of Commerce, at request and in collaboration with the Finance Committee staff from Goudima reports.

Japan. One large Dutch company was used for several years to represent the Netherlands and two large British firms to represent the United Kingdom.

MATERIAL COSTS

Item 5, "Purchase of raw materials, fuel, power," in section II of the profit-and-loss statement portion of the country summary was available only for the United States for all years covered, but beginning with 1963, was also available for Germany. However, companies reporting data for this item were summed to obtain country totals also for the Netherlands, France, United Kingdom, and Japan.

DEPRECIATION AND DEPLETION COSTS

Item 10, "Depreciation: Total," including depletion, in section III of the profit-and-loss statement portion of the country summary was available for all countries, except the Netherlands and Italy, and all years covered. For the two excepted countries, new country totals were prepared based on those companies reporting production of steel ingots.

CORPORATE INCOME TAX

Item 14(a), "Taxes based on income, profit, and net worth (plant and equipment)," in the profit-and-loss portion of the country summary, was available for five of the nine countries of report for the years 1959 through 1965; it was available for France only 1959 and 1960; and it was not available for Belgium for 1964 and 1965. New country totals were prepared for available years for the Netherlands and Italy based on those companies reporting production of steel ingots.

CASH FLOW

The computed "profits after taxes" less "dividends paid" or "income reinvested" was combined with the total depreciation and depletion figure to represent "Cash flow."

CURRENT ASSETS

Item 4, "Current assets: Stocks (inventories)," and 5, "Other current assets," in the balance sheet portions of the country summary were combined to represent "current assets," except for the Netherlands and Italy. New country totals were prepared for these countries based on those companies reporting production of steel ingots.

CURRENT LIABILITIES

The total line for short-term debts in the liabilities section was used to represent current liabilities. This line was suggested by Mr. Goudima.

DEBT

Item 10(a), "Long-term debt," and Item 10(b), "Minority interests," were combined with short-term debt minus item 5, "Other current assets," to represent debt as per the suggestion of Mr. Goudima.

NEW WORKING CAPITAL

The current liabilities figure was deducted from the computed current assets figure. The computed difference was used for "New working capital" for the particular year.

INVESTMENTS

Item 18 under section III, for Belgium, Luxembourg, the Netherlands, Germany, and Italy, and item 22 under section III, for the United Kingdom, Japan, and the United States were used to represent investments in steel plants and equipment.

SOURCES OF FUNDS

Changes in capital stock

Item 7 in the liabilities section of the balance sheet represented capital stock. The increase in capital stock, e.g., from 1959 to 1960, was entered under the above category for the year 1960.

Changes in debt

Annual increases in the computed debt figures were used as a source of funds.

Income reinvested

This was computed by subtracting the "dividend" amount, as given in item 15(a) of the profit-and-loss section, from the computed profits after taxes. The remainder was considered to be income reinvested and entered under the above heading.

Depreciation and depletion

The total (T) line of item 10 was used to represent depreciation as a source of funds.

TRENDS IN ANNUAL FINANCIAL INFORMATION, UNITED STATES AND MAJOR FREE WORLD PRODUCERS OF STEEL

Profits after taxes/total revenues—percentages

Five countries had profits after taxes amounting to 5 percent or more of total revenue during the 6-year period, 1960–65. These were: The Netherlands (1960–65), Italy (1961–64), Belgium (1961–62), the United States (1960–61 and 1963–64), and the United Kingdom (1960–61). Except for Italy and the United States the profit ratios tended to decline during this period. The profit percentages for the Netherlands in 1960 and 1964–65 reflected the activity of only one company, but its steel production represented over 80 percent of total production for that country.

Profits after taxes/total assets—percentages

Except for the Netherlands, the ratios of profits after taxes to total assets have been generally low. During the 5-year period 1960–64, inclusive, the countries and years, which had profits after taxes greater than 5 percent of total assets, were:

Luxembourg	1960.
The Netherlands	1960–64.
Italy	1962.
United Kingdom	1960–61.
United States	1960, 1964.

Belgium, Germany, France, and Japan had quite low ratios of profits after taxes to total assets, and were never as high as 5 percent during the 5-year period.

The comparable ratios for all manufacturing corporations in the United States, except newspapers, were greater than 5 percent for each of 7 years (1959–65).

Profits after taxes/equity—percentages

During the 5-year period, 1960–64, the countries (and years) which had profits, after taxes, greater than 5 percent of stockholders equity, were:

Belgium	1960–62.
Luxembourg	1960.
Netherlands	1960–64.
Germany	1960–61, and 1964.
Italy	1960–64.
United Kingdom	1960–61.
Japan	1960–61 and 1963–64.
United States	1960–64.

Comparable ratios for France were under 5 percent for each year of the 5-year period.

Comparable ratios for all manufacturing corporations, except newspapers, in the United States were above 5 percent for each of 7 years, and above 10 percent in 1959 and 1963–65.

Dividends/profits after taxes—percentages

The countries (and years) which had dividend payments during 1960–64, greater than profits after taxes, were:

France	1960, 1962, and 1964.
United Kingdom	1963 and 1964.
Japan	1962.

For all manufacturing corporations, except newspapers, in the United States, the ratios of dividends to total profits after taxes fluctuated around the 50-percent level.

Profits after taxes/steel ingots produced—dollars per short ton

Profits (after taxes) dollars per short ton of steel ingots produced, during 1960–64 were highest for the Netherlands and lowest for France. The United Kingdom was the second highest in 1960–61, and Italy was second highest in 1962–65, in respect to profits (after taxes) dollars per ton of steel ingots produced.

Employment costs/steel ingots produced—dollars per short ton

Employment cost data was not available for Luxembourg, and was available for only 3 of the 6-year period (1959–64) for Italy. The countries which reported employment costs for all 6 years were ranked as follows, from the highest dollars per short ton to the lowest: The United Kingdom, the United States, Germany, Belgium, France, the Netherlands, and Japan.

Depreciation and depletion costs/steel ingots produced—dollars per short ton

Depreciation costs per short ton of steel ingots produced over a 6-year period (1959–64) were highest for France, Germany, Italy, the Netherlands, Japan, United States, Belgium, Luxembourg, and United Kingdom, ranked in that order.

Interest costs/steel ingots produced—dollars per short ton

Interest costs per short ton of steel ingots produced were highest for Japan, Italy, France, and Germany. Interest cost data were not available for the Netherlands.

Corporate income taxes/steel ingots produced—dollars per short ton

The highest tax dollars per short ton for the 6-year period, 1959–64, were indicated for the Netherlands, the United States, and Germany.

They were lowest for Belgium, Japan, Luxembourg, and Italy. The rate declined sharply for the United Kingdom from a high to a low level. Data were available for France for 2 years only—1959 and 1960; for these 2 years the rate was quite low.

Material costs/steel ingots produced—dollars per short ton

For the six countries, whose steel producers reported material costs for the 6-year period (1959–64) the countries which had the highest rates were: United Kingdom, Germany, Japan, and France. The Netherlands and the United States had the lowest rates.

Current assets/current liabilities—ratios

Countries (and years) which had ratios greater than 2 to 1 for current assets over current liabilities, for the 6-year period (1959–64), were:

France	1959 to 1961.
United Kingdom	1959 to 1964.
United States	1959 to 1964.

The countries with the lowest ratios were Italy, the Netherlands, Japan, Germany, Luxembourg, and Belgium. Low ratios indicated a limited financial liquidity position.

Debt/equity—percentages

Countries (and years) whose debts were greater than their stockholders' equities during the 6-year period (1959–64) were France (1961–64), Italy (1959, 1963–64), Japan (1959–64), and Germany (1964). These high ratios indicate that these four countries were in the poorest financial condition. Conversely, Luxembourg, the United States, the Netherlands, and the United Kingdom, with the lowest ratios, were in the best financial condition.

Debt/total revenue—percentages

Debts were 50 percent or higher of total revenue for Belgian steel producers in 1962–64, for French producers in 1963–64, for Italian producers in 1959–64 and for six Japanese producers in 1959–64. Steel producers in the United States had the lowest debt/revenue ratios.

Employment costs/total revenue—percentages

Although these percentages are not completely comparable between countries because of the varying numbers of companies reporting employment costs and/or revenues in the nine countries under study, the computed percentages of employment costs to total revenue based on available data are indicative of relative labor costs in eight of the nine countries. Employment cost data were not available for Luxembourg. In comparing the percentages as computed, the United States appears to have had the highest employment cost ratios, followed closely by Belgium. The eight countries, which reported some employment cost data, may be ranked as follows, from the highest to the lowest ratios: United States, Belgium, United Kingdom, Germany, France, Italy, the Netherlands, and Japan.

Depreciation costs/total revenue—percentages

France, the Netherlands, and Japan had the highest depreciation cost ratios; the United Kingdom had the lowest. The United States had the second lowest ratio in 1959, but its ratios have increased each year since then, through 1963, when it was fourth lowest.

Interest costs/total revenue—percentages

Japan reported the highest interest cost ratios, which was consistent with its very high debt-equity ratios. As might be expected Italy and France had the next highest interest cost ratios; they also had high debt-equity ratios. The United States and the United Kingdom had the lowest interest cost ratios. Interest cost data were not reported for Luxembourg and the Netherlands.

Corporate income taxes/total revenue—percentages

Although corporate income tax data were available only for one company in each of two countries, the data available indicated that the Netherlands and the United States had the highest tax ratios; they were lowest in the United Kingdom, France, Japan, and Italy.

Material costs/total revenue—percentages

Six of the nine countries reported material cost data. Of these six countries, Japan had the highest material cost ratios, followed by Germany, the United Kingdom, the Netherlands, and France. The United States had the lowest ratios. Material cost information was lacking for Belgium, Luxembourg, and Italy.

SOURCES OF FUNDS—PERCENTAGES

Income reinvested

This category was the major source of funds for investments in the steel industry for the Netherlands in 1960–62, and for the United Kingdom in 1960. It was the second most important source for the Netherlands in 1963–65. Luxembourg in 1960–61, Germany in 1960, and the United States in 1962–63, but a minor source for the other four countries.

Depreciation and depletion

The depreciation and depreciation reserves of steel producing companies were major sources of funds for Belgium in 1960–61 and 1964–65, for Luxembourg in 1960–62 and 1964–65, the Netherlands in 1963–65, for Germany in each year (except in 1961), for France in each year (except in 1961–62), Italy in 1960, Japan in 1963–64, and for the United States in each year through 1964. It was the second most important source for Belgium in 1962–63, the Netherlands in 1961–62, Italy in 1961–63 and 1965, for the United Kingdom in each year through 1964, and for Japan in 1960 and 1965. It was a minor source for the Netherlands in 1960, Italy in 1964, and Japan in 1961–62.

Increases in debt

This category indicates steel producing countries where the companies borrowed money to invest in steel plants and equipment or for use as working capital. Borrowed money was the main source of funds for Belgium in 1962–63, Germany in 1961, France in 1961–62, Italy in 1961 and 1963–65, the United Kingdom in 1961–63, and Japan in 1960–62 and 1965.

It was the second most important source for Luxembourg in 1962 and 1965, Germany in 1962–65, France in 1960, 1963–64, and for the United States in 1960–61 and 1964. It was a minor source for Luxembourg in 1961 and 1964, the Netherlands in 1960, and 1962–65, the United Kingdom in 1960, and for Japan in 1962–64.

Increases in capital stock

This category reflects the extent to which the steel companies in a particular country increased their funds, for investment in facilities, by selling additional shares of stock. This was the major source of funds for Luxembourg in 1963, Italy in 1962, and the United Kingdom in 1964. It was the second most important source for Belgium in 1965, Luxembourg in 1964, the Netherlands in 1960, Italy in 1960 and 1964, and for Japan in 1961–64. It was a less important source for Belgium in 1960–61 and 1963–64, the Netherlands in 1961 and 1964, for Germany in 1960–65, France in 1960–65, the United Kingdom in 1960–62, Japan in 1960 and 1965, Italy in 1961, and for the United States in 1960–63.

Cash flow

Cash sources (income reinvested and depreciation reserves) were adequate to cover investments in steel plants and equipment for Luxembourg in 1960 and 1965, the Netherlands in 1960 and 1964–65, Germany in 1960, France in 1960, the United Kingdom in 1960, and the United States in 1962–63.

ANALYSIS OF TRENDS IN ANNUAL FINANCIAL INFORMATION FOR NINE MAJOR FREE WORLD COUNTRY STEEL PRODUCERS, 1959–65

Belgium

Although there were eight [1] steel producers in Belgium, only three reported revenue or sales data in 1959–62, four in 1963, and five producers in 1964–65.

The Belgian steel producers had widely fluctuating profits-after-taxes ratios and rates, with most of them at an intermediate level. In 1961 the profits-after-taxes/total revenue ratio for Belgium was third highest of the eight countries studied. In 1963–65 the profits-after-taxes/total assets ratios were second lowest. Likewise for the profits-after-taxes/equity ratios in 1963 and 1965. The profits-after-taxes rates per ton of steel ingots produced were second lowest in 1960, 1963, and 1965.

The dividend/profits-after-taxes ratios have fluctuated widely. In 1962, it was the lowest of the nine countries studied; in 1963, it was second lowest; and in 1965 it was the second highest ratio.

The employment cost/total revenue ratios for Belgium firms were second highest, of the countries studied, during the 6-year period, 1959–64. The employment cost rates per ton of steel ingots produced were at an intermediate level.

Depreciation cost ratios and rates were generally at an intermediate level. The ratio of depreciation cost to total revenue was second highest in 1961. The depreciation cost rate per ton was second lowest in 1962–64.

Interest cost ratios and rates, although trending upward during the 7-year period covered, were generally at an intermediate level. In 1959 the interest cost rate per ton was second lowest of the group.

Corporate-income-tax cost ratios and rates for 1959–61 were the lowest of the countries covered; and during the 6-year period covered, for the rate-per-ton category, trended downward.

No material cost data were available for Belgian steel producers.

The financial liquidity ratios (current assets/current liabilities) were generally at an intermediate level, and were trending downward.

The indebtedness ratios were generally at an intermediate level, and were trending upward.

The major sources of investment funds were depreciation reserves (1960–61, 1964–65), and increases in debt (1962–63).

In summary, the Belgian steel producers had moderate, but widely fluctuating, profits-after-taxes ratios and rates; likewise for dividend payment ratios; high employment cost ratios, but moderate employment cost rates, moderate depreciation and interest cost ratios and rates, low corporate income tax cost ratios and rates; and moderate, but increasing, indebtedness ratios.

Luxembourg

There were three steel producers in Luxembourg but only one company reported revenue or sales data in 1961–64; two companies reported sales data in 1965. The major steel producer in Luxembourg had low profits-after-taxes/revenue ratios in 1961–62 and 1964, showed a loss in 1963, and had a 6.1 ratio in 1965. Ratios of profits-after-taxes to total assets for three producers fluctuated between 5.4 percent in 1959, and a loss in 1963, but rose to 4.9 percent in 1965. Generally the steel producers in Luxembourg had low profits-after-taxes ratios and rates.

The dividend payments/profits-after-taxes ratios fluctuated quite widely. When profits ratios were moderately high, the dividend payments ratios were usually less than 50 percent, but when profits ratios were low, the dividend payments ratios were quite high. Dividends were paid out in 1963 even though the steel industry showed a loss.

Depreciation-depletion costs were 7–9 percent of total revenue, and ranged from a low point of $5.61 per short ton of steel ingots produced in 1961 to a high point of $7.33 per ton in 1964. Depreciation reserves were the major source of funds for investments in steel plants and equipment, except 1963 when increases in capital stock was the major source.

[1] The number of companies shown for each country comprises those included in the source publications of the European Coal and Steel Community.

The interest cost rates per short ton of steel ingots produced were quite low, less than $1 per ton, and were the lowest of the nine countries studied. Low interest cost rates were consistent with Luxembourg's low indebtedness ratios.

Corporate income tax cost rates and ratios were generally at intermediate levels. However, corporate income tax cost ratios for Luxembourg were second highest in 1961 and 1962. The corporate income tax cost per short ton of steel ingots produced fluctuated between a high of $4.20 in 1961 and a low of $1.50 in 1963.

The financial liquidity ratio of current assets to current liabilities rose from a low point of 1.37 in 1959 to a high point of 1.61 in 1963. Consequently the ratio of new working capital to total revenues increased from 1961 to 1963.

No information on employment and material costs was given in the available reports on steel producers in Luxembourg.

In summary, steel producers in Luxembourg had moderate, but declining profit after taxes ratios and rates; low, but increasing, dividend payment ratios; low interest cost ratios and rates; moderate depreciation cost rates; moderate, but declining, corporation income tax cost ratios and rates; and very low indebtedness ratios.

The Netherlands

There were three steel producers in the Netherlands; two companies reported revenue or sales data, but only one large company reported employment and material cost data.

The ratio of profits after taxes to total revenue for the one large company in 1960 was 19.3 percent; for two companies the ratios declined from 15.4 to 10.3 percent in 1961–63. However, Dutch steel producers had higher profit ratios and rates than any of the other eight countries studied.

The depreciation cost/revenue ratios were at an intermediate level in 1959–61, second highest in 1962, and highest of the nine countries in 1963–65. Corporation income tax cost/revenue ratios for the Netherlands were the highest of the nine countries studied during the 7 years covered.

The dividends/profits after taxes ratios were lower for the Netherlands than any other of the steel-producing countries studied, except in 1962 when Belgium's ratio was lower and in 1965 when Luxembourg's dividends/profits after taxes ratio was lower.

Employment costs per short ton of steel ingots produced by the major steel producer in the Netherlands, as well as the ratios (employment costs/revenue) were lower in 1959 and 1960 than for any other of the nine steel-producing countries studied. In 1961–65, the Netherlands was second lowest; Japan's employment cost ratios and rates were lowest in those years.

Depreciation costs per short ton of steel ingots produced by Dutch steel companies ranged from $7.09 per ton in 1960 to $12.34 per ton in 1964 when the Dutch ratio was the highest of the nine countries.

Corporate-income-tax costs per short ton of steel ingots produced in the Netherlands trended downward from a high point of $13.24 in 1960 to a low point of $7.10 in 1963 and were higher during the entire 7-year period than for any other steel producing country covered.

The ratios of current assets to current liabilities for the Netherlands ranged from a low point of 1.05 in 1963 to a high point of 3.35 in 1965. In 1959 the Dutch ratio was second lowest, in 1960 and 1963 the Dutch ratios were the lowest of the nine countries covered, but in 1964–65 the Dutch ratios were the highest. The low CA/CL ratios indicated that the Dutch steel producers had very little financial liquidity in 1959, 1960, and 1963. In fact, the major steel producer in the Netherlands reported negative working capital or frozen assets in 1960–63, that is, the difference between current assets and current liabilities indicated excesses of liabilities over assets, but this situation was reversed in 1964–65 when the major steel producer merged with a major steel mill company. In respect to the ratios of debt to equity, however, the Netherlands ratios for 1959–63 ranged from 14.3 to 17.9 percent which were quite low. In 1961–62 the ratios were second lowest of the nine countries covered. The ratios of debt to total revenue were at an intermediate level during the 7-year period covered.

In respect to the relationship of basic costs to revenue, for the major steel producer in the Netherlands, employment cost ratios were quite low but rising (12.2 to 23.5 percent), and material costs relatively high but declining ([illegible]4 to 39.7 percent).

The major sources of investment funds were: income reinvested (1960–62) and depreciation reserves (1963–65).

In summary, Dutch steel producers had comparatively high profits-after-taxes ratios; low dividend payment ratios; high corporate-income-tax cost ratios and rates, moderate but declining material cost ratios; and frozen current assets until a merger made in 1965, and relatively low debt/equity ratios.

Germany

There were 17 steel producers in Germany during the 7-year period covered.

The ratios of profits-after-taxes to total revenue, declined from 3.7 percent in 1960 to 1.3 percent in 1965. The annual ratios were below 2 percent in 1962, 1963, and 1965. Likewise other profits-after-taxes ratios and rates (PAT/total assets, PAT/equity, PAT/steel ingots produced) declined.

Conversely, dividend/profit-after-taxes ratios have risen over the 6-year period (1960–65) and ranged from 42.8 to 85.7 percent.

The ratios of employment costs to revenue were moderate and ranged from 21.4 to 25.2 percent. Employment costs per short ton of steel ingots produced ranged from $39.56 to $54.40, and in 1963–64 were second highest of the seven steel producing countries covered.

Ratios of material costs to total revenue ranged from 46.8 percent to 62.8 percent, were highest of six countries covered in 1962, and in 1961 and 1963 were second highest. In respect to material costs per short ton of steel ingots produced, German steel producers were highest in 1960 and 1963, and were second highest of the countries covered in 1959, 1961, 1962, and 1964. The material costs per ton ranged from $92.89 to $134.67.

From 1959 through 1962 and in 1964, depreciation costs per ton of steel ingots were second highest of nine countries covered and in 1963 and 1965 were the highest. The lowest rate was $11.14 in 1961, and the highest was $12.89 in 1963. The ratios of depreciation cost to total revenue in 1959–65 were at intermediate and low levels and fluctuated between 5.4 and 6.9 percent. Depreciation reserves were the major sources of funds for new investments in steel plants and equipment in 1960, 1962–65; increases in debt were the main source in 1961.

The interest cost/total revenue ratios were at an intermediate level and under 2 percent for the 7-year period (1959–65), and fluctuated between 1 and 2 percent. Interest costs per ton of steel ingots also were at the intermediate level. Similarly for corporation income tax cost ratios and rates, the ratios fluctuated in a narrow range between 2.1 and 3.6 percent, and the rates ranged from $4.29 per ton to $7.19 per ton.

Ratios of current assets to current liabilities were on the low side, fluctuating between 1.21 and 1.42, thus indicating limited financial liquidity. New working capital as a percent of total revenue fluctuated between 5.5 percent and 10.2 percent. The debt/equity ratios trended upward from 62.3 percent in 1960 to 105.7 percent in 1965. The trend of these ratios indicate that the financial condition in Germany's steel industry has worsened each year in the first half of the sixties. The debt load as related to total revenue has risen from less than one-fourth to more than one-third during the same period.

In summary, German steel producers had low profit-after-taxes ratios and rates; moderate but increasing dividend payment ratios; moderate employment, but high material and depreciation cost ratios and rates; moderate corporation income tax ratios and rates, and low interest cost ratios and rates; and moderate but increasing indebtedness ratios, indicating a deteriorating financial condition.

France

Of the 14–15 steel producers in France, only eight reported employment costs, and only two or three reported material costs until 1965 when all companies reported employment costs, and 12 reported material costs.

French steel producers in the period covered had low profit ratios. Their ratios of profit after taxes to total revenue in 1960–62 and 1964 were the lowest of the seven to nine countries covered; their ratios of profit-after-taxes/total assets in 1960–62 and 1964 were the lowest of nine countries covered, and in 1965 the lowest of seven countries covered. An identical comparison prevailed for the profit-after-taxes/equity ratios; likewise for the profit-after-taxes per short ton of steel ingots produced.

The ratios of dividend payments to profit-after-taxes were highest of the countries covered in 1960, 1964–65 and second highest in 1961–62.

Employment cost ratios of total revenue and rates per ton of steel ingots produced were at intermediate levels while material cost ratios and rates were on the low side. Depreciation cost ratios and rates, however, in 1959–62 were highest of the nine countries covered; in 1963–64 they were at an intermediate level. The depreciation reserve was the major source of funds for new investments in steel plants and equipment in 1960 and 1963–65; increases in debt was the major source in 1961–62.

Interest cost ratios and rates were at intermediate levels in 1959–61, but second highest in 1962–63; however, interest cost ratios and rates trended upward. This rising trend in interest cost ratios is consistent with the increasing indebtedness ratios of the French stee producers.

Corporate income tax cost ratios and rates in 1959–60 were quite low, but trended upward in 1961–65.

French steel producers had high, but declining, ratios of current assets to current liabilities; they dropped from 2.44 in 1960 to 1.67 in 1965. This drop indicates a decreasing financial liquidity position.

In summary, the French steel producers had quite low profit-after-taxes ratios and rates; fluctuating but high-level-dividend payment ratios; intermediate employment and corporate income tax but low material cost ratios and rates, and high but declining depreciation cost ratios and rates; intermediate but increasing interest cost ratios and rates, and increasing indebtedness ratios.

Italy

Although seven Italian companies produced steel ingots, only five reported revenue or sales data and only two reported employment data in 1959–61.

Profits after taxes as related to total revenue were less than 5 percent in 1960 and 1965, but greater than 5 percent in 1961–64. In 1962–64, Italian profit ratios were second highest of the countries covered in this study. Profits-after-taxes/total assets ratios fluctuated between 3 and 4 percent in 1960–61 and 1964, were less than 3 percent in 1963 and 1965, but exceeded 5 percent in 1962. Profit-after-taxes/equity ratios were on a higher level, exceeding 5 percent each year (1960–64 until 1965). In 1962 and 1964, Italian steel producers had the highest profit/equity ratios of the countries covered. The rate of profit-after-taxes to steel ingots produced fluctuated between $6 and $7 in 1960–61, but exceeded $10 in 1962 and 1964. In 1962–64, the Italian profit rates per ton were the second highest of the nine countries covered. It may be concluded that profits-after-taxes ratios and rates for Italian steel producers during the 6-year period (1960–65) were at intermediate to high levels.

The ratios of dividend payments to profits after taxes for the seven Italian steel producers fluctuated between 30.5 percent (1964) and 75 percent (1963), but were above the 50-percent level in 4 of the 6 years covered.

Employment cost ratios (as related to total revenue) and rates (as related to steel ingot production) in 1959–61 were at intermediate levels. These data are not available for more recent years.

Depreciation and depletion cost ratios and rates in 1959–65 were at intermediate levels, but were declining. The depreciation reserve was the major source of funds for investment by the producers in steel plants and equipment in 1960, and second most important source in 1961–63 and 1965, but "increases in debt" was the major source of funds in 1961 and 1963–65; and "increases in capital stock" was the major source in 1962.

Interest costs ratios and rates were at high levels in 1959–61 and 1964–65, but at intermediate levels in 1962–63. In 1965 the Italian interest cost ratio and rate was the highest of the nine countries covered.

Corporate income tax cost ratios were at intermediate levels in 1959 and 1961–63, second lowest of the countries covered in 1960 and 1964, and lowest of six countries in 1965. However, the corporate-income-tax cost per short ton of steel ingots produced followed a somewhat different trend—highest of eight countries in 1959, second highest in 1960–61 and 1964, intermediate in 1962–63, and highest of seven countries in 1965.

Material cost data were not available for Italian steel producers.

The ratios of current assets to current liabilities fluctuated from 0.77 (1965) to 1.48 (1962), but remained at fairly low levels, thus indicating limited financial liquidity.

The debt ratios fluctuated widely but remained at fairly high levels. The debt/equity ratios were second highest in 1959–60 and 1963, and highest of the countries covered in 1964–65. The debt/total revenue ratios were the highest of the countries covered in 1959 and 1963–65, and second highest in 1960–62.

In summary, the Italian steel producers had moderate-to-high profits-after-taxes ratios and rates; moderate dividend payment ratios; moderate but declining depreciation cost ratios and rates and low corporate-income-tax cost ratios but high corporate income-tax cost rates; relatively high interest cost ratios and rates, and relatively high indebtedness ratios.

United Kingdom

Although the United Kingdom had 15 producers of steel ingots, only six reported revenue data, and only one reported employment and material cost data.

Profits-after-taxes ratios and rates were high in 1960–61, but declined each successive year through 1964 to intermediate levels.

Conversely the dividend payment ratio, as related to profits-after-taxes, were below 50 percent in 1960–61, but rose each successive year reaching 147.2 percent in 1964. In 1963 the U.K. dividend ratio was the highest of the steel producing countries covered and in 1964 was second highest.

The rate of employment costs per ton of steel ingots produced were quite high in 1959–64 for one large steel producing company, but the ratios of employment costs to total revenue were at an intermediate level.

The ratios of depreciation costs to total revenue although trending upward were the lowest of the countries covered. The rates of depreciation cost to steel ingots produced for 15 British steel producers trended upward, but were lowest, of the nine countries studied, in 1959–60, second lowest in 1961, and at intermediate levels in 1962–64.

Interest cost ratios (as related to total revenue) were the lowest, of seven countries covered, in 1959–61, second lowest in 1962, but at an intermediate level in 1963–64. The interest cost rates per ton of steel ingots produced were at an intermediate level, but trending upward in 1960–63.

Corporate-income-tax cost ratios and rates were at an intermediate level in 1959–61, trended downward sharply in subsequent years, and were lowest, of the countries covered, in 1962–63. The corporate-income-tax cost ratio was also lowest of the countries covered in 1964.

The material-cost ratios (as related to total revenue) for a major steel company were at an intermediate level in 1959 and 1961–63 but the material-cost ratio was second highest of the countries covered in 1960 and highest in 1964. Material-cost rates per ton of steel ingots produced were highest, of the countries covered, in 1959, 1961–62, and 1964; the material-cost rate was second highest in 1960 and 1963.

The ratios of current assets to current liabilities were at a generally high level. They were second highest, of the countries covered, in 1959, and 1961–63. These high ratios indicated a large degree of financial liquidity.

The debt/equity ratios were at an intermediate level, but they trended upward in 1960–63.

The major sources of investment funds during the 5-year period covered were as follows:

Income reinvested	1960
Increases in debt	1961–63
Increases in capital stock	1964

In summary, British steel producers had initially high but subsequently moderate profit-after-taxes ratios and rates; initially moderate, but subsequently high dividend payment ratios; initially low, but subsequently moderate, depreciation and interest cost ratios and rates; moderate, but declining, corporation-income-tax cost ratios and rates; relatively high material cost rates and ratios; a high degree of financial liquidity, and moderate indebtedness ratios.

Japan

Although Japan had six producers of steel ingots, only three reported employment and material cost data.

The profit-after-taxes ratios and rates were generally at an intermediate level, but the ratio of profit-after-taxes/total assets and the profit-after-taxes rate per ton of steel ingots produced was second lowest, of the nine countries covered, in 1962.

