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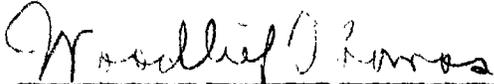
JAN 7 1960

January 7, 1960.

To: Federal Open Market Committee

From: Woodlief Thomas

You may be interested in reading the attached article on "Interest Rates, Cyclical Expansion and Economic Growth", which was prepared by Dr. Edward M. Bernstein, formerly of the International Monetary Fund and the Treasury Department. It has a bearing upon the developments illustrated by the chart that Mr. Bryan presented at the last meeting of the Open Market Committee.


Adviser to the Board

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Interest Rates, Cyclical Expansion and Economic Growth

The expansion in the U. S. economy continued at a very satisfactory rate until it was temporarily interrupted by the steel strike in mid-July 1959. With the resumption of steel production under the Taft-Hartley Act, there has been a rebound in economic activity. If an agreement settling the steel strike is made before the expiration of the 80-day cooling off period, it may be expected that the economic expansion will continue its normal course throughout 1960. There are, of course, uncertainties that may slow down the expansion or even bring it to a premature halt. Among these is the fear that monetary policy may become too restrictive.

Availability of Credit

The economy depends upon an adequate supply of capital and credit to finance the expansion of economic activity. Bank loans are needed for the accumulation of inventories and the higher level of consumer expenditure on durable goods. Longer-term capital is needed for residential construction, fixed business investment, and for the capital outlays of state and municipal governments. While the Federal Government will be in the market steadily, it will not be a net borrower over the next 18 months. The budget deficit for this fiscal year (1960), which will probably be about \$1 billion, has already been financed. For the fiscal year ending in June 1961, the budget will show a modest surplus.

So long as there is no danger of inflation, bank credit will be available in adequate amounts to enable the economic expansion to continue, although the cost of credit will be higher. It is true that the Federal Reserve Banks are not increasing the credit base to the full extent necessary to meet all demands for bank loans. That is why short-term interest rates are rising. There is no reason, however, for believing that at these higher interest rates the commercial banks will be unable to meet the greater demand for loans that normally accompanies the expansion of business activity. The fact that the Federal Reserve Banks are slowing down the increase in the credit base gives the illusion that credit policy is much tighter than it really is. Actually, this is the cyclical pattern in which the Federal Reserve authorities meet the needs of the economy for bank credit.

The credit base which determines the lending power of the member banks is shown by the gold stock plus the securities held by the Federal Reserve Banks. Bank reserves may increase from changes in other items—a decrease in currency in circulation or an increase in the float—but these are either small or erratic and they have little bearing on the credit situation over the course of a cycle. Borrowing from the Federal Reserve Banks does add to the reserves of the banking system, but such borrowing is itself an indication of the pressure on the credit base. From the point of view of the member banks, borrowed reserves

See page 6 for article on **THE STEELS: A MINORITY VIEW**

are by no means equivalent to reserves arising from an inflow of gold or an increase in the security holdings of the Federal Reserve Banks. It should be noted that the reduction in reserve requirements on demand deposits in the first half of 1958 released bank reserves to support a substantial expansion of bank credit. The equivalent of a further reduction in reserve requirements was made at the end of November 1959, by permitting excess vault cash to be counted as part of the required reserves.

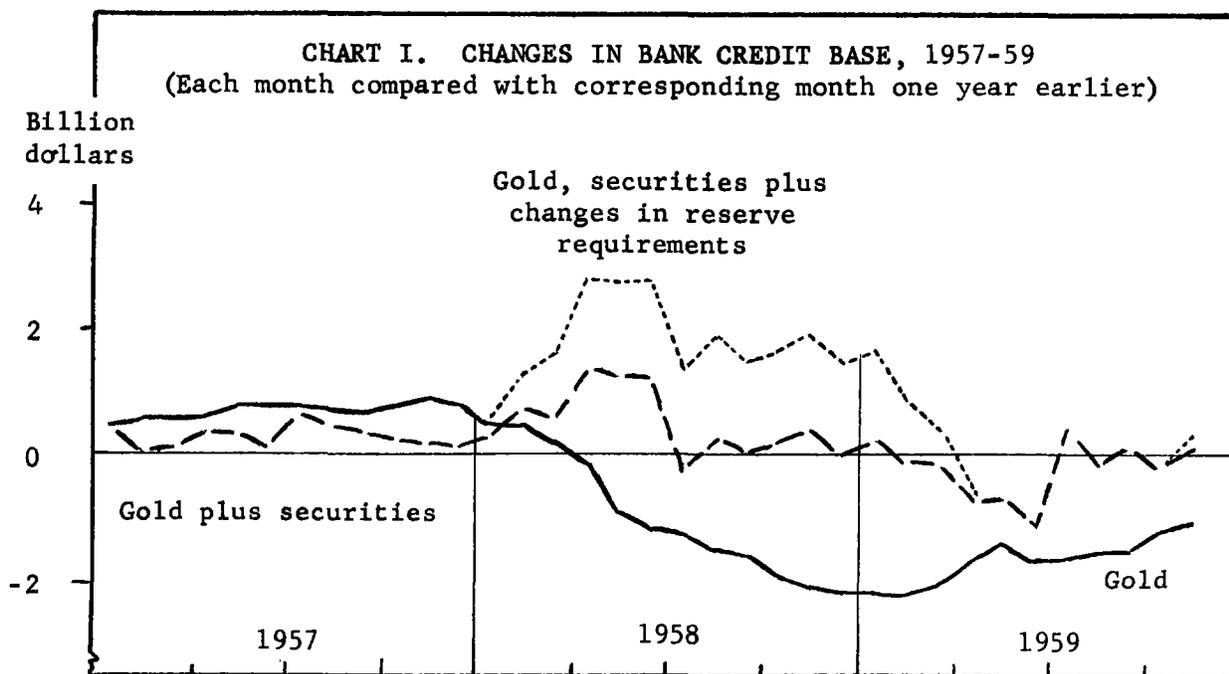
The data on Chart I show the increase in the credit base in each month from January 1957 to November 1959 compared with the credit base in the corresponding month one year earlier. Thus, the change in gold, or gold plus securities, in January 1957 is the amount by which these constituents of the credit base exceeded the same constituents in January 1956. And the change shown for November 1959 is the amount by which the gold, or the gold plus securities, or the gold plus securities plus changes in reserve requirements, exceeded the same constituents of the credit base in November 1958.

