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THE RELATIONSHIP BETWEEN CAPITAL APPROPRIATIONS AND EXPENDITURES

Surveys of business firms' capital appropriations provide valuable information to business analysts and public policy officials. Changes in capital appropriations foreshadow changes in capital expenditures and, as a result, frequently signal changes in overall economic activity. Yet, the relationship between capital appropriations and actual outlays is neither obvious nor straightforward. The decisions to appropriate and to spend generally represent successive stages in a continuous planning-decision-commitment-expenditure process. Thus, newly approved capital appropriations are continuously being added to an existing stock of previously approved, but unspent, appropriations from which expenditures are made. The time lapse, or lag, between the approval of appropriations and the actual expenditure of funds related to these appropriations will vary, of course, among different industries and in response to changes in economic and financial conditions. This article presents some estimates of the timing of the relationship between appropriations and related expenditures among various industry groups for the 1956-1969 period and for selected subperiods.

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CAPITAL APPROPRIATIONS

Data on capital appropriations are provided by the Conference Board's "Quarterly Survey of Capital Appropriations."¹ The survey of capital appropriations began in 1956 and covered only manufacturing industries. The survey coverage and format have been changed several times, and additional surveys have been instituted to cover other industries. In its present form, the survey of manufacturing industries is designed to estimate capital appropriations and related data for only the 1,000 largest manufacturing companies measured by total assets. These companies, however, account for more than three-fourths of all of the assets in manufacturing and more than 80 percent of all capital spending by manufacturing companies. Furthermore, the data contained in these surveys represent compilations of information transcribed from business records and based upon actual management decisions.

Information obtained from the surveys of manufacturers' capital appropriations for the 1956-1969 period is shown in Chart 1. *New capital appropriations* are defined as authority granted within a particular quarter to incur obligations for new plant and equipment. This grant of authority generally signifies that the appropriate management level—typically the board of directors—has authorized the capital expenditure. Appropriations

for capital expenditures cover: (1) new construction, such as new buildings and plants, additions to, or improvements of plants and buildings; and (2) new machinery, motor vehicles for business use, office machines, storage equipment, and other such items.²

Capital expenditures refer to the total actual costs of new plant and equipment during the quarter that are chargeable to fixed asset accounts. Appropriations approved during a particular period, but not spent until a later period, are reported in the backlog of uncommitted or unspent appropriations.³ Backlogs are reported at the opening and closing of each quarter. The difference between the opening backlog for any single quarter and the closing backlog for the same quarter reflects changes in backlogs (see Chart 1). When the sum of capital expenditures and cancellations exceeds new appropriations (such as in 1957-1958, 1960-1961, and 1966-1967), backlogs are reduced. Conversely, when new appropriations exceed the sum of expenditures and cancellations, backlogs increase.

CAPITAL APPROPRIATIONS AND EXPENDITURES

The fact that the expenditure of appropriations may be deferred, or the appropriations even cancelled, complicates the relationship between newly approved capital appropriations and capital expenditures. Although the median time span

¹The results of the surveys are published in *Investment Statistics*, National Industrial Conference Board, Inc., New York, New York. Data used in this article covering the 1953-1964 period were obtained from "Quarterly Survey of Capital Appropriations: (Sponsored by *Newsweek*) Historical Statistics 1953-1964," *Investment Statistics*, National Industrial Conference Board, Inc., New York, New York, August 1967. Effective September 24-25, 1970, the corporate name of the National Industrial Conference Board, Inc. was changed to The Conference Board.

²For a more complete description of the series and definition of terms see "A New Survey of Capital Appropriations," *The Conference Board Business Record*, National Industrial Conference Board, Inc., Vol. XIII, No. 10, October 1956, pp. 418-434.

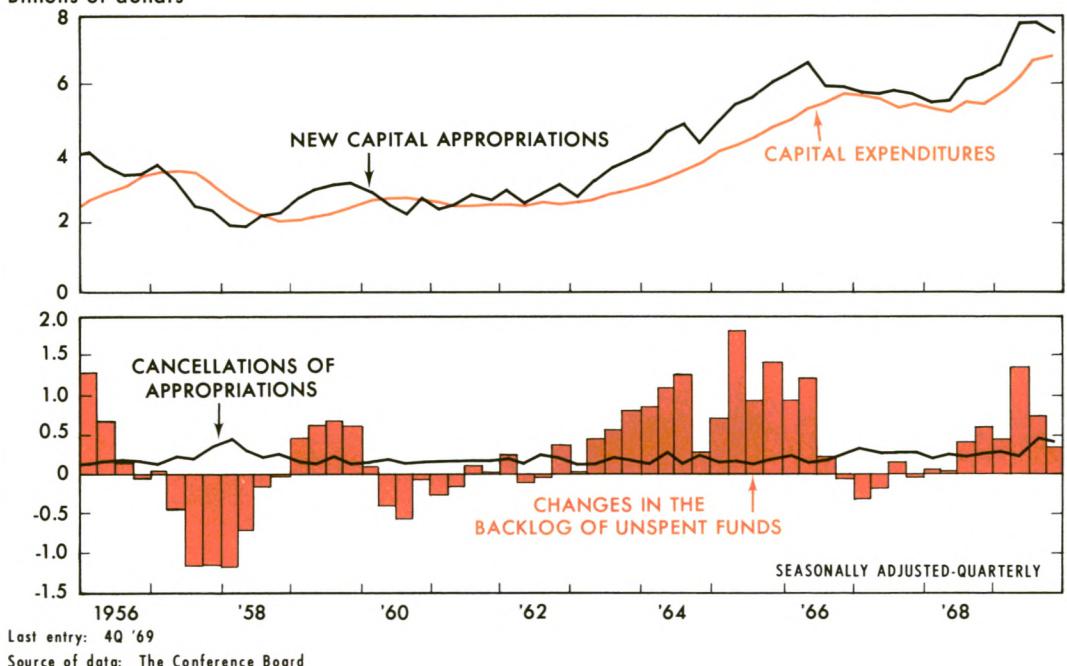
³The Conference Board defines *commitment* as the actual placing of the order for new plant and equipment.