The ratios of dividend payments to profits after taxes were generally at an intermediate level, except in 1962 when the Japanese ratio was the highest of the nine countries studied.

Employment cost ratios and rates were generally at a low level and were lowest, of the countries studied, in 1961–65, and second lowest in 1959–60.

The depreciation costs, ratios, and rates were generally at an intermediate level. The ratios of depreciation costs to total revenue in 1959–60, however, were second highest of the countries studied, and the depreciation-cost rate per ton of steel ingots produced was lowest in 1959–60, and second lowest in 1961.

The interest-cost ratios and rates were at a high level. The ratios of interest cost to total revenue were highest of the countries covered, during the period, 1959–64, and second highest in 1965. The interest cost per ton of steel ingots produced were highest of the countries covered, during the 1960–64 period, and the rate was second highest in 1959 and 1965. These high-interest-cost ratios and rates were consistent with the high indebtedness ratios for Japanese steel producers.

The corporate-income-tax costs, ratios, and rates were at an intermediate level during the years covered by the study. The corporate-income-tax cost ratios were second lowest, of the countries covered in 1961–63 and 1965; the corporate-income-tax cost rates per ton of steel ingots produced were second lowest in 1961 and 1965.

Material cost rates per ton were at an intermediate level, but the ratios of material costs to total revenue were highest, of the countries covered, in 1959–61 and 1963, and second highest in 1962 and 1964.

The financial liquidity ratios (current assets/current liabilities) were generally at a low level indicating limited financial liquidity. The Japanese CA/CL ratio was second lowest in 1961, 1963–65, and tied with two other countries for lowest ratio in 1962.

In respect to the indebtedness ratios, the Japanese ratio of debt to equity was the highest, of the countries studied, in 1959–63 and second highest in 1965. Also the total debt of the six Japanese steel producers exceeded their total equity in each of the 7 years. In respect to the ratios of debt to total revenue, the Japanese ratio was second highest in 1959 and 1963–65, and highest of the countries studied in 1960–62.

The major sources of investment funds, and years, were: increases-in-debt in 1960–62 and 1965, and depreciation-reserves in 1963–64.

In summary the Japanese steel producers had generally moderate profit-after-taxes ratios and rates; moderate dividend payment ratios, except in 1962 when it was the highest; low employment cost ratios and rates, moderate-to-low depreciation, and corporate-income-tax cost ratios and rates, high interest cost ratios and rates, and moderate-to-high material costs ratios and rates; limited financial liquidity, and very high indebtedness ratios.

The United States

Thirty-three companies in the United States produced steel ingots. All of them reported revenue, employment, and material cost data.

The profits-after-taxes ratios and rates were generally at an intermediate level, but the profits/assets ratio was second highest in 1963–64.

The U.S. ratio of dividend payments of profits after taxes was second highest, of the countries studied in 1960, and highest in 1961, but declined thereafter to an intermediate level.

The U.S. ratios of employment costs to total revenue were the highest of the countries studied during a 6-year period (1959–64). The U.S. employment cost rate per ton of steel ingots produced was second highest in 1959 and 1961–62, and highest in 1960, but had declined to an intermediate level in 1963–64.

The depreciation cost ratios and rates were generally at an intermediate level, but the ratio was second lowest in 1959–60.

Interest cost ratios and rates were generally low. The U.S. ratio of interest cost to total revenue was second lowest in 1959-61 and lowest in 1962–64. The interest cost rate per ton of steel ingots produced was second lowest in 1960 and 1962–64.

Corporation-income-tax cost ratios and rates were at a generally high level; they were second highest of the countries covered in 1959–60 and 1963–64.

Material cost ratios and rates were generally low. The U.S. ratio of material cost to total revenue was lowest of the countries studied throughout the entire 6-year period covered (1959–64). Material cost per ton of steel ingots produced were second lowest in 1960–61 and in 1963–64.

The U.S. ratios of current assets to current liabilities were generally high, indicating a large degree of financial liquidity. In 1960 and 1964 it was second highest, and in a 3-year period (1961–63) the U.S. ratios were the highest of the countries studied.

The indebtedness ratios were generally low. The debt/equity ratio was second lowest in 1959–60, and 1963–64. The debt/total revenue ratio was second lowest in 1959–60 and 1962–64.

The depreciation reserve was the major source of investment funds.

In summary, U.S. steel producers had moderate but occasionally high profits-after-taxes ratios and rates; initially high but subsequently moderate dividend payment ratios; high employment costs, moderate depreciation cost ratios and rates, and generally low-interest cost ratios and rates, high corporate-income-tax cost ratios and rates and low material cost ratios and rates; a high degree of financial liquidity, and low indebtedness ratios.

Trends in annual financial information, United States and major free world producers of steel

Country	Number of companies	1960	1961	1962	1963	1964	1965
		Profits after taxes—total revenue (percent)					
Belgium	3, 4, 5	4.4	6.0	5.8	(4) 1.6	(5) 0.8	(5) (0.1)
Luxembourg	1, 2	----------	3.1	3.8	(1.1)	3.1	(2) 6.1
Netherlands	1, 2	(1) 19.3	15.4	14.1	10.3	(1) 11.1	(1) 10.8
Germany	17	3.7	3.7	1.7	1.6	2.1	1.3
France	14, 15	.7	1.4	1.0	(14) 2.1	(14) .5	.4
Italy	7	4.4	5.0	9.3	5.7	10.9	2.9
United Kingdom	2, 6	(2) 13.8	(2) 9.7	2.8	2.7	1.1	----------
Japan	6	4.0	4.7	2.7	4.7	4.5	3.2
United States	33	6.0	5.3	4.3	5.6	6.0	----------
		Profits after taxes—total assets (percent)					
Belgium	8	4.3	4.8	4.3	1.3	1.3	.5
Luxembourg	3	5.4	3.1	3.1	(.2)	1.6	4.9
Netherlands	2, 3	11.6	8.6	6.2	5.8	(2) 5.8	(2) 4.7
Germany	17	4.7	4.5	2.0	1.7	2.4	1.5
France	14, 15	(14) 1.0	1.4	.9	1.5	.5	.3
Italy	7	3.1	3.3	5.4	2.5	3.4	1.0
United Kingdom	15	10.0	5.3	2.4	1.9	1.7	----------
Japan	6	2.8	3.1	1.4	2.7	2.8	2.0
United States	33	5.1	4.1	3.5	4.6	5.3	----------
		Profits after taxes—equity (percent)					
Belgium	8	8.1	8.8	8.3	2.7	2.8	1.0
Luxembourg	3	8.3	4.7	4.7	(.2)	2.3	7.4
Netherlands	2, 3	15.1	10.9	7.9	7.3	(2) 7.2	(2) 5.9
Germany	17	9.7	9.5	4.4	3.9	5.8	3.7
France	14, 15	(14) 2.4	3.6	2.5	4.2	1.4	.8
Italy	7	7.6	8.3	12.1	7.1	10.9	3.7
United Kingdom	15	15.6	8.7	4.1	3.5	3.1	----------
Japan	6	8.1	9.5	4.3	8.5	8.6	6.6
United States	33	7.6	6.2	5.2	6.9	8.0	----------
		Dividends—Profits after taxes (percent)					
Belgium	8	63.1	46.4	34.2	35.7	83.3	108.6
Luxembourg	3	37.4	53.5	41.3	----------	91.0	24.4
Netherlands	2, 3	24.4	30.5	35.0	32.5	(2) 24.9	(2) 32.6
Germany	17	42.8	54.1	85.7	78.6	57.7	82.7
France	14, 15	(14) 126.2	77.3	114.2	47.9	148.9	226.7
Italy	7	63.4	66.2	47.5	75.0	80.5	58.0
United Kingdom	15	29.5	46.8	88.5	113.2	147.2	----------
Japan	6	64.7	69.2	149.3	75.8	81.7	106.1
United States	33	68.4	79.5	86.5	55.1	47.6	----------
		Profits after taxes—Steel ingots produced (dollars per short ton)					
Belgium	8	4.51	5.60	5.19	2.79	2.52	0.91
Luxembourg	3	4.58	2.87	3.02	(.17)	1.49	4.95
Netherlands	2, 3	20.00	16.74	13.71	12.33	(2) 15.62	(2) 11.61
Germany	17	6.79	7.42	3.63	3.38	4.34	2.55
France	14, 15	(14) 1.14	2.06	1.54	3.02	.87	.46
Italy	7	6.19	6.91	12.99	7.93	15.23	3.16
United Kingdom	15	16.08	9.99	5.49	4.48	3.53	----------
Japan	6	4.55	5.19	2.87	4.93	4.65	3.33
United States	33	8.72	7.91	6.22	7.60	7.98	----------

Trends in annual financial information, United States and major free world producers of steel—Continued

Country	Number of companies	Percent 1959	1960	1961	1962	1963	1964	1965
		Employment costs—total revenue						
Belgium	3	32.5	31.2	32.3	35.5	35.5	35.5	33.6
Luxembourg	----------	----------	----------	----------	----------	----------	----------	----------
Netherlands	1	12.5	12.2	18.7	20.7	21.5	17.0	23.5
Germany	16, 17	(16) 23.3	21.4	23.3	23.9	24.9	25.2	25.0
France	----------	(8) 20.7	(7) 19.3	(8) 21.7	(6) 22.2	(7) 24.6	(7) 24.6	24.2
Italy	2	20.6	18.7	20.8	----------	----------	----------	----------
United Kingdom	1	28.3	27.1	28.3	30.4	29.4	28.6	----------
Japan	2, 3	14.0	13.1	12.8	14.7	18.6	15.8	(2) 13.4
United States	33	36.8	39.8	41.1	39.9	39.0	38.1	----------
		Depreciation costs—total revenue						
Belgium	3, 5	7.2	7.7	8.2	7.9	7.5	(5) 7.8	(5) 5.8
Luxembourg	1, 2	----------	----------	7.1	7.7	8.8	8.8	(2) 9.4
Netherlands	1, 2	(1) 6.9	(1) 6.2	7.7	8.3	9.1	(1) 11.1	(1) 11.1
Germany	16, 17	(16) 6.9	6.1	5.6	5.4	5.9	5.9	5.9
France	14, 15	10.4	13.4	10.5	9.4	(14) 7.0	(14) 6.0	5.6
Italy	4, 7	(4) 6.1	7.4	7.3	6.5	6.3	5.9	5.2
United Kingdom	----------	(2) 2.9	(2) 2.9	(2) 3.3	(6) 4.5	(6) 5.1	(6) 5.0	----------
Japan	6	8.8	8.9	8.1	8.1	8.3	8.0	8.8
United States	33	4.7	5.1	5.7	6.9	7.2	6.7	----------
		Interest costs—total revenue						
Belgium	3, 5	1.3	1.4	1.5	2.0	2.6	(5) 3.4	(5) 3.4
Luxembourg	2	----------	----------	----------	----------	----------	----------	.7
Netherlands	1	----------	----------	----------	----------	----------	----------	1.0
Germany	16, 17	(16) 1.8	1.2	1.0	1.3	1.6	1.7	1.8
France	14, 15	1.6	1.5	1.7	2.4	(14) 2.8	3.0	3.3
Italy	5, 7	(5) 3.4	3.4	3.0	2.3	2.4	3.3	6.8
United Kingdom	----------	(2) .5	(2) .3	(2) .3	(6) 1.2	(6) 1.9	(7) 2.0	----------
Japan	6	4.7	4.8	5.1	6.6	6.5	5.3	6.5
United States	33	.7	.7	.9	1.0	.9	.8	----------
		Corporate income tax cost—total revenue						
Belgium	2, 3	.7	.6	(2) .6	----------	----------	----------	----------
Luxembourg	1, 2	----------	----------	5.5	3.8	2.3	3.1	(2) 3.0
Netherlands	1, 2	(1) 11.2	(1) 11.6	9.0	7.6	8.0	(1) 5.7	(1) 7.4
Germany	16, 17	(16) 2.6	3.5	3.6	2.6	2.4	2.6	2.1
France	----------	(13) 1.4	(12) 1.5	(10) 3.0	(9) 1.4	(9) 2.8	(11) 2.7	(8) 3.6
Italy	5, 6, 7	(5) 2.2	2.1	2.6	(6) 2.4	(6) 1.9	(5) 1.9	(5) 1.2
United Kingdom	----------	(2) 3.3	(2) 3.5	(2) 2.4	(6) 1.0	(6) .6	(6) .8	----------
Japan	6	1.7	2.2	2.0	1.1	1.8	2.2	1.6
United States	33	5.7	5.4	4.5	3.3	4.4	4.3	----------
		Materials costs—total revenue						
Belgium	----------	----------	----------	----------	----------	----------	----------	----------
Luxembourg	----------	----------	----------	----------	----------	----------	----------	----------
Netherlands	1	59.4	57.1	51.5	52.3	51.6	39.7	----------
Germany	3, 8, 17	(3) 46.8	(8) 57.9	61.6	62.8	60.8	60.6	61.8
France	----------	(1) 52.7	(2) 50.1	(3) 50.9	(2) 48.1	(3) 51.0	(3) 52.2	(12) 49.7
Italy	----------	----------	----------	----------	----------	----------	----------	----------
United Kingdom	1	58.3	59.8	60.9	58.1	57.5	61.6	----------
Japan	3	62.6	62.4	63.4	60.8	68.6	60.7	----------
United States	33	40.9	37.6	37.1	39.6	38.2	38.7	----------

Country	Number of companies	Dollars per short ton of steel ingots produced						
		1959	1960	1961	1962	1963	1964	1965
		Employment costs—steel ingots produced						
Belgium	3	32.80	30.74	34.61	34.16	36.28	34.14	32.95
Luxembourg								
Netherlands	1	12.34	12.66	18.93	19.18	18.23	17.81	21.98
Germany	17	42.08	39.56	46.21	51.21	54.34	50.94	54.40
France	6, 7, 8, 15	(8) 21.82	(7) 21.91	(8) 26.75	(6) 25.85	(7) 30.09	(7) 30.17	(15) 31.93
Italy	2	26.27	24.12					
United Kingdom	1	59.33	50.66	64.77	74.57	67.60	64.53	
Japan	2, 3	15.83	15.77	15.14	15.76	17.14	17.44	(2) 15.16
United States	33	57.85	57.63	60.82	58.37	53.20	50.47	
		Depreciation and depletion costs—Ingots produced						
Belgium	8	6.82	7.58	8.13	7.30	6.95	7.53	5.94
Luxembourg	3	6.19	6.03	5.61	6.04	6.65	7.33	6.92
Netherlands	3	6.13	6.20	8.48	8.47	8.54	12.34	11.27
Germany	17	11.97	11.21	11.14	11.46	12.89	11.85	11.73
France	14, 15	(14) 13.60	(14) 18.69	14.91	13.09	10.02	9.97	7.44
Italy	7	9.57	10.32	10.19	9.12	8.72	8.17	5.64
United Kingdom	15	5.94	5.18	5.82	7.31	8.12	7.56	
Japan	6	9.95	10.22	8.92	8.64	8.70	8.34	9.27
United States	33	7.47	7.43	8.50	10.10	9.88	8.88	
		Interest costs—Ingots produced						
Belgium	8	.96	1.11	1.22	1.47	2.01	2.59	2.65
Luxembourg	3	.33	.30	.37	.45	.51	.47	.63
Netherlands	2							1.39
Germany	17	3.15	2.14	1.95	2.71	3.41	3.40	3.51
France	14, 15	(14) 2.40	(14) 2.24	2.64	3.61	3.94	4.01	4.34
Italy	7	5.47	4.81	4.13	3.17	3.32	4.55	7.37
United Kingdom	15	1.70	1.40	1.58	2.21	3.08	3.02	
Japan	6	5.24	5.43	5.59	7.04	6.78	5.53	6.81
United States	33	1.08	1.06	1.40	1.42	1.21	1.07	

		Corporate income taxes—Ingots produced						
Belgium	8	.68	.57	(7) .61	(1) .65	(1) .31	(1) .19	
Luxembourg	3	2.52	4.19	4.20	2.91	1.50	2.02	2.19
Netherlands	3	12.64	13.24	10.62	8.12	7.10	8.84	7.70
Germany	17	4.52	6.44	7.19	5.58	5.18	5.16	4.29
France	8, 9, 10, 11, 12, 13	(13) 1.65	(12) 1.67	(10) 2.85	(9) 1.49	(9) 3.94	(11) 3.19	(3) 4.77
Italy	7	3.17	2.88	3.78	3.35	2.61	2.47	1.24
United Kingdom	15	5.24	5.18	2.97	.34	.06	1.48	
Japan	6	1.94	2.56	2.22	1.21	1.91	2.30	1.72
United States	33	8.92	7.89	6.62	4.78	5.99	5.64	

		Material costs—Ingots produced						
Belgium								
Luxembourg								
Netherlands	1	58.34	50.21	52.15	48.51	43.85	41.68	
Germany	3, 8, 17	(3) 92.89	(8) 112.06	122.12	134.47	132.63	122.40	134.67
France	1, 2, 3	(1) 50.47	51.55	(3) 63.58	48.39	(3) 62.87	61.81	(12) 62.25
Italy								
United Kingdom	1	122.39	111.73	13[illegible].58	142.64	132.50	139.25	
Japan	3	70.86	75.21	74.80	65.30	63.07	67.09	
United States	33	64.39	54.44	54.90	57.96	52.19	51.34	

Country	Number of companies	1959	1960	1961	1962	1963	1964	1965
		Current assets to current liabilities (ratio)						
Belgium	8	1.94	1.89	1.90	1.73	1.39	1.34	1.32
Luxembourg	3	1.37	1.38	1.45	1.39	1.61	1.53	1.46
Netherlands	2, 3	1.33	1.15	1.24	1.21	1.05	(2) 3.00	(2) 3.35
Germany	17	1.39	1.42	1.27	1.21	1.23	1.26	1.24
France	14, 15	(14) 2.29	(14) 2.44	2.07	1.95	1.74	1.75	1.67
Italy	7	1.06	1.27	1.15	1.48	1.26	1.04	.77
United Kingdom	15	2.27	2.16	2.17	2.24	2.35	2.20	----------
Japan	6	1.43	1.45	1.22	1.21	1.19	1.20	1.17
United States	33	2.20	2.27	2.37	2.53	2.49	2.26	----------
		New working capital, total revenue (percent)						
Belgium	3.5	29.3	29.8	26.5	23.5	(4) 14.9	(5) 12.1	(5) 11.2
Luxembourg	1, 2	----------	----------	11.6	11.6	23.0	8.0	(2) 2.4
Netherlands	1	----------	----------	----------	----------	----------	24.4	29.1
Germany	16, 17	(16) 10.2	9.4	6.8	5.5	5.9	6.8	6.4
France	14, 15	25.0	24.8	22.8	24.4	(14) 21.1	(14) 20.3	18.1
Italy	5	11.5	12.5	7.6	23.5	20.8	4.5	----------
United Kingdom	2, 6, 7	30.0	31.5	35.4	(6) 27.6	(6) 29.5	(7) 28.9	----------
Japan	6	18.0	18.7	11.9	13.9	11.7	11.0	9.4
United States	33	26.4	25.7	30.5	29.0	29.7	25.3	----------
		Debt, equity (percent)						
Belgium	8	28.5	33.4	41.4	53.8	72.2	80.5	73.4
Luxembourg	3	10.6	9.7	9.0	13.1	8.2	10.3	19.6
Netherlands	2, 3	17.0	17.4	14.5	14.3	17.9	(2) 13.3	(2) 12.7
Germany	17	70.4	62.3	72.4	84.9	90.6	103.7	105.7
France	14, 15	(14) 83.1	81.6	103.8	125.1	(14) 120.7	(14) 130.4	136.6
Italy	7	107.0	92.8	98.3	70.9	127.3	142.4	213.4
United Kingdom	15	24.4	24.2	33.3	44.1	51.3	16.4	----------
Japan	6	113.5	121.7	141.8	142.0	135.7	128.4	145.4
United States	33	12.7	17.2	20.3	16.1	11.6	17.3	----------
		Debt, total revenue (percent)						
Belgium	3, 4, 5	20.5	29.6	35.5	51.3	(4) 62.0	(5) 63.9	(5) 56.3
Luxembourg	1, 2	----------	----------	.5	2.1	----------	----------	(2) 14.8
Netherlands	1, 2	29.8	30.0	(2) 26.4	(2) 29.0	(2) 30.4	27.8	24.3
Germany	16, 17	(16) 32.2	23.6	28.6	32.9	35.8	38.5	36.9
France	14, 15	23.8	25.4	42.7	45.9	(14) 52.4	(14) 51.9	57.1
Italy	7	60.0	54.4	58.6	54.2	101.8	142 6	167.9
United Kingdom	1, 5, 6, 7	21.5	12.0	4.7	(5) 52.3	(6) 37.7	(7) 32.3	----------
Japan	6	55.9	59.9	69.9	88.9	75.4	66.2	70.1
United States	33	9.7	13.6	17.4	13.2	9.4	13.0	----------

Year and country	Number of companies	Sources of funds (percent)					Uses of funds (percent)	
		Income reinvested	Depreciation	Increases in debt	Increases in capital stock	Total	Investments	Other
1960								
Belgium	8	9.8	44.7	25.0	20.5	100.0	92.0	8.0
Luxembourg	3	32.2	67.8	----------	----------	100.0	79.9	20.1
Netherlands	3	43.6	17.9	18.8	19.7	100.0	41.5	58.5
Germany	17	22.5	64.9	----------	12.6	100.0	70.1	29.9
France	14	(1.2)	82.7	10.4	8.1	100.0	71.9	28.1
Italy	7	11.1	50.5	----------	38.4	100.0	64.2	35.8
United Kingdom	15	49.8	22.7	14.7	12.8	100.0	70.5	29.5
Japan	6	4.1	26.4	43.9	25.6	100.0	78.3	21.7
United States	33	17.4	47.0	35.0	0.6	100.0	96.2	3.8
1961								
Belgium	8	13.6	36.7	32.8	16.9	100.0	75.9	24.1
Luxembourg	3	18.5	77.7	3.8	----------	100.0	118.7	(18.7)
Netherlands	3	54.7	39.9	----------	5.4	100.0	95.6	4.4
Germany	17	13.8	37.2	40.4	8.6	100.0	62.3	37.7
France	14	1.1	38.2	47.4	13.3	100.0	61.3	38.7
Italy	7	7.5	32.5	39.5	20.5	100.0	69.5	30.5
United Kingdom	15	18.7	20.5	45.1	15.7	100.0	76.3	23.7
Japan	6	3.6	20.3	54.1	22.0	100.0	67.5	32.5
United States	33	11.1	58.0	29.0	1.9	100.0	76.6	23.4
1962								
Belgium	8	17.5	37.4	45.1	----------	100.0	94.7	5.3
Luxembourg	3	16.7	56.8	26.5	----------	100.0	86.7	13.3
Netherlands	3	42.1	40.0	17.3	0.6	100.0	104.9	(4.9)
Germany	17	2.2	49.0	47.7	1.1	100.0	86.1	13.9
France	15	(0.6)	44.5	47.6	8.5	100.0	86.3	13.7
Italy	7	17.0	22.8	----------	60.2	100.0	65.7	34.3
United Kingdom	15	2.5	29.3	60.8	7.4	100.0	132.4	32.4
Japan	6	(4.7)	28.8	39.6	36.3	100.0	87.5	12.5
United States	33	7.7	91.8	----------	0.5	100.0	84.5	15.5
1963								
Belgium	8	5.0	30.8	58.4	5.8	100.0	96.3	3.7
Luxembourg	3	(9.6)	51.2	----------	58.4	100.0	82.5	17.5
Netherlands	3	33.2	34.2	32.6	----------	100.0	85.3	14.7
Germany	17	3.9	68.7	26.3	1.1	100.0	112.9	(12.9)
France	15	6.0	44.1	42.3	7.6	100.0	78.3	21.7
Italy	7	2.7	11.8	85.5	----------	100.0	89.9	10.1
United Kingdom	15	(3.6)	49.9	53.7	----------	100.0	169.6	69.6
Japan	6	6.4	46.8	20.8	26.0	100.0	88.8	11.2
United States	33	25.5	74.0	----------	.5	100.0	71.8	28.2
1964								
Belgium	8	1.8	50.1	45.0	3.1	100.0	68.1	31.9
Luxembourg	3	1.2	68.6	13.0	17.2	100.0	78.0	22.0
Netherlands	2	41.6	43.7	3.3	11.4	100.0	52.8	47.2
Germany	17	7.2	46.8	45.2	.8	100.0	64.7	35.3
France	14	(1.9)	52.3	31.0	18.6	100.0	56.5	43.5
Italy	7	11.9	9.2	60.0	18.9	100.0	102.9	2.9
United Kingdom	15	(10.6)	48.0	----------	62.6	100.0	80.8	19.2
Japan	6	5.0	49.5	17.4	28.1	100.0	73.0	27.0
United States	33	21.7	46.2	32.1	----------	100.0	68.4	31.6
1965								
Belgium	8	(.6)	74.3	----------	26.3	100.0	75.1	24.9
Luxembourg	3	21.7	40.1	38.2	----------	100.0	35.6	64.4
Netherlands	2	39.9	57.5	2.6	----------	100.0	54.4	45.6
Germany	17	2.5	66.3	21.5	9.7	100.0	81.3	18.7
France	15	(6.2)	78.6	21.3	6.3	100.0	91.7	8.3
Italy	7	2.6	10.9	86.5	----------	100.0	69.7	30.3
United Kingdom	15	----------	----------	----------	----------	----------	----------	----------
Japan	6	(1.0)	46.1	47.3	7.6	100.0	68.6	31.4
United States	33	----------	----------	----------	----------	----------	----------	----------

[In percent of total production of steel ingots]

Country	1959	1960	1961	1962	1963	1964	1965
Coverage of countries with companies reporting revenue data							
Belgium	56.8	57.1	55.4	56.0	60.4	61.9	63.2
Luxembourg	--------	--------	79.5	78.8	77.6	78.4	109.2
Netherlands	82.3	82.7	89.6	90.0	91.1	87.4	89.6
Germany	80.7	90.4	90.1	88.7	88.2	87.6	90.8
France	86.1	75.8	75.5	75.5	74.7	75.3	85.7
Italy	61.5	66.5	64.5	64.6	60.7	66.1	67.8
United Kingdom	10.7	14.5	15.0	51.7	51.0	60.1	--------
Japan	76.4	70.2	70.4	66.9	74.2	70.1	73.2
United States of America	92.8	94.0	87.5	93.1	93.5	93.8	--------
Coverage of countries with companies reporting employment costs							
Belgium	56.8	57.1	55.4	56.0	55.9	56.4	57.8
Luxembourg	--------	--------	--------	--------	--------	--------	--------
Netherlands	82.3	82.7	84.4	84.9	86.4	87.4	89.6
Germany	81.4	90.4	90.1	88.7	88.2	87.6	90.8
France	60.0	54.8	57.5	51.1	55.1	56.1	85.7
Italy	46.6	46.5	8.6	--------	--------	--------	--------
United Kingdom	7.0	7.7	7.8	7.3	7.3	7.8	--------
Japan	38.5	33.4	32.3	32.5	35.1	33.0	24.8
United States of America	92.8	94.0	87.5	93.1	93.5	93.8	--------
Coverage of countries with companies reporting material costs							
Belgium	--------	--------	--------	--------	--------	--------	--------
Luxembourg	--------	--------	--------	--------	--------	--------	--------
Netherlands	82.3	82.7	84.4	84.9	86.4	87.4	--------
Germany	15.4	43.7	90.1	88.7	88.2	87.6	90.8
France	15.9	30.0	31.5	30.9	33.2	34.8	85.7
Italy	--------	--------	--------	--------	--------	--------	--------
United Kingdom	7.0	7.7	7.8	7.3	7.3	7.8	--------
Japan	38.5	33.4	32.3	32.5	35.1	33.0	--------
United States of America	92.8	94.0	87.5	93.1	93.5	93.8	--------