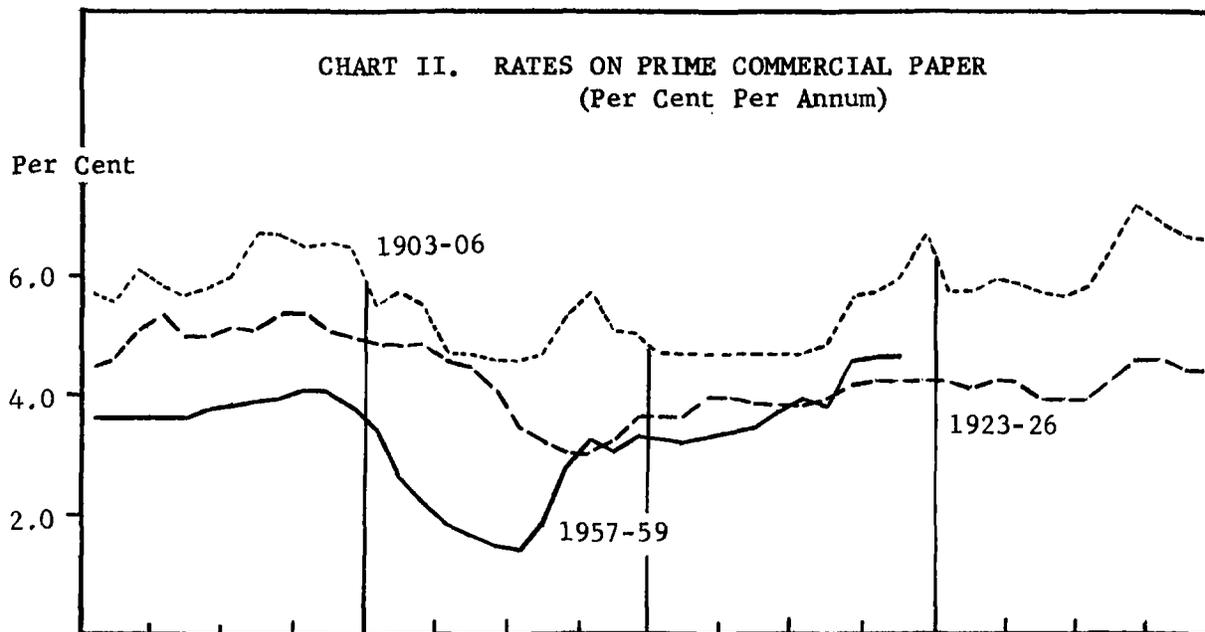
The chart reflects the changing attitude of the Federal Reserve authorities toward the credit situation. Through most of 1957, the last stage of the previous boom, the Federal Reserve Banks were providing a modest addition to the credit base—somewhat more toward the end of the year, when the recession had already begun. In 1958, the Federal Reserve Banks added substantially to the credit base, but at a de-

creasing rate after the third quarter. At the end of 1958, the credit base was about \$1.6 billion larger than it was a year earlier, despite the large outflow of gold. Through most of 1959, the Federal Reserve Banks have added relatively little to the credit base.

The emphasis on the relative stability of the credit base in recent months tends to exaggerate the significance of current reserve operations. It should be noted that the banking system was already generously supplied with bank reserves and that the Federal Reserve authorities have been steadily offsetting the effects of the outflow of gold by increasing their holdings of Government securities. As the pressure for bank loans becomes greater and the banks have somewhat more difficulty in meeting the demand for loans, the Federal Reserve Banks will probably again provide modest increments to the reserve base, just as they did in 1957. In fact, the pressure on the banking system is much less than is generally assumed.

Although the Federal Reserve Banks have not increased the credit base very much recently, member banks have not had great difficulty in meeting the demand for loans. When the large expansion in the credit base took place in 1958, the banks used the additional resources they acquired to invest in U.S. Government securities. As the demand for loans began to increase in the recovery, the banks liquidated their holdings of Government securities rather slowly; and as the demand for loans increased more sharply in 1959, the banks accelerated their liquidation of





Government securities. Thus, in 1958, the member banks of the Federal Reserve system increased their holdings of Government securities by over \$7 billion; and in 1959, they reduced their investment in Government securities to about the same extent.

There is no reason for uncertainty about the broad policy of the Federal Reserve system—it is trying to avoid a too rapid expansion of bank credit. The banks have considerable resources of their own for making bank loans, through further liquidation of their holdings of Government bonds; and the Federal Reserve Banks will undoubtedly provide some of the resources needed to meet the increased demand for bank loans. Bank credit, therefore, will be available to permit the economy to expand output and employment, but only at higher interest rates. If the threat of inflation does not become greater and the balance-of-payments position does not become worse, the Federal Reserve authorities will probably not make monetary policy more restrictive than this.