Chart 1.

CAPITAL EXPENDITURES, CAPITAL APPROPRIATIONS, and RELATED DATA

Manufacturing (1956-1969)

Billions of dollars

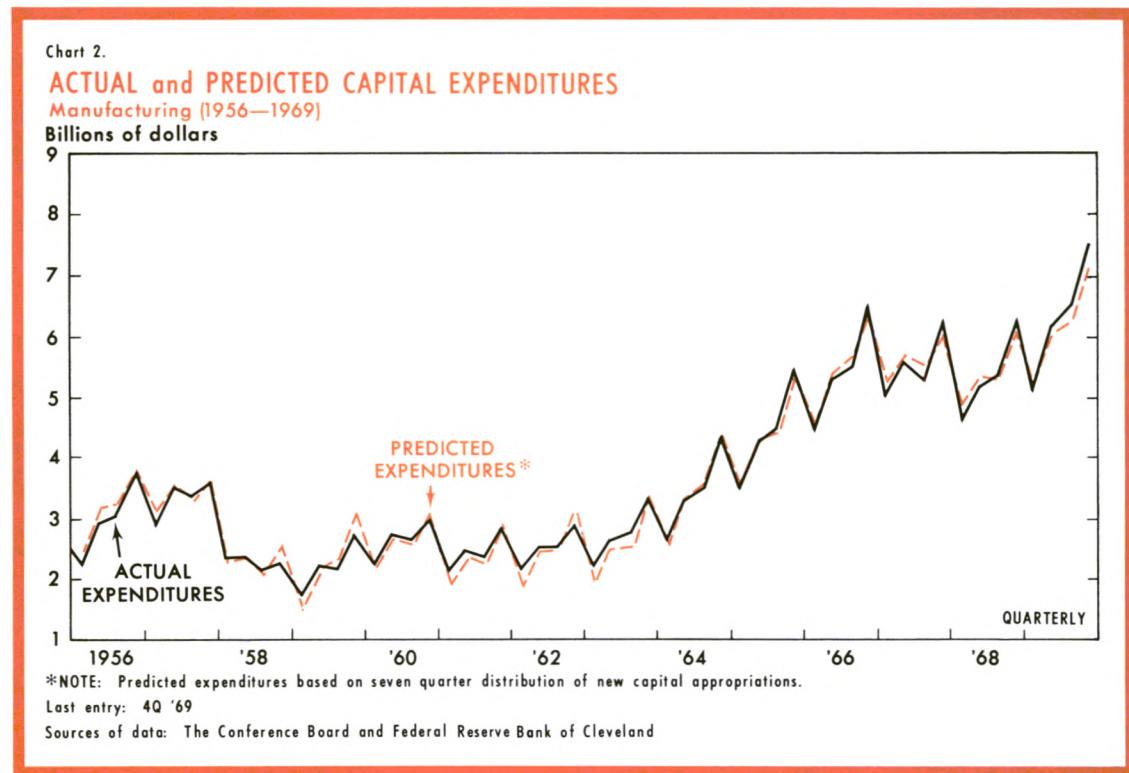


between manufacturers' new capital appropriations and total plant and equipment expenditures has been estimated to be roughly five months, this information merely relates, in a general manner, to turning points in the two series.⁴ It is also useful to know both the amount and the time distribution pattern of the expected spending from any given amount of new appropriations. Obtaining

⁴ Manufacturers' new capital appropriations have been estimated to lead business cycle reference points by a median lead time of four months and total plant and equipment expenditures lag business cycle reference points by a median lag time of one month. See Geoffrey H. Moore and Julius Shiskin, *Indicators of Business Expansions and Contractions*, National Bureau of Economic Research (New York: Columbia University Press, 1967).

this information required a method of estimating expenditures that is based upon previous appropriations and that allocates the resulting expenditures over time in a manner consistent with the way the funds are actually spent. This type of estimating technique has been developed and tested⁵ and is the basis of the estimates presented in this article, although some modifications were made in the original technique for this analysis.