Year and country	Number of companies	Millions of dollars					Short tons of steel ingots produced (thousands)	Capital stock
		Profits after taxes	Total revenue	Total assets	Equity	Dividends		
1959								
Belgium	3, 8		(3) 407.4		391.0		6,906	184.3
Luxembourg	3				280.3		4,844	88.8
Netherlands	1, 3		(1) 148.9		206.1		1,828	33.5
Germany	16, 17		(16) 4,713.1		2,178.5		27,511	891.2
France	13, 14		(13) 1,440.1		628.3		13,604	304.6
Italy	5, 7		(5) 595.5		440.2		4,930	279.6
United Kingdom	15		(2) 947.8		2,137.5		18,530	778.9
Japan	6		1,578.0		777.4		14,009	387.6
United States	33		13,638.9		10,420.0		86,689	3,031.2
1960								
Belgium	3, 8	35.0	(3) 445.2	814.6	433.0	22.1	7,766	211.4
Luxembourg	3	24.6		454.5	295.3	9.2	5,376	88.8
Netherlands	1, 3	42.6	(1) 183.5	366.5	282.1	10.4	2,130	48.1
Germany	17	230.9	6,290.6	4,874.6	2,384.0	98.8	33,983	964.8
France	13, 14	16.4	(13) 1,712.5	1,725.4	683.7	20.7	15,246	336.7
Italy	7	37.4	844.5	1,223.8	494.9	23.7	6,034	326.5
United Kingdom	2, 15	387.8	(2) 1,094.5	3,875.8	2,481.1	114.4	24,114	849.4
Japan	6	77.9	1,958.2	2,745.9	963.8	50.4	17,135	557.0
United States	33	813.3	13,512.3	15,859.1	10,684.9	556.5	93,298	3,039.3
1961								
Belgium	3, 8	42.7	(3) 458.8	888.1	483.1	19.8	7,625	240.0
Luxembourg	1, 3	15.7	(1) 292.0	506.1	334.8	8.4	5,471	88.8
Netherlands	2, 3	36.1	(2) 203.5	420.0	331.2	11.0	2,157	50.6
Germany	17	246.7	6,593.0	5,471.6	2,609.7	108.8	33,238	1,050.8
France	13, 15	29.9	(13) 1,758.3	2,179.5	831.2	23.1	16,465	418.1
Italy	7	45.8	923.4	1,371.5	550.4	30.3	6,629	369.0
United Kingdom	2, 15	235.1	(2) 1,110.2	4,408.4	2,710.9	110.0	23,537	954.1
Japan	6	113.8	2,424.4	3,705.5	1,194.5	78.8	21,947	768.7
United States	33	677.9	12,678.1	16,598.4	10,847.9	538.9	85,722	3,063.4
1962								
Belgium	3, 8	41.8	(3) 438.0	977.5	502.8	14.3	8,051	233.3
Luxembourg	1, 3	16.0	~~(1) 276.0~~	524.4	343.3	6.6	5,298	88.8
Netherlands	2, 3	31.4	~~(2) 196.6~~	506.6	397.1	11.0	2,290	50.9
Germany	17	115.7	6,816.5	5,913.8	2,641.2	99.1	31,848	1,059.4
France	13, 15	21.9	(13) 1,730.0	2,530.2	871.0	25.0	16,216	458.9
Italy	7	90.3	976.2	1,676.1	746.3	42.9	6,951	536.3
United Kingdom	6, 15	114.4	(6) 2,211.2	4,751.8	2,762.4	101.2	20,874	992.3
Japan	6	58.4	2,177.8	4,215.8	1,362.8	87.2	20,319	989.6
United States	33	569.3	13,376.6	16,259.0	10,930.8	492.2	91,501	3,069.1
1963								
Belgium	4, 8	14.0	(4) 509.9	1,086.0	521.1	5.0	8,005	243.8
Luxembourg	1, 3	(.9)	(1) 266.0	538.9	376.6	5.7	5,278	128.8
Netherlands	2, 3	31.6	(2) 206.1	549.5	433.0	10.3	2,563	50.9
Germany	17	103.9	6,698.8	6,132.6	2,643.9	81.7	30,710	1,065.7
France	10, 15	43.4	(10) 1,549.8	2,822.3	1,034.7	20.8	16,588	487.6
Italy	7	53.9	943.5	2,174.9	754.8	40.4	6,801	536.3
United Kingdom	6, 15	96.8	(6) 2,318.7	5,003.8	2,743.9	109.6	21,636	986.6
Japan	6	127.0	2,699.5	4,695.4	1,500.0	96.3	25,772	1,114.3
United States	33	775.9	13,946.2	16,693.0	11,285.1	427.7	102,127	3,075.3
1964								
Belgium	5, 8	15.0	(5) 609.7	1,188.7	544.0	12.5	9,141	248.2
Luxembourg	1, 3	8.9	(1) 304.0	563.0	378.3	8.1	5,992	139.8
Netherlands	1, 2	43.3	(1) 268.0	753.1	601.1	10.8	2,772	59.8
Germany	17	156.5	7,285.7	6,657.1	2,708.4	90.3	36,650	1,073.0
France	14, 15	14.1	(14) 2,212.4	2,985.6	1,043.0	21.0	18,751	554.4
Italy	7	100.5	919.8	2,943.2	921.3	30.7	6,597	646.7
United Kingdom	7, 15	91.7	(7) 2,985.9	5,274.3	2,956.5	135.0	76,646	242.5
Japan	6	142.9	3,210.6	5,024.8	1,654.6	116.7	34,749	1,260.2
United States	33	950.8	15,796.9	17,871.5	11,848.5	452.7	119,188	3,061.4
1965								
Belgium	[illegible], 8	5.8	(5) 6,643.5	1,219.2	577.6	6.3	9,838	268.9
Luxembourg	2, 3	29.9	(2) 420.0	605.0	401.9	7.3	6,040	139.8
Netherlands	1, 2	38.3	(1) 289.8	815.5	646.3	12.5	3,300	59.8
Germany	17	102.4	8,031.7	6,962.1	2,799.5	84.7	40,141	1,141.9
France	15	8.6	2,446.4	2,958.5	1,022.5	19.5	18,515	565.5
Italy	7	30.0	1,034.0	3,021.8	313.7	17.4	9,481	583.8
United Kingdom								
Japan	6	110.6	3,481.6	5,495.3	1,678.4	117.[illegible]	33,208	1,310.9
United States								

Year and country	Number of companies	Cost analysis (millions of dollars): Employment	Materials	Depreciation	Interest paid	Corporate income tax
1959						
Belgium	3,8	(3) 132.2	-----	47.1	6.6	4.7
Luxembourg	3	-----	-----	30.0	1.6	12.2
Netherlands	1,3	(1) 18.7	(1) 88.4	11.2	-----	23.1
Germany	3,17	1,111.5	(3) 464.8	329.4	86.6	124.3
France	1,8,14	(8) 216.7	(1) 133.7	185.0	32.7	20.4
Italy	2,7	(2) 91.2	-----	47.2	27.0	15.6
United Kingdom	1,15	(1) 93.8	(1) 193.5	109.8	31.5	97.0
Japan	3,6	(3) 111.7	(3) 499.8	139.4	73.4	27.2
United States	33	5,015.0	5,582.2	647.8	93.2	772.9
1960						
Belgium	3,8	(3) 139.0	-----	58.9	8.6	4.4
Luxembourg	3	-----	-----	32.4	1.6	22.5
Netherlands	1,3	(1) 22.4	(1) 104.8	13.2	-----	28.2
Germany	8,17	1,344.2	(8) 1,847.5	380.9	72.6	218.9
France	2,7,14	(7) 227.1	(2) 292.0	285.0	34.1	22.9
Italy	2,7	(2) 101.7	-----	62.3	29.0	17.4
United Kingdom	1,15	(1) 105.9	(1) 233.6	124.9	33.6	125.2
Japan	3,6	(3) 128.7	(3) 613.5	175.2	93.1	43.8
United States	33	5,376.3	5,079.0	693.0	98.8	736.0
1961						
Belgium	3,8	(3) 148.1	-----	62.0	9.3	3.9
Luxembourg	3	-----	-----	30.7	2.0	23.0
Netherlands	1,3	(1) 34.7	(1) 95.6	18.3	-----	22.9
Germany	17	1,535.9	4,058.9	370.3	64.9	238.9
France	3,8,15	(8) 295.4	(3) 384.4	245.5	43.5	-----
Italy	1,7	(1) 29.5	-----	67.5	27.4	23.7
United Kingdom	1,15	(1) 125.4	(1) 270.2	136.8	37.2	69.9
Japan	3,6	(3) 152.3	(3) 752.5	195.8	122.6	48.7
United States	33	5,213.3	4,705.8	728.4	120.3	567.5
1962						
Belgium	3,8	(3) 155.3	-----	58.8	11.8	1.0
Luxembourg	3	-----	-----	32.0	2.4	15.4
Netherlands	1,3	(1) 37.5	(1) 94.8	19.4	-----	18.6
Germany	17	1,630.8	4,282.6	364.9	86.3	177.6
France	2,6,15	(6) 249.0	(2) 281.6	212.2	58.6	-----
Italy	7	-----	-----	63.4	22.1	22.6
United Kingdom	1,15	(1) 124.9	(1) 238.9	152.6	46.2	7.0
Japan	3,6	(3) 155.3	(3) 643.5	175.6	143.1	24.6
United States	33	5,341.3	5,303.1	924.0	129.7	437.4
1963						
Belgium	3,8	(3) 168.3	-----	55.6	16.1	.2
Luxembourg	3	-----	-----	35.1	2.7	7.9
Netherlands	1,3	(1) 40.7	(1) 97.9	21.9	-----	18.2
Germany	17	1,668.7	4,073.1	395.8	104.7	159.0
France	3,7,15	(7) 318.7	(3) 400.6	166.2	65.8	-----
Italy	7	-----	-----	59.3	22.6	17.2
United Kingdom	1,15	(1) 124.0	(1) 213.0	175.6	66.4	1.5
Japan	3,6	(3) 208.8	(3) 768.2	224.1	174.8	49.1
United States	33	5,433.1	5,329.6	1,009.5	123.9	612.1
1964						
Belgium	3,8	(3) 185.3	-----	68.8	23.7	-----
Luxembourg	3	-----	-----	43.9	2.8	12.1
Netherlands	-----	(1) 45.5	(1) 106.5	(2) 34.2	-----	(2) 24.5
Germany	17	1,836.3	4,412.6	427.3	122.6	185.9
France	3,7,15	(7) 364.1	(3) 463.0	187.0	75.2	-----
Italy	7	-----	-----	53.9	30.0	15.1
United Kingdom	1,15	(1) 145.0	(1) 312.9	196.3	78.9	38.4
Japan	3,6	(3) 252.4	(3) 971.1	256.6	170.1	70.6
United States	33	6,015.4	6,119.3	1,058.9	127.5	672.5
1965						
Belgium	3,8	(3) 192.4	-----	58.4	26.1	-----
Luxembourg	3	-----	-----	41.8	3.8	13.2
Netherlands	1,2	(1) 68.2	-----	37.2	4.6	25.4
Germany	17	2,004.1	4,961.2	470.7	140.8	172.2
France	12,15	591.2	(2) 1,152.5	137.7	80.3	-----
Italy	7	-----	-----	53.5	69.9	11.1
United Kingdom	-----	-----	-----	-----	-----	-----
Japan	2,6	(2) 170.5	-----	307.8	226.3	57.1
United States	-----	-----	-----	-----	-----	-----

Year and country	Number of companies	Debt analysis (millions of dollars)				
		Cash flow	Current assets	Current liabilities	New working capital	Debt
1959						
Belgium	8		337.9	173.9	164.0	111.6
Luxembourg	3		167.1	122.1	45.0	29.7
Netherlands	3		79.2	59.5	19.7	35.1
Germany	17		1,746.1	1,257.8	488.3	1,533.9
France	14		722.4	316.1	406.3	522.0
Italy	7		410.0	388.2	21.8	471.2
United Kingdom	15		1,304.9	573.7	731.2	520.4
Japan	6		943.4	658.6	284.8	882.2
United States	33		6,580.9	2,984.7	3,596.2	1,323.6
1960						
Belgium	8	71.8	381.7	201.9	179.8	144.5
Luxembourg	3	47.8	179.4	129.9	49.5	28.5
Netherlands	3	45.4	85.2	74.0	11.2	49.0
Germany	17	513.0	2,000.4	1,410.5	589.9	1,486.4
France	14	280.7	829.9	340.5	489.4	557.8
Italy	7	76.0	500.0	394.2	105.8	459.2
United Kingdom	15	398.3	1,515.2	701.4	813.8	601.0
Japan	6	202.7	1,184.9	819.3	365.6	1,173.1
United States	33	949.8	6,218.9	2,742.5	3,476.4	1,839.4
1961						
Belgium	8	84.9	360.7	189.4	171.3	199.8
Luxembourg	3	38.0	196.6	135.8	60.8	30.0
Netherlands	3	43.4	96.5	77.7	18.8	48.2
Germany	17	508.2	2,105.0	1,653.8	451.2	1,888.3
France	15	252.3	971.5	470.0	501.5	862.4
Italy	7	83.0	550.7	480.3	70.4	541.3
United Kingdom	15	261.9	1,566.0	720.4	845.6	901.5
Japan	6	230.8	1,624.0	1,336.1	287.9	1,693.8
United States	33	867.4	6,678.2	2,815.2	3,863.0	2,203.9
1962						
Belgium	8	86.3	358.9	207.0	151.9	270.7
Luxembourg	3	41.4	194.3	139.3	55.0	44.9
Netherlands	3	39.8	98.9	82.0	16.9	56.6
Germany	17	381.5	2,203.9	1,826.5	377.4	2,243.4
France	15	209.1	1,079.8	554.1	525.7	1,089.8
Italy	7	110.8	707.5	478.4	229.1	529.3
United Kingdom	15	165.8	1,506.8	671.4	835.4	1,217.7
Japan	6	146.8	1,719.4	1,416.8	302.6	1,935.3
United States	33	1,001.1	6,425.6	2,541.2	3,884.4	1,760.9
1963						
Belgium	8	64.6	346.4	248.7	97.7	376.1
Luxembourg	3	28.5	186.6	115.6	71.0	30.7
Netherlands	3	43.2	92.2	88.0	4.2	77.5
Germany	17	418.0	2,145.4	1,749.1	396.3	2,394.9
France	15	188.8	1,084.4	622.1	462.3	1,249.1
Italy	7	72.8	959.4	763.2	196.2	960.5
United Kingdom	15	162.8	1,604.7	681.7	923.0	1,406.7
Japan	6	254.8	1,939.1	1,623.8	315.3	2,035.1
United States	33	1,357.7	6,914.7	2,778.7	4,136.0	1,312.9
1964						
Belgium	8	71.3	387.0	288.6	98.4	437.8
Luxembourg	3	44.7	205.6	134.5	71.1	39.0
Netherlands	2	66.7	147.9	49.3	98.6	80.1
Germany	17	493.4	2,412.3	1,918.7	493.6	2,807.4
France	15	180.1	1,163.8	666.1	497.7	1,359.9
Italy	7	123.7	1,092.2	1,050.6	41.6	1,311.5
United Kingdom	15	153.0	654.2	297.3	356.9	485.1
Japan	6	282.8	2,094.6	1,742.2	352.4	2,125.3
United States	33	1,557.0	7,161.9	3,165.4	3,996.5	2,047.1
1965						
Belgium	8	57.9	390.1	295.1	95.0	424.0
Luxembourg	3	64.4	194.7	132.9	61.8	78.8
Netherlands	2	63.0	176.6	52.7	123.9	81.8
Germany	17	488.4	2,648.2	2,138.1	510.1	2,959.8
France	15	126.8	1,108.1	665.3	442.8	1,397.2
Italy	7	66.1	908.7	1,180.4	(271.7)	1,736.2
United Kingdom	15					
Japan	6	314.5	2,223.3	1,897.7	325.6	2,441.2
United States	33					

Year and country	Number of companies	Sources of funds (millions of dollars)					Uses of funds (millions of dollars)	
		Income reinvested	Depreciation	Increases in debt	Increases in capital stock	Total	Investments	Other
1960								
Belgium	8	12.9	58.9	32.9	27.1	131.8	121.2	10.6
Luxembourg	3	15.4	32.4	....	....	47.8	38.2	9.6
Netherlands	3	32.2	13.2	13.9	14.6	73.9	30.7	43.2
Germany	17	132.1	380.9	....	73.6	586.6	411.2	175.4
France	14	(4.3)	285.0	35.8	28.1	344.6	247.6	97.0
Italy	7	13.7	62.3	....	47.4	123.4	79.2	44.2
United Kingdom	15	273.4	124.9	80.6	70.5	549.4	387.3	162.1
Japan	6	27.5	175.2	290.9	169.4	663.0	519.2	143.8
United States	33	256.8	693.0	515.8	8.1	1,473.7	1,417.1	56.6
1961								
Belgium	8	22.9	62.0	55.3	28.6	168.8	128.2	40.6
Luxembourg	3	7.3	30.7	1.5	....	39.5	46.9	(7.4)
Netherlands	3	25.1	18.3	....	2.5	45.9	43.9	2.0
Germany	17	137.9	370.3	401.9	86.0	996.1	620.8	375.3
France	15	6.8	245.5	304.6	85.4	642.3	394.0	248.3
Italy	7	15.5	67.5	82.1	42.6	207.7	144.4	63.3
United Kingdom	15	125.1	136.8	300.5	104.7	667.1	509.2	157.9
Japan	6	35.0	195.8	520.7	211.7	963.2	650.5	312.7
United States	33	139.0	128.9	364.5	24.1	1,256.0	962.5	293.5
1962								
Belgium	8	27.5	58.8	70.9	....	157.2	148.8	8.4
Luxembourg	3	9.4	32.0	14.9	....	56.3	48.8	7.5
Netherlands	3	20.4	19.4	8.4	0.3	48.5	50.9	(2.4)
Germany	17	16.6	364.9	355.1	8.6	745.2	641.4	103.8
France	15	(3.1)	212.2	227.4	40.8	477.3	411.9	65.4
Italy	7	47.4	63.4	....	167.3	278.1	182.7	95.4
United Kingdom	15	13.2	152.6	316.2	38.2	520.2	688.7	(168.5)
Japan	6	(28.8)	175.6	241.5	220.9	609.2	533.1	76.1
United States	33	77.1	924.0	....	5.8	1,606.9	850.9	156.0
1963								
Belgium	8	9.0	55.6	105.4	10.5	180.5	173.9	6.6
Luxembourg	3	(6.6)	35.1	....	40.0	68.5	56.5	12.0
Netherlands	3	21.3	21.9	20.9	....	64.1	54.7	9.4
Germany	17	22.2	395.8	151.5	6.3	575.8	650.3	(74.5)
France	15	22.6	166.2	159.3	28.7	376.8	295.2	81.6
Italy	7	13.5	59.3	431.2	....	504.0	453.1	50.9
United Kingdom	15	(12.8)	175.6	189.0	....	351.8	596.6	(244.8)
Japan	6	30.7	224.1	99.8	124.7	479.3	425.4	53.9
United States	33	348.2	1,009.5	....	6.1	1,363.8	979.8	384.0
1964								
Belgium	8	2.5	68.8	61.7	4.2	137.2	93.5	43.7
Luxembourg	3	0.8	43.9	8.3	11.0	64.0	49.9	14.1
Netherlands	2	32.5	34.2	2.6	8.9	78.2	41.3	36.9
Germany	17	66.2	427.3	412.5	7.3	913.3	591.0	322.3
France	14	(6.9)	187.0	110.8	66.8	357.7	202.1	155.6
Italy	7	69.8	53.9	351.0	110.4	585.1	602.3	(17.2)
United Kingdom	15	(43.3)	196.3	....	255.9	408.9	330.3	78.6
Japan	6	26.2	256.6	90.2	145.9	518.9	378.6	140.3
United States	33	498.1	1,058.9	734.2	....	2,291.2	1,566.5	724.7
1965								
Belgium	8	(0.5)	58.4	....	20.7	78.6	59.0	19.6
Luxembourg	3	22.6	41.8	39.8	....	104.2	37.1	67.1
Netherlands	2	25.8	37.2	1.7	....	64.7	35.2	29.5
Germany	17	17.7	470.1	152.4	68.9	709.7	577.3	132.4
France	15	(10.9)	137.7	37.3	11.1	175.2	160.7	14.5
Italy	7	12.6	53.5	424.7	....	490.8	342.3	148.5
United Kingdom	....	....	....	....	....	....	....	....
Japan	6	(6.7)	307.8	315.9	50.7	667.7	458.0	209.7
United States	....	....	....	....	....	....	....	....

Country	No. of companies	1959	1960	1961	1962	1963	1964	1965
		Debt—Total assets (percent)						
Belgium	8	15.9	17.7	22.5	27.7	34.6	36.8	34.8
Luxembourg	3	6.9	6.3	5.9	8.6	5.7	6.9	13.0
Netherlands	2,3	12.6	13.4	11.5	11.2	14.1	(2) 10.6	(2) 10.0
Germany	17	33.8	30.5	34.5	37.9	39.1	42.2	42.5
France	14,15	33.3	32.3	39.6	43.1	(14) 44.3	(14) 45.5	47.2
Italy	7	42.0	37.5	39.5	31.6	44.2	44.6	57.5
United Kingdom	15	15.5	15.5	20.4	25.6	28.1	25.8	----------
Japan	6	42.1	42.7	45.7	45.9	43.3	42.3	44.4
United States	33	8.4	11.6	13.3	10.8	7.9	11.5	----------
		Debt—Equity and debt (percent)						
Belgium	8	22.2	22.4	29.3	35.0	41.9	44.6	42.3
Luxembourg	3	9.6	8.8	8.2	11.6	7.5	9.3	18.4
Netherlands	2,3	14.6	14.8	12.7	12.5	15.2	(2) 11.8	(2) 11.2
Germany	17	41.3	38.4	42.0	45.9	47.5	50.9	51.4
France	14,15	45.4	44.9	50 9	57.3	(14) 54.7	(14) 56.6	57.7
Italy	7	51.7	48.1	49.6	41.5	56.0	58.7	68.1
United Kingdom	15	19.6	19.5	25.0	30.6	33.9	31.5	----------
Japan	6	53.2	54.9	58.6	58.7	57.6	56.2	59.3
United States	33	11.3	14.7	16.9	13.9	10.4	14.7	----------

[In thousands of short tons]

Country	1959	1960	1961	1962	1963	1964	1965
Production of steel ingot:							
Belgium	7,096	7,923	7,728	8,115	8,298	9,624	10,106
Luxembourg	4,038	4,502	4,534	4,420	4,445	5,025	5,054
Netherlands	1,841	2,141	2,173	2,301	2,582	2,924	3,468
Germany	32,446	37,589	36,881	35,895	34,830	41,159	40,588
France	16,617	18,907	19,211	18,857	19,214	21,501	21,610
Italy	7,454	9,071	10,283	10,755	11,196	10,715	13,978
United Kingdom	22,609	27,222	24,737	22,950	25,222	28,918	30,246
Japan	18,330	24,403	31,160	30,364	34,724	43,871	45,372
United States	93,446	99,282	98,014	98,328	109,261	127,076	131,462
Steel ingot production of countries with companies reporting revenue data:							
Belgium	4,030	4,521	4,279	4,547	5,016	5,961	6,387
Luxembourg	----------	----------	3,605	3,485	3,451	3,940	5,518
Netherlands	1,515	1,770	1,948	2,070	2,351	2,555	3,106
Germany	26,175	33,983	33,238	31,848	30,710	36,050	36,841
France	14,310	14,333	14,501	14,245	14,354	16,184	18,515
Italy	4,583	6,034	6,629	6,951	6,801	6,597	9,481
United Kingdom	2,413	3,948	3,704	11,876	12,870	17,384	----------
Japan	14,009	17,135	21,947	20,319	25,772	30,749	33,208
United States	86,689	93,298	85,722	91,501	102,127	119,188	----------
Steel ingot production of countries with companies reporting employment costs:							
Belgium	4,030	4,521	4,279	4,547	4,638	5,426	5,840
Luxembourg	----------	----------	----------	----------	----------	----------	----------
Netherlands	1,515	1,770	1,833	1,954	2,232	2,555	3,106
Germany	26,411	33,983	33,238	31,848	30,710	36,050	36,841
France	9,932	10,361	11,042	9,635	10,592	12,067	18,515
Italy	3,471	4,216	888	----------	----------	----------	----------
United Kingdom	1,581	2,091	1,936	1,675	1,834	2,247	----------
Japan	7,053	8,158	10,060	9,855	12,180	14,474	11,250
United States	86,689	93,298	85,722	91,501	102,127	119,188	----------
Steel ingot production of countries with companies reporting material costs:							
Belgium	----------	----------	----------	----------	----------	----------	----------
Luxembourg	----------	----------	----------	----------	----------	----------	----------
Netherlands	1,515	1,770	1,833	1,954	2,232	2,555	----------
Germany	5,004	16,487	33,238	31,848	30,710	36,050	36,841
France	2,649	5,664	6,046	5,820	6,372	7,491	18,515
Italy	----------	----------	----------	----------	----------	----------	----------
United Kingdom	1,581	2,091	1,936	1,675	1,834	2,247	----------
Japan	7,053	8,158	10,060	9,855	12,180	14,474	----------
United States	86,689	93,298	85,722	91,501	102,127	119,188	----------

APPENDIX J

TABLE J-1.—*Imports and basic labor agreements—Centered 3-month moving average of steel mill product imports*

[In thousands of net tons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1953:												
3-month moving total	------	360	424	521	548	556	559	519	455	375	298	218
3-month moving average	------	120	141	174	183	185	186	173	152	125	99	73
1954:												
3-month moving total	173	177	197	200	204	209	234	235	240	240	244	235
3-month moving average	58	59	66	67	68	70	78	78	80	80	81	78
1955:												
3-month moving total	220	215	219	232	224	188	196	216	268	286	320	333
3-month moving average	73	72	73	77	75	63	65	72	89	95	107	111
1956:												
3-month moving total	321	294	293	291	280	278	301	319	375	406	452	438
3-month moving average	107	98	98	97	93	93	100	106	125	135	151	146
1957:												
3-month moving total	412	389	373	361	328	287	246	226	223	218	223	207
3-month moving average	137	130	124	120	109	96	82	75	74	73	74	69
1958:												
3-month moving total	212	231	274	324	359	416	454	507	537	555	606	635
3-month moving average	71	77	91	108	130	139	151	169	179	185	202	212
1959:												
3-month moving total	701	758	888	1,032	1,155	1,225	1,164	1,120	1,052	1,188	1,361	1,464
3-month moving average	234	253	296	344	385	408	388	373	351	396	451	488
1960:												
3-month moving total	1,475	1,401	1,267	1,068	817	662	574	569	572	586	569	534
3-month moving average	492	467	422	356	273	221	191	190	191	195	190	178
1961:												
3-month moving total	489	512	606	721	738	851	890	879	913	962	985	982
3-month moving average	163	171	202	240	263	284	297	393	304	321	328	327
1962:												
3-month moving total	907	954	946	1,077	1,102	1,173	1,135	1,056	985	963	989	898
3-month moving average	302	318	315	359	367	391	348	352	328	321	330	299
1963:												
3-month moving total	885	961	1,151	1,328	1,408	1,582	1,613	1,617	1,568	1,540	1,471	1,403
3-month moving average	295	320	384	443	469	527	538	539	523	513	490	468
1964:												
3-month moving total	1,312	1,384	1,397	1,513	1,643	1,730	1,711	1,601	1,574	1,782	1,812	1,604
3-month moving average	437	461	466	504	548	577	570	534	525	594	604	535
1965:												
3-month moving total	1,322	1,824	2,385	2,948	3,115	3,300	3,347	2,942	2,739	2,517	2,503	2,279
3-month moving average	441	608	795	983	1,038	1,100	1,116	981	913	839	834	760
1966:												
3-month moving total	1,878	1,982	2,029	2,410	2,648	3,015	3,186	3,261	3,119	3,180	2,861	2,703
3-month moving average	626	661	676	803	883	1,005	1,062	1,087	1,040	1,060	954	901

TABLE J–2.—*Steel mill product shipments, imports, exports, and inventories at manufacturing consumers' plants, showing effects of strikes, 1961–66*

[In thousand short tons]

Year	Shipments	Imports	Exports	Inventories at manufacturing consumers' plants
1961:				
January	4,638	145	132	(1)
February	4,251	154	147	(1)
March	5,047	213	168	(1)
April	5,133	239	137	(1)
May	6,048	269	159	(1)
June	6,134	280	146	(1)
July	5,121	302	169	(1)
August	6,139	308	150	(1)
September	6,058	269	165	(1)
October	6,046	335	208	8,900
November	5,787	357	193	8,800
December	5,787	292	212	8,900
Total	66,126	3,163	1,990	....
1962: [2]				
January	6,906	332	180	9,800
February	6,626	282	169	10,700
March	7,699	339	153	11,700
April	6,783	325	149	12,200
May	6,183	413	150	11,900
June	5,360	364	158	11,200
July	4,505	396	140	10,700
August	5,402	375	215	10,100
September	5,125	285	204	9,600
October	5,579	325	142	8,900
November	5,499	353	189	8,600
December	5,001	311	164	8,400
Total	70,552	4,100	2,013	....
1963: [3]				
January	5,731	234	53	8,500
February	5,604	340	174	8,600
March	6,691	387	179	9,000
April	7,308	425	198	9,400
May	8,061	516	223	10,200
June	7,375	467	171	11,200
July	6,460	599	201	11,900
August	5,895	547	185	11,600
September	5,455	471	166	10,900
October	5,927	550	219	10,000
November	5,617	519	215	9,500
December	5,540	402	240	9,300
Total	75,555	5,446	2,224	....
1964: [4]				
January	6,475	482	235	9,400
February	6,239	428	225	9,400
March	7,124	474	248	9,400
April	7,359	496	235	9,300
May	7,271	544	280	9,200
June	7,065	604	316	9,200
July	6,869	582	353	9,500
August	6,993	525	346	9,500
September	7,344	493	273	9,600
October	7,367	555	310	10,000
November	7,314	734	269	10,500
December	7,673	523	352	11,200
Total	84,945	6,440	3,442	....

See footnotes at end of table, p. 463.

TABLE J-2.—*Steel mill product shipments, imports, exports, and inventories at manufacturing consumers' plants, showing effects of strikes, 1961–66*—Continued

[In thousand short tons]

Year	Shipments	Imports	Exports	Inventories at manufacturing consumers' plants
1965:[5]				
January	8,050	347	115	11,900
February	7,839	452	162	12,500
March	9,590	1,025	281	13,700
April	10,101	908	230	15,100
May	7,874	1,014	200	15,500
June	7,887	1,192	177	15,800
July	7,699	1,094	188	16,300
August	8,634	1,062	195	17,200
September	6,698	786	203	17,000
October	6,237	892	254	15,600
November	6,200	939	218	14,300
December	6,061	672	273	12,900
Total	92,666	10,383	2,496	....
1966:				
January	6,602	668	174	12,000
February	6,734	538	158	11,300
March	8,239	776	159	10,900
April	8,174	715	143	10,800
May	8,221	919	126	10,900
June	8,033	1,014	142	10,600
July	7,179	1,082	116	10,900
August	7,788	1,090	126	11,200
September	7,718	1,089	106	11,000
October	7,495	940	139	10,600
November	7,239	1,152	151	10,400
December	6,846	770	184	10,100
Total	89,995	10,753	1,724	....

[1] Not available prior to October.
[2] Labor contract expired June 30, 1962; new agreement signed April 6, 1962, effective July 1, 1962.
[3] Contract reopened and settled May 1963.
[4] Labor contract expired June 30, 1964.
[5] Previous contract extended to expire May 1, 1965; then extended to September 1, 1965. New contract dated September 1, 1965; will expire August 1, 1968.

NOTE.—Monthly figures do not necessarily add to annual totals since the totals reflect revisions not identified monthly.

Source: Shipments, American Iron & Steel Institute imports, exports, and inventories, U.S. Bureau of the Census.