Interest Rates and Cyclical Expansion

After a protracted period of very low interest rates, the public finds it difficult, psychologically, to adjust to a level of interest rates suited to economic growth without inflation. This difficulty is emphasized by the rapid rise in interest rates since the beginning of the recovery. The rapidity of the recent rise in interest rates reflects the fact that modern monetary policy induces a sharp fall in interest rates during recession and this necessitates a sharp rise during expansion. While this is now widely accepted as appropriate

contra-cyclical monetary policy, it is open to question whether more moderate fluctuations would not be just as useful in inducing recovery and restraining expansion without such disturbing effects on the money and capital markets.

Throughout 1957, the yield on Treasury bills rose with the tightening of the money market in the last phase of the previous boom. It is worth noting that the yield on Treasury bills reached a peak in October 1957, some months after the economy had begun to turn down. When the Federal Reserve authorities began to expand the credit base, indebtedness to the Federal Reserve Banks was quickly reduced, and with the depressed demand for loans, excess bank funds went into the Treasury bill market. By June 1958, the average yield on three-month Treasury bills fell to .83%. Since then, there has been a large increase in the demand for bank loans, while the Federal Reserve authorities have slowed down their additions to the credit base. As a consequence, the yield on Treasury bills rose sharply in the third quarter of 1958 and has continued to rise rapidly, despite intermittent periods of stable or lower yields.

Long-term interest rates have followed a similar pattern, although the fluctuations were, of course, much less than in short-term rates. Nevertheless, the monthly average yield on long-term Treasury bonds fell from 3.73% in October 1957 to 3.12% in April 1958. This was equivalent to a rise of over 9% in the price of a 3% 20-year Treasury bond. In the subsequent expansion, the yield on long-term Treasury bonds rose to 4.26% in September 1959. The yield has

since declined to about 4.20% at the end of November 1959. The steady rise in bond yields has involved a sharp fall in the price of Treasury bonds—over 15% on a 3% 20-year bond. Corporate bonds have followed the same course as Treasury bonds, although the difference in yields widened somewhat in the recession and narrowed again during the expansion.

Cyclical fluctuations in interest rates are much greater now than in the past. The basic reason is that the monetary authorities act more forcefully to ease credit in the recession and to tighten it in the boom. This can be seen from Chart II which shows fluctuations in the rate on prime commercial paper of four to six months maturity in three cycles. It will be noted that in the cycle of 1903-06, before the establishment of the Federal Reserve system, the cyclical movements in short-term interest rates were considerably smaller, less regular and occasionally erratic. In the cycle of 1923-6, the cyclical movements in short-term interest rates were somewhat greater and much more regular. The Federal Reserve authorities began to use open market operations as a deliberate means of increasing the credit base in the recession of 1924. In the cycle since 1957, the Federal Reserve authorities were very bold in their contra-cyclical monetary policy. They increased the credit base substantially in the course of a few months of recession and they have let the money market tighten itself considerably in the subsequent expansion.

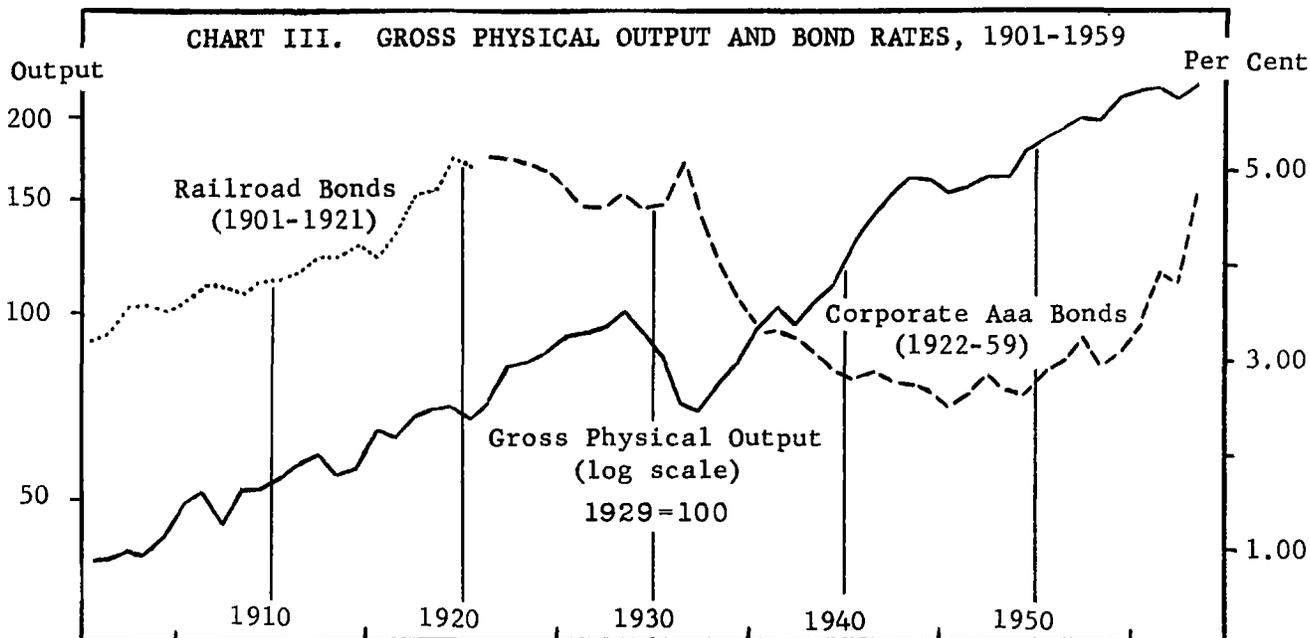
Obviously, easy money and low interest rates did facilitate recovery in 1958. Similarly, tighter money

and higher interest rates are certain to restrain investment in 1960. The restraint will, of course, be much greater for some forms of investment than for others. The greatest impact will be on residential construction; the smallest impact probably on installment credit. If the Federal Reserve authorities are successful in their policy, the limited growth in bank credit and the higher interest rates will prevent inflation while output and employment continue to increase. In brief, the objective of monetary policy is to restrain the boom without halting the expansion.