⁵ The technique is a form of distributed lag commonly referred to as the "Almon lag." For a technical discussion of the development of this technique, see Shirley Almon, "The Distributed Lag Between Capital Appropriations and Expenditures," *Econometrica*, Vol. 33, No. 1, January 1965, pp. 178-196.



ESTIMATES OF CAPITAL EXPENDITURES FROM NEW APPROPRIATIONS

The results of estimating manufacturers' capital expenditures from new appropriations data for the 1956-1969 period are shown in Chart 2. Predicted expenditures are based on a seven quarter distribution. Thus, estimates for each quarter are based upon some portion of new appropriations approved during that particular quarter and during the previous six quarters.⁶

During the 14-year period for which capital expenditures were estimated from appropriations

data, the direction of change in actual capital spending was predicted incorrectly for only two quarters—the third quarter of 1959 and the third quarter of 1968. For the third quarter of 1959, expenditures were projected to rise by 7.0 percent, but actually fell by 1.8 percent. For the third quarter of 1968, expenditures were predicted to decline by 1.2 percent, but actually rose by 3.0 percent.

For the entire 1956-1969 period, errors in the estimates do not appear to be either serious or systematic. In general, expenditures were overestimated by small amounts in 27 of the 56 quarters and slightly underestimated in the remaining 29 quarters. The only extended period of misestimation occurred during the investment boom of 1956 and 1957. From the first quarter

⁶Although only the optimal distributions for each industry group and time period are discussed in this article, distributions from six through twelve quarters were estimated.

of 1956 through the second quarter of 1957, expenditures were overestimated by an average of 6 percent.⁷ Nevertheless, the average error of the estimates for the entire 14-year period was only 1.7 percent. Thus, it appears that the estimating technique is reasonably accurate and that capital spending in any given quarter reflects the sum of some portion of new capital appropriations approved during that quarter and the preceding six quarters. This pattern appears to coincide with business practices where expenditures associated with large- and medium-sized capital spending programs that were previously authorized are frequently spread over several quarters or years.

SPENDING PATTERNS IN VARIOUS INDUSTRIES

The portion of new appropriations actually spent in any given quarter varies among industries and over different time periods according to economic conditions and the nature of the industry. It is assumed, however, that spending in the various industries follows similar patterns—although the timing pattern may vary for particular firms or for particular types of projects—and occurs only out of previously approved appropriations (see Chart 3). Spending from any given amount of new appropriations begins in the quarter in which the new appropriations are approved. The rate of spending out of these appropriations then increases, reaches a peak, and then tapers off. At the end of this expenditure pattern, this particular group of appropriations has either been spent or cancelled although in some

instances minor amounts of the appropriations are spent in some future quarter. Estimates indicate that this point is reached after approximately seven quarters in manufacturing, and after eight quarters in the transportation and utilities industries. The rates of spending, however, differ considerably among these industry groups.

Manufacturing. Estimates of the cumulative rates of spending out of new appropriations by manufacturing corporations for the 1956-1969 period and for selected subperiods are shown in Table I.⁸ During the 1956-1969 period, manufacturers spent approximately 13 percent of new appropriations within one quarter following approval of the appropriations. The rate of spending then accelerated, and at the end of three quarters, approximately 52 percent of the original amount of the appropriations had been spent. After three quarters, the rate of spending slowed until, at the end of seven quarters, 96 percent of the original amount of the appropriations had been expended. The remaining 4 percent of appropriations is presumed to have been either spent in subsequent quarters or cancelled.⁹

The 1956-1969 period is divided into two subperiods—1956-1961 and 1961-1969—to compare the rates of spending during the most recent period of economic expansion with the spending pattern of the previous six year period.¹⁰ This

⁸Data contained in Tables I through VI were obtained by rounding and summing the estimated coefficients for each quarter. Coefficients that summed to more than 100 were not included in these tables.

⁹No attempt was made to include cancellations in the estimates

¹⁰Also, the 1961-1969 period was selected in an effort to supplement previous estimates for the period 1953-1961 (see Almon, *op. cit.*).