APPENDIX K

TABLE K-1.—*U.S. steel industry: Steel output per all employee man-hours, steel output per production worker man-hour, and steel output per nonproduction worker man-hour 1947–66*

[Indexes, 1957-59=100]

Year	Steel output	All employee man-hours	Output per all employee man-hours	Production worker man-hours	Output per production worker man-hours	Nonproduction worker man-hours	Output per nonproduction worker man-hours
1966	132.1	106.4	124.2	107.3	123.1	102.4	129.0
1965	131.3	108.1	121.5	109.7	119.7	101.0	130.0
1964	120.7	103.5	116.6	105.2	114.7	96.5	125.1
1963	106.3	95.1	111.8	95.3	111.5	94.2	112.8
1962	100.2	93.7	106.9	92.4	108.4	99.0	101.2
1961	95.2	93.6	101.7	92.2	103.3	99.7	95.5
1960	99.5	100.9	98.6	99.9	99.6	105.0	94.8
1959	99.3	94.6	105.0	93.5	106.2	99.5	99.8
1958	85.8	91.8	93.5	90.3	95.0	98.0	87.6
1957	114.8	113.6	101.1	116.2	98.8	102.5	112.0
1956	119.0	114.8	103.7	119.4	99.7	95.1	125.1
1955	120.9	114.9	105.2	121.2	99.8	87.6	138.0
1954	91.7	99.0	92.6	102.2	89.7	85.0	107.9
1953	114.5	118.0	97.0	124.4	92.0	90.5	126.5
1952	97.5	102.6	95.0	107.3	90.9	82.7	117.9
1951	110.6	117.2	94.4	125.6	88.1	80.9	136.7
1950	101.7	108.3	93.9	115.9	87.7	75.3	135.1
1949	80.5	94.4	85.3	99.6	80.8	71.7	112.3
1948	91.6	108.0	84.8	116.2	78.8	73.0	125.5
1947	87.0	103.2	84.3	110.0	78.4	69.7	124.8
Average annual change in percent:[1]							
1947–66	1.3	-.4	1.7	-.8	2.2	2.0	-.6
1957–66	3.4	.5	2.8	.7	2.7	-.2	3.5

[1] Based on the least squares trend of the logarithms of the index numbers.

NOTE.—Col. 2, steel output indexes, are based on (1) the physical output of pig iron, ferroalloys, raw steel and steel for castings and coke; and (2) the shipments of semifinished and finished steel products. The output data used for constructing the indexes by the Bureau of Labor Statistics are from published annual reports of the American Iron & Steel Institute with the exception of the data on coke production which are published by the Bureau of Mines, U.S. Department of the Interior.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Labor Productivity of the Steel Industry in the United States, BLS Report No. 310, July, 1966. Data updated by the BLS for this study.

TABLE K-2.—*U.S. steel industry—Compensation per man-hour, output per man-hour, and unit labor cost, all employees, 1947–66*

[Indexes, 1957–59=100]

Year	Compensation per man-hour	Output per man-hour	Unit labor cost [1]
1966	129.9	124.2	104.6
1965	125.9	121.5	103.7
1964	123.6	116.6	106.0
1963	120.0	111.8	107.3
1962	117.1	106.9	109.5
1961	113.0	101.7	111.1
1960	108.7	98.6	110.3
1959	107.4	105.0	102.3
1958	100.6	93.5	107.6
1957	93.5	101.1	92.5
1956	86.9	103.7	83.9
1955	80.9	105.2	76.8
1954	74.8	92.6	80.8
1953	72.7	97.0	74.9
1952	87.9	95.0	71.5
1951	63.8	94.4	67.6
1950	57.5	93.9	61.3
1949	53.7	85.3	63.0
1948	50.5	84.8	59.5
1947	46.1	84.3	54.7
Average annual rate of change in percent: [2]			
1947–66	5.7	1.7	3.9
1957–66	3.4	2.8	.6

[1] Unit labor cost=compensation per man-hour divided by output per man-hour.
[2] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

TABLE K-3.—*U.S. steel industry—Steel output and unit labor requirements in terms of man-hours, 1947–66*

(Indexes, 1957–59=100)

Year	Steel output	Unit labor requirements in terms of—		
		All employee man-hours	Production worker man-hours	Nonproduction worker man-hours
1966	132.1	80.5	81.2	77.5
1965	131.3	82.3	83.5	76.9
1964	120.7	85.8	87.2	79.9
1963	106.3	89.4	89.7	88.7
1962	100.2	93.5	92.2	98.8
1961	95.2	98.3	96.8	104.7
1960	99.5	101.4	100.4	105.5
1959	99.3	95.3	94.2	100.2
1958	85.8	107.0	105.2	114.2
1957	114.8	99.0	101.2	89.3
1956	119.0	96.5	100.3	79.9
1955	120.9	95.0	100.2	72.5
1954	91.7	108.0	111.5	92.7
1953	114.5	103.1	108.6	79.0
1952	97.5	105.2	110.1	84.8
1951	110.6	106.0	113.6	73.1
1950	101.7	106.5	114.0	74.0
1949	80.5	117.3	123.7	89.1
1948	91.6	117.9	126.9	79.7
1947	87.0	118.6	127.6	80.1
Average annual rates of change in percent:				
1947–66	1.3	−1.7	−2.2	−.7
1957–66	3.4	−2.8	−2.7	−3.4

Source: U.S. Department of Labor, Bureau of Labor Statistics.

TABLE K-4.—*U.S. steel industry—Steel shipments and raw steel production per 1,000 man-hours worked, all employees, 1947-66*

Year	Total hours worked [1] (millions)	Net tons of shipments [2] (millions)	Net tons of shipments per 1,000 man-hours [2]	Raw steel production (millions of tons) [2]	Net tons of raw steel production per 1,000 man-hours [2]
1966	1,152.5	90.0	78.1	134.1	116.4
1965	1,158.2	92.7	80.0	131.5	113.5
1964	1,114.1	84.9	76.2	127.1	114.1
1963	1,023.4	75.6	73.8	109.3	106.8
1962	1,008.0	70.6	70.0	98.3	97.5
1961	1,012.9	66.1	65.3	98.0	96.8
1960	1,086.9	71.1	65.5	99.3	91.3
1959	1,003.3	69.4	69.2	93.4	93.1
1958	981.7	59.9	61.0	85.3	86.8
1957	1,222.7	79.9	65.3	112.7	92.2
1956	1,261.0	83.3	66.0	115.2	91.4
1955	1,285.3	84.7	65.9	117.0	91.0
1954	1,117.1	63.2	56.5	88.3	79.1
1953	1,344.1	80.2	59.6	111.6	83.0
1952	1,189.9	68.0	57.2	93.2	78.3
1951	1,344.7	78.9	58.7	105.2	78.2
1950	1,214.4	72.2	59.5	96.8	79.7
1949	1,073.2	58.1	54.1	78.0	72.7
1948	1,219.6	66.0	54.1	88.6	72.3
1947	1,167.6	63.1	54.0	84.9	72.7

[1] Covering only those employees engaged in the production and sale of iron and steel products as reported to the AISI on AIS-I.

[2] Tonnage statistics include total industry as contrasted with hourly statistics that cover only those employees engaged in the production and sale of iron and steel products as reported on AIS-I.

Source: AISI annual statistical reports.

Note: The more relevant measure is net tons of shipments per 1,000 man-hours; however, because of fluctuations in steel mill inventory the trend is more evident by using raw steel production per 1,000 man-hours.

TABLE K-5.—*Comparison of output per man-hour and compensation per man-hour, all persons, steel industry, manufacturing, and private nonfarm economy, 1947-66*

(Indexes, 1957-59=100)

Year	Output per man-hour			Compensation per man-hour		
	Steel	Manufacturing	Private nonfarm economy	Steel	Manufacturing	Private nonfarm economy
1966	124.2	130.8	125.3	129.9	135.5	137.5
1965	121.5	128.7	122.4	125.9	129.1	130.2
1964	116.6	124.6	119.9	123.6	126.0	126.1
1963	111.8	118.9	115.6	120.0	120.3	120.4
1962	106.9	114.3	112.2	117.1	116.5	116.2
1961	101.7	107.9	107.3	113.0	111.9	111.6
1960	98.6	105.5	104.4	108.7	108.5	108.4
1959	105.0	103.7	103.1	107.4	104.2	104.2
1958	93.5	98.1	99.7	100.5	100.0	99.8
1957	101.1	92.8	97.2	93.5	95.8	96.2
1956	103.7	96.2	95.2	86.9	90.5	91.0
1955	105.2	97.2	85.7	80.9	85.0	85.9
1954	92.6	91.8	91.6	74.8	81.8	83.0
1953	97.0	90.2	89.7	72.7	78.3	80.6
1952	95.0	87.3	87.1	67.9	74.2	76.3
1951	94.4	86.9	86.4	63.8	69.7	72.4
1950	93.9	85.0	84.6	57.5	63.2	66.6
1949	85.3	79.3	79.6	53.7	60.3	63.0
1948	84.8	76.4	76.6	50.5	57.6	61.4
1947	84.3	72.3	74.3	46.1	52.5	56.3
Average annual rate of change in percent:						
1947-66	1.7	2.9	2.6	5.7	5.0	4.6
1957-66	2.8	3.6	3.0	3.4	3.8	3.9

Source: U.S. Department of Labor, Bureau of Labor Statistics.

TABLE K-6.—*Comparison of prices and unit labor costs: Steel industry, manufacturing, and private nonfarm economy, 1947–66*

[Indexes, 1957-59=100]

Year	Prices			Unit labor costs—All employees		
	Steel	Manufacturing	Private nonfarm economy	Steel, all employees	Manufacturing, all persons	Private nonfarm economy, all persons
1966	104.7	(1)	111.8	104.6	103.6	109.8
1965	103.3	104.5	109.2	103.7	100.3	106.3
1964	102.8	103.9	107.7	106.0	101.1	105.2
1963	102.0	103.1	106.3	107.3	101.2	104.1
1962	101.4	102.9	105.1	109.5	102.0	103.5
1961	101.7	103.0	104.1	111.1	103.7	104.0
1960	102.1	102.7	103.2	110.3	102.9	103.8
1959	102.3	101.9	101.7	102.3	100.6	101.1
1958	100.6	100.2	99.9	107.6	101.9	100.1
1957	97.2	97.8	98.3	92.5	97.6	98.9
1956	88.8	94.8	94.7	83.9	94.1	95.6
1955	81.9	90.7	91.6	76.8	87.4	89.8
1954	78.2	89.1	90.4	80.8	89.1	90.6
1953	75.0	87.3	88.9	74.9	86.8	89.9
1952	69.7	86.8	87.3	71.5	84.9	87.6
1951	68.2	85.1	85.2	67.6	80.2	83.8
1950	63.1	79.5	80.0	61.3	74.4	78.7
1949	60.1	79.3	79.1	63.0	76.0	79.2
1948	55.5	77.9	78.5	59.5	75.4	80.1
1947	48.8	73.0	73.5	54.7	72.6	75.7
Average annual rate of change in percent:						
1947–66	4.0	[2] 2.0	2.1	3.9	2.0	1.9
1957–66	.7	[2] .7	1.3	.6	.2	1.0

[1] Not available.
[2] 1947–65 and 1957–65.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Matrixes for Chapter XI

U.S. steel industry output—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	5.3	−3.8	3.4	6.0	4.0	4.6	2.6	3.4	3.5	3.2	1.8	1.4	1.1	0.7	0.6	0.6	0.9	1.1	1.3
1948		−12.1	5.4	8.3	4.5	5.2	2.4	3.4	3.6	3.2	1.5	1.1	.8	.5	.3	.4	.7	1.0	1.3
1949			26.3	17.2	6.8	6.8	2.5	3.8	3.9	3.4	1.3	.9	.5	.2	.1	.2	.5	.9	1.2
1950				8.8	−2.1	2.3	−1.7	1.3	2.1	2.0	−.2	−.5	−.6	−.8	−.7	−.5	0	.5	.8
1951					−11.8	1.7	−3.9	1.2	2.3	2.0	−.7	−.9	−1.0	−1.2	−1.0	−.7	−.1	.4	.8
1952						17.4	−3.0	4.3	4.6	3.5	−.4	−.8	−.9	−1.1	−1.0	−.6	0	.7	1.1
1953							−19.9	2.8	4.0	2.7	−2.2	−2.2	−1.9	−2.0	−1.7	−1.1	−.3	.5	1.0
1954								31.8	13.9	6.8	−1.8	−1.9	−1.7	−1.8	−1.4	−.8	.1	1.0	1.5
1955									−1.6	−2.6	−10.1	−7.0	−5.0	−4.3	−3.2	−2.1	−.7	.5	1.1
1956										−3.5	−15.1	−8.0	−4.9	−3.9	−2.6	−1.4	.2	1.4	2.0
1957											−25.3	−7.0	−2.8	−2.2	−1.0	.1	1.7	2.9	3.4
1958												15.7	7.7	3.2	2.7	3.1	4.3	5.1	5.2
1959													.2	−2.1	−.2	1.4	3.6	4.9	5.1
1960														−4.3	.4	2.5	5.1	6.4	6.2
1961															5.3	5.7	8.0	8.6	7.6
1962																6.1	9.8	9.8	7.9
1963																	13.5	11.1	7.6
1964																		8.8	4.6
1965																			.6

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry output per all employees—Average annual rates of change in percent,[1] *1947–66*

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	1.7	−0.3	3.7	4.3	3.6	3.4	2.1	2.6	2.6	2.3	1.6	1.6	1.3	1.2	1.3	1.4	1.6	1.7	1.8
1948		−2.2	5.7	5.6	4.2	3.6	1.9	2.6	2.6	2.2	1.4	1.5	1.2	1.1	1.1	1.3	1.5	1.7	1.8
1949			14.3	8.4	4.8	3.8	1.4	2.5	2.5	2.0	1.1	1.3	.9	.9	.9	1.1	1.4	1.6	1.8
1950				2.7	.7	1.3	−1.0	1.2	1.6	1.2	.2	.6	.4	.4	.5	.8	1.1	1.4	1.6
1951					−1.3	1.0	−2.3	1.3	1.9	1.3	0	.6	.3	.3	.5	.8	1.2	1.5	1.7
1952						3.3	−3.6	2.3	2.8	1.7	0	.6	.2	.3	.5	.9	1.3	1.7	1.9
1953							−10.1	4.1	3.9	1.9	−.5	.5	.1	.1	.5	.9	1.4	1.8	2.0
1954								20.5	8.9	3.4	−.6	.8	.1	.2	.6	1.1	1.7	2.0	2.3
1955									−1.6	−3.5	−5.8	−1.9	−1.9	−1.2	−.4	.5	1.2	1.8	2.1
1956										−5.3	−7.9	−1.0	−1.3	−.6	.3	1.2	2.0	2.5	2.7
1957											−10.5	3.0	.4	.7	1.5	2.4	3.0	3.4	3.5
1958												18.5	3.5	2.4	2.9	3.5	4.1	4.3	4.2
1959													−9.7	−2.8	.4	2.3	3.4	3.9	3.9
1960														4.6	5.2	5.7	5.9	5.7	5.2
1961															5.7	6.2	6.3	5.9	5.2
1962																6.7	6.5	5.8	4.8
1963																	6.4	5.3	4.1
1964																		4.2	3.0
1965																			1.8

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry output per production worker—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	1.9	0.4	4.0	4.5	4.2	3.9	2.6	3.0	3.1	2.7	2.1	2.3	2.0	1.9	1.9	2.0	2.1	2.2	2.3
1948	------	−1.0	6.0	5.8	4.8	4.1	2.4	3.0	3.1	2.7	2.0	2.2	1.9	1.8	1.8	1.9	2.1	2.2	2.3
1949	------	------	13.5	8.1	5.4	4.2	1.9	2.8	2.9	2.5	1.7	2.0	1.7	1.6	1.7	1.8	2.0	2.1	2.2
1950	------	------	------	2.9	1.9	2.0	−.3	1.6	2.1	1.8	1.0	1.5	1.2	1.2	1.3	1.5	1.7	1.9	2.1
1951	------	------	------	------	1.0	1.7	−1.5	1.6	2.3	1.8	.8	1.4	1.1	1.1	1.3	1.5	1.8	2.0	2.2
1952	------	------	------	------	------	2.5	−3.4	2.2	2.9	2.1	.7	1.5	1.1	1.1	1.3	1.6	1.9	2.1	2.3
1953	------	------	------	------	------	------	−9.0	4.1	4.2	2.5	.5	1.6	1.0	1.1	1.3	1.6	2.0	2.3	2.4
1954	------	------	------	------	------	------	------	19.2	9.1	4.0	.5	2.1	1.2	1.2	1.5	1.8	2.2	2.5	2.6
1955	------	------	------	------	------	------	------	------	−.2	−2.2	−4.1	−.2	−.6	−.1	.6	1.2	1.8	2.2	2.4
1956	------	------	------	------	------	------	------	------	------	−4.2	−6.0	.8	−.2	.3	1.1	1.8	2.3	2.7	2.9
1957	------	------	------	------	------	------	------	------	------	------	−7.8	5.0	1.3	1.5	2.1	2.7	3.2	3.5	3.5
1958	------	------	------	------	------	------	------	------	------	------	------	19.5	3.3	2.5	3.0	3.5	3.9	4.1	4.0
1959	------	------	------	------	------	------	------	------	------	------	------	------	−10.8	−2.8	.5	2.2	3.1	3.6	3.7
1960	------	------	------	------	------	------	------	------	------	------	------	------	------	5.8	5.9	5.7	5.6	5.4	5.0
1961	------	------	------	------	------	------	------	------	------	------	------	------	------	------	5.7	5.6	5.5	5.3	4.8
1962	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	5.4	5.5	5.1	4.5
1963	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	5.6	4.9	4.1
1964	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	4.2	3.3
1965	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	2.4

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry output per nonproduction worker—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	0.3	−5.3	1.2	2.5	0.3	0.3	−1.1	−0.0	−0.0	−0.5	−1.7	−1.9	−2.2	−2.3	−2.2	−1.9	−1.4	−1.0	−0.7
1948		−10.6	3.7	4.4	.6	.5	−1.3	0	0	−.6	−2.0	−2.2	−2.4	−2.5	−2.4	−2.0	−1.5	−1.0	−.7
1949			20.3	10.2	1.5	.9	−1.7	.2	.2	−.6	−2.3	−2.5	−2.7	−2.8	−2.6	−2.1	−1.5	−1.0	−.6
1950				1.0	−6.7	−3.5	−5.3	−1.6	−1.2	−1.8	−3.5	−3.6	−3.6	−3.5	−3.2	−2.6	−1.8	−1.2	−.8
1951					−13.8	−3.9	−6.3	−.8	−.4	−1.5	−3.7	−3.7	−3.8	−3.6	−3.2	−2.5	−1.7	−1.0	−.5
1952						7.2	−4.5	3.1	2.0	−.2	−3.5	−3.5	−3.7	−3.5	−3.0	−2.2	−1.3	−.6	−.1
1953							−14.8	4.4	2.1	−1.0	−5.1	−4.7	−4.5	−4.2	−3.4	−2.4	−1.3	−.5	0
1954								27.9	7.7	.1	−6.1	−5.2	−4.9	−4.3	−3.4	−2.2	−.9	−.0	.5
1955									−9.3	−9.9	−13.7	−9.6	−7.7	−6.2	−4.6	−2.9	−1.2	−.1	.5
1956										−10.5	−16.3	−8.8	−6.5	−4.9	−3.2	−1.3	.3	1.4	1.9
1957											−21.8	−5.6	−3.7	−2.5	−1.0	.8	2.4	3.2	3.4
1958												13.9	3.9	1.9	2.3	3.7	4.9	5.4	5.1
1959													−5.2	−2.4	.3	3.0	4.9	5.4	5.2
1960														.4	3.1	5.8	7.4	7.3	6.4
1961															5.8	8.6	9.6	8.6	6.9
1962																11.5	11.2	8.9	6.5
1963																	10.8	7.4	4.5
1964																		4.0	1.6
1965																			−.9

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry—All employee man-hours—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	4.7	−4.4	0.1	2.6	1.0	1.9	0.6	0.9	1.1	1.0	0.2	−0.3	−0.4	−0.6	−0.7	−0.8	−0.7	−0.5	−0.4
1948		−12.6	.1	3.9	1.1	2.2	.5	1.0	1.1	1.1	.0	−.5	−.5	−.8	−.9	−.9	−.8	−.6	−.4
1949			14.7	11.4	3.3	4.0	1.0	1.5	1.6	1.4	.1	−.5	−.6	−.8	−1.0	−1.0	−.8	−.6	−.4
1950				8.2	−2.7	1.3	−1.7	−.2	.4	.5	−.9	−1.4	−1.3	−1.5	−1.6	−1.5	−1.2	−.9	−.7
1951					−12.5	.3	−3.6	−.8	.2	.4	−1.3	−1.8	−1.7	−1.8	−1.8	−1.7	−1.4	−1.0	−.8
1952						15.0	−1.8	1.7	2.0	1.7	−.9	−1.7	−1.5	−1.7	−1.7	−1.6	−1.3	−.9	−.6
1953							−16.1	−1.3	.7	.7	−2.4	−2.9	−2.4	−2.4	−2.3	−2.1	−1.6	−1.1	−.8
1954								16.1	7.7	4.2	−1.6	−2.6	−2.0	−2.2	−2.1	−1.9	−1.3	−.7	−.4
1955									−.1	−.6	−6.6	−5.9	−4.0	−3.7	−3.2	−2.7	−1.9	−1.1	−.7
1956										−1.0	−10.6	−7.6	−4.3	−3.8	−3.2	−2.5	−1.5	−.7	−.3
1957											−19.2	−8.7	−3.2	−2.9	−2.4	−1.8	−.7	.2	.5
1958												3.0	4.8	1.2	.3	.2	1.1	1.7	1.8
1959													6.7	−.5	−1.0	−.6	.8	1.7	1.8
1960														−7.2	−3.6	−1.8	.7	1.9	2.0
1961															.1	.8	3.2	4.0	3.4
1962																1.5	5.1	5.3	3.9
1963																	.8	6.6	3.9
1964																		4.4	1.4
1965																			−1.6

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry production worker man-hours—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	4.7	−5.3	−0.2	2.5	0.6	1.5	0.1	0.6	0.7	0.6	−0.4	−0.9	−1.0	−1.3	−1.4	−1.4	−1.2	−1.0	−0.8
1948		−14.3	−.1	3.9	.7	1.9	−.1	.6	.7	.6	−.6	−1.2	−1.2	−1.5	−1.6	−1.6	−1.3	−1.1	−.9
1949			16.4	12.3	3.1	3.7	.5	1.2	1.2	1.0	−.6	−1.2	−1.3	−1.6	−1.7	−1.6	−1.4	−1.1	−.9
1950				8.4	−3.8	.6	−2.6	−.7	−.1	−.1	−1.7	−2.3	−2.2	−2.3	−2.4	−2.2	−1.8	−1.4	−1.2
1951					−14.6	−.5	−4.6	−1.2	−.2	−.2	−2.2	−2.8	−2.5	−2.7	−2.6	−2.4	−1.9	−1.5	−1.2
1952						15.9	−2.4	1.7	1.9	1.3	−1.8	−2.6	−2.4	−2.5	−2.5	−2.3	−1.8	−1.3	−1.0
1953							−17.8	−1.3	.5	.2	−3.5	−4.0	−3.4	−3.4	−3.2	−2.8	−2.1	−1.5	−1.1
1954								18.6	8.1	3.8	−2.9	−3.8	−3.0	−3.1	−3.0	−2.5	−1.8	−1.1	−.7
1955									−1.5	−2.1	−8.7	−7.7	−5.4	−4.9	−4.2	−3.4	−2.3	−1.4	−.9
1956										−2.7	−13.0	−9.4	−5.6	−4.8	−4.0	−3.0	−1.8	−.8	−.3
1957											−22.3	−10.3	−4.1	−3.6	−2.9	−2.0	−.6	.3	.7
1958												3.5	5.2	1.3	.3	.4	1.5	2.2	2.2
1959													6.8	−.7	−1.2	−.4	1.3	2.2	2.2
1960														−7.7	−3.8	−1.4	1.4	2.6	2.5
1961															.2	1.7	4.4	4.9	4.0
1962																3.1	6.7	6.3	4.5
1963																	10.4	7.3	4.1
1964																		4.3	1.0
1965																			−2.2

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry nonproduction worker man-hours—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	4.7	1.4	2.2	3.3	3.5	4.2	3.6	3.3	3.4	3.6	3.5	3.3	3.3	3.0	2.8	2.5	2.2	2.1	2.0
1948		−1.8	1.6	3.6	3.8	4.6	3.7	3.3	3.4	3.7	3.5	3.3	3.3	3.0	2.7	2.3	2.1	2.0	1.9
1949			5.0	6.2	5.1	5.8	4.2	3.5	3.6	3.9	3.6	3.4	3.3	3.0	2.7	2.3	2.0	1.9	1.8
1950				7.4	4.8	5.9	3.6	2.9	3.2	3.7	3.4	3.1	3.1	2.8	2.4	2.0	1.7	1.6	1.6
1951					2.2	5.8	2.4	1.9	2.7	3.5	3.1	2.9	2.9	2.5	2.2	1.7	1.5	1.4	1.3
1952						9.4	1.4	1.1	2.5	3.6	3.2	2.8	2.8	2.4	2.0	1.5	1.3	1.2	1.2
1953							−0.1	−1.6	1.8	3.7	3.0	2.6	2.7	2.2	1.8	1.3	1.0	0.9	0.9
1954								3.1	5.8	6.6	4.5	3.5	3.3	2.5	2.0	1.3	1.0	0.9	0.9
1955									8.6	8.2	4.2	2.9	2.9	2.0	1.4	0.7	0.4	0.5	0.6
1956										7.8	1.5	0.9	1.7	0.9	0.5	−0.2	−0.3	−0.1	0.1
1957											−4.4	−1.5	0.9	0.1	−0.2	−0.8	−0.8	−0.5	−0.2
1958												1.5	3.5	1.1	0.2	−0.8	−0.8	−0.3	−0.0
1959													5.5	0.1	−0.7	−1.7	−1.4	−0.6	−0.2
1960														−5.0	−2.9	−3.3	−2.2	−1.0	−0.3
1961															−0.7	−2.8	−1.5	0.0	0.6
1962																−4.8	−1.3	0.8	1.4
1963																	2.4	3.5	3.0
1964																		4.7	3.0
1965																			1.4

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry output per all employee man-hour—Average annual rates of change in percent,[1] *1947–66*

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	0.6	0.6	3.3	3.3	2.9	2.7	2.0	2.4	2.4	2.2	1.6	1.6	1.4	1.3	1.3	1.4	1.5	1.6	1.7
1948		.6	5.2	4.3	3.3	2.9	1.9	2.4	2.4	2.1	1.5	1.6	1.3	1.2	1.3	1.3	1.5	1.6	1.7
1949			10.1	5.2	3.3	2.7	1.5	2.3	2.3	2.0	1.3	1.4	1.1	1.0	1.1	1.2	1.4	1.5	1.7
1950				.5	.6	1.0	−0	1.5	1.8	1.5	.7	1.0	.7	.7	.8	1.0	1.2	1.4	1.6
1951					.6	1.4	−.4	1.9	2.1	1.7	.7	1.0	.7	.7	.8	1.0	1.3	1.5	1.6
1952						2.1	−1.3	2.6	2.6	1.8	.5	.9	.6	.6	.8	1.0	1.3	1.5	1.7
1953							−4.5	4.1	3.3	2.0	.2	.8	.4	.5	.7	1.0	1.3	1.6	1.8
1954								13.6	5.8	2.5	−.2	.7	.3	.3	.7	1.1	1.4	1.7	1.9
1955									−1.4	−2.0	−3.7	−1.1	−1.0	−.6	.1	.7	1.2	1.6	1.8
1956										−2.5	−5.0	−.4	−.6	−.2	.6	1.2	1.7	2.1	2.3
1957											−7.5	1.9	.4	.7	1.3	1.9	2.4	2.7	2.8
1958												12.3	2.7	1.9	2.4	2.8	3.2	3.4	3.4
1959													−6.1	−1.6	.9	2.1	2.8	3.1	3.2
1960														3.1	4.1	4.4	4.4	4.4	4.1
1961															5.1	4.8	4.7	4.5	4.2
1962																4.6	4.4	4.4	3.9
1963																	4.3	4.2	3.6
1964																		4.2	3.2
1965																			2.2

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry output per production worker man-hour—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	0.5	1.5	3.7	3.5	3.4	3.1	2.5	2.8	2.8	2.6	2.2	2.3	2.1	2.0	2.0	2.1	2.1	2.1	2.2
1948		2.5	5.5	4.3	3.8	3.3	2.5	2.8	2.8	2.6	2.2	2.3	2.1	2.0	2.0	2.0	2.0	2.1	2.2
1949			8.5	4.4	3.6	3.0	2.0	2.6	2.6	2.4	1.9	2.1	1.9	1.8	1.8	1.9	1.9	2.0	2.1
1950				.5	1.8	1.8	.9	2.1	2.2	2.1	1.6	1.8	1.6	1.6	1.6	1.7	1.8	1.9	2.0
1951					3.2	2.2	.7	2.4	2.5	2.2	1.6	1.9	1.6	1.6	1.6	1.7	1.8	2.0	2.1
1952						1.2	−.7	2.6	2.7	2.2	1.4	1.8	1.5	1.5	1.6	1.7	1.8	2.0	2.1
1953							−2.5	4.2	3.5	2.5	1.3	1.9	1.5	1.4	1.6	1.7	1.9	2.0	2.1
1954								11.3	5.4	2.9	1.1	2.0	1.4	1.4	1.6	1.7	1.9	2.1	2.2
1955									−.1	−.5	−1.6	.8	.4	.6	1.1	1.4	1.6	1.9	2.1
1956										−.9	−2.4	1.5	.7	.9	1.4	1.7	2.0	2.2	2.4
1957											−3.8	3.7	1.4	1.4	1.9	2.2	2.3	2.6	2.7
1958												11.8	2.4	1.9	2.4	2.6	2.7	2.9	3.0
1959													−6.2	−1.4	1.0	1.8	2.2	2.6	2.8
1960														3.7	4.3	3.9	3.7	3.7	3.6
1961															4.9	3.9	3.5	3.6	3.5
1962																2.9	2.9	3.3	3.3
1963																	2.9	3.6	3.5
1964																		4.4	3.6
1965																			2.8