Interest Rates and Long-term Growth

Interest rates will probably continue to rise throughout the period of expansion. That is the typical pattern in a period of expansion and there is no reason for thinking that it will be different in this cycle. Furthermore, interest rates are high compared with the rates that have prevailed since the 1920s. Even economists who regard the credit policy of the Federal Reserve system as essential to the maintenance of monetary stability in the present environment fear that a high level of long-term interest rates, if continued, would slow down the rate of economic growth.

The upward trend in long-term interest rates in the postwar period has not prevented the economy from growing quite satisfactorily over the past twelve years. In fact, the United States has had the largest sustained growth in output per capita in 80 years. Bond yields have risen steadily since 1946, with temporary declines in the recessions of 1949, 1954, and



1958. The rise of long-term interest rates has been accelerated in each successive period of cyclical expansion. But rising interest rates, it may be said, did not involve high rates, by historical comparison, until quite recently. With long-term interest rates that are higher (as measured by the yield on corporate Aaa bonds) than at any time since 1922, and that are still rising, there is some fear that the rate of economic growth will slow down. The question is of particular importance in connection with long-run projections that forecast a period of accelerated growth in the decade of the 1960s.

The statistical data for correlating interest rates with long-term economic growth are exceedingly scanty. The data we have do not support the view that economic growth has been slower in periods of rising interest rates or in periods of high interest rates. The table below shows the growth of output in the private U.S. economy in selected 10-year periods since 1889, omitting the first and second World Wars. As the growth in the labor force was much greater prior to 1910 than since 1919, the output comparisons are also made on a man-hour basis. There is a tendency for the increase in *gross* output to slow down, which is explained by the smaller growth in the labor force, and perhaps a tendency for the increase in *output per man-hour* to be accelerated, which is probably explained by the changing composition of output as well as by technology and capital investment.

Growth in Output, Private U. S. Domestic Economy
(Selected periods, 1889-1957)

Period	Interest Rates	Increase in Gross Output (%) Increase between Terminal Years	Increase in Output per Man-hour
1889-1899	falling	55.2	22.0
1899-1909	rising	50.6	14.1
1919-1929	falling	43.5	24.4
1929-1939	falling	4.1	23.6
1947-1957	rising	43.1	38.3

Source: Solomon Fabricant, "Basic Facts on Productivity Change," pp. 42-45, National Bureau of Economic Research, Occasional Paper 63 (1959).

While the statistical data regarding interest rates and economic growth are not conclusive, the qualitative descriptions of the long waves (40 to 50-year cycles) indicate that there is a concurrence of economic growth and rising interest rates. Over these long periods, high interest rates are likely to be associated with a large demand for capital, high levels of investment, and a more than average rate of growth of output. In brief, the level of long-term interest rates is much more the consequence than the determinant of the state of the economy. As can be seen from Chart

III, long-term interest rates have followed rather than preceded the trend of gross physical output in the private sector of the U.S. economy from 1901 to 1959.

There is no reason to expect a check to economic progress from the present level of long-term interest rates. If the U.S. economy generates a demand for capital that can be met only at comparatively high interest rates, it will be because the forces for economic growth are strong. We must learn to accept the fact that a dynamic economy, growing more rapidly than in the past, with a vast consumption of durable goods financed by credit, will have to be a high interest economy. In such an economic environment, high interest rates are the symbol of rapid growth, not a barrier to it. The only reason for high interest rates is that there is no other way for an economy to grow rapidly over an extended period without generating inflation.

Conclusions

While monetary policy will not become so restrictive as to bring the current expansion to a premature halt, it must not be assumed that the expansion will last indefinitely. This period of cyclical expansion is likely to continue throughout the coming year and perhaps into the first or second quarter of 1961. By then, the expansive forces in the economy will have come to a temporary halt. Residential construction is already falling. The demand for consumer durable goods will after a time decline to a level nearer the long-run average relationship of such expenditure to disposable personal income. Similarly, business investment will decline to a level better related to the average growth of output and sales. When expenditure in these sensitive sectors of the economy falls, a recession will occur. While it is impossible to say how severe such a recession would be or how long it would last, there is no reason for believing at this time that it will be other than the usual mild and short recession typical of the postwar period.

There is a tendency these days to look forward to an accelerated rate of growth in the 1960s. If such a period of accelerated growth should materialize, it would inevitably result in even higher interest rates. Some caution is necessary, however, in making projections for a decade ahead. While it is possible that the rate of economic growth will be accelerated, it would be a mistake to regard this as inevitable. The fact is that economic growth in the postwar period has been exceptionally good. Over longer periods, economic growth in the United States is a fairly steady process and the growth trend does not change quickly. Furthermore, even a period of rapid economic growth

is interrupted from time to time by recession. The new decade, however prosperous it may be, cannot be one long period of boom.