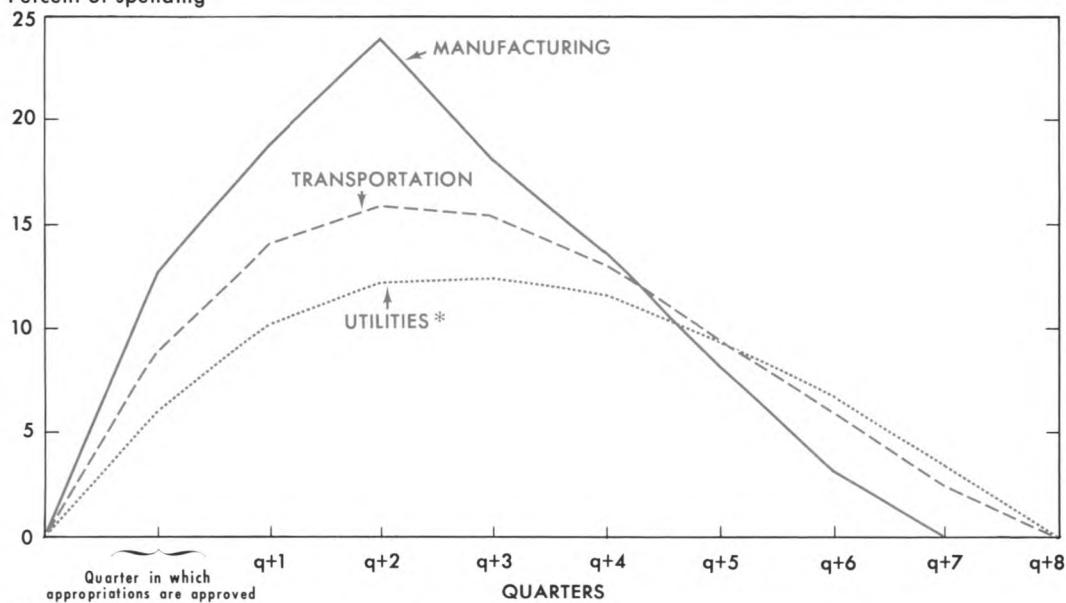
⁷Estimates of manufacturers' capital expenditures presented in this article include considerations of limitations in the supply of capital goods. A supply constraint was imposed on the basis of the behavior of backlogs to reflect the effects of capacity limitations and strikes.

Chart 3.

COMPARISON of ESTIMATED RATES of SPENDING OUT of NEW APPROPRIATIONS

Selected Industry Groups (1956—1969)

Percent of spending



Source of data: Federal Reserve Bank of Cleveland

comparison suggests that manufacturers' spending was considerably more rapid during the 1961-1969 economic expansion than during the period preceding 1961. During the 1961-1969 period, manufacturers spent approximately three-fourths of new appropriations within one year, compared with slightly more than one-half during the 1956-1961 period.

The 1961-1969 was divided into two periods—1961-1965 and 1965-1969 to evaluate changes in the patterns of capital spending that may have occurred during the most recent inflationary period. Although the results of the estimates for the shorter periods should be interpreted as being somewhat less reliable than estimates for the longer periods, it appears that most of the acceler-

ation in spending observed during the 1961-1969 period occurred during the five years from 1965 through 1969. During this period, manufacturers spent new appropriations at nearly twice the rate of the previous five year period.

Within manufacturing industries, it appears that nondurable goods manufacturers spent new appropriations somewhat faster than durable goods producers (see Table II). During the 1961-1969 period, nondurable goods manufacturers spent approximately 4 percent more of their new appropriations within one year than durable goods manufacturers. Differences in the rate of spending between these industries are undoubtedly due, in part, to differences in the nature of the industries and the longer delivery time required for some

TABLE I

Distribution of Capital Expenditures
in Manufacturing
Selected Periods

Within Quarters	Cumulative Percent of New Appropriations Spent				
	1956– 1969	1956– 1961	1961– 1969	1961– 1965	1965– 1969
1	13%	9%	14%	7%	15%
2	32	24	35	19	38
3	52	40	56	34	60
4	70	56	74	51	77
5	84	69	86	67	88
6	92	79	92	82	
7	96	85		93	
8		88		99	
9					

Source: Federal Reserve Bank of Cleveland

capital equipment used in the durable goods industry.

Between the two subperiods—1961-1965 and 1965-1969—it does not appear that the rate of spending changed appreciably in the durable goods industries (see Table III). If any change can be inferred from the estimates obtained for these short periods, it has been toward some slowing during the most recent period. In the nondurable goods industries, however, it appears that the rate of spending out of new appropriations was greater during the 1965-1969 period than during the 1961-1965 period (see Table IV). Estimates of the rates of spending during the recent period are, for the first two quarters following appropriations, approximately two and one half times greater than for the same quarters during the 1961-1965 period. Thus, it would appear that the acceleration in the rate of spending out of new appropriations that occurred in manufacturing industries during the 1961-1969 period was largely due to increases in the rate of spending in the nondurable goods industries during the 1965-1969 period.

TABLE II

Distribution of Capital Expenditures
in Manufacturing
1961-1969

Within Quarters	Cumulative Percent of New Appropriations Spent			
	Total Manufacturing	Durable Goods Industries	Nondurable Goods Industries	
1	14%	13%	14%	
2	35	33	35	
3	56	54	57	
4	74	72	76	
5	86	85	89	
6	92	92	96	
7				
8				
9				

Source: Federal Reserve Bank of Cleveland

Transportation. Spending out of new appropriations appears to proceed much slower in the transportation industries than in the manufacturing industries (see Table V). During the 1961-1969 period, spending in the transportation industry was only about one-half of new appropriations within one year after the appropriations were approved, compared with nearly three-fourths in manufacturing. After a year and a half, manufacturers spent nearly all of a given amount of appropriations, while firms in the transportation industry spent only 75 percent. It appears, however, that the rate of spending from new appropriations in the transportation industries has increased substantially in recent years.