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry output per nonproduction worker man-hour—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	0.6	−5.1	1.3	2.6	0.4	0.4	−1.0	0.1	0.1	−0.4	−1.6	−1.9	−2.1	−2.2	−2.1	−1.8	−1.3	−0.9	−0.6
1948		−10.5	3.8	4.5	.7	.6	−1.2	.1	.1	−.5	−1.9	−2.1	−2.4	−2.5	−2.3	−1.9	−1.4	−.9	−.6
1949			20.3	10.3	1.6	1.0	−1.5	.3	.3	−.5	−2.2	−2.4	−2.7	−2.7	−2.5	−2.0	−1.4	−.9	−.6
1950				1.2	−6.6	−3.4	−5.1	−1.5	−1.1	−1.7	−3.5	−3.5	−3.6	−3.5	−3.1	−2.5	−1.8	−1.2	−.7
1951					−13.8	−3.8	−6.2	−.7	−.4	−1.4	−3.7	−3.7	−3.7	−3.6	−3.1	−2.4	−1.6	−.9	−.5
1952						7.3	−4.3	3.2	2.1	−.1	−3.5	−3.5	−3.6	−3.4	−2.9	−2.1	−1.2	−.5	−.1
1953							−14.7	4.4	2.1	−1.0	−5.1	−4.7	−4.5	−4.1	−3.4	−2.3	−1.3	−.4	.1
1954								27.9	7.7	.1	−6.1	−5.2	−4.9	−4.3	−3.3	−2.1	−.9	0	.6
1955									−9.3	−9.9	−13.7	−9.6	−7.7	−6.1	−4.5	−2.8	−1.1	0	.6
1956										−10.5	−16.3	−8.8	−6.5	−4.8	−3.1	−1.2	.4	1.5	2.0
1957											−21.8	−5.6	−3.6	−2.4	−.9	1.0	2.5	3.3	3.5
1958												13.9	4.0	2.1	2.5	3.8	5.0	5.5	5.2
1959													−5.0	−2.2	.5	3.2	5.0	5.6	5.2
1960														.7	3.3	6.0	7.5	7.4	6.5
1961															6.0	8.7	9.6	8.6	7.0
1962																11.5	11.2	8.9	6.5
1963																	10.9	7.4	4.5
1964																		3.9	1.5
1965																			−.8

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry, total compensation per man-hour, all employees—Average annual rates of change, in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	9.5	7.9	7.5	8.1	8.0	7.9	7.4	7.3	7.2	7.1	7.1	7.1	7.0	6.8	6.6	6.3	6.1	5.9	5.7
1948		6.3	6.7	8.0	7.9	7.8	7.2	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.6
1949			7.1	9.0	8.4	8.0	7.2	7.0	6.9	6.9	7.0	7.0	6.8	6.6	6.3	6.1	5.9	5.6	5.4
1950				11.0	8.7	8.0	6.8	6.6	6.7	6.8	6.9	6.9	6.7	6.4	6.2	5.9	5.7	5.4	5.2
1951					6.4	6.7	5.6	5.9	6.2	6.4	6.6	6.7	6.5	6.2	6.0	5.7	5.5	5.2	5.0
1952						7.1	5.0	5.7	6.2	6.5	6.8	6.9	6.5	6.2	5.9	5.6	5.3	5.1	4.9
1953							2.9	5.5	6.3	6.7	7.0	7.0	6.6	6.2	5.8	5.5	5.2	4.9	4.7
1954								8.2	7.8	7.7	7.6	7.5	6.8	6.2	5.8	5.4	5.1	4.8	4.5
1955									7.4	7.5	7.5	7.4	6.4	5.8	5.4	5.0	4.7	4.4	4.2
1956										7.6	7.5	7.3	6.0	5.4	4.9	4.6	4.3	4.0	3.8
1957											7.5	7.2	5.3	4.7	4.3	4.0	3.8	3.6	3.4
1958												6.9	4.0	3.7	3.6	3.4	3.3	3.2	3.1
1959													1.2	2.6	3.0	3.0	3.0	2.9	2.8
1960														4.0	3.8	3.4	3.2	3.0	2.9
1961															3.6	3.1	3.0	2.7	2.7
1962																2.5	2.7	2.5	2.6
1963																	3.0	2.4	2.6
1964																		1.9	2.5
1965																			2.2

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry total compensation per man-hour of production workers—Average annual rates of change in percent,[1] *1947–66*

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	9.1	6.7	7.1	8.0	7.7	7.7	7.2	7.1	7.0	7.0	7.0	7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.6
1948		4.5	6.6	8.1	7.7	7.7	7.1	7.0	6.9	6.9	6.9	6.9	6.7	6.5	6.3	6.1	5.9	5.7	5.5
1949			8.7	9.9	8.3	8.1	7.2	7.0	6.9	6.9	6.9	6.9	6.7	6.5	6.2	6.0	5.8	5.6	5.4
1950				11.1	7.6	7.7	6.5	6.5	6.5	6.6	6.6	6.7	6.5	6.3	6.1	5.8	5.6	5.4	5.2
1951					4.3	6.6	5.4	5.8	6.1	6.3	6.4	6.5	6.3	6.1	5.9	5.6	5.4	5.2	5.0
1952						9.0	5.4	5.9	6.3	6.5	6.6	6.7	6.4	6.1	5.9	5.6	5.3	5.1	4.9
1953							1.9	5.1	6.1	6.5	6.6	6.7	6.4	6.0	5.7	5.4	5.1	4.9	4.7
1954								8.5	7.8	7.6	7.3	7.2	6.6	6.1	5.7	5.4	5.1	4.8	4.5
1955									7.2	7.1	7.0	7.0	6.3	5.7	5.3	5.0	4.7	4.4	4.2
1956										7.1	6.9	6.9	5.9	5.3	4.9	4.6	4.3	4.1	3.9
1957											6.8	6.9	5.4	4.8	4.4	4.1	3.9	3.7	3.6
1958												7.0	4.4	4.0	3.8	3.6	3.5	3.3	3.3
1959													2.0	2.9	3.2	3.2	3.2	3.0	3.0
1960														3.8	3.7	3.4	3.3	3.1	3.0
1961															3.5	3.2	3.1	2.9	2.9
1962																2.8	3.0	2.7	2.8
1963																	3.1	2.6	2.8
1964																		2.1	2.7
1965																			3.3

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry total compensation per man-hour of nonproduction worker—Average annual rates of change in percent,[1] *1947–66*

	1948	1949	1950	1951	1952	1953	1954	1955	1956
1947	8.7	11.2	8.8	8.7	8.8	8.1	7.4	7.3	7.2
1948		13.7	8.0	8.2	8.6	7.7	7.0	6.9	6.8
1949			2.6	6.5	7.9	6.9	6.2	6.4	6.4
1950				10.6	10.2	7.6	6.3	6.5	6.5
1951					9.9	5.7	4.8	5.6	5.9
1952						1.7	2.9	5.1	5.7
1953							4.1	7.0	7.0
1954								9.9	8.0
1955									6.1
1956									
1957									
1958									
1959									
1960									
1961									
1962									
1963									
1964									
1965									

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	7.0	6.9	6.8	6.5	6.3	6.1	5.9	5.7	5.5	5.3
1948	6.8	6.6	6.6	6.3	6.0	5.8	5.6	5.4	5.3	5.1
1949	6.4	6.3	6.3	6.0	5.8	5.6	5.4	5.2	5.0	4.8
1950	6.5	6.4	6.3	6.0	5.7	5.5	5.2	5.1	4.9	4.7
1951	6.1	6.0	6.0	5.7	5.4	5.2	5.0	4.9	4.7	4.5
1952	6.0	5.9	6.0	5.6	5.3	5.1	4.8	4.7	4.5	4.3
1953	6.8	6.5	6.4	5.8	5.4	5.1	4.8	4.6	4.4	4.2
1954	7.3	6.6	6.5	5.7	5.2	4.9	4.6	4.4	4.2	4.0
1955	6.2	5.8	5.9	5.0	4.6	4.3	4.1	4.0	3.8	3.7
1956	6.3	5.5	5.8	4.7	4.2	4.0	3.8	3.7	3.6	3.4
1957		4.7	5.7	4.1	3.8	3.6	3.5	3.5	3.3	3.2
1958			6.7	3.3	3.0	3.2	3.2	3.3	3.1	3.0
1959				−0.1	1.7	2.6	2.6	3.0	3.0	2.8
1960					3.6	3.8	3.5	3.6	3.3	3.0
1961						4.0	3.5	3.5	3.2	2.9
1962							2.9	3.4	2.9	2.6
1963								3.9	2.7	2.3
1964									1.6	1.7
1965										1.9

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics

U.S. steel industry unit labor cost, all employees—Average annual rates of change in percent,[1] *1947–66*

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	8.8	7.3	4.1	4.6	5.0	5.1	5.3	4.7	4.7	4.9	5.4	5.4	5.5	5.4	5.1	4.9	4.5	4.2	3.9
1948		5.9	1.5	3.6	4.5	4.8	5.2	4.5	4.5	4.8	5.4	5.4	5.5	5.4	5.1	4.8	4.4	4.1	3.8
1949			-2.7	3.6	4.9	5.1	5.6	4.6	4.5	4.9	5.6	5.6	5.6	5.5	5.2	4.8	4.4	4.0	3.7
1950				10.3	8.0	6.8	6.8	5.0	4.8	5.2	6.1	5.9	5.9	5.7	5.3	4.8	4.4	4.0	3.6
1951					5.8	5.3	6.0	3.8	4.0	4.7	5.9	5.7	5.7	5.5	5.1	4.6	4.2	3.7	3.3
1952						4.8	6.3	2.9	3.5	4.6	6.2	5.9	5.9	5.6	5.1	4.5	4.0	3.5	3.1
1953							7.9	1.3	2.9	4.7	6.8	6.2	6.1	5.7	5.1	4.4	3.8	3.3	2.8
1954								-5.0	1.9	5.1	7.9	6.8	6.5	5.9	5.1	4.3	3.6	3.0	2.5
1955									9.2	9.7	11.7	8.6	7.6	6.5	5.3	4.3	3.5	2.8	2.3
1956										10.2	13.2	7.7	6.7	5.5	4.3	3.3	2.5	1.9	1.5
1957											16.3	5.2	4.9	4.0	2.9	2.0	1.4	.8	.6
1958												-4.9	1.2	1.7	1.2	.6	.2	-.2	-.3
1959													7.8	4.2	2.1	.9	.2	-.3	-.4
1960														.7	-.4	-1.0	-1.1	-1.3	-1.2
1961															-1.4	-1.7	-1.6	-1.7	-1.4
1962																-2.0	-1.6	-1.7	-1.2
1963																	-1.2	-1.7	-1.0
1964																		-2.2	-.7
1965																			.9

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. steel industry unit labor cost, production workers—Average annual rates of change in percent,[1] *1947–66*

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	8.6	5.2	3.3	4.4	4.2	4.5	4.6	4.2	4.1	4.3	4.6	4.5	4.6	4.5	4.3	4.1	3.9	3.6	3.4
1948		1.8	1.0	3.7	3.8	4.3	4.5	4.0	4.0	4.2	4.6	4.5	4.6	4.5	4.3	4.0	3.8	3.5	3.3
1949			.1	5.3	4.6	5.0	5.1	4.2	4.2	4.4	4.8	4.7	4.7	4.6	4.3	4.0	3.8	3.5	3.2
1950				10.8	5.8	5.8	5.6	4.3	4.2	4.4	5.0	4.7	4.8	4.6	4.3	4.0	3.7	3.4	3.1
1951					1.1	4.2	4.7	3.3	3.4	4.0	4.8	4.5	4.6	4.5	4.1	3.8	3.5	3.1	2.9
1952						7.5	6.0	3.3	3.5	4.2	5.2	4.8	4.8	4.6	4.2	3.8	3.4	3.0	2.7
1953							4.6	1.0	2.5	3.9	5.3	4.7	4.8	4.5	4.1	3.6	3.2	2.8	2.5
1954								−2.5	2.3	4.5	6.2	5.1	5.1	4.7	4.1	3.5	3.1	2.6	2.3
1955									7.3	7.6	8.7	6.2	5.8	5.1	4.2	3.5	3.0	2.5	2.1
1956										8.0	9.5	5.3	5.2	4.4	3.5	2.8	2.3	1.8	1.5
1957											11.2	3.1	4.0	3.4	2.5	1.9	1.5	1.1	.9
1958												−4.4	2.0	2.1	1.4	1.0	.8	.4	.3
1959													8.7	4.4	2.2	1.3	.9	.4	.2
1960														.2	−.6	−.5	−.3	−.6	−.5
1961															−1.4	−.7	−.4	−.6	−.6
1962																−.1	−.1	−.6	−.5
1963																	.3	−.9	−.7
1964																		−2.1	−.9
1965																			.4

[1] Based on the least sqares trend of the logarithms of the index numbers

Source: U.S. Department of Labor, Bureau of Labor Statistics.

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U.S. steel industry unit labor cost, nonproduction worker—Average annual rates of change in percent,[1] 1947–66

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1947	8.0	17.3	7.5	5.9	8.3	7.6	8.5	7.2	7.1	7.5	8.7	8.8	8.8	8.7	8.3	7.8	7.1	6.5	6.0
1948		27.3	4.2	3.6	7.8	7.1	8.3	6.8	6.7	7.3	8.7	8.9	8.9	8.7	8.3	7.7	6.9	6.3	5.7
1949			−14.7	−3.5	6.2	5.8	7.9	6.0	6.1	7.0	8.7	8.9	8.9	8.7	8.3	7.5	6.7	6.0	5.4
1950				9.1	17.9	11.3	12.1	8.1	7.6	8.3	10.2	10.2	9.9	9.5	8.9	8.0	7.0	6.1	5.5
1951					27.4	9.9	11.7	6.4	6.3	7.6	10.1	10.1	9.8	9.4	8.6	7.6	6.5	5.6	5.0
1952						−5.2	7.5	1.9	3.6	6.1	9.7	9.8	9.6	9.0	8.2	7.1	6.0	5.0	4.4
1953							22.0	2.5	4.7	7.9	12.2	11.6	10.8	9.9	8.8	7.3	6.0	4.9	4.1
1954								−14.0	0.3	7.1	13.5	12.3	11.1	9.9	8.5	6.8	5.3	4.2	3.4
1955									16.9	17.8	22.5	17.0	13.8	11.4	9.3	7.1	5.2	3.9	3.0
1956										18.8	26.1	16.0	11.9	9.4	7.3	5.1	3.3	2.1	1.4
1957											33.9	12.0	8.0	6.1	4.4	2.5	0.9	−0.0	−0.4
1958												−6.3	−0.7	0.9	0.7	−0.6	−1.7	−2.2	−2.1
1959													5.3	4.0	2.1	−0.3	−1.9	−2.5	−2.3
1960														2.8	0.4	−2.3	−3.7	−3.8	−3.2
1961															−1.8	−4.9	−5.6	−5.1	−3.9
1962																−7.8	−7.0	−5.5	−3.7
1963																	−6.3	−4.3	−2.1
1964																		−2.3	0.2
1965																			2.6

[1] Based on the least squares trend of the logarithms of the index numbers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

APPENDIX L

TABLE L-1.—*Average hourly labor expenditure for production workers in the iron and steel industries of 9 countries, 1952–66*

[Index, 1957=100. In national currencies [1]]

Year	Total labor cost per hour [2]														Average hourly earnings [3]			
	United States		European Coal and Steel Community												United Kingdom [4]		Japan [5]	
			Germany		France		Belgium		Luxembourg		Italy		Netherlands					
	In U.S. dollars	Index	In deutsche marks	Index	In new francs	Index	In Belgian francs	Index	In Belgian francs	Index	In lire	Index	In guilders	Index	In pence	Index	In yen	Index
1966	[6] 4.63	143.8	[6] 7.48	176.8	[6] 7.49	206.3	[6] 91.31	168.8	[6] 98.79	154.2	[6] 1,098.73	218.5	[6] 7.54	220.5	117.5	156.0	283.34	194.8
1965	4.48	139.1	[6] 7.24	171.2	[6] 7.18	197.8	[6] 85.76	158.6	[6] 94.24	147.1	[6] 1,037.84	206.4	[6] 7.06	206.4	115.7	153.6	254.23	174.8
1964	4.36	135.4	6.73	159.1	6.87	189.3	81.19	150.1	86.23	134.6	987.18	196.4	6.33	185.1	105.1	139.6	230.09	158.2
1963	4.25	132.0	6.34	149.9	6.39	176.0	72.47	134.0	80.96	126.3	893.83	177.8	5.70	166.7	97.2	129.1	209.58	144.1
1962	4.16	129.2	6.03	142.6	5.91	162.8	66.57	123.1	74.71	116.6	758.78	150.9	5.31	155.3	94.1	125.0	193.32	133.0
1961	3.99	123.9	5.49	129.6	5.46	150.4	62.93	116.3	73.72	115.0	651.21	129.5	5.08	148.5	89.8	119.3	176.75	121.6
1960	3.82	118.6	5.07	119.9	4.89	134.7	60.83	112.5	70.32	109.7	610.07	121.3	4.12	120.5	85.8	113.9	163.70	112.6
1959	3.80	118.0	4.69	110.9	4.48	123.4	56.25	104.0	65.65	102.5	563.41	112.1	3.62	105.9	81.0	107.6	155.58	107.0
1958	3.51	109 0	4.44	105.0	4.20	115.7	54.61	101.0	65.88	102.9	537.83	107.0	3.59	105.0	75.6	100.4	151.40	104.1
1957	3.22	100.0	4.23	100.0	3.63	100.0	54.09	100.0	64.08	100.0	502.74	100.0	3.42	100.0	75.3	100.0	145.42	100.0
1956	2.95	91.6	3.80	89.8	3.35	92.3	49.14	90.9	57.41	89.6	492.18	97.9	3.12	91.2	69.1	91.8	138.50	95.3
1955	2.72	84.5	3.48	82.3	2.96	81.5	44.34	82.0	50.97	79.5	436.04	86.7	2.83	82.7			122.20	84.0
1954	2.51	78.0	3.16	74.7	2.62	72.2	41.45	76.6	47.25	73.7	426.71	84.9	2.41	70.4			116.26	80.0
1953	2.44	75.8	3.06	72.3	2.55	70.3	40.29	74.5	47.58	74.3	408.50	81.3	2.18	63.7			107.30	73.8
1952	2.32	72.1	2.92	69.0	2.50	68.9	41.12	76.0	48.96	76.4	399.30	79.4	2.01	58.8			98.68	67.9

[1] Exchange rates:
Germany: U.S. $1=4.2 DM, 1952–March 1961; U.S. $1=4.0 DM, March 1961–66.
France: U.S. $1=3.5 NF, 1952–57; U.S. $1=4.2 NF, 1958; U.S. $1=4.9 NF, 1959–66.
Belgium/Luxembourg: U.S. $1=50.0 FB, 1952–66.
Italy: U.S. $1=625 lire, 1952–66.
Netherlands: U.S. $1=3.80 guilders, 1952–60; U.S. $1=3.62 guilders, 1951–66.
Japan: U.S. $1=360 yen, 1952–66.
United Kingdom (1952–66): U.S. $1=0.375P; U.S. $1=58.7d.

[2] Including all supplements.

[3] Excluding supplements.

[4] October of each year, except the 1966 figure which is for April.

[5] Cash earnings, including bonuses.

[6] Estimate.

NOTE.—Intercountry comparisons of labor cost per man-hour should not be used to represent unit labor cost (that is, labor cost per unit of output) because of large differences in productivity among countries. In the absence of strict governmental controls on foreign trade and exchange, average wages for all industries combined tend to be highest in countries with the highest productivity. If this were not so, competition would soon force changes in international exchange rates until it became true. Thus, in a general way, high wages tend to reflect high productivity and intercountry differences in unit labor cost are usually far smaller than intercountry differences in hourly wages.

Source:
United States: Annual Statistical Report (American Iron & Steel Institute), New York.
ECSC: Memento de Statistique 1960 and Salaries CECA, Social Statistics series (Statistical Office of the European Communities), Luxembourg.
United Kingdom: Statistics on Income, Prices, Employment and Production (United Kingdom, Ministry of Labour) London.
Japan: Statistical Year Book (the Japan Iron & Steel Federation), Tokyo.

TABLE L-2.—*Indexes of productivity and labor cost for all manufacturing industries in 6 countries, 1955-65*

[1957 equals 100]

	France	Germany, Federal Republic	Italy [1]	Japan	Netherlands	United Kingdom
Productivity:						
1955	97.2	89.9	90.5	88.0	95.6	98.8
1956	98.6	92.8	95.5	91.6	98.2	97.6
1957	100.0	100.0	100.0	100.0	100.0	100.0
1958	110.8	104.7	107.0	96.9	100.0	101.5
1959	117.1	112.7	117.3	111.5	108.7	106.9
1960	122.1	122.1	123.3	125.5	117.6	112.8
1961	120.2	128.4	129.4	142.8	125.2	112.3
1962	121.7	136.0	139.4	149.7	136.5	114.1
1963	125.8	141.1	147.4	159.6	139.1	120.1
1964	129.0	153.1	156.2	(2)	151.4	127.8
1965	(2)	(2)	(2)	(2)	(2)	(2)
Unit labor cost:						
1955	95.3	91.3	99.8	106.0	84.5	87.9
1956	100.8	97.6	101.0	105.7	91.7	96.2
1957	100.0	100.0	100.0	100.0	100.0	100.0
1958	89.8	103.8	98.1	105.8	102.9	104.6
1959	85.4	102.4	91.3	99.7	98.3	103.1
1960	88.5	105.2	90.6	97.9	100.5	103.3
1961	94.0	115.7	92.4	99.7	113.4	110.5
1962	100.5	124.9	99.1	108.5	117.6	113.9
1963	105.2	129.3	108.7	113.2	125.9	112.5
1964	110.7	129.1	113.9	110.8	133.5	114.0
1965	115.5	137.0	(2)	118.4	(2)	119.6

[1] Refers to wage earners only.
[2] Not available.

NOTE.—Indexes cover all employees in manufacturing industry, unless otherwise noted. Unit labor cost indexes for France, Germany, and the Netherlands have been adjusted for changes in the official or commercial exchange rate.

Source: Unit Labor Cost in Manufacturing, Trends in 9 Countries, 1950-65, Bul. No. 1518, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C., June 1966; and national publications.

APPENDIX M

TABLE M-1.—*Steel consumption and international trade of Japan*

[In thousands of net tons]

	1963	1964	1965	1966
Production	34,724	43,870	45,372	52,672
Imports, ingot equivalent	76	49	35	42
Exports, ingot equivalent	7,931	9,861	14,005	14,127
Apparent consumption	26,869	34,058	31,402	38,587
Balance of trade	7,855	9,812	13,970	14,085
Trade ratios:				
Imports, percent of apparent consumption	0.3	0.1	0.1	0.1
Exports, percent of production	22.8	22.5	30.9	26.8

Source: JISF Statistical Year Book for 1966, table 2.

TABLE M-2.—*U.S. imports of steel mill products from Japan by product, 1959-66*

[In net tons]

	1959	1960	1961	1962	1963	1964	1965	1966
Ingots and skelp	472	1,408	580	3,291	4,404	197	3,575	1,037
Wire rods	114,782	163,788	198,439	299,342	414,008	452,374	642,449	609,858
Structural and piling	20,335	5,597	4,240	10,667	52,668	125,911	227,925	211,836
Plates	83,902	46,694	10,346	60,882	93,586	215,830	415,637	468,283
Railway mat	--------	--------	--------	23	28	541	968	1,275
Rebars	133,923	96,437	69,854	75,998	99,955	87,322	72,727	81,112
A.O. bars and tool	21,835	20,676	16,753	18,521	39,322	105,128	240,741	270,453
Pipe and tube	49,773	63,014	89,760	198,698	358,565	436,960	579,213	628,021
Wire and wire products	143,030	135,718	169,564	233,324	305,705	332,958	376,454	394,646
Tin mill products	3	5,074	3,424	8,663	26,144	52,514	88,261	107,549
Sheets and strip	56,287	57,747	33,569	162,299	413,501	636,638	1,769,691	2,076,927
Total	624,342	596,153	596,529	1,071,708	1,807,886	2,446,373	1,417,641	4,850,997

Source: AISI annual statistical report.

TABLE M-3.—*Japanese exports of iron and steel products by country of destination*

[In thousands of net tons]

	1962	1963	1964	1965	1966
North America (Canada and United States)	1,363.1	2,075.7	3,020.9	5,065.0	5,431.7
Percent of total	29.9	33.4	39.6	46.4	49.8
Latin America	369.4	396.8	474.3	678.2	541.3
Percent of total	8.1	6.4	6.2	6.2	5.0
Western Europe	388.5	624.5	475.0	341.1	395.9
Percent of total	8.5	10.1	6.2	3.1	3.6
Eastern Europe (U.S.S.R.)	249.1	360.9	113.0	222.8	172.0
Percent of total	5.5	5.8	1.5	2.0	1.6
Africa and Middle East	132.2	152.2	245.5	442.2	188.9
Percent of total	2.9	2.4	3.2	4.1	1.7
Asia and Far East [1]	2,052.0	2,604.9	3,299.9	4,173.2	4,177.6
Percent of total	45.1	41.9	43.3	38.2	38.3
Total	4,554.3	6,215.0	7,628.6	10,922.5	10,907.4

[1] Includes others.

Source: JISF Statistical Year Book for 1966, table 59.

TABLE M-4.—*Raw steel production, by process*

[In thousands of net tons]

Year	Output: Open hearth	Output: Converters: BOF	Output: Converters: Others	Output: Electric furnace	Total
1951	5,924		215	1,029	7,168
1952	6,436		221	1,047	7,704
1953	6,926		379	1,141	8,446
1954	7,017		401	1,125	8,543
1955	8,613		449	1,308	10,370
1956	9,884		495	1,863	12,242
1957	10,945	61	439	2,411	13,856
1958	10,153	871	40	2,294	13,358
1959	13,572	1,327		3,430	18,329
1960	16,584	2,898		4,921	24,403
1961	18,707	5,905		6,548	31,160
1962	14,643	9,305		6,416	30,364
1963	13,442	13,277		8,005	34,724
1964	15,270	19,379		9,221	43,870
1965	11,204	24,943		9,225	45,372
1966	9,518	32,972		10,182	52,672
1959 (percent)	74.1	7.2		18.7	100.0
1965 (percent)	24.7	55.0		20.3	100.0
1966 (percent)	18.1	62.6		19.3	100.0

Source: JISF Statistical Year Book for 1966, table 34.

TABLE M-5.—*Comparison of shipments by product*

Products	1965				1966			
	Japan [1]		United States		Japan [1]		United States	
	Million net tons	Percent	Million net tons	Percent	Million net tons	Percent	Million net tons	Percent
Semifinished			3.2	3.5			2.4	2.7
Shapes and piling	4.5	13.7	6.8	7.3	5.2	13.4	6.8	7.6
Plates	6.2	18.9	9.8	10.6	7.6	19.6	9.1	10.1
Rails and accessories	.7	2.1	1.5	1.6	.6	1.6	1.8	2.0
Bars	5.7	17.3	14.5	15.6	6.4	16.5	14.5	16.1
Rods and wire	3.0	9.1	4.8	5.2	3.2	8.3	4.9	5.4
Pipe and tubes	3.3	10.0	8.7	9.4	3.6	9.3	9.2	10.2
Tin mill products	.9	2.7	6.7	7.2	1.1	2.9	5.8	6.5
Sheet and strip	8.6	26.2	36.7	39.6	11.0	28.4	35.5	39.4
Total	32.9	100.0	92.7	100.0	38.7	100.0	90.9	100.0

[1] Carbon steel only.

NOTE.—In Japanese product classification shapes and plates include tonnages classified in bars (light shapes) and sheets (medium plates) in this country.

Source: JISF Statistical Year Book for 1966, Table 44A.

TABLE M-6.—*Japanese crude steel capacity, total and by major companies and plant locations, 1964*

[In thousands of metric tons]

Company and city	Capacity	Percent of total capacity
Aichi Steel Works, Ltd.:		
Chita	299	0.7
Kariya	42	.1
Total	341	.8
Chubu Steel Plate Co., Ltd.: Nagoya	1,275	2.9
Daido Steel Co., Ltd.:		
Nagoya	210	.5
Chita	325	.7
Tokyo	60	.1
Nagoya	58	.1
Total	653	1.4
Daitesu Steel Industrial Co., Ltd.: Osaka	120	.3
Fuji Iron & Steel Co., Ltd.: [1]		
Muroran	2,760	6.2
Hirohata	2,732	6.2
Kamaish	900	2.0
Tokai Iron & Steel Co., Ltd. (subsidiary)	1,420	3.2
Total	7,812	17.6
Japan Special Steel Co., Ltd.: Tokyo	144	.3
The Japan Steel Works, Ltd.:		
Muroran	383	.8
Hiroshima	19	.1
Total	402	.9
Kanto Special Steel Works, Ltd.: Tsujide	54	.1
Kawdsaki Steel Corp.: [1]		
Chiba	5,000	11.3
Nishinomiya	116	.3
Kobe	142	.3
Chita	90	.2
Kuji	60	.1
Total	5,408	12.2
Kobe Steel Works, Ltd.: [1]		
Kobe	1,668	3.7
Takasago	256	.6
Total	1,924	4.3
Nakayama Steel Products Co., Ltd.:		
Yokohama	95	.2
Osaka	90	.2
Total	185	.4
Nippon Kokan K. K.: [1]		
Kawasaki	1,948	4.4
Tsurumi	1,466	3.3
Kawasaki	1,669	3.8
Total	5,083	11.9
Nippon Koshuha Steel Co., Ltd.:		
Hachinoe	18	
Toyama	50	.1
Total	68	.2
Nippon Yakin Kogyo Co., Ltd.:		
Kawasaki	109	.3
Kanazawa	7	
Total	116	.3

See footnotes at end of table, p. 490.