No doubt, interest rates will have a significant effect on the course of the current business cycle and on economic growth in the coming decade. We may presume that the Federal Reserve authorities are aware of the important role of interest rates in restraining

the demand for credit. We may also presume that the Federal Reserve authorities will exercise their restraining influence on the supply of bank credit with great care. It is difficult to believe that credit policy will be permitted to halt the normal expansion of production and employment in the current cycle or to retard the normal growth of the U. S. economy over a longer period.

The Steels: A Minority View

Steel stocks have been among the leaders in the strong market of the last several years, as shown in Table I which compares Standard & Poor's Index of Prices of 11 Steel Shares with its Index of 425 Industrials.

It will be seen that, after a strong relative rise in 1950 from the 1949 low, steel shares settled back at the 1953 low point to their 1949 relationship. Subsequently, they rose relatively to an impressive extent in 1955 and 1956, losing part of their relative gains when the market dropped in the latter part of 1957.

The performance of steel shares from the 1957 low to a short time ago, however, was exemplary. The general market recovery, which at the highs in late July of this year had brought a rise of some 52% in the 425 Industrials from their 1957 low, was accompanied by an increment of no less than 111% in the 11 Steels during the same period. Further, even during the most prolonged strike in the industry's history, steel shares resisted a general market decline during the early autumn. In mid-September, the Steel Index reached its all-time high; perhaps more significantly, at this time it attained its highest relationship to the Industrial Index since 1918. In subsequent weeks, the steels have slumped somewhat, doubtless reflecting uncertainty about resumption of the strike after the Taft-Hartley cooling-off period. But they remained as of a recent date in the upper area of their relative position during the past decade.

One might expect such a performance for stocks of a growth industry, but the fact of the matter is that the steel industry may not strictly be so classified. The growth in earnings of recent years appears to have come primarily from the leverage of higher selling prices on per-share results; unit volume has increased only moderately.

Doubtless, investors have been impressed with the ability of the industry in both the 1954 and the 1958 recessions to operate in the black at low levels of operations. The absence of price-cutting has reflected

recognition by the industry—under strong leadership—that the demand for steel is inelastic, volume being dependent basically on factors other than price. Conversely, the industry has been enabled in concert to raise prices to compensate for increased costs. This record has been the target of Governmental attack, and has been clearly publicized in recent months. Whether this performance can be counted upon in the future may be quite speculative at this juncture.

As was set forth in an article about U.S. Steel in the December 1953 issue of this *Review*, there can be no question that steel stocks were basically undervalued five years or less ago. They commanded low price-earnings ratios, and were generally in disrepute among institutional investors; the "coming of age" of the industry was generally overlooked. It is the burden of this article to examine some phases of the industry's economics running counter to the widely-publicized bullish comments rampant today. Although present prices of steel stocks may bear conservative ratios to earning *power*, price-earnings

TABLE I
Standard & Poor's Stock Price Indexes
(1941-3 = 100)

Date*	425 Industrials	11 Steels	Steels % of Industrials
June 1949	13.84	12.69	91.7
December 1950	20.45	25.27	123.6
September 1953	23.02	21.05	91.6
September 1955	48.10	62.35	129.6
December 1956	49.76	73.54	147.8
June 1957	51.21	69.37	135.5
December 1957	42.86	51.47	120.1
June 1958	48.18	61.01	126.7
December 1958	58.65	89.06	151.8
July 29, 1959	65.26	99.38	152.3
September 16, 1959	60.87	99.97	160.1
December 9, 1959	63.45	94.90	149.6

*Last week of month unless specified.

TABLE II
Volume of Steel Sales and Gross National Product

		1947-9 = 100					
		Steel Products Shipped & Other Services (000,000)	Gross National Product (000,000,000)	Steel Sales Per \$1,000 GNP	Steel Products Shipped & Other Services	Gross National Product	Steel Sales Per \$1,000 GNP
1947-9	Average	\$7,382	\$250.6	\$29.40	100	100	100
	1950	9,485	284.6	33.30	128	114	113
	1951	11,782	329.0	35.80	160	132	122
	1952	10,804	346.0	31.20	146	138	106
	1953	13,091	365.4	35.80	177	146	122
	1954	10,545	363.1	29.10	143	145	99
	1955	13,960	397.5	35.10	189	159	120
1953-5	Average	12,532	375.3	33.80	170	150	115
	1956	15,161	419.2	36.20	205	168	123
	1957	15,469	440.3	35.30	210	176	120
	1958	12,411	437.7	26.10	168	175	89
1956-8	Average	14,347	432.4	33.20	194	173	113

Sources: Department of Commerce; American Iron & Steel Institute.

ratios relative to that of the market as a whole have risen substantially over the past several years. Steel earnings, in other words, have not grown in excess of all business so greatly as steel stock prices have outrun the price of the average stock. And the vacuum that formerly existed in institutional portfolios appears to have been filled; steel stocks have been among the favorites of the institutions for a considerable period.

Steel Sales

Table II shows that the industry has generally been able to retain its share of Gross National Product. However, two factors stand out: (1) the trend toward an increasing share in the first half of the 1950 decade shows signs of having leveled off since 1955; and (2) the essentially cyclical character of the industry has not been corrected, as witness the sharp declines in share of product in the recessions of 1954 and 1958, with the latter considerably deeper than the former. Of course, steel is in reality included in the Gross National Product twice, in the form of the sales of the industry and of the finished products made from steel. One cannot judge whether the whole steel component will have grown more or less than industry gross revenues alone. Nevertheless, the fact remains that from the standpoint of sales, this can hardly be considered a "growth" industry, in so far as such an appellation denotes progress exceeding that of the economy.