Public Utilities. Because of limited data, the rates of spending by public utility companies were estimated only for the 1958-1969 period (see Table VI). These estimates can be compared in a general manner, however, with the estimated rates of spending in manufacturing and transportation during the 1961-1969 period. Such a comparison

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TABLE III

Distribution of Capital Expenditures
in Durable Goods Industries
1961–1969

Within Quarters	Cumulative Percent of New Appropriations Spent		
	1961– 1969	1961– 1965	1965– 1969
1	14%	11%	11%
2	33	28	28
3	54	48	46
4	72	67	62
5	85	85	73
6	92	99	79
7			
8			
9			

Source: Federal Reserve Bank of Cleveland

TABLE V

Distribution of Capital Expenditures
in the Transportation Industries
1961–1969

Within Quarters	Cumulative Percent of New Appropriations Spent		
	1961– 1969	1961– 1965	1965– 1969
1	9%	6%	10%
2	22	15	25
3	38	26	41
4	53	36	58
5	65	46	71
6	75		81
7	80		87
8	83		90
9			

Source: Federal Reserve Bank of Cleveland

suggests that spending of new appropriations by utilities proceeded even slower than in the transportation industry and considerably slower than in manufacturing. Within one year following approval of the appropriations, manufacturers spent nearly three-fourths of the amount appropriated, transportation companies spent more than one-half,

TABLE IV

Distribution of Capital Expenditures
in Nondurable Goods Industries
1961–1969

Within Quarters	Cumulative Percent of New Appropriations Spent		
	1961– 1969	1961– 1965	1965– 1969
1	14%	4%	14%
2	35	12	36
3	57	23	61
4	76	37	84
5	89	52	
6	96	67	
7		79	
8		87	
9			

Source: Federal Reserve Bank of Cleveland

TABLE VI

Distribution of Capital Expenditures
in the Utilities Industries
1961–1969

Within Quarters	Cumulative Percent of New Appropriations Spent	
	1958– 1969	1961– 1969
1	6%	
2	16	
3	29	
4	41	
5	53	
6	62	
7	69	
8		
9		

Source: Federal Reserve Bank of Cleveland

and utilities spent considerably less than one-half. The slower rates of spending by public utilities undoubtedly reflect the more predictable nature of the demand for utility services that facilitates long-range capital budgeting and the more specialized nature of the capital equipment that these industries require.

SUMMARY

These estimates of the rates of spending out of new appropriations should provide additional insight for the evaluation of announced changes in new appropriations. Rates of spending appear to vary among industries and over different time periods. The expenditure of new appropriations appears to proceed more rapidly in manufacturing than in the transportation and utility industries. Furthermore, it appears that the rates of spending

in manufacturing have increased in recent years due to an acceleration in the rate of spending by nondurable goods manufacturers.

Differences in the rates of spending among industry groups undoubtedly reflect differences in the characteristics of the industries. However, changes in the spending patterns within any particular industry group undoubtedly reflect changes in investment conditions.

A NOTE ON THE VOLUNTARY STEEL QUOTA

One of the most common nontariff barriers to trade is the quota, which is not only contrary to general principles of free trade but also to the aims of the General Agreement on Tariffs and Trade. Nevertheless, the use of quotas as a means to restrict imports is widespread and has been gaining prominence in recent years. For example, many countries, including Great Britain, Germany, and Japan, have import quotas on coal, a commodity for which the United States has a sizable cost advantage in production. On the other hand, the United States imposed a quota on imports of petroleum and petroleum products in 1956, on grounds of national security. In recent years, there has been growing demand from American producers to expand the number of products covered under import quotas. In 1968, Congress considered proposals for quotas covering 40 major industries, including steel, textiles, oil, glass, among others. This article focuses on a voluntary agreement among major world steel producers to restrict their exports of steel to the United States and discusses the performance of those exports against the voluntary restraint program.

Trade in Steel. Since 1958, foreign producers have made a sizable and progressive penetration of United States steel markets that has intensified the demand by steel producers in the United States for some type of quota on steel imports. In 1968, steel producers in the United States proposed

legislation that would restrict the foreign producers' share of domestic consumption of steel to an average of their 1964-1966 proportion, which amounted to 9.6 percent of the total quantity consumed. In 1968, 16.7 percent of the United States market was absorbed by foreign producers.

The United States has not adopted restrictive legislation. Instead, as a means of forestalling trade restrictions, steel producers in major steel exporting countries voluntarily agreed to hold down the volume of steel exports to the United States. Thus, in contrast to mandatory quotas typically legislated by a country attempting to protect its markets for domestic producers, the existing steel import "quota" is a voluntary restraint program that was self-imposed by foreign suppliers. The so-called voluntary quotas are simply letters of intent filed with the U. S. Department of State in December 1968 by steel companies in Japan and in the European Coal and Steel Community¹ (ECSC). In these letters, the foreign steel producers agreed to limit their steel exports to the United States in the years 1969 through 1971. Prior to the time the letters were filed, these participants had been providing more than 80 percent of the steel exported to the United States.