TABLE M-6.—*Japanese crude steel capacity, total and by major companies and plant locations, 1964*—Continued

[In thousands of metric tons]

Company and city	Capacity	Percent of total capacity
Nisshin Steel Co., Ltd.:		
Amagasaki	157	.4
Kure	728	1.6
Shunan	152	.3
Total	1,037	2.3
Sanyo Special Steel Co., Ltd.: Himeji	320	.7
Sumitome Metal Industries, Ltd.:[1]		
Wakayama	2,430	5.5
Kokura	1,336	3.0
Osaka	280	.6
Amagasaki	95	.2
Total	4,141	9.3
Tokushu Seiko Co., Ltd.:		
Kawasaki	146	.3
Tokyo	48	.1
Total	194	.4
Tokyo Steel Mfg. Co., Ltd.:		
Okayama	383	.9
Tokyo	168	.4
Total	551	1.3
Tosa Steel Works, Ltd.:		
Takamatsu	72	.2
Kochi	48	.1
Total	120	.3
Yamato Steel Works, Ltd.: Osaka	288	.7
Yawata Iron & Steel Co., Ltd.:[1]		
Kitakyushu, Fukuoka Prefecture	6,504	14.7
Kitakyushu, Fukuoka Prefecture	3,025	6.8
Hikari	74	.2
Total	9,603	21.7
Other	4,433	10.1
Total capacity	44,272	100.0

[1] Indicates one of the 6 largest firms.

Source; Iron and Steel Works of the World, 4th ed., 1965, Metal Bulletin Books, Ltd.; Statistical Yearbook for 1966, Japan Iron & Steel Federation.

TABLE M-7.—*Imports of raw materials and fuels from the United States*

[In thousands of metric tons. Heavy fuel oil in thousands of kiloliters]

Calendar year	Pig iron	Ferro-alloy	Iron ore	Iron and steel scrap	Manganese ore	Coking coal	Chromium ore	Magnesia clinker	Fluorite ore	Nickel ore	Tungsten ore	Molybdenum ore	Petroleum coke	Heavy fuel oil
1960	28	(1)	825	3,066	(2)	4,307	(2)	25	(2)	(2)	1	4	19	1,120
1961	267	20	946	5,308	(2)	5,292	(2)	20	(2)	(1)	(1)	5	32	1,237
1962	118	4	864	2,695	(2)	5,441	(1)	1	1	(1)	(1)	1	(2)	859
1963	20	(1)	1,821	3,363	(2)	5,108	(2)	9	(2)	(2)	(1)	(1)	41	937
1964	56	(1)	2,005	3,758	(2)	5,281	(2)	3	(2)	(2)	(1)	4	(2)	1,029
1965	1	(1)	2,660	2,340	(2)	6,408	(2)	(1)	(2)	(2)	(1)	3	(2)	723
1966	(1)	(1)	3,724	2,669	(2)	6,716	(2)	(2)	(2)	(2)	(2)	3	58	452

[1] Less than 500 metric tons.
[2] Nil.

NOTE.—Import of U.S. raw materials and fuels for use of other Japanese industries as compared with the steel industry (Total for 1960–1966):

[In thousands of metric tons. Heavy fuel oil in thousands of kiloliters]

	Other industries	Steel industry
Coking coal	3,540	38,553
Magnesia clinker	61	58
Petroleum coke	384	150
Heavy fuel oil	6,706	6,357

Source: "Coking Coal and Magnesia Clinker," Japan Iron & Steel Federation; "Petroleum Coke and Heavy Fuel Oil," MITI.

The Japanese must import at least 55 percent of their coking coal requirements from sources as distant as 10,000 miles. They are using large boats, some in excess of 85,000-ton capacity. Recognizing the need to blend coals of diverse characteristics in order to get a uniform coke, Japanese plants are designed to blend as many as 12 to 20 different coals.

As a result of the high cost of imported coal, the Japanese have applied themselves to achieve blast furnace practices with the lowest coke rate in the world.

In 1965, the Japanese steel industry used an average of only 1,000 pounds of coke per ton of hot metal compared to 1,330 pounds in the United States.

TABLE M-8.—*Imports of raw materials and fuels from the United States*

[In thousands of dollars—cost, insurance, and freight, Japan]

Calendar year	Total	Pig iron	Ferro-alloy	Iron ore	Iron and steel scrap	Coking coal	Petroleum coke	Heavy fuel oil	Others [1]
1960	276,579	1,681	5	12,760	155,781	79,077	815	16,565	9,895
1961	453,198	14,603	3,703	14,788	289,281	97,955	1,373	19,891	11,604
1962	269,984	6,611	712	12,744	131,642	101,964	----------	13,856	2,455
1963	275,910	1,076	154	25,477	135,751	91,433	1,693	13,830	6,496
1964	326,871	2,860	659	28,125	174,860	95,745	----------	15,065	9,557
1965	282,255	120	369	38,344	106,326	118,548	----------	11,076	7,472
1966	306,362	141	331	55,144	109,908	124,514	2,517	6,825	6,982

[1] Includes manganese ore, chromium ore, manganese clinker, fluorite ore, nickel ore, tungsten ore, and molybdenum ore.

NOTE.—Imports of U.S. raw materials and fuels for other use of Japanese industries as compared with the steel industry (total for 1960-66):

[In thousands of dollars]

	Other industries	Steel industry
Coking coal	65,194	709,236
Magnesia clinker	4,476	4,231
Petroleum coke	10,279	6,396
Heavy fuel oil	154,732	97,108

Source: Ministry of Finance. Figures for coking coal, petroleum coke, and heavy fuel oil and magnesia clinker are estimated.

TABLE M-9.—*Indirect steel imports into Japan from the United States*

[In thousands of dollars]

Calendar year:	*Value (CIF)*
1960	172,044
1961	275,686
1962	344,419
1963	351,304
1964	294,150
1965	248,574
1966	267,484
1960-66 total	1,953,661

NOTE.—Above figures represent general machinery, heavy electrical machinery, automobiles, buses, trucks, and tractors.

Source: Ministry of Finance.

TABLE M-10.—*Iron and steel shipments to the United States (quantity and FOB value)*

Calendar year	Metric tons				Value (thousands)
	Grand total	Ordinary rolled steel products	Secondary products	Others	
1960	611,498	402,748	164,155	44,595	$96,602
1961	624,147	402,926	193,252	27,969	97,616
1962	1,162,591	812,388	256,114	94,089	171,939
1963	1,795,742	1,371,360	375,006	49,376	255,173
1964	2,587,207	2,103,695	428,126	55,386	353,419
1965	4,348,696	3,726,834	514,316	107,546	572,836
1966	4,695,075	3,994,246	540,853	160,776	608,434

NOTE.—Iron and steel export to United States, by export certificate statistics:

1966, January and February	$92,190,000
1967, January and February	85,435,000
Difference	6,755,000

Source: Japanese customs clearance statistics.

TABLE M-11.—*Japanese production of road vehicles* [1]

[In thousands]

Year	Motorcycles	Passenger cars	Buses	Large trucks	Small trucks	Total
1960	1,368	165	9	84	225	1,851
1961	1,698	250	11	107	446	2,512
1962	1,605	269	12	105	606	2,597
1963	1,865	408	15	97	765	3,150
1964	2,057	580	18	114	992	3,761
1965	2,175	696	19	111	1,050	4,051
1966 [2]	[3] 2,411	[4] 878	[5] 21	[6] 130	[7] 1,258	[8] 4,698

[1] Excluding 3-wheel trucks and motorscooters.
[2] Preliminary.
[3] Increase of 76 percent over 1960.
[4] Increase of 432 percent over 1960.
[5] Increase of 133 percent over 1960.
[6] Increase of 55 percent over 1960.
[7] Increase of 459 percent over 1960.
[8] Increase of 154 percent over 1960.

Source: Bureau of Statistics, Office of the Prime Minister.

TABLE M-12.—*Japanese production of completed steel vessels*

[In thousands of gross tons]

1960	1,759	1964	4,079
1961	1,898	1965	5,527
1962	2,182	1966	[1] 5,700
1963	2,266		

[1] 1st 7 months at an annual rate; represents an increase of 224 percent over 1960.

Source: Bureau of Statistics, Office of the Prime Minister.

APPENDIX N

TABLE N-1.—*Foreign trade of principal energy products of the United States, 1939–66*

[In millions of dollars]

Year	Coal and related products (exports)	Petroleum and products		
		Exports	Imports	Trade balance [1]
	(1)	(2)	(3)	(4)
1939	67	385	44	+342
1940	87	310	70	+240
1941	119	285	83	+202
1942	152	350	37	+313
1943	172	517	85	+432
1944	182	960	113	+846
1945	198	753	152	+601
1946	316	436	159	+276
1947	634	642	250	+391
1948	492	657	416	+241
1949	308	562	478	+84
1950	278	500	592	−92
1951	605	783	601	+182
1952	510	793	692	+101
1953	346	692	762	−70
1954	312	658	829	−171
1955	495	646	1,026	−380
1956	745	766	1,286	−520
1957	846	994	1,548	−554
1958	534	558	1,636	−1,078
1959	358	480	1,536	−1,056
1960	362	479	1,544	−1,065
1961	349	445	1,643	−1,199
1962	384	442	1,765	−1,323
1963	483	492	1,789	−1,297
1964	505	471	1,872	−1,401
1965	494	418	2,093	−1,675
1966	493	436	2,127	−1,691

[1] Col. (2) minus col. (3) equals col. (4). Subject to errors of rounding.

Sources: U.S. Department of Commerce, Bureau of the Census, Survey of Current Business, and 1965 Statistical Supplement to the Survey of Current Business.

TABLE N-2.—*End use of bituminous coal exports, by countries, 1965*

[Tonnage in thousands of net tons]

Destination	Metallurgical use		Total exports (tonnage)
	Tonnage	Percent	
North America:			
Canada	6,200	40	15,661
Mexico	60	100	60
Total, North America	6,260	40	15,721
South America:			
Argentina	620	100	620
Brazil	1,211	100	1,211
Chile	126	100	126
Other			39
Total, South America	1,957	98	2,002
Europe:			
Benelux	1,800	81	2,215
France	1,900	92	2,070
Germany, West	100	2	4,730
Italy	7,800	87	8,930
Netherlands	1,500	44	3,371
Subtotal, ECSC	13,100	61	21,316
Germany, East	121	100	121
Norway	150	91	164
Poland			
Portugal	50	48	104
Rumania	56	100	56
Spain	1,377	100	1,377
Sweden	870	100	870
Yugoslavia	558	100	558
Other	200	51	390
Subtotal	3,382	93	3,640
Total, Europe	16,482	66	24,956
Japan	7,491	100	7,491
Africa	7	64	11
Total exports	32,197	64	50,181

Source: Compiled by U.S. Department of the Interior, Bureau of Mines; all data subject to revision.

TABLE N-3.—*Bituminous coal—Prices and principal cost components, 1950–66*

Year	Bituminous coal (f.o.b. mine), open-market sales		Miners' wages (basic wage rate)		Mine supplies (finished steel index)		Capital equipment (mining machinery index)	
	Per ton	1950=100	Per day	1950=100	1947–49=100	1950=100	1947–49=100	1950=100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1950	$5.00	100.0	$14.63	100.0	115.2	100.0	116.6	100.0
1951	4.91	98.2	16.21	110.8	124.5	108.1	131.9	113.1
1952	4.84	96.8	16.83	115.0	127.2	110.4	132.1	113.3
1953	4.65	93.0	18.25	124.7	136.9	118.8	139.1	119.3
1954	4.22	84.4	18.25	124.7	142.8	124.0	148.1	127.0
1955	4.26	85.2	18.65	127.5	149.5	129.8	155.4	133.3
1956	4.60	92.0	20.35	139.1	162.1	140.7	173.0	148.4
1957	4.82	96.4	22.05	150.7	177.5	154.1	189.3	162.3
1958	4.58	91.6	22.25	152.1	183.7	159.5	200.0	171.5
1959	4.49	89.8	24.05	164.4	186.8	162.2	209.3	179.5
1960	4.38	87.6	24.25	165.8	186.5	161.9	212.3	182.1
1961	4.25	85.0	24.25	165.8	185.7	161.2	215.2	184.6
1962	4.19	83.8	24.25	165.8	185.2	160.8	216.3	185.5
1963	4.12	82.4	24.25	165.8	186.3	161.7	217.7	186.7
1964	4.11	82.2	25.00	170.9	187.8	163.0	220.5	189.1
1965	4.13	82.6	26.25	179.4	188.7	163.8	226.1	193.9
1966	(1)	(1)	27.25	186.3	191.2	166.0	233.1	199.9

1 Not available.

Sources: Col. 2: U.S. Bureau of Mines and Office of Price Stabilization. Col. 4: Bituminous coal wage agreements. Col. 6: U.S. Department of Labor, Bureau of Labor Statistics. Col. 8: U.S. Department of Labor, Bureau of Labor Statistics.

TABLE N-4.—*Comparison of tons per man-shift in the coal industries of certain countries, 1965*

	Net tons
United States	17.5
United Kingdom	2.7
Germany, West	2.5
Netherlands	2.0
France	1.9
Belgium	1.7
Japan	1.5

SOURCES:

ESCS members from European Coal and Steel Community. The High Authority, General Report on the Activities of the Community, Feb. 1, 1965, to Jan. 31, 1966 (Luxembourg, 1964), p. 361.

U.S. Department of the Interior, Bureau of Mines Minerals Yearbook, vol. II, Fuels (Washington, G.P.O.), preprint, p. 5.

U.S. Department of the Interior, Bureau of Mines, International Coal Trade, 36 (February 1967), p. 27 for United Kingdom; 35 (December 1966), p. 14 for Japan.

TABLE N-5.—*Single-trip ocean freight rates for overseas coal, as reported by Rodriguez Sons & Co., Inc., from Hampton Roads, Baltimore, and Philadelphia*

[In U.S. dollars per gross ton]

Date, week of—	Dunkirk and Bordeaux		Toulon and Marseilles		Brest, Rotterdam and Antwerp		Bremen and Hamburg		Dublin	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
June 26, 1950	--------	3.75	4.00	4.25	--------	3.25	--------	4.00	--------	--------
Feb. 19, 1951	14.75	15.25	14.75	15.25	13.75	14.25	14.00	14.50	--------	--------
Dec. 29, 1952	4.65	5.15	5.15	5.65	4.40	4.75	4.65	5.00	--------	--------
Dec. 28, 1953	4.35	4.75	5.05	5.30	3.85	4.15	4.25	4.45	--------	--------
Dec. 27, 1954	7.60	8.10	7.25	8.00	6.75	7.10	7.05	7.45	--------	--------
May 31, 1955	9.00	[illegible]	9.00	9.50	7.90	8.25	8.25	8.60	--------	--------
Oct. 3, 1955	--------	11.20	--------	10.50	--------	10.10	--------	10.35	--------	--------
May 21, 1956	--------	12.20	--------	13.00	--------	11.05	--------	11.25	--------	--------
Dec. 10, 1956	16.40	17.90	--------	18.20	15.40	16.50	15.70	16.95	--------	--------
Mar. 25, 1957	10.65	10.90	--------	11.60	9.65	9.95	9.95	10.20	--------	--------
July 29, 1957	5.20	5.30	6.70	7.15	4.60	4.75	4.70	5.00	--------	--------
Sept. 30, 1957	4.35	4.50	5.75	5.90	3.80	3.90	4.00	4.15	--------	--------
Dec. 30, 1957	--------	4.35	--------	5.20	--------	3.75	--------	3.90	--------	--------
Sept. 29, 1958	--------	3.85	--------	4.90	--------	3.15	--------	3.35	--------	--------
Jan. 26, 1959	--------	3.90	--------	4.90	3.20	3.50	3.45	3.70	--------	3.85
June 1, 1959	--------	3.65	--------	4.90	2.95	3.20	3.20	3.50	--------	3.50
Sept. 28, 1959	--------	3.50	--------	4.90	2.80	3.05	3.20	3.35	--------	3.60
Dec. 3, 1959	--------	4.60	--------	4.90	--------	3.80	--------	4.05	4.40	4.50
June 27, 1960	--------	4.35	--------	4.60	--------	3.60	--------	3.80	--------	3.75
Dec. 27, 1960	--------	4.35	--------	4.60	--------	3.80	--------	4.00	--------	4.25
June 5, 1961	--------	4.35	--------	5.05	--------	3.65	--------	3.85	--------	4.23
Dec. 6, 1961	--------	4.75	--------	5.60	--------	4.15	--------	4.35	--------	5.00
June 4, 1962	--------	4.05	--------	4.50	3.10	3.35	3.20	3.50	--------	4.00
Dec. 3, 1962	--------	3.65	--------	4.00	--------	2.65	2.80	3.10	3.50	4.00
June 3, 1963	4.20	4.50	--------	5.50	3.65	4.05	3.90	4.20	5.50	6.25
Dec. 30, 1963	5.30	5.60	--------	7.50	4.20	4.50	4.50	4.75	6.50	7.00
June 8, 1964	4.05	4.35	--------	6.00	3.35	3.80	3.65	3.90	5.50	6.00
Dec. 7, 1964	4.05	4.50	--------	7.00	3.50	4.05	3.80	4.05	5.25	6.00
June 14, 1965	4.20	4.60	--------	7.50	3.90	4.35	4.20	4.50	6.25	6.75
Dec. 13, 1965	4.50	5.05	7.00	7.50	3.90	4.75	4.20	4.75	5.75	6.25
June 20, 1966	3.90	4.20	6.00	6.50	3.10	4.20	2.80	3.65	4.75	5.25
Dec. 12, 1966	3.65	3.90	6.00	6.50	2.65	3.10	3.10	3.35	4.75	5.25
May 22, 1967	3.35	3.65	6.00	6.50	2.50	3.10	2.95	3.20	4.75	5.25

Table N-5.—*Single-trip ocean freight rates for overseas coal, as reported by Rodriguez Sons & Co., Inc., from Hampton Roads, Baltimore, and Philadelphia*—Continued

[In U.S. dollars per gross ton]

Date, week of—	(W.C.) United Kingdom		Lisbon		Savona, Naples and Genoa		Trieste and Yugoslavia		Casablanca	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
June 26, 1950	....	4.25	3.25	3.50	3.75	4.25	(1)	5.00	(2)	3.00
Feb. 19, 1951	14.00	14.50	14.25	14.75	13.75	14.25	[1] 15.25	15.75	[2] 13.25	13.75
Dec. 29, 1952	4.65	5.00	4.40	4.75	5.00	5.50	[1] 6.00	6.50	[2] 4.15	4.65
Dec. 28, 1953	4.55	4.85	4.25	4.50	4.35	4.60	[1] 5.35	5.60	[2] 4.25	4.50
Dec. 27, 1954	7.75	8.00	6.85	7.15	7.60	7.85	9.65	9.90	6.25	6.75
May 31, 1955	8.75	9.00	8.00	8.50	9.00	9.50	11.00	11.25	7.80	8.25
Oct. 3, 1955	....	11.05	....	9.60	....	10.00	....	12.00	....	9.50
May 21, 1956	....	12.05	....	12.00	....	10.75	....	14.50	....	12.00
Dec. 10, 1956	16.50	17.90	....	15.50	17.50	17.75	19.50	20.00	....	16.80
Mar. 25, 1957	10.65	10.90	....	10.75	....	10.50	....	12.25	....	10.20
July 29, 1957	5.20	5.30	....	5.00	....	5.50	....	6.25	5.75	6.25
Sept. 30, 1957	4.35	4.50	....	4.00	....	4.50	5.25	5.50	4.75	5.00
Dec. 30, 1957	....	4.35	....	4.00	....	4.25	....	4.75	....	4.00
Sept. 29, 1958	....	3.85	....	3.60	....	3.65	....	4.05	....	3.60
Jan. 26, 1959	....	3.90	3.75	4.00	3.80	3.90	4.35	4.50	....	3.50
June 1, 1959	....	3.65	3.60	3.75	3.70	3.90	4.35	4.50	....	3.50
Sept. 28, 1959	....	3.50	3.40	3.65	3.40	3.60	4.60	4.75	....	3.60
Dec. 3, 1959	....	4.60	....	4.25	4.40	4.75	5.25	5.50	....	4.50
June 27, 1960	....	4.35	....	4.00	4.10	4.25	5.00	5.25	....	4.00
Dec. 27, 1960	....	4.35	....	4.25	4.00	4.15	4.80	5.25	....	4.00
June 5, 1961	....	4.35	5.00	5.25	4.25	4.40	5.00	5.50	....	4.50
Dec. 6, 1961	....	4.75	....	5.25	4.25	4.50	5.25	5.50	....	4.75
June 4, 1962	....	4.20	4.00	4.25	3.70	4.10	4.35	4.60	....	5.00
Dec. 3, 1962	....	3.80	3.75	4.00	3.20	4.00	3.50	4.00	....	4.50
June 3, 1963	....	5.00	5.75	6.25	4.75	5.30	6.00	6.25	....	5.50
Dec. 30, 1963	....	....	6.50	7.00	5.70	6.20	6.50	7.00	....	7.00
June 8, 1964	....	....	5.50	6.00	3.90	4.50	5.00	5.50	....	....
Dec. 7, 1964	....	....	6.00	6.50	4.00	5.00	5.50	6.50	....	....
June 14, 1965	....	....	5.75	6.25	4.75	5.25	6.00	6.50	....	....
Dec. 13, 1965	....	....	5.75	6.25	4.75	5.25	6.00	6.50	....	....
June 20, 1966	....	....	4.90	5.40	4.00	4.50	5.25	5.75	....	....
Dec. 12, 1966	....	....	4.90	5.40	3.50	4.00	4.50	5.00	....	....
May 22, 1967	....	....	4.90	5.40	3.50	4.00	4.25	5.00	....	....

Date, week of—	Rio de Janeiro		Buenos Aires		Japan		Korea		Spain	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
June 26, 1950	5.00	5.50	5.25	5.75	....	7.00	....	....	....	....
Feb. 19, 1951	15.75	16.75	17.25	18.25	20.50	21.50	....	....	....	....
Dec. 29, 1952	5.00	5.25	6.05	6.55	8.50	9.00	....	....	....	....
Dec. 28, 1953	3.65	3.90	4.25	4.50	8.90	9.20	....	....	....	....
Dec. 27, 1954	8.00	8.25	8.75	9.00	11.70	12.10	14.50	15.00	....	....
May 31, 1955	9.00	9.50	9.75	10.00	12.75	13.50	16.25	16.75	....	....
Oct. 3, 1955	10.70	11.10	12.05	12.30	....	18.00	....	19.00	....	....
May 21, 1956	....	12.50	13.00	13.50	....	21.00	....	22.00	....	....
Dec. 10, 1956	....	14.75	....	17.25	25.00	26.00	....	28.00	....	....
Mar. 25, 1957	....	10.00	....	12.50	20.25	20.75	23.00	24.00	....	....
July 29, 1957	....	5.75	....	7.25	....	12.50	....	13.50	....	....
Sept. 30, 1957	....	5.00	....	6.50	....	9.75	....	10.75	....	....
Dec. 30, 1957	4.75	5.00	....	5.25	9.50	10.50	....	10.50	....	....
Sept. 29, 1958	4.60	4.75	6.00	6.25	7.00	7.50	....	8.50	....	....
Jan. 26, 1959	5.00	5.15	....	6.25	7.25	7.50	....	8.50	....	....
June 1, 1959	5.20	5.60	5.90	6.10	7.15	7.60	....	8.50	....	....
Sept. 28, 1959	5.20	5.50	5.90	6.10	7.60	8.00	....	8.50	....	....
Dec. 3, 1959	....	5.40	5.75	6.00	8.25	8.50	....	9.00	....	....
June 27, 1960	....	5.30	5.75	6.00	8.40	8.75	....	9.00	....	....
Dec. 27, 1960	5.25	5.50	5.75	6.00	8.30	8.50	....	9.00	....	....
June 5, 1961	6.00	7.00	7.00	8.00	10.00	11.00	....	10.00	....	....
Dec. 6, 1961	6.25	6.50	....	6.00	8.25	8.55	....	10.50	....	....
June 4, 1962	5.00	5.25	5.75	6.25	6.75	7.50	....	8.50	....	....
Dec. 3, 1962	4.75	6.00	5.75	6.00	5.00	6.00	....	8.50	....	....
June 3, 1963	6.50	7.50	6.50	7.00	6.50	7.00	....	9.50	....	....
Dec. 30, 1963	8.75	9.50	9.00	9.50	8.50	9.00	....	10.50	6.50	7.50
June 8, 1964	8.50	9.25	8.00	8.50	6.50	7.15	....	9.50	6.00	6.50
Dec. 7, 1964	7.50	8.00	8.00	9.00	7.00	8.25	....	10.50	6.00	7.50
June 14, 1965	7.00	8.85	7.75	8.50	7.75	8.50	....	10.50	5.50	6.50
Dec. 13, 1965	6.75	8.50	7.75	8.50	7.60	8.25	10.00	10.50	5.00	6.50
June 20, 1966	6.35	7.00	7.50	8.00	6.00	7.00	....	....	5.00	6.00
Dec. 12, 1966	5.60	6.75	7.50	8.00	5.85	7.30	....	....	5.00	6.00
May 22, 1967	3.00	3.20	7.50	8.00	5.45	7.50	....	....	5.00	6.00

See footnotes at end of table, p. 499.

TABLE N-5.—*Single-trip ocean freight rates for overseas coal, as reported by Rodriguez Sons & Co., Inc., from Hampton Roads, Baltimore, and Philadelphia*—Continued

[In U.S. dollars per gross ton]

	Lowest rate to listed port beginning week of June 26, 1950			Highest rate to listed port beginning week of June 26, 1950		
	Week of—	Rate		Week of—	Rate	
		Minimum	Maximum		Minimum	Maximum
Dunkirk and Bordeaux	Sept. 28, 1959		3.50	Dec. 10, 1956	16.50	17.90
Toulon and Marseilles	Dec. 3, 1962		4.00	do		18.20
Rotterdam, Antwerp and Brest	do		2.65	do	15.40	16.50
Bremen and Hamburg	do		3.10	do	15.70	16.95
Dublin [1]	June 1, 1959		3.50	Oct. 27, 1958		4.00
W.C. United Kingdom	Sept. 28, 1959		3.50	Dec. 10, 1956	16.50	17.90
Lisbon	do	3.40	3.65	Dec. 3, 1956		15.50
Spain	June 30, 1966	5.00	6.00	Dec. 30, 1963	6.50	7.50
Savona, Naples, and Genoa	Dec. 3, 1962	3.20	4.00	Dec. 10, 1956	17.50	17.75
Trieste and Yugoslavia	do	3.50	4.00	do	19.50	20.00
Casablanca	Oct. 27, 1958		3.50	do		16.80
Rio de Janeiro	May 22, 1967	3.00	3.20	Feb. 19, 1951	15.75	16.75
Buenos Aires	Dec. 28, 1953	4.25	4.50	do	17.25	18.25
Japan	Dec. 3, 1962	5.00	6.00	Dec. 10, 1956	25.00	26.00
Korea [4]	Apr. 28, 1958		8.00	do		28.00

[1] Adriatic ports.
[2] Morocco.
[3] No rates quoted previous to December 1954.
[4] No rates quoted previous to October 1958.

NOTE.—Rodriguez Sons & Co., Inc., is the successor to Battle & Co., Inc.

TABLE N-6.—*Average charter rates for coal from Hampton Roads to certain foreign ports in 1964, by size of shipment*

Size of shipment (long tons)	To Japan		To Italy		To Holland-Belgium	
	Rate	Scale factor [1]	Rate	Scale factor [1]	Rate	Scale factor [1]
Under 10,000	$8.65	116	$5.00	110	(1)	
10,000 to 14,999	8.18	110	4.94	109	$3.64	102
15,000 to 19,999	7.37	99	4.47	98	3.58	101
20,000 to 24,999	7.42	99	4.40	97	3.55	100
25,000 to 34,999	7.03	94	4.15	91	3.49	98
Over 35,000	6.25	84	(1)		(1)	
Average for all shipments	7.44	100	4.54	100	3.56	100

[1] No observations.

Source: Basic data from Chartering Annual, Maritime Research, Inc., New York. Table shown in "An Economic Analysis of the U.S. Export Coal Distribution System," a report submitted to U.S. Department of the Interior, Office of Coal Research by W. B. Saunders & Co., Washington, D.C., on Mar. 25, 1966, p. 72.

TABLE N-7.—*U.S. exports of bituminous coal, actual and projected in certain years*

[In millions of net tons]

Importing country	1939 (prewar)	1957 (postwar peak)	1965	1970[1] Forecast A[2]	1970[1] Forecast B[3]
Latin America (total)[4]	1.4	2.4	2.1	9.4	9.9
Europe:					
Benelux		2.3	2.2	3.3	3.3
France		8.1	2.1	6.6	23.2
Germany, West		15.6	4.7	9.9	23.2
Italy	(5)	9.1	8.9	12.1	12.1
Netherlands		8.9	3.4	4.4	4.4
Subtotal, ECSC	(5)	44.0	21.3	36.4	66.2
United Kingdom		1.8		4.4	24.8
Other Europe	.1	6.2	3.7	4.4	4.4
Subtotal, other Europe	.1	8.0	3.7	8.8	29.2
Total, Europe	.2	52.0	25.0	45.2	95.4
Japan		4.9	7.5	9.5	15.0
Other overseas	.1	1.2	.1	.7	.7
Total overseas	1.6	58.0	34.5	64.7	121.0
Canada	10.0	[6] 20.2	16.3	16.0 [7] (18.0)	17.0 [7] (19.0)
Total, including anthracite	[8] 14.2	80.7	51.1	80.7	137.9
Total, excluding anthracite	11.6	76.4	50.2	77.1	133.9
Coking coal	(9)	(9)		45.3	66.3
Coking coal, percent bituminous	(9)	(9)		58.8	49.5

[1] Includes 4,000,000 tons of anthracite coal.
[2] Assumes some relaxation of restrictions on imports of U.S. coal and subsidizing indigenous coal production.
[3] Assumes a more liberal relaxation of import restrictions and places maximum emphasis on a low-cost energy policy that might be realistically anticipated.
[4] Includes small tonnages of bituminous exported to North American destinations, other than Canada.
[5] Less than 50,000 tons.
[6] Postwar peak exports to Canada were 25,800,000 tons in 1947 and 1948.
[7] Recent developments indicates that original forecast warrants an upward revision as shown in parenthesis. Total U.S. exports as shown in source document.
[8] Breakdown for anthracite by countries is not shown for 1939, 1957, and 1965.
[9] Not available.