Further, as subsequent discussion will demonstrate, the steel industry's performance is largely attribut-

able to above-average price increases and a more advantageous product-mix, the continuance of either or both of which trends could be subject to question.

Steel Volume

While steel sales may have grown secularly with Gross National Product, the growth in tonnage has lagged behind the Durable Manufactures Index, as shown in Table III.

TABLE III
Steel Output vs. Durable Goods Output

		1947-9 = 100			
		Steel Products Shipped (000 Tons)	Steel Products Shipped	F.R.B. Index of Durable Manufactures	Steel Products Shipped: 000 Tons per Point F.R.B. Index
1947-9	Average	62,378	100	100	624
	1950	72,232	116	116	624
	1951	78,929	127	128	617
	1952	68,004	109	136	500
	1953	80,152	129	153	524
	1954	63,153	101	137	461
	1955	84,717	136	155	547
1953-5	Average	76,007	122	148	511
	1956	83,251	134	159	524
	1957	79,895	128	160	499
	1958	59,914	96	142	422
1956-8	Average	74,353	119	154	482

Sources: Department of Commerce; American Iron & Steel Institute.

The decreasing share of the industry in durable manufactures is shown clearly in the right-hand column of this table; shipments per point of the F.R.B. Index have dropped consistently over the past ten years, with only relatively minor reversals in years of high activity. Further, since steel is an important component of the Index, it is apparent that other components have grown more rapidly than the Index itself. It is somewhat striking to note that in 1958, steel tonnage shipped actually fell some 4% below the 1947-9 average.

Prices

At least a portion of the anomaly of about average growth in sales as against below-average growth in volume is explained by price trends, as shown in Table IV.

From almost whatever point in this period is selected, steel prices have made greater advances than have prices of other commodities. The steel price index in October 1959, for example, was 23% higher than its average for 1955, compared to an increase of but 8% in all commodities, less than 10% in commodities other than farm and food, and 5% in industrial chemicals, and a decrease of 4% in nonferrous metals. There has been no interruption in the annual uptrend of steel prices, in sharp contrast to the erratic pattern of nonferrous metals. Actually, of the roughly

TABLE IV
Selected Wholesale Price Indexes
(1947-9 = 100)

	All Commodities	All Other Than Farm & Food	Iron & Steel	Nonferrous Metals	Industrial Chemicals
1950	103.1	105.0	113.1	104.1	101.1
1951	114.8	115.9	123.2	124.2	120.7
1952	111.6	113.2	124.7	123.5	115.2
1953	110.1	114.0	131.3	125.1	117.6
1954	110.3	114.5	132.9	124.2	117.6
1955	110.7	117.0	140.6	142.7	117.8
1956	114.3	122.2	154.7	156.1	121.4
1957	117.6	125.6	166.2	137.5	123.5
1958	119.2	126.0	168.8	127.5	123.5
October					
1959	119.2	128.5	173.0	137.2	123.9

Source: Department of Labor.

fifty commodity price classifications reported monthly by the Department of Labor, none is currently higher in respect to the 1947-9 base than is iron and steel.

That the above-average increase in prices has been the prime contributor to sales growth cannot readily

be refuted. To argue that these price increases were forced on the industry by increased labor costs may be true although it hardly bolsters the industry's investment appeal. It may, however, be further argued that steel products have improved over the years in partial justification of the increased prices; product improvement, of course, has also taken place in many other industries (e.g., appliances) in which price advances have been small or nonexistent.

In the context of this subject, an interesting comparison may be made of steel sales, corrected for the price index, with industry tonnage shipments and the F.R.B. Index of Durable Manufactures, as given in Table V.

TABLE V
Steel Sales and Shipments
(1947-9 = 100)

	Steel Products & Services Sold Divided by Iron & Steel Price Index	Steel Products Shipped	F. R. B. Index of Durable Manufactures
1950	113	116	116
1951	130	127	128
1952	117	109	136
1953	135	129	153
1954	108	101	137
1955	135	136	155
1953-5 Average	126	122	148
1956	133	134	159
1957	126	128	160
1958	100	96	142
1956-8 Average	119	119	154

In the early 1950s, the "corrected" sales showed a somewhat superior trend to that of tonnage, though again well behind the F.R.B. Index. This was apparently indicative of an improved product-mix; as will be discussed later, the growth in light steel products in the earlier part of the period was outstanding. However, with the larger proportion of heavier types in the last few years, "corrected" sales have grown little if any more than aggregate tonnage.

The industry has apparently accepted the credo that price-cutting does little to stimulate sales. However, this is not to imply that continued price increases will not stimulate competition from other materials, particularly in the lighter weights where steel's advantages are not so compelling.

Types of Steel Shipments

As shown in Table VI, there have been important shifts in the types of steel shipped in recent years. Whereas total steel tonnage in 1953-5 averaged 122%

TABLE VI
Shipments of Steel Products—By Types
(1947-9 = 100)

	<i>Hot Rolled Sheets</i>	<i>Cold Rolled Sheets</i>	<i>Tinplate</i>	<i>Heavy Structural Shapes</i>	<i>Plates</i>	<i>Other</i>	<i>Total</i>
1950	114	146	126	102	89	116	116
1951	119	151	120	119	124	126	127
1952	89	125	111	100	110	111	109
1953	113	176	123	122	120	126	129
1954	89	150	132	109	84	94	101
1955	138	237	149	115	106	124	136
1953-5 Average	113	188	135	115	103	114	122
1956	128	208	147	130	121	122	134
1957	114	186	141	166	145	111	128
1958	92	162	145	96	83	85	96
1956-8 Average	111	185	145	131	116	105	119

Source: American Iron & Steel Institute.