¹The European Coal and Steel Community includes Italy, France, West Germany, Belgium-Luxembourg, and the Netherlands.

Although other major foreign steel producers, especially the United Kingdom, Canada, and Sweden, are not parties to the agreement, they are expected to limit voluntarily the volume of their steel exports to the United States.

Until 1959, when a 116-day strike in the steel industry in the United States caused a surge of imports of steel mill products, the United States had been a net exporter of steel. In 1959, however, the trade balance in steel swung into a deficit that has widened each year since then, except in 1961, 1964, and 1969. In dollar terms, between 1958 and 1968 the shift from surplus to deficit in the steel trade balance amounted to \$1.9 billion, and in tons, the shift totaled 16.9 million tons. Moreover, the share of domestic consumption of steel supplied by foreign steel makers rose sharply between 1958 and 1968 and in the latter year accounted for 16.7 percent of the market.

This background led steel representatives from Japan and the ECSC countries to hold discussions with the U. S. State Department and to submit in December 1968 letters of intent covering limitations of steel mill exports to the United States in 1969, 1970, and 1971. Basically, the voluntary agreements were the same for both Japan and the ECSC. Both groups planned to limit their exports of steel mill products to the United States to 5.75 million net tons in 1969 and permit, at most, an annual growth in steel exports of 5 percent in 1970 and 1971. In addition to limitations on total tonnage, both the product mix and patterns of distribution of trade were to remain approximately the same.²

Although the State Department participated in the discussions that preceded the letters of intent from the Japanese and ECSC steel industries, no trade pacts were signed by national governments. Enforcement of the letters of intent instead depends on the good faith of the steel industries of the countries that agreed to them.

Effects of the Voluntary "Quotas." The voluntary restraint program has been in effect 21 months, or more than half its planned life span. Have exports of steel to the United States since January 1969 differed from what they could have expected to have been without any voluntary limitations? An appraisal of the data for United States imports of steel mill products in 1969 indicates that the volume of imports was nearly the same as indicated in the letters of intent. However, the composition of the products that were imported and their patterns of distribution were considerably different from the patterns in 1968.

As shown in Table I, total imports of steel in 1969 held close to the 14 million ton "quota" or limitation. Although steel producers in the ECSC shipped almost 10 percent less than indicated in their statements of intentions (and 37 percent less than in 1968), the shortfall is commonly attributed to the strong demand for steel in Europe that absorbed exports, rather than to voluntary limitations of exports to the United States. On the other hand, imports from Japan exceeded the limitation by nearly 9 percent. Apparently, Japanese producers have promised to deduct some of the 1969 overshipment from their 1970 target. Part of the 1969 overshipment consisted of very large diameter pipe used to construct an oil pipeline in Alaska. The Japanese do not consider this shipment as part of their voluntary restraint program since steel producers in the United States were

²Memorandum to the Secretary of State of the United States from the Japan Iron & Steel Exporters' Association dated December 23, 1968, and letter to the Secretary of State of the United States from the steel producers of the ECSC dated December 18, 1968.

TABLE I

Voluntary Quotas and Exports of Steel
to the United States
1968 and 1969
(mil. of tons)

Steel Exports to United States from	1968 Shipments	1969 Quota	1969 Shipments
Japan	7.29	5.75	6.25
ECSC*	7.10	5.75	5.20
Other	3.57	2.50	2.58
Total	17.96	14.00	14.03

* European Coal and Steel Community includes Italy, France, Belgium-Luxembourg, West Germany, and the Netherlands.

Sources: American Iron and Steel Institute and Letters of Intent from Japanese and European Coal and Steel Community steel industries

unable to meet delivery requirements for the order immediately. However, after allowance for that special factor (amounting to nearly 90,000 tons), the excess of receipts of steel from Japan over limitations still amounted to 300,000 tons in 1969.³ The limitations were stipulated in terms of exports from Japan and the ECSC, whereas these data reflect receipts at United States ports.

The other foreign steel producers not formally included in the voluntary agreement exceeded the quotas implied by the letters of intent from Japan and the ECSC countries by about 3 percent. Heavy domestic demand for steel as well as labor strikes in the steel industry in Great Britain apparently held down the volume of steel exports from these

³U. S. Department of Commerce data show that exports of steel mill products received from Japan in 1969 amounted to 6.25 million tons. In contrast, data published by the Japan Iron and Steel Federation show that Japanese exports of steel mill products to the United States amounted to 5.86 million tons in 1969. Total pipe and tubing exported to Alaska from Japan amounted to 86,000 tons, leaving a difference of 300,000 tons that can be partly explained by time lags in ocean shipping.

other countries. Therefore, it is doubtful whether the voluntary limitations program materially affected imports of steel from other countries.