Sources: 1939, 1957, and 1965 from U.S. Department of Commerce, but published annually in U.S. Department of the Interior, Bureau of Mines, Minerals yearbook, vol. II, "Fuels" (Washington: Government Printing Office, various years). 1970 from "The Foreign Market Potential for United States Coal," a report submitted to the U.S. Department of the Interior, Office of Coal Research, by Robert R. Nathan Associates, Inc., Washington, D.C., Sept. 1, 1963.

TABLE N-8.—*U.S. exports of bituminous, anthracite, and coke, 1939–66*

[In millions of tons]

Year	Bituminous (1)	Anthracite (2)	Subtotal (3)	Coke (4)	Total (5)
1939	11.6	2.6	14.2	.6	14.8
1940	16.5	2.7	19.2	.8	20.0
1941	20.7	3.4	24.1	.7	24.8
1942	22.9	4.4	27.3	.8	28.1
1943	25.8	4.1	29.9	1.0	30.9
1944	26.0	4.2	30.2	.9	31.1
1945	28.0	3.7	31.7	1.5	33.2
1946	41.2	6.5	47.7	1.2	48.9
1947	68.7	8.5	77.2	.8	78.0
1948	45.9	6.7	52.6	.7	53.3
1949	27.8	4.9	32.7	.5	33.2
1950	25.5	3.9	29.4	.4	29.8
1951	56.7	6.0	62.7	1.0	63.7
1952	47.6	4.6	52.2	.8	53.0
1953	33.8	2.7	36.5	.5	37.0
1954	31.0	2.9	33.9	.4	34.3
1955	51.3	3.2	54.5	.5	55.0
1956	68.6	5.2	73.8	.7	74.5
1957	76.4	4.3	80.7	.8	81.5
1958	50.3	2.3	52.6	.4	52.6
1959	37.3	1.8	39.1	.5	39.6
1960	36.5	1.4	37.9	.4	38.3
1961	35.0	1.4	36.4	.4	36.8
1962	38.4	1.8	40.2	.4	40.6
1963	47.1	3.4	50.5	.5	51.0
1064	48.0	1.6	49.6	.5	50.1
1965	50.2	.9	51.1	.8	51.9
1966	49.3	.8	51.1	1.1	52.2

Source: U.S. Department of Commerce, and published annually in U.S. Department of the Interior, Bureau of Mines Minerals Yearbook, vol. II, Fuels (Washington, Government Printing Office, various years).

TABLE N-9.—*Estimated coal reserves of the world*

Region and country	Billion net tons	Percent of world	Region and country	Billion net tons	Percent of world
North America:			Asia—Continued		
United States	1,660	32.4	India	69	1.4
Others	100	2.0	Japan	11	.2
			Others	9	.1
Total	1,760	34.4			
South America, total	21	.4	Total	1,204	23.5
Europe:			Africa:		
Germany	316	6.2	South Africa (Republic)	75	1.5
United Kingdom	188	3.7	Others	2	
Poland	88	1.7			
Czechoslovakia	21	.4	Total	77	1.5
France	14	.3			
Others	38	.7	Oceania:		
			Australia	64	1.3
Total	665	13.0	Others	1	
U.S.S.R., total	1,323	25.9	Total	65	1.3
Asia:			World total	5,116	100.0
China	1,115	21.8			

Source: Paul Averitt, "Coal Reserves of the United States—A Progress Report Jan. 1, 1960." U.S. Department of the Interior, Geological Survey Bulletin 1131 Wash., D.C.

APPENDIX O

TABLE O–1.—*Stainless steel statistics*

	Year	Amount (tons) Imports	Exports	Shipments	Consumption	Percent of domestic apparent consumption[1]
1. Ingots, blooms, billets, slabs, and sheet bars	1962	7,209	527	33,819	40,501	17.8
	1963	20,231	306	34,962	54,907	36.8
	1964	28,994	89	43,846	72,751	39.8
	1965	44,111	1,218	51,802	94,695	46.6
	1966	44,091	1,780	54,649	96,960	45.5
2. Bars, hot-rolled and cold-finished	1962	412	2,640	110,092	107,864	.4
	1963	1,759	2,830	107,695	106,624	1.7
	1964	2,490	3,068	116,297	115,719	2.2
	1965	4,717	5,131	145,150	144,736	3.3
	1966	7,909	3,397	167,211	171,723	4.6
3. Wire rods	1962	5,921	5	12,635	18,551	32.0
	1963	7,885	33	12,085	19,937	39.5
	1964	8,077	156	7,787	15,708	51.4
	1965	9,074	735	14,061	22,400	40.5
	1966	12,688	313	14,996	27,371	46.5
4. Plates and sheets, hot- and cold-rolled	1962	11,109	28,914	202,363	184 558	6.0
	1963	23,448	51,924	223,680	195,204	12.0
	1964	27,432	65,451	269,264	231,245	11.8
	1965	39,457	67,325	297,131	269,263	10.9
	1966	50,447	28,681	316,554	338,320	14.9
5. Cold-rolled sheets only (included in item 4)	1962	8,281	15,243	143,650	138,398	5.7
	1963	17,348	28,711	154,001	142,638	11.3
	1964	24,985	27,641	172,174	174,518	14.5
	1965	37,256	24,335	189,900	202,821	18.4
	1966	47,228	24,590	206,355	228,993	20.6
6. Strip and flat wire	1962	182	10,117	223,470	218,535	.1
	1963	2,074	15,692	234,096	220,478	.9
	1964	5,238	23,204	278,098	260,132	2.0
	1965	5,858	14,140	303,341	295,059	2.0
	1966	8,967	10,725	300,195	298,437	3.0
7. Round wire	1962	1,498	366	30,877	32,009	4.7
	1963	2,086	382	26,265	27,969	7.9
	1964	5,028	2,160	24,909	27,777	18.1
	1965	6,625	792	27,815	33,648	19.7
	1966	9,156	495	32,889	41,550	22.0
8. Pipe and tube	1962	1,385	1,793	17,844	17,436	7.9
	1963	2,398	2,077	19,232	19,553	12.3
	1964	2,060	2,119	29,988	29,929	6.9
	1965	3,508	3,724	39,767	39,551	8.9
	1966	3,593	3,531	41,849	41,911	8.6
Total	1962	27,716	44,362	631,100	614,454	4.5
	1963	59,881	73,244	658,036	644,672	9.3
	1964	79,319	132,624	770,189	753,261	10.5
	1965	113,350	93,065	879,067	899,352	12.6
	1966	136,851	89,304	928,343	1,016,272	13.5

[1] This figure is reached by dividing imports by consumption. Consumption is the result of imports plus shipments minus exports.

Source: U.S. Department of Commerce and the American Iron and Steel Institute.

TABLE O-2.—*Total stainless steel imports by products*

	1962	1963	1964	1965	1966
Ingots, billets, slabs, etc.	7,209	20,231	28,994	44,111	44,098
Bars	412	1,759	2,490	4,717	7,902
Wire rods	5,921	7,885	8,077	9,074	12,692
Hot-rolled plates and sheets	3,526	7,624	1,835	1,403	1,574
Cold-rolled plates and sheets	7,583	15,824	25,597	38,054	48,872
Strip and flat wire	182	2,074	5,238	5,858	8,972
Round wire	1,498	2,066	5,028	6,625	9,157
Pipes and tubes	1,385	2,398	2,060	3,508	3,595
Total	27,716	59,881	79,319	113,350	136,852

Source: U.S. Department of Commerce.

TABLE O-3.—*Quantity of U.S. imports of stainless steel mill products by country of origin*

[In tons]

Product and country of origin	1962	1963	1964	1965	1966
1. Ingots, billets, slabs, etc.:					
Austria	26	29			1
Belgium			1		
Canada	7,031	19,918	28,838	42,980	43,681
France				22	2
Japan		62	91	743	143
Sweden	12	19	2	9	1
United Kingdom	140	112	60	55	131
West Germany				302	131
All others		91	2		
Total	7,209	20,231	28,994	44,111	44,090
2. Bars, hot rolled and cold finished:					
Austria	27		11	8	17
Belgium					
Canada	111	123	71	152	286
France	42	20	49	198	146
Japan	179	1,578	2,328	4,251	7,359
Sweden	53	7	24	63	90
United Kingdom		29	3		
West Germany		2	4		4
All others				45	
Total	412	1,759	2,490	4,717	7,902
3. Wire rods:					
Austria	14	64	65	147	90
Belgium			34	10	295
Canada	23	20	7	1	1
France	3,240	3,810	2,377	3,044	5,074
Japan	1,511	2,224	2,534	3,252	2,913
Sweden	1,007	1,695	2,982	2,502	3,272
United Kingdom			4	5	13
West Germany	126	72	44		
All others			30	113	1,034
Total	5,921	7,885	8,077	9,074	12,692
4. Plates and sheets, hot rolled:					
Austria				2	4
Belgium					
Canada	60	99	159	235	211
France	253	723	13	12	103
Japan	3,189	6,718	1,532	1,017	1,107
Sweden	21	81	82	30	52
United Kingdom	3			105	35
West Germany		1			63
All others		2	49	2	
Total	3,526	7,624	1,835	1,403	1,574

TABLE O-3.—*Quantity of U.S. Imports of stainless steel products by country of origin*—Continued

[In tons]

Product and country of origin	1962	1963	1964	1965	1966
5. Plates and sheets, cold rolled:					
Austria					
Belgium		8	35		
Canada	66	36	660	692	1,381
France	415	1,650	1,751	1,899	2,072
Japan	7,015	13,789	22,181	34,090	41,242
Sweden	68	323	623	1,123	3,437
United Kingdom	5	4	138	20	419
West Germany	14		135	30	197
All others		14	74	200	123
Total	7,583	15,824	25,597	38,054	48,872
6. Strip and flat wire:					
Austria					
Belgium		4	261	30	42
Canada		28	120	260	724
France		225	859	1,262	1,632
Japan	62	476	1,695	1,999	4,028
Sweden	109	751	1,404	1,379	1,579
United Kingdom	6	475	505	765	820
West Germany	3	115	307	163	116
All others	2		87		11
Total	182	2,074	5,238	5,858	8,972
7. Round wire:					
Austria	24		5	5	1
Belgium	58	105	161	199	383
Canada	4	40	187	128	97
France	39	327	1,076	1,067	906
Japan	747	1,151	2,944	4,268	6,004
Sweden	411	421	583	799	1,538
United Kingdom	76	24	24	29	90
West Germany	139	16	43	93	101
All others		2	5	37	7
Total	1,498	2,086	5,028	6,625	9,157
8. Pipes and tubes:					
Austria					
Belgium				26	
Canada	3	116	1	10	5
France	332	520	399	256	56
Japan	602	997	1,018	2,280	3,077
Sweden	72	364	188	299	227
United Kingdom	374	195	297	363	200
West Germany	2	198	143	172	1
All others		8	14	102	29
Total	1,385	2,398	2,060	3,508	3,595

Source: U.S. Department of Commerce.

TABLE O-4.—*U.S. imports of stainless steel: Quantity, value, and percent of total, by country of origin*

Country of origin	1962	1963	1964	1965	1966
Quantity, short tons:					
Japan	13,305	26,995	34,323	51,900	65,873
Canada	7,298	20,380	30,043	44,458	46,381
Sweden	1,735	3,661	5,888	6,204	10,226
France	4,321	7,275	6,524	7,760	10,011
All other	1,039	1,570	2,541	3,028	4,368
Total	27,716	59,881	79,319	113,350	136,859
Value, thousands of U.S. dollars:					
Japan	9,521.4	17,469.9	24,356.5	34,852.2	43,585
Canada	2,716.4	7,020.7	8,757.1	15,474.1	18,895
Sweden	1,777.9	5,088.9	7,808.2	7,775.9	11,504
France	2,746.5	5,237.2	5,066.9	5,782.9	6,916
All other	1,278.3	3,231.6	3,864.2	4,169.9	5,413
Total	18,040.5	38,074.3	50,027.9	68,055.0	86,313
Quantity, percent of total:					
Japan	48.0	45.1	43.3	45.8	48.2
Canada	26.4	34.0	37.9	39.2	33.8
Sweden	6.3	6.1	7.4	5.5	7.5
France	15.6	12.2	8.2	6.8	7.3
All other	3.7	2.6	3.2	2.7	3.2
Total	100.0	100.0	100.0	100.0	100.0
Value, percent of total:					
Japan	52.8	46.0	49.1	51.2	50.5
Canada	15.1	18.4	17.5	22.8	21.9
Sweden	9.9	13.4	15.6	11.4	13.3
France	15.1	13.8	10.1	8.5	8.0
All other	7.1	8.4	7.7	6.1	6.3
Total	100.0	100.0	100.0	100.0	100.0

Source: U.S. Department of Commerce.

TABLE O-5.—*Value of U.S. imports of stainless steel mill products by country of origin, 1962-66*

[Thousands of dollars]

Product and country of origin	1962	1963	1964	1965	1966
Ingots, billets, slabs, etc.:					
Austria	12	15			1
Belgium			0		
Canada	2,502	6,732	8,157	14,814	17,497
France				13	1
Japan		43	45	188	82
Sweden	10	15	1	7	1
United Kingdom	175	110	45	53	87
West Germany				101	44
All others		22	1		
Total	2,699	6,937	8,249	15,176	17,713
Bars:					
Austria	31		5	12	6
Belgium					
Canada	83	107	56	86	169
France	30	12	31	111	99
Japan	110	1,039	1,521	2,510	3,250
Sweden	32	6	19	61	69
United Kingdom		24	3		7
West Germany		3	2		2
All others				31	
Total	286	1,191	1,637	2,811	3,602
Wire rods:					
Austria	7	96	46	76	69
Belgium			38	11	245
Canada	38	21	4	0	2
France	1,550	1,895	1,619	2,085	3,470
Japan	1,040	1,161	1,491	1,545	1 383
Sweden	683	1,260	2,062	1,700	2,156
United Kingdom			1	3	8

TABLE O-5.—*Value of U.S. imports of stainless steel mill products by country of origin, 1962–66*—Continued

[Thousands of dollars]

Product and country of origin	1962	1963	1964	1965	1966
Wire rods—Continued					
West Germany	117	58	8		
All others			23	77	488
Total	3,022	4,491	5,292	5,497	7,821
Plates and sheets, hot rolled:					
Austria				1	10
Belgium					
Canada	28	58	90	110	119
France	197	511	11	6	51
Japan	2,627	5,155	1,149	656	707
Sweden	80	132	58	24	45
United Kingdom	2			15	23
West Germany		4			10
All others		5	18	0	
Total	2,934	5,865	1,326	812	965
Plates and sheets, cold-rolled:					
Austria					
Belgium		7	15		
Canada	52	28	213	222	582
France	310	1,234	1,288	1,270	1,375
Japan	3,760	7,403	15,589	22,391	27,327
Sweden	87	414	508	958	2,251
United Kingdom	4	3	90	13	324
West Germany	11		65	14	90
All others		12	50	127	91
Total	4,224	9,101	17,818	24,995	32,040
Strip and flat wire:					
Austria			0		
Belgium		4	26	3	7
Canada		12	57	93	342
France		151	498	793	960
Japan	69	325	1,020	1,243	2,364
Sweden	297	2,164	3,981	3,419	4,227
United Kingdom	6	1,241	1,314	1,411	1,877
West Germany	3	285	362	172	113
All others	13	4	64		12
Total	388	4,186	7,322	7,134	9,902
Round wire:					
Austria	20		7	7	1
Belgium	84	143	185	253	465
Canada	10	33	161	140	173
France	34	279	706	664	541
Japan	811	945	2,235	3,400	5,048
Sweden	448	594	813	1,126	2,369
United Kingdom	17	38	35	42	106
West Germany	109	35	57	95	148
All others		12	10	54	14
Total	1,533	2,079	4,208	5,841	8,865
Pipes and tubes:					
Austria					
Belgium				3	
Canada	3	29	18	8	11
France	625	1,155	914	840	419
Japan	1,104	1,424	1,486	2,859	3,424
Sweden	140	508	362	483	386
United Kingdom	658	661	797	850	614
West Germany	8	198	189	251	3
All others		249	406	492	548
Total	2,538	4,219	4,172	5,786	5,406

Source: U.S. Department of Commerce.

TABLE O-6.—*Total stainless steel imports, by value*

[Thousands of dollars]

	1962	1963	1964	1965	1966
Ingots, billets, etc	2,700	6,938	8,249	15,176	17,713
Bars	286	1,191	1,638	2,811	3,602
Wire rods	3,436	4,491	5,291	5,497	7,821
Hot rolled plates and sheets	2,935	5,866	1,327	812	965
Cold rolled plates and sheets	4,224	9,102	17,818	24,995	32,040
Strip and flat wire	388	4,187	7,323	7,135	9,902
Round wire	1,533	2,080	4,209	5,842	8,865
Pipes and tubes	2,538	4,219	4,173	5,787	5,405
Total	18,040	38,074	50,028	68,055	86,313

Source: U.S. Department of Commerce.

TABLE O-7.—*Base prices of stainless steel products in the United States, 1960–67*

[In cents per pound]

	April 1960	April 1964	April 1967
Type 302:			
Sheets	52.00	42.50	41.75
Strip, cold-rolled	52.00	39.75	41.75
Plates	42.25	38.75	38.00
Bars	46.75	46.75	51.50
Type 304:			
Sheets	55.00	42.50	41.75
Strip, cold-rolled	55.00	39.75	41.75
Plates	45.75	38.75	38.00
Bars	49.50	46.75	51.50
Type 316:			
Sheets	80.75	66.75	65.00
Strip, cold-rolled	80.75	66.75	65.00
Plates	71.75	61.55	58.50
Bars	75.75	75.75	74.00
Type 416:			
Sheets	48.25	48.25	48.25
Strip, cold-rolled	42.50	42.50	42.50
Plates	31.25	31.25	31.75
Bars	35.50	35.50	38.00
Type 430:			
Sheets	40.75	38.25	38.25
Strip, cold-rolled	40.75	38.75	38.25
Plates	31.00	31.00	31.00
Bars	35.50	35.50	38.00

Source: Iron Age.

TABLE O-8.—*Tool steel statistics*

	Year	Amount (tons)				Penetration (percent)
		Imports	Exports	Shipments	Consumption	
High-speed tool steel bars	1962	748	477	18,429	18,710	4.0
	1963	1,280	574	20,666	21,372	6.0
	1964	1,664	565	16,068	17,157	9.7
	1965	2,392	249	18,564	20,707	11.6
	1966	3,572	288	24,600	27,884	12.8
Total tool steel	1962	3,612	2,230	86,283	87,665	4.1
	1963	6,146	2,304	86,143	89,895	6.8
	1964	6,576	3,605	102,379	105,350	6.2
	1965	8,849	1,582	118,242	125,509	7.1
	1966	17,614	1,418	121,345	137,541	12.8

Source: U.S. Department of Commerce and the American Iron and Steel Institute.

TABLE O-9.—*U.S. imports of tool steel mill products by product and country of origin, 1962–66*

[In tons]

Product and country of origin	1962	1963	1964	1965	1966
Bars, high-speed tool steel, hot-rolled:					
Austria	37	165	263	281	537
Canada	15	89	275	728	216
France		21			10
Japan	88	155	331	495	561
Sweden	196	118	245	198	465
United Kingdom	9	21	80	12	20
West Germany			4	43	41
All others		13	2	1	57
Total	345	582	1,200	1,758	1,907
Bars, high-speed tool steel, cold-rolled:					
Austria	35	312	366	523	798
Canada	105	108	33	15	706
France					
Japan	22	53	53	36	37
Sweden	238	211	10	28	7
United Kingdom		9	1	1	16
West Germany	1	5		31	2
All others	2		1		103
Total	403	698	464	634	1,669
Bars, tool steel, hot-rolled:					
Austria	1,202	789	670	1,589	2,476
Canada	372	1,482	793	963	1,308
France	22	267	241	240	370
Japan	6	113	218	84	891
Sweden	765	1,126	1,828	2,181	3,109
United Kingdom	68	115	224	285	299
West Germany	25	109	229	194	721
All others	7		10	20	125
Total	2,467	4,001	4,213	5,556	9,289
Bars, tool steel, cold-rolled:					
Austria	177	99	56	207	152
Canada	55	173	18	11	337
France		11	6	1	
Japan		201	78	69	114
Sweden	35	131	35	26	70
United Kingdom	5	90	198	127	59
West Germany	10	12	26	1	29
All others			4		29
Total	282	717	421	442	770
Plates and sheets, high-speed tool steel:					
Austria			30	26	32
Canada					45
France	9	14	59	72	338
Japan					7
Sweden					
United Kingdom				19	
West Germany	61	26	1	11	15
All others			5		
Total	70	40	95	128	437
Round wire, high-speed tool steel:					
Austria		29	23	1	
Canada	35	19	27	144	161
France					
Japan				3	10
Sweden	2	44	87	143	57
United Kingdom	1	1		3	9
West Germany	7	15	46	37	141
All others					
Total	45	108	183	331	378

Source: U.S. Department of Commerce.

TABLE O-10.—*Quantity of U.S. imports of tool steel, by country of origin, 1962–66*

Product and country of origin	1962		1963		1964		1965		1966	
	Tons	Percent of total	Tons	Percent of total	Tons	Percent of total	Tons	Percent of total	Tons	Percent of total
Bars, high speed tool steel:										
Austria	72	9.6	477	37.3	629	37.8	804	33.6	1,335	37.3
Canada	120	16.1	197	15.4	308	18.5	743	31.1	922	25.8
Japan	110	14.7	208	16.3	384	23.1	531	22.2	598	16.7
Sweden	434	58.0	329	25.7	255	15.3	226	9.5	472	13.2
United Kingdom	9	1.2	30	2.3	81	4.9	13	.5	36	1.0
All others	3	.4	39	3.0	7	.4	75	3.1	215	6.0
Total	748	100.0	1,280	100.0	1,664	100.0	2,392	100.0	3,576	100.0
Bars, tool steel:										
Austria	1,379	50.1	888	18.8	726	15.7	1,796	29.9	2,628	26.1
Canada	427	15.6	1,655	35.1	811	17.5	974	16.1	1,645	16.3
Japan	6	.2	314	6.7	296	6.4	153	2.6	995	9.9
Sweden	800	29.1	1,257	26.6	1,863	40.2	2,207	36.8	3,179	31.6
United Kingdom	73	2.7	205	4.3	422	9.1	412	6.9	358	3.5
All others	64	2.3	399	8.5	516	11.1	456	7.6	1,274	12.6
Total	2,749	100.0	4,718	100.0	4,634	100.0	5,998	100.0	10,079	100.0
Plates and sheets, high speed tool steel:										
Austria	------	------	------	------	30	31.6	26	20.3	32	7.3
Canada	------	------	------	------	------	------	------	------	45	10.3
Japan	------	------	------	------	------	------	------	------	7	1.6
Sweden	------	------	------	------	------	------	------	------	------	------
United Kingdom	------	------	------	------	------	------	19	14.8	------	------
France	9	12.9	14	35.0	59	62.1	72	56.3	338	77.4
West Germany	61	87.1	26	65.0	1	1.0	11	8.6	15	3.4
All others	------	------	------	------	5	5.3	------	------	------	------
Total	70	100.0	40	100.0	95	100.0	128	100.0	437	100.0
Round wire, high speed tool steel:										
Austria	------	------	------	------	------	------	1	.3	------	------
Canada	35	77.8	19	17.6	27	14.8	144	43.5	161	42.6
Japan	------	------	------	------	------	------	3	.9	10	2.6
Sweden	2	4.4	44	40.7	87	47.5	143	43.2	57	15.1
United Kingdom	------	------	------	------	------	------	3	.9	9	2.4
West Germany	7	15.6	15	13.9	46	25.1	37	11.2	141	37.3
All others	1	2.2	30	27.8	23	12.6	------	------	------	------
Total	45	100.0	108	100.0	183	100.0	331	100.0	378	100.0
All products:										
Austria	1,451	40.2	1,365	22.2	1,385	21.1	2,627	29.7	3,995	26.5
Canada	582	16.1	1,871	30.5	1,146	17.4	1,861	21.0	2,773	18.4
Japan	116	3.2	522	8.5	680	10.3	687	7.8	1,685	11.2
Sweden	1,236	34.2	1,630	26.5	2,205	33.5	2,576	29.1	4,233	28.0
United Kingdom	82	2.3	235	3.8	503	7.7	447	5.0	403	2.7
All others	145	4.0	523	8.5	657	10.0	651	7.4	1,981	13.2
Total	3,612	100.0	6,146	100.0	6,576	100.0	8,849	100.0	15,070	100.2

Source: U.S. Department of Commerce.

APPENDIX P

TABLE P-1.—*Steel industry employees, raw steel production, and tons produced per employee, 1946–66*

Year	All employees, SIC 331 (thousands)	Raw steel production (million net tons)	Tons of raw steel (per employee)
1966	651.2	134.1	205.9
1965	660.4	131.5	199.1
1964	629.4	127.1	201.9
1963	589.9	109.3	185.3
1962	592.8	98.3	165.8
1961	595.5	98.0	164.6
1960	651.4	99.3	152.4
1959	587.3	93.4	159.0
1958	601.1	85.3	141.9
1957	719.9	112.7	156.5
1956	706.6	115.2	163.0
1955	706.9	117.0	165.4
1954	645.5	88.3	136.8
1953	726.1	111.6	153.7
1952	638.0	93.2	146.1
1951	714.4	105.2	147.3
1950	674.4	96.8	143.5
1949	610.1	78.0	127.9
1948	678.6	88.6	130.6
1947	655.8	84.9	129.5
1946	593.1	66.6	112.3

Sources: All employees, U.S. Department of Labor, Bureau of Labor Statistics, "Raw Steel Production: AISI Annual Statistical Reports."

TABLE P-2.—*Labor turnover rates, total manufacturing versus steel industry, per 100 employees*

[Annual averages, 1958–66]

Year	Accession rates				Separation rates					
	Total		New hires		Total		Quits		Layoffs	
	Manufacturing	Steel	Manufacturing	Steel	Manufacturing	Steel	Manufacturing	Steel	Manufacturing	Steel
1st quarter, 1967 [1]	3.8	2.0	2.8	0.8	4.3	2.6	1.7	0.6	1.4	1.1
1966	5.0	2.9	3.8	1.8	4.6	2.5	2.6	1.1	1.2	.5
1965	4.3	2.4	3.1	1.4	4.1	2.9	1.9	.9	1.4	1.2
1964	4.0	2.8	2.6	1.5	3.9	1.8	1.5	.6	1.7	.6
1963	3.9	3.1	2.4	.7	3.9	2.8	1.4	.4	1.8	1.7
1962	4.1	2.6	2.5	.5	4.1	3.7	1.4	.3	2.0	2.8
1961	4.1	3.5	2.2	.5	4.0	2.5	1.2	.3	2.2	1.6
1960	3.8	2.0	2.2	.4	4.3	4.3	1.3	.3	2.4	3.4
1959 [2]	4.2	3.3	2.6	1.6	4.1	1.4	1.5	.5	2.0	.4
1958	3.6	2.8	1.7	.3	4.1	3.3	1.1	.3	2.6	2.6

[1] Estimated.
[2] 7-month average.

NOTE.—Steel includes Standard Industrial Classification 331 "Blast Furnaces and Basic Steel Products."

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Employment and Earnings Statistics for the United States 1909–66," Bulletin No. 1312-4, issued October 1966.

TABLE P-3.—*Steel imports as percent of United States market compared to U.S. unemployment rate, steel industry layoffs, and new hiring, 1958-66*

[In percent]

Year	Steel imports as percent of U.S. market [1]	U.S. unemployment rate	Average annual layoffs, SIC 331 [2]	Average annual new hires, SIC 331
1966	11.9	3.9	0.5	1.8
1965	11.2	4.6	1.2	1.4
1964	7.6	5.2	.6	1.5
1963	7.7	5.7	1.7	.7
1962	5.8	5.6	2.8	.5
1961	4.8	6.7	1.6	.5
1960	4.7	5.6	3.4	.4
1959	6.3	5.5	.4	1.6
1958	2.8	6.8	2.6	.3

[1] U.S. market (appraisal consumption) equals domestic shipments plus net imports.
[2] SIC 331 includes blast furnace and basic steel products classifications.

Source: U.S. Department of Labor, "Employment and Earnings Statistics for the U.S." 1909-66, October 1966, Bulletin No. 1312-4, and "Employment and Earnings," vol. 13, No. 9, March 1967.