TABLE VII
Shipments of Steel Products—By Users
(% of Total)

	<i>Automotive</i>	<i>Warehouses & Distributors</i>	<i>Construction (including Maintenance)</i>	<i>Containers</i>	<i>Export</i>	<i>Other</i>
1947-9 Average	16.3	17.2	11.4	8.0	5.9	41.2
1950	20.0	18.5	11.9	8.2	3.6	37.8
1951	16.4	18.2	12.1	8.3	3.5	41.5
1952	16.0	19.6	11.5	8.2	4.8	40.0
1953	18.3	18.5	12.4	7.6	3.3	39.9
1954	18.7	19.0	13.7	9.3	4.0	35.3
1955	22.1	18.6	11.4	7.9	4.2	35.8
1953-5 Average	19.8	18.7	12.4	8.2	3.9	37.0
1956	17.0	20.1	12.6	8.2	4.3	36.8
1957	17.8	18.2	15.7	7.8	5.7	34.8
1958	16.9	18.2	14.6	11.0	4.1	35.2
1956-8 Average	17.3	18.9	14.2	8.8	4.8	36.0

(1947-9 = 100)

1950	143	125	121	118	70	110
1951	128	134	135	130	75	127
1952	107	125	110	111	89	106
1953	144	139	139	121	73	124
1954	116	112	121	117	69	87
1955	184	147	136	134	98	118
1953-5 Average	148	133	132	124	80	110
1956	139	156	147	136	99	123
1957	140	136	176	125	125	108
1958	107	102	122	131	66	82
1956-8 Average	138	131	148	131	97	104

Source: American Iron & Steel Institute.

of the 1947-9 level, shipments of cold rolled sheets and of tinplate had risen to 187% and 141%, respectively, while all other classifications had grown less than aggregate volume. The growth in these two classifications undoubtedly was made possible by improved techniques and superior products. Commanding premium prices as compared to heavier types, their fast growth doubtless was an important contributor to expanded sales and profits.

Since 1955, however, structurals and plates—the heavier types—have played a somewhat more important role, accompanied by traditional wide fluctuations, although tinplate apparently is continuing its relative growth. In this connection, it is of interest to note the substantial upturn in shipments of plates in 1956 and 1957, followed by a precipitous drop in 1958. The cycle must be attributed to the large shipbuilding program in the first two of these years, a recurrence of which in early future years may be doubtful. In any event, the lesser dominance of the lighter steels may explain the recent lag, discussed on a previous page, of “corrected” shipments behind actual tonnage.

If the 1956-8 period be considered a better guide to the future than earlier years, two conclusions may at least tentatively be drawn: (1) the industry may be encountering greater competition of other materials in markets for its lighter-weight steels; and (2) if greater importance is to be attached to the heavier

weights—farther from the consumer sector of the economy—the industry may be even more susceptible to business cycles than has been the case in most of the postwar period.

Distribution of Steel Shipments

Shipments of steel products by broad classes of users are examined in Table VII.

In the years through 1955, the secularly increasing importance of the automobile industry as a customer was apparent, particularly since it may be supposed that at least a portion of tonnage taken by warehouses and distributors has ultimate automotive use. In subsequent years, the picture has been somewhat clouded by less prosperous conditions in that industry. However, it is perhaps interesting to note that shipments for automotive use were lower in 1957 than in 1953, despite the fact that automobile production was about the same in the two years and that in the latter year the cars were larger. This could well be indicative of the displacement of steel by other materials, of the larger glass area in cars, etc. In this connection, it is important to note that in recent years roughly half of cold rolled sheet—a premium product, as noted earlier—has gone to the automotive industry. One may speculate further that if the growth in recent years in size and weight of passenger cars is now to be curtailed, with the “compact” car on the scene, automotive de-

TABLE VIII
Steel vs. Aluminum and Copper
(% of Steel Shipments)

	Tonnage			Volume (a)		
	Primary Aluminum Sold or Used	Consumption of Refined Copper	Aluminum plus Copper	Aluminum	Copper	Aluminum plus Copper
1950	1.01	1.97	2.98	2.92	1.73	4.65
1951	1.07	1.80	2.87	3.10	1.58	4.68
1952	1.38	2.18	3.56	4.00	1.91	5.91
1953	1.52	1.86	3.38	4.41	1.63	6.04
1954	2.34	1.99	4.33	6.78	1.75	8.53
1955	1.86	1.77	3.63	5.39	1.55	6.94
1953-5 Average	1.87	1.86	3.73	5.42	1.63	7.05
1956	1.91	1.83	3.74	5.54	1.61	7.15
1957	1.98	1.69	3.67	5.74	1.48	7.22
1958	2.66	2.10	4.76	7.71	1.84	9.55
1956-8 Average	2.14	1.85	3.99	6.20	1.63	8.83

(a) On basis of weights per cubic foot:
 Aluminum 169 lb.
 Copper 557 lb.
 Steel 490 lb.

Sources: Department of Interior, Bureau of Mines; American Bureau of Metal Statistics; American Iron & Steel Institute.

mand for steel will be unlikely to be as helpful to steel fortunes, even in good automobile years, as it has in the past.

All four of the largest outlets for steel (automotive, warehouses and distributors, construction and containers) have, over the years, had increases in tonnage in excess of the aggregate. All other domestic outlets used tonnages in the 1956-8 period only 4% greater than in 1947-9. Exports appear to be consistently of less importance.