Product Composition. The composition of steel mill products exported to the United States in 1969 also varied considerably from what the letters of intent appeared to promise. To evaluate changes in product composition, steel products were divided into two broad categories: (1) semi-finished steel products, plates, structurals, hot rolled bars, and hot rolled sheets and strip; and (2) finished items, cold rolled, and alloy steels. The first category consists of lower value, lower profit items, and the second category consists of higher value, more profitable products. An analysis shows a shift from lower value to higher value products that occurred in 1969 and in the first eight months of 1970 resulted in a product mix considerably different from the intended pattern of the restraint program.

As shown in Table II, 61 percent of United States steel imports in 1968 were accounted for by lower value items. In 1969, that ratio declined to 56 percent, and in the first eight months of 1970, it fell to 48 percent of steel imports. Conversely, over the same time, the proportion of higher value steels rose from 39 percent of total imported steel in 1968 to 44 percent in 1969 and 52 percent in the first eight months of 1970.

The shift from lower value steel was even more pronounced among imports of steel mill products from Japan. In 1968, 56 percent of the steel imports from Japan were in the lower value category and 44 percent in the higher value group. In 1969, they were nearly evenly divided between the two categories, and at the end of the first eight months of 1970, the change from lower to higher value steel was even more arresting—41 percent in the lower value group and 59 percent in the higher

TABLE II

Percent Distribution of United States
Imports of Steel Mill Products
1968-1970

	1968	1969	1970*
Distribution of Total Imports—All Sources			
Low value steel †	61.1%	55.6%	48.1%
High value steel ‡	38.9	44.4	51.9
Distribution of Imports from Japan			
Low value steel	56.1%	49.3%	41.1%
High value steel	43.9	50.7	58.9
Distribution of Imports from ECSC §			
Low value steel	64.4%	60.9%	52.7%
High value steel	35.6	39.1	47.3

* First eight months.

† Includes ingots, wire rod, structural, sheet piling, plate, rails, reinforcing bars, hot-rolled carbon bars, and hot-rolled sheet and strip.

‡ Includes wheels and axles, alloy and cold-finished bars, hollow drill steel, pipe and tubing, round, shaped, flat, and barbed wire, tin plate, cold-rolled sheet and strip, alloy strip and galvanized sheet.

§ European Coal and Steel Community includes Italy, France, Belgium-Luxembourg, West Germany, and the Netherlands.

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

value group. Thus, the composition of exports to the United States varied considerably from the intent of the Japanese producers "...not to change greatly the product mix," as stated in the letter filed with the State Department.

Similarly, the composition of steel exports from the ECSC countries has departed significantly from the intent "...to maintain approximately the same product mix." Instead, a trend toward a larger proportion of higher value steel products has been developing (see Table II). In the first eight months of 1970, 47 percent of the steel imported from the ECSC consisted of higher value

steel products, compared with less than 36 percent in 1968.

Imports of non-carbon steels (stainless, tool, and other non-carbon varieties) have been largely unaffected by the voluntary restraints and increased in volume in both 1969 and 1970, while carbon steel imports declined. In 1969, imports of non-carbon grades of steel were almost 10 percent higher than in 1968 and were 46 percent higher than their implied quota (see Table III). Imports of specialty steels from Japan in 1969 were 48 percent higher than the agreed limitations, while imports from the ECSC were 16 percent higher, and imports from other countries were 50 percent higher.

In 1968, non-carbon steels represented 2.7 percent of the total steel mill products imported to the United States; in 1969, their penetration had risen to a 3.8 percent share, and in the first eight months of 1970, they accounted for 4.6 percent of total steel imports. Since the average per ton value of imported non-carbon steel is five times greater than that of carbon steel, the growth in non-carbon steel imports has been an important factor in supporting the total value of steel imports even though volume has declined. Although imports of non-carbon steels amounted to only 4.6 percent of the tonnage volume of steel imports in 1970, they accounted for 15 percent of the dollar volume steel imports.

A comparison of total steel imports into the United States by type of product in the first eight months of 1970 with imports in the first eight months of 1968 indicates that the greatest decline occurred in hot rolled sheets and strip. In the first eight months of 1968 that item accounted for 19.4 percent of steel imports by the United States. This year, hot rolled sheets and strip represented only 13.0 percent of all imports, a decline of 56

TABLE III

Distribution of Non-carbon Steel Imports

	Percent Change 1968-1969	Percent Above 1969 Voluntary Restraint Level
Total imports	9.7%	46.1%
Japan	18.4	47.7
ECSC*	- 6.4	15.6
Other	5.0	49.9

* European Iron and Steel Community includes Italy, France, Belgium-Luxembourg, West Germany, and the Netherlands.

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

percent from the same time period in 1968. Pipe and tubing, on the other hand, increased from 9.1 percent of the import market in 1968 to 16.3 percent in 1970; tonnage in this category was 16 percent greater in the first eight months of 1970 than in the first eight months of 1968. Such shifts would seem to indicate that maintenance of "approximately the same product mix" was not being accomplished with the voluntary quotas.