TABLE P-4.—*Trend of U.S. imports and domestic producers' prices for selected steel mill products*

	Imports (thousands of net tons)						BLS price indexes for related steel products, as of May 1967 (1957–59=100)	
	1957		1959		1966			
	Tons	Percent of apparent consumption	Tons	Percent of apparent consumption	Tons	Percent of apparent consumption		
Wire rods	54	5.4	448	31.5	1,150	45.9	Wire rods, carbon	101.4
Plates	22	.3	291	4.8	951	9.5	Plates, carbon, A-7	107.3
Structural shapes	237	3.6	497	11.4	906	13.0	Structural shapes	110.1
Tool steel [1]	(2)	(2)	(2)	(2)	23	16.2	Bars, tool steel, alloy, die	114.6
							Bars, tool steel, cold finished, alloy	107.5
Bars, hot rolled	26	.3	210	3.0	553	5.7	Bars, hot rolled, carbon	108.4
Bars, reinforcing	160	6.7	852	28.3	673	17.1	Bars, reinforcing	95.7
Sheets, hot rolled	23	.3	180	2.3	1,948	16.2	Sheets, hot rolled, carbon	107.7
Sheets, cold rolled	2	0	30	.2	1,170	6.9	Sheets, cold rolled, carbon	108.0
Sheets, galvanized [3]	---	---	115	4.1	503	9.6	Sheets, galvanized, carbon	112.0
Sheets, stainless [4]	(2)	(2)	(2)	(2)	49	18.6	Sheets, cold rolled, stainless	80.3
Steel pipe and tubing	191	1.9	553	6.4	1,058	10.6	Pipe, black, carbon	100.4
							Pipe, galvanized, carbon	100.6
							Oil well casing, carbon	112.5
							Pressure tubing, carbon	97.0
Steel wire, round and shaped	61	2.3	199	6.8	441	13.7	Drawn wire, carbon	103.8
Wire nails	135	23.4	305	43.9	275	45.8	Nails, wire, 8D common	98.0
Barbed wire	64	52.1	78	61.9	77	31.4	Barbed wire, galvanized	101.0
Tin plate	---	---	---	---	125	2.4	Tin plate, electrolytic	106.7
Total, steel mill products	1,154	1.5	4,396	6.1	10,753	10.9	Total, steel mill products	106.7

[1] Imports not separately identified in 1957 and 1959. Statistics are as follows in more recent years: 1964—14,000 tons equal to 12.3 percent of apparent consumption; 1965—19,000 tons equal to 14.1 percent of apparent consumption.

[2] Not available.

[3] Imports in 1957 were less than 1,000 tons.

[4] Imports not separately identified in 1957 and 1959. Statistics are as follows in more recent years: 1964—27,000 tons equal to 15.4 percent or apparent consumption; 1965—39,000 tons equal to 16.2 percent of apparent consumption.

Note: The import data shown cover all types, sizes and grades of the product imported, while the price indexes cover only the specific type, size or grade of the product for which BLS compiles price data. Apparent consumption equals net shipments of the U.S. industry, plus imports, minus exports.

Source: Bureau of Census, foreign trade; American Iron & Steel Institute—shipments for calculation of percent of consumption; Bureau of Labor Statistics, price indexes.

TABLE P-5.—*Tonnage of imports and exports, total steel mill products, 1957-66*

Year	Imports			Exports		
	Millions of tons	Percentage of U.S. consumption	Percentage of U.S. shipments	Millions of tons	Percentage of U.S. consumption	Percentage of U.S. shipments
1967 (8 months)	7.2	11.6	12.9	1.2	1.9	2.1
1966	10.8	10.9	11.9	1.7	1.7	1.9
1965	10.4	10.3	11.2	2.5	2.5	2.7
1964	6.4	7.3	7.6	3.4	3.9	4.1
1963	5.4	6.9	7.7	2.2	2.8	2.9
1962	4.1	5.6	5.8	2.0	2.8	2.9
1961	3.2	4.7	4.8	2.0	3.0	3.0
1960	3.4	4.7	4.7	3.0	4.2	4.2
1959	4 4	6.1	6.3	1.7	2.3	2.4
1958	1.7	2.9	2.8	2.8	4.8	4.7
1957	1.2	1.5	1.4	5.3	7.1	6.7

INDEPENDENT WIRE DRAWERS ASSOCIATION,
Washington, D.C., May 31, 1967.

Dr. ROBERT M. WEIDENHAMMER,
Senate Finance Committee Staff,
New Senate Office Building,
Washington, D.C.

DEAR DR. WEIDENHAMMER: I am pleased to enclose an analysis of an economic questionnaire concerning the withdrawal of list prices on hot-rolled carbon steel wire rods by the United States Steel Corp. and other domestic steel mills on the wire rod purchasing patterns of Independent Wire Drawers Association members.

I think that this paper will be of particular significance to your study of the imported steel situation. The members of the Independent Wire Drawers Association do not feel the domestic steel industry has made a genuine attempt to meet imported wire rod prices. In some areas, the domestic mills are definitely wooing particular independent wire drawers. In other areas there is no serious attempt to gain their business.

Probably the most significant factor concerning the reluctance of independent wire drawers to convert to domestic wire rod is the general superiority of imported wire rod. This is particularly true on the west coast because the Japanese rod is definitely of superior quality while the domestic wire rod produced for the west coast is unquestionably of inferior quality. Quality is less of a factor on the east and gulf coasts because the domestic rod is generally considered acceptable. Even so, certain German and Belgian mills produce a superior wire rod at a competitive price.

I would be most pleased to discuss this subject further with you or the members of your staff.

Sincerely yours,

ALAN D. HUTCHISON,
General Counsel.

THE U.S. INDEPENDENT WIRE DRAWING INDUSTRY AND STEEL WIRE ROD IMPORTS

(An analysis of an economic questionnaire concerning the withdrawal of list prices on hot-rolled carbon steel wire rods by the United States Steel Corp. and other domestic steel mills on the wire rod purchasing patterns of Independent Wire Drawers Association members)

On March 1, 1966, the United States Steel Corp. announced it was withdrawing its published prices on hot-rolled low-carbon steel wire rods in order to meet foreign wire rod import competition directly in the marketplace. This action was followed by several other major domestic steel mills.

The Independent Wire Drawers Association, whose members consume most of the foreign wire rod imported into the United States, publicly commended the domestic steel industry on its decision to reduce rod prices. The president of the Independent Wire Drawers Association, Mr. F. C. Muntwyler, testified on this price reduction before the House Committee on Education and Labor, General Subcommittee on Labor, on September 21, 1966 as follows:

"Most independent wire drawers were not in a position to place large orders with domestic steel companies at the time the price reduction was announced because of prior commitments to foreign suppliers; but independent wire drawers are now placing orders with domestic steel companies for a portion of their wire rod requirements.

"At a recent meeting of the board of directors of the Independent Wire Drawers Association it was agreed as a matter of general principle that independent wire drawers should attempt to purchase at least half of their wire rod requirements from domestic mills and the other half from foreign sources. Most independent wire drawers are extremely reluctant to place all of their business with the domestic mills, since they have established excellent business relationships with many foreign steel mills who supplied them in times of dire need."

In order to determine the impact of the United States Steel wire rod published price withdrawal on the wire rod purchasing patterns of its membership, the Independent Wire Drawers Association (IWDA) recently sent a confidential economic questionnaire to its members. *The results of this questionnaire indicate that less than one-half of the independent wire drawing firms affiliated with the IWDA purchased domestic wire rod since March 1, 1966.* The amount of domestic wire rod purchased varied from token purchases to, in one instance, 100 percent of the firm's wire rod requirements. Most of the firms purchasing domestic wire rod are located in the Midwestern and Central States areas where inland freight costs make imported wire rod less competitive with domestic wire rod than in the coastal regions. *Average delivered price of domestic rod purchased was $110 per short ton.*

More than half of the independent wire drawing firms affiliated with the IWDA relied exclusively on imported wire rod. East and gulf coast firms purchased almost all of their wire rod from Western Europe, while west coast firms purchased their wire rod primarily from Japan with some purchases from Australia. *Average delivered price of imported rod purchased was $98 per short ton.*

Most importantly, more than half of the independent wire drawing firms affiliated with the IWDA thought imported wire rod is superior in quality to domestic wire rod. This was of particular significance on the west coast.

Ordinarily, U.S. steel consumers will shift from imported to domestic steel when the domestic price is within 10 to 15 percent of the imported price. But it appears the shift did not take place in wire rod because the domestic reductions are limited to certain geographic areas and certain sizes. The poorer quality of domestic wire rod is also an important factor.

Here are some typical answers to the question: Have the price reductions in wire rod initiated by United States Steel Corp. and other integrated domestic producers had any significant effect on your wire rod purchasing patterns?

"No. We have been contacted by several domestic producers who indicated a desire to sell us wire rod at a negotiated price, but no one yet quoted us a definite price or a definite schedule of deliveries.

"The priced reductions offered by integrated domestic producers has had no effect on our purchasing patterns since the prices offered by these producers does not have enough spread between the cost of wire rods and their selling price of finished products to allow an independent producer to convert the wire rod and then compete with the finished goods.

"No. United States Steel Corp. will only negotiate prices on 7/32-, 1/4-, and 5/16-inch wire carbon rods.

"We plan to purchase about 25 percent of our requirements from United States Steel. However, may have to change this thinking—notice some hedging and inching up of prices. Will not offer full size ranges of rod. We are afraid to commit greater tonnages.

"No. Have not been quoted any firm prices. Indicated prices are still higher than European.

"No, they have not been able to offer delivery at competitive prices. We have had no offers to negotiate rod prices. On certain sizes, prices have been made competitive (within 5 to 10 percent), as a result some tonnage was shifted back to American mills. This was done only where we were sure of getting the quantity and delivery needed. So far this has been satisfactory but because of the past history of American mills in not meeting competition with price and quality, we do not plan to drop our foreign suppliers.

"No, United States Steel is not interested in competing in this area at this time. Bethlehem is almost $3 per hundredweight higher than imports in this area.

"No. Not priced competitively in our area. Limited to quality and size of rod available."

Contrary to the oft repeated statements of domestic steel industry spokesmen, foreign wire rod prices were not reduced during the past year. Rather, the foreign rod prices remained reasonably firm (see table attached).

The membership of the Independent Wire Drawers Association agreed unanimously that any restriction or additional tariff levy placed on imported wire rod would have a disastrous effect on their business. Most thought it would force them out of business.

Imported wire rod prices

	European rod (f.o.b. Antwerp, per metric ton, Thomas quality)	Japanese rod (f.o.b. Japan, per metric ton, open hearth quality)
1966:		
January	$84.50	$94.50
February	84.50	93.00
March	85.50	89.00
April	85.50	89.00
May	85.50	89.00
June	85.50	87.50
July	82.00	93.00
August	82.38	93.00
September	82.50	93.00
October	82.50	93.00
November	82.50	93.00
December	83.00	85.00
1967:		
January	83.50	86.00
February	84.00	90.00
March	84.50	90.00

Source: American metal market.

Because the answers received by Mr. Hutchinson were confidential, the committee staff could not appraise Mr. Hutchinson's summary but had to let it stand as a strong expression of opinion opposing the temporary levy requested by the U.S. steel industry:

"The membership of the Independent Wire Drawers Association agreed unanimously that any restriction or additional tariff levy placed on imported wire rod would have a disastrous effect on their business. Most thought it would force them out of business."

In addition to the traditional argument about "industrial distribution" the "quality" factor is used:

"Probably the most significant factor concerning the reluctance of independent wire drawers to convert to domestic wire rod is the general superiority of imported wire rod. This is particularly true on the west coast. * * *"

Some efforts have been made to verify this quality factor but in the time available, they could not possibly come up with unbiased results.

Meeting Foreign Competition in Wire Rods

(Reply to committee staff inquiry by a major U.S. steel producer)

There has been much criticism of the domestic steel industry's response to the impact of foreign competition. This is particularly true in the case of imports of low-carbon wire rods which are typically used as an intermediate product in the further manufacturing of wire and many end use products made of wire. (See, for example, "Steel Imports and Vertical-Oligopoly Power" by Walter Adams and Joel Dirlam, American Economic Review, September 1964.) Wire and wire products are manufactured both by integrated basic steel producers and also by a large group of small manufacturers who purchase wire rod, mostly five-sixteenths of an inch and finer, for further processing. This latter group is known in the trade as converters.

In addition, wire rods, in sizes generally exceeding five-sixteenths of an inch, are also purchased by other product manufacturers and put to a variety of uses, including volume welding operations and the production of fasteners and screw machine products. These industrial uses of wire rods in most cases require special quality characteristics and constitute a market distinct from converter requirements. As a result, the impact of wire rod imports has been sharper in the much larger converter market where quality requirements are considerably lower.

At least one wire rod producer, in attempting to meet import competition for the market constituted by the wire and wire products or "converter" industry, in early 1966 withdrew its published price lists for low-carbon wire rod of five-sixteenths of an inch and smaller diameter. Since that date the domestic producer has negotiated wire rod sales with individual customers in the converter group. The terms of each sale have reflected the competitive offers of foreign suppliers, although the specific prices have varied from case to case. In general, it has not been necessary for the domestic producer to match the importer's offer. The modest premium obtained above the importer's price has reflected the general preference by wire rod converters for domestic suppliers who are in closer proximity and provide greater assurance of supply and service.

The results of this new approach were that the domestic producer regained some wire rod business in the small diameter range. The net mill proceeds realized from these sales varied, depending on the location of the customer and the competitive offers by foreign suppliers. However, the average proceeds on such sales fell sharply.

APPENDIX Q

An Approach to the Study of Steel Imports Through Computer Simulation

This paper has been prepared by the Advanced Systems Development Division, IBM Corp., after consultations with the committee staff; it does not constitute a proposal by IBM, nor does it commit IBM to make a proposal in regard to the topic discussed. The committee staff is aware of the desirability of pretesting policy decisions affecting foreign trade through quantitative analysis, if feasible, but the staff also is aware that the whole gamut of nontrade barriers and export subsidies largely defies pure quantitative analysis and therefore computer simulation.

1. INTRODUCTION

The purpose of this paper is to describe an approach to studying the complex question of steel imports by employing the technique of computer simulation. The analytical power of simulation lies in its ability to draw a large number of dynamic considerations together in a single, unified conceptual framework. These considerations are expressed in terms of mathematical relationships that have been extracted from a study of real world data. In unified form, they constitute a model which can be mathematically manipulated so that the effects of a postulated change in one or more of the elements of the situation can be determined for the other elements. The working through of these changes is what is meant by simulation. The model is thus an abstract representation of reality, and the simulation is a paradigm of the effects that seem likely to occur in reality under various specified conditions.

The central consideration which this approach seeks to take into account is that of interrelationship. In the world of economic reality in particular, a change in one factor frequently initiates a whole succession of changes regarding other factors; and it is often the case that many of these factors "feed back," either simultaneously or at a later point in time, to create still further changes in each other. Thus, in addition to interrelationship, there are the facts of complexity, change, and time to be dealt with. Where these are of a large order, involving many different variables represented by many different series of data, it becomes not merely convenient but also necessary to resort to a computer to perform the required calculations. The results printed out by the computer are the results that are expected to occur in reality if the same conditions apply.

The conditions of greatest interest that are deliberately varied in the model to get different results are called the "policy variables"—the representations of the factors that would be under human control in the real world. For example, the level of taxation is not something that is built into society. It is, at least in principle, within the competence of legislators to change. In contradistinction to this, the level of consumption spending, given a certain level of disposable income, is not under similar control. If legislators wish to control consumption, they have to do so by affecting the rate of taxation rather than by operating on consumption directly. Accordingly, in a model seeking to deal with these economic factors, the rate of taxation would be a "policy variable," while consumption would not.

Quite clearly, how well the computer results will foreshadow reality is a matter of how accurately reality relationships have been captured in a model—and of whether the right ones have been captured. There is, in this sense, no magic in the computer. What it computes can be no better than the relationships and the data with which it has been supplied to make the computations. What the computer contributes in a practical sense is the gains that can be derived from having a unitary scheme, for a host of factors studied piecemeal rarely will yield the same insights and understanding that they will when their effects on each other can be taken into account.

The application of the technique of computer simulation to a study of steel imports into the United States is but a means to an end. The end itself is an increased understanding of the conditions generating imports and their significance for the domestic steel industry, for the rest of the economy, and for the balance-of-payments position. To the extent that these gains in knowledge can be realized, they would be of value to both those who merely wish to assay the probable course of future events and those who wish to influence it through policy.

There are, however, inherent difficulties connected with any study of steel imports whether or not it relies on simulation. These are discussed in the pages that follow, so that the reader may gain a fair notion of the limitations as well as the advantages that a study employing simulation would afford. The point is made for this particular task that, in fact, no single model can be constructed which will embrace all the aspects of interest. In this pass, the recommendation is made that several models be employed and that the results derived from one be used to condition the results of the other. This falls short of the complete conceptual unity that is the theoretical ideal. Nevertheless, it appears to offer a higher degree of unity than it has been possible to obtain hitherto, and it is believed that the insight and understanding this would yield would be of sufficient practical importance to make the undertaking worthwhile.

2. FACTORS AFFECTING STEEL IMPORTS

There can be no question but that steel imports have increased substantially in the last decade. This phenomenon has been the result of numerous factors, not of any one alone. An analysis of the factors "determining" steel imports would be prerequisite to the development of any simulation model. This would not only statistically isolate the factors but also indicate their relative importance. It would involve, at the minimum, a systematic investigation of cost-price factors, nonprice factors, and demand factors, along with their quantitative impact on steel imports.

There are a number of theoretical notions concerning steel imports which may be relevant in this connection. These would have to be examined and tested in the light of the actual data. One theme that has been recurrent about imports in general and steel imports in particular is that domestic price increases have not only reduced U.S. exports but have also been a leading element contributing to increased imports. Thus, the argument goes, there has been a deterioration in the U.S. competitive position in world steel markets. Admittedly, defining "competitiveness" is no simple task, but the notion is commonly associated with cost conditions.[1] Accordingly, the investigation of cost-price data[2] becomes an essential part of the analysis of steel imports. This, in turn, raises the question of how adequate the data are to permit such an investigation. For example, Assistant Secretary of Commerce Trowbridge has testified that "the hard core of the facts needed to judge this situation—those on foreign and domestic product costs and pricing—are not now available and probably are difficult to obtain. Without at least some data of this kind, however, a study would be inconclusive."[3]

While, in general, Secretary Trowbridge's statement may be accepted as a responsible opinion, it should be pointed out that data limitations are not unique to the case of steel imports. They are inherent in most areas of economic research, but this fact in and of itself has not prevented fruitful work from being carried out. It perhaps gets closer to the heart of the matter to say that, until a problem has been conceptualized in specific form, it is not possible to define the actual severity of the data limitations, and, indeed, the limitations that apply to one way of looking at the problem do not necessarily apply to another. Frequently, an imaginative analysis can circumvent some of the problems. Hence, although data that are inadequate or not in the exact form dictated by a given conceptual framework add another dimension to an already complex problem, it is difficult to feel that this constitutes an insurmountable obstacle.

Another factor that has been stressed in explaining steel imports is the rapid increase in foreign productive capacity that has taken place. The development of new capacity is related to the rapid increase in steel exports from Japan, for example. The presence of this capacity factor does not mean that cost-price factors can be neglected, though, for there is evidence to suggest that changes in relative prices were a necessary condition for enabling the Japanese to compete in world markets.[4]

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[1] See Richard N. Cooper, "The Competitive Position of the United States," in "The Dollar in Crisis," ed. S. E. Harris (New York: Harcourt, Brace & World, Inc., 1961), p. 142.

[2] Cost-price factors include such things as raw material costs, labor costs, profits, depreciation, interest costs, transportation and tariff costs, and if, possible, actual selling prices.

[3] Statement by the then Assistant Secretary of Commerce for Domestic and International Business, Alexander B. Trowbridge, in hearings before the Senate Finance Committee on Steel Imports, Washington, 1966, p. 23.

[4] See Bela Balassa, "Recent Developments in the Competitiveness of American Industry and Prospects for the Future," in Factors Affecting the United States Balance of Payments, U.S. Congress, Joint Economic Committee (Washington, D.C., 1962), p. 34.

Thus far the discussion has concerned those factors generally associated with supply conditions. Clearly, demand considerations have an effect on steel imports. If one inspects a graph of seasonally adjusted, quarterly steel imports for the period 1953–65, one is immediately struck by the pattern of cyclical variations that it reveals. Moreover, one finds imports at a higher level after each cycle than they were after the previous cycle.

A priori, steel imports might be expected to increase during periods of peak domestic economic activity. In the upward phase of the business cycle, when output, income, and prices—factors which affect the demand for imports—are rising, limitations on productive capacity would be increasing as well. These latter limitations, and the lengthening of delivery times usually associated with them, would have the dual effect of stimulating domestic users of steel to seek foreign supply sources and reducing the supply of domestic steel available for export. Another nonprice factor possibly affecting the trend toward foreign supply is the threat or actual occurrence of domestic steel strikes.

It is evident that what is important regarding the relation of cost-price factors to steel imports is the relative, rather than the absolute values of the factors. The same is true of demand factors. The analysis of steel imports not only needs to take into account domestic income, output, prices, et cetera, but the foreign counterparts of these items. This aspect of the matter becomes crucial when the United States is in a different phase of the business cycle than the nations with which it has major trade connections. Just as high levels of domestic economic activity tend to increase the demand for imports while reducing the demand for exports, this same phenomenon abroad, say in Japan, would tend to increase the demand there for imports, many of which would come from the United States, and at the same time to curtail the supply of their exports to world markets, including the markets in this country. In short, business cycle developments abroad influence the supply of U.S. imports and the demand for U.S. exports. The end result is that steel imports into the United States have to be regarded as a function of numerous cost-price factors and of the relative positions of various demand factors as well.

This discussion of factors statistically "determining" steel imports has been highly simplified. It has, among other things, omitted consideration of the speed with which changes in one of them may induce changes to occur in others. Thus in actuality, while changes in wages or raw materials may lead to changes in prices, they will do so only after a time delay. In similar fashion, there is a delay before changes in steel prices will show an impact on imports. The nature of these delays has to be determined and their magnitudes quantified in order to permit them to be incorporated into the analysis.

It is the very multiplicity of these factors plus the consideration of time delays that makes it essential that they be viewed from the standpoint of their having joint effects. In this regard, the categorization of variables according to the notions of "supply" and "demand" should not be misinterpreted. Such categorization is simply an expository device. Steel imports depend on domestic supply, domestic demand, foreign supply, and foreign demand, all at the same time. For an analysis to be meaningful, it has to be directed toward exploring these factors simultaneously. This, though, is probably too much to attempt at the outset.

A more realistic strategy would seem to be that of making a detailed, two-country analysis as a preliminary step, focusing on the United States and Japan. This would permit the treatment of interactions at a level of detail that would not be immediately feasible for a multination analysis. The selection of Japan as the second country for this bilateral analysis would be especially felicitous inasmuch as Japan is the single largest foreign supplier of steel to the U.S. market When this analysis was completed, the experience gained from it could be applied to the multination problem. As a bonus, this same experience would be valuable in its own right for the light it would throw on an important part of the question, even though this would not constitute the whole of it.

For the next step, that of making a multination analysis, reliance would be placed on the world trade models developed by R. R. Rhomberg.[5] These models permit the estimation of direct and indirect effects on international trade and service flows stemming from simultaneous changes in economic activity and prices. At present, these models deal with aggregate flows and not with a breakdown by commodities. The models would have to be disaggregated to achieve such a breakdown at a fairly detailed level in order to treat steel imports specifi-

[5] R. R. Rhomberg and L. Boissonneault, "Effects of Income and Price Changes on the U.S. Balance of Payments," IMF staff papers, March 1964, pp. 59–124.

cally. This would be a substantial undertaking, but it appears feasible and work along these lines is already under consideration by Mr. Rhomberg.

The broad advantages to be derived from models have been previously discussed. It might be desirable to incorporate the findings of the two-country analysis into a model and, in any case, an adaptation of one of the Rhomberg world trade models would be made for the multination analysis. These would answer the questions: (1) Which variables are of key importance for statistically "explaining" steel imports? (2) What is the "sensitivity" of steel imports to a change in any one of them? This would mean that it would then be possible to determine whether a 1-percent change in domestic steel prices, for example, was likely to lead to a considerable or to only a minor change in steel imports. In addition to providing a conceptual framework and allowing alternative events to be simulated, the models would place data limitations in perspective. They might also prove useful for forecasting considerations.

3. DOMESTIC IMPLICATIONS OF STEEL IMPORTS

To assess the domestic implications of steel imports, an interindustry model should be employed. This type of model is also known as an input-output model. An input-output approach was used by Walter Salant and Beatrice Vaccara for studying the impact of tariff reductions on domestic output and employment. They not only determined these implications for a given, liberalized industry but for the associated industries supplying the liberalized industry. Their model reflected the 1947 interindustry structure of the nation.[6]

The character of an input-output model allows it to be applied in a number of ways, ranging from an analysis of the potential markets of a firm to the assessment of the effects of broad, national policies on an industry and on the economy as a whole. Applied to the question of steel imports, the model would provide information on the different industries affected by a change in steel imports and gage the magnitude of the impacts. To quote another, more recent study, the use of a national input-output model

"* * * permits identifying the industries which are affected directly and indirectly (and the extent to which they are affected) by specified changes in consumer expenditures, by *increasing* exports or *imports*, by changes in the level of defense expenditures * * *[7]"

This makes a persuasive case for using an input-output model as the national framework for determining the domestic implications of steel imports.[8] Nevertheless, as an analytical tool, the model has limitations as well as capabilities. Chief among them is the fact that it cannot generate direct information on wages, prices, and profits. Accordingly, supplementary information, derived, in part, from other models, will have to be brought to bear in order for inferences to be drawn concerning these variables not dealt with by the input-output model.

In order to get at the associated questions of the future effect of steel imports and the influence of technological change, models of two national interindustry structures would be used—one for 1958 and one for 1970.[9] Technological advances have undoubtedly played a major role in bringing about the substitution of plastics, aluminum, cement, and other products for steel and steel products. Information about technological change would be valuable by itself, but it has special relevance here for the reason that the domestic significance of steel imports when the domestic market for steel is expanding is likely to be very different from what it would be if the market is stable or contracting. Clearly, technological advances in both steel and the substitutes for steel are major factors in determining the nature of the steel market.

[6] Walter S. Salant and Beatrice N. Vaccara, "Import Liberalization and Employment," Washington: The Brookings Institution, 1961.

[7] Morris R. Goldman, Martin L. Marimont, and Beatrice N. Vaccara, "The Interindustry Structure of the United States," Survey of Current Business, November 1964, p. 11. [Emphasis mine.]

[8] Recent econometric models of the United States provide the necessary national framework, but are inadequate for assessing the domestic implications of changes in steel imports. Moreover, these models neither provide specific information on steel nor do they treat the supply of imports. See James Duesonberry, Gary Fromm, et al., "The Brookings Quarterly Econometric Model of the United States," Amsterdam: North-Holland Publishing Co., 1965; and Maurice Liebenberg, Albert Hirsch, and Joel Popkin, "A Quarterly Econometric Model of the United States: a Progress Report," Survey of Current Business, May 1966, pp. 13-39.

[9] See footnote 7 for 1958 model. The 1970 model is described in "Projections 1970: Interindustry Relationships, Potential Demand, Employment," Bureau of Labor Statistics Bulletin 1536.

4. STEEL IMPORTS AND THE UNITED STATES BALANCE OF PAYMENTS

An analysis of the balance-of-payments implications of steel imports poses greater problems than the analysis of domestic implications. For one thing, imports generate dollar exchange and this affects exports. For another, import prices affect domestic prices, which, in turn, partly influence export prices. A further consideration is that the trade flows on current account may create repercussions in other sectors of the balance of payments, particularly in the capital account. The difficulty in dealing with them springs from the fact that their many dimensions encompass not just those nations from which the United States imports steel but all of the nations with which it has significant economic transactions. Moreover, many transactions of a specialized financial character enter into the picture. For these reasons, none of the many economic models that have been built thus far takes these kinds of linkages fully into account.

The best approach to the balance-of-payments aspect of steel imports would appear to be that of proceeding by steps. The initial step would be that of investigating those U.S. exports which incorporate an appreciable component of domestic steel in conjunction with the task of disaggregating and modifying one of the Rhomberg world trade models as has been already discussed in an earlier connection. This disaggregation, it will be recalled, would be intended to yield a detailed commodity breakdown so that steel and steel related items could be specifically isolated. This would then make it possible to assess the overall impact of steel imports on the U.S. trade position as a second step.

In turn, the development of the trade position would serve as the foundation for subsequent steps to be taken. These would be directed toward linking the trade position with the other items in the balance of payments, particularly the capital accounts. How far it would be possible to go in this direction would depend, in large measure, on what was developed through the analysis of the trade position. Here, is has to be frankly recognized that it may not prove possible to trace the balance-of-payments implications of steel imports in their entirety. However, the first two steps of disaggregating a world trade model and relating steel imports to the context of the U.S. trade position would be of major practical significance even if it should prove infeasible to fully link them to the capital accounts consideration.

5. CONCLUSION: MODELS, SIMULATION, AND STEEL IMPORTS

The approach discussed here calls for the development of a series of models to be used for the study of steel imports. The models would be related to each other and thus constitute a system. The system would not be fully unified in the sense that the outputs of one model could be directly fed into another, however. Instead, the persons making the study would examine the results obtained from one model then enter those that seemed appropriate into the other models or use them to modify the results of the others, according to their professional judgment. The final results would then be interpreted and reported in formal, written reports.

The broad purpose of building the system, of course, would be to assess the factors determining steel imports, the domestic implications of these imports, and the balance-of-payment implications. Beyond this, though, the system would have the capability of providing information about a large number of specific problems within these areas. Alternative policies and strategies could be simulated—that is, hypothetically tested—in order to form notions of how they are likely to work out in practice if they should be adopted. The particular value would lie in helping policymakers to estimate the tradeoffs that would be involved in any course of economic action concerning steel imports. Thus, it would be possible to estimate the "cost" of making price changes in terms of resulting changes in imports, employment, output, and so forth, and these could be further discriminated in terms of the probable length of time required for their impacts to occur.

In sum, there are three assumptions on which it would seem worthwhile to approach the study of steel imports through the use of simulation, as described here. The first is that the nature of the subject makes it desirable to achieve as much conceptual unity as it is possible to obtain; and that if complete unity does not appear feasible, partial and increased unity is still to be preferred to lesser unity. The second is that tradeoffs are the desideratum of policymaking. The third is that the matter of steel imports will remain of continuing interest and concern; and therefore a system that can continue to explore it and examine new questions as they arise will be of greater utility than a conventional study which cannot do this.

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