As a result of upgrading the type of steel mill products imported by the United States and generally higher prices of all steel mill products since 1968 (because of increased world demand), the volume of steel imports has been reduced more than the value of such imports. In 1969, steel imports, when measured in tons, had declined by 22 percent from the previous year but, when measured in dollars, were only 12 percent lower. In the first eight months of 1970, steel tonnage was 35 percent below the level for the same period in 1968, but in terms dollars, the decline amounted to only 10.5 percent.

Distribution Patterns. The letters of intent also stated that Japanese and ECSC steel producers would try to keep the geographic pattern of exports to the United States relatively unchanged

TABLE IV

Steel Imports by Customs District
As a Percent of Total Imports

1968-1970	1968	1969	1970*
Great Lakes	36.8%	31.5%	26.6%
Atlantic Coast	26.2	24.9	25.6
Gulf Coast	20.2	21.6	21.0
Pacific Coast	14.7	18.4	21.5
Off-Shore	2.1	3.6	5.3
Total	100.0%	100.0%	100.0%

* First eight months.

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

from "the present," which presumably referred to the pattern in 1968. In spite of this, the distribution of imports in 1969 and again in the first eight months of 1970 varied considerably from 1968, especially in the Pacific Coast and Off Shore⁴ customs districts, where the proportions increased, and in the Great Lakes customs district, where the proportions decreased (see Table IV).

Stated differently, shipments to Great Lakes ports were reduced by 33 percent in 1969, the largest decrease for any customs district. Foreign steel shipments to the Pacific Coast showed the smallest decline (2.1 percent) and Off Shore imports were 33 percent higher than in 1968, due in part to the pipe situation in Alaska mentioned earlier. An even greater proportion of steel imports entered the United States via Pacific Coast ports in 1970 than in 1969; as a result, the discrepancy between the voluntary restraint program and actual performance increased.

Differences in regional patterns of the demand for steel in the United States may make it difficult to hold the geographic pattern of steel imports consistent with the voluntary restraint program.

⁴ Includes ports in Alaska, Hawaii, and Puerto Rico.

The sharp decline in steel imports through the Great Lakes ports largely reflected the decline in auto output (hence, steel consumption) in 1969 and again this year. In contrast, steel imports at Pacific Coast ports have shown almost no decline. Lower transportation costs for Japanese shippers to the Pacific Coast, Hawaiian, and Alaskan ports give them an additional competitive edge in those areas over both the domestic steel industry and European steel exporters. As a result, domestic steel producers located on the West Coast have derived few benefits from voluntary import limitations since 1968.

Outlook For The Voluntary Restraint Agreement in 1971. Data for the first 20 months in which the steel agreement was in effect suggest little, if any, success in maintaining the product mix or distribution pattern indicated in the letters of intent from steel producers in Japan and the ECSC. In contrast, *total* steel imports have been held within the voluntary limitation. A major test of the voluntary restraint program on the volume of steel exports to the United States will probably come in 1971, when a new labor contract in the steel industry will be negotiated. Based on past patterns, domestic steel consumers can be expected to start building inventories early in 1971 as a strike hedge. In the past, strike hedging also contributed to a surge in imports of foreign steel products. For example, in 1965, a year of labor negotiations for the steel industry, steel imports rose to 10.4 million tons from 6.4 million tons in the previous year. In 1968, the most recent year of labor negotiations, imports rose to 18 million tons, compared with 11.5 million tons in the previous year.

In both 1965 and 1968, domestic steel shipments were strong prior to the steel labor settle-

ments and then fell sharply during the remainder of the year, as steel consumers liquidated their stocks. Steel imports, on the other hand, are tied to fairly long-term order contracts and held up very well following the wage settlements, thus putting the burden of inventory liquidation on domestic steel producers. To illustrate, in 1968, steel imports in the five months following the labor settlement, when overall stocks were being liquidated, were 10.7 percent higher than in the five months preceding the contract expiration, when stocks were being built. In contrast, domestic steel shipments were 38.6 percent lower in the five months of 1968 following the labor agreement than they were in the five months preceding the settlement. In 1968, steel imports amounted to 15.3 percent of domestic shipments during the period when stocks were being built, but rose to a ratio of 28.5 percent during the inventory liquidation period.

If past conditions are repeated in 1971, the voluntary limitation of about 15.5 million tons of steel imports for the year will be strained as strike hedging boosts the demand for steel in the United States. At the same time, there are already signs that steel capacity has caught up with demand in Europe. European demand for United States exports of semi-finished steel, strong since the third quarter of 1969, had tapered off by mid-1970 and orders are down sharply. As a result of reduced demand in Europe, additional steel can again become available to the American market from exporters in Europe. Similarly, Japan, the world's largest steel exporter, will have more than ample capacity to meet higher demands for steel in the United States. In the past decade, Japanese raw steel production grew at an average annual rate of 17.3 percent, while Japanese steel exports

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grew at an average annual rate of 24 percent. Japanese steel production in the first six months of 1970 showed a 22 percent increase over the first six months of 1969, strongly implying no abatement is scheduled for growth in exports from

Japan. The impressive expansion in Japanese production and exports of steel, as well as reduced demand for steel in Europe, suggests that the first real test of the voluntary quota program will take place in 1971.

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