Other Factors Affecting Steel Prospects

Competitive Materials

While tonnage of the steel industry has lagged behind the growth of the economy, it still is vastly in excess of that of other metals. However, the growth of aluminum as against steel has been quite remarkable, particularly when expressed in terms of volume as contrasted to tonnage (Table VIII).

Although copper volume may have barely held its own vis-a-vis steel, the growth of aluminum has been so superior that the relative growth of the two non-ferrous metals combined has been substantial. The upsurges in proportion of aluminum shipments in 1954 and 1958 are of particular significance. In 1954, there was for the first time sufficient aluminum capacity to seek civilian markets, but this was short-lived because capacity again became severely strained in 1955. By 1958, the aluminum industry had once again added substantial capacity, with sizable further additions held in abeyance. For some time ahead, it appears that consumers may lay plans for aluminum use without fear of shortages. The relative growth in 1958 reflected a "hard-sell" effort that may continue for some time. Increases in and new uses of aluminum are reported almost daily, in automobiles, construction, etc. In most such cases, this light and versatile metal is displacing steel.

Figures are not available to demonstrate the increasing competition, as well, of polyethylene and other plastics, other synthetics and paper for steel's lighter uses. Particularly may these materials, over a period of years, play a larger role in packaging, to the detriment of the tinsplate market. The profit on tinsplate may be presumed already to have been reduced by the coil-processing projects of the major can makers; this part of the steel business, which is believed quite profitable, is also being invaded by aluminum. Up until 1958, aluminum prices had generally followed the uptrend in steel prices. But it will be recalled that last year aluminum prices were cut, while steel prices continued to advance. Meanwhile,

price patterns in plastics and paper—in both of which capacity additions have been substantial—have been relatively stable and in some cases have trended downward.

In short, the competition of other materials, particularly but not exclusively in the light uses, appears to be in a strong uptrend. In terms of tonnage it may not yet appear significant, but in terms of profits and earnings stability, it appears to pose an important threat to the steel industry. It will, in this connection, be recalled that earlier allusions were made to the apparent slackening in the growth of the profitable lighter steel items, a trend that may well continue to the detriment of profit per ton and to the creation of an even more cyclical aspect in the steel industry.

Imports

The growth of steel imports, meanwhile, has been given considerable publicity, and has been one of the key arguments in the industry's resistance to further labor demands. In the face of a decline from 1957 to 1958 of almost 20 million tons (25%) in tonnage shipments by American producers, imports are reported to have risen from 1,851,000 to 2,130,000 tons (relative to domestic shipments, from 2.3% to 3.6%). Imports are known to have been rising this year, even before the strike started; during the summer they ran as high as 500,000 tons per month. Foreign capacity has been dramatically expanded, and labor costs are low; the opening of the St. Lawrence Seaway will undoubtedly have benefited foreign competition for Middle West markets. And it may well be that during the strike some American steel users will have entered into long-term contracts with foreign suppliers, to the detriment of markets for domestic production for some time to come.

The Labor Factor

As Table IX demonstrates, through 1955 the steel industry had done an excellent job in increasing output per employee in physical terms. In 1947-9, shipments averaged 80.7 tons annually per employee; in 1953-5 this had increased to 93.7 tons per employee, and in the record steel year of 1955, to 104.3 tons. This trend, however, seems to have abated somewhat. Shipments per employee in 1957 were only slightly higher than in 1953, tonnage shipments being roughly the same in both years. And 1958 showed virtually the same ratio as in 1954, another recession year. The 1956-8 average, in fact, was slightly lower than in 1953-5, partly explained by a drop in tonnage of about 2% between the two three-year periods.

Be that as it may, it appears that over the years

progress in dollar terms has been discouraging. Despite the industry's achievement of a larger proportionate market for higher-priced products, payrolls have certainly kept pace with sales growth; in 1958 they constituted the largest percentage of sales in the postwar period, and in 1956-8 they averaged a larger percentage of sales than in 1947-9 and 1953-5. Employment costs per ton shipped have shown a strong secular uptrend; in 1956-8 they averaged 64% higher than in the 1947-9 period.

The disappointing rate of progress of the last few years may not be a portent of the future, since the industry's sizable capital outlays for expansion and greater efficiency that culminated in 1957 may not yet have been afforded the opportunity of showing their effects, 1958 having been a recession year and this year having been interrupted by the strike. Neverthe-

less, it must be considered rather striking, in view of the widely publicized efficiency moves of the industry, to note the rather disheartening results to date.

This, of course, is what the strike was about, marking this event as clearly more than a mere manifestation of the traditional biennial disagreement. If labor is to pre-empt the savings of greater mechanization and improved operations, then the steel industry may find itself "running fast to stand still," and forced to continue pricing its products upward to the seemingly inevitable detriment of retention of its markets.

Parenthetically, this prospect may give pause to those who view steel stocks as most reasonably priced in relation to cash flow. If the reinvestment of depreciation and retained earnings produces, at best, a small long-term return, then using this as a factor of stock evaluation may have doubtful validity.

TABLE IX
Steel Industry Labor Factors

		<i>Monthly Average Number of Employees</i>	<i>Total Employment Costs (000,000)</i>	<i>Tons Shipped per Employee</i>	<i>Employment Costs % of Sales</i>	<i>Employment Costs Per Ton Shipped</i>
1947-9	Average	772,300	\$2,632	80.7	35.6	\$42.10
	1950	782,000	3,151	92.4	32.1	43.60
	1951	842,600	3,829	93.7	32.5	48.50
	1952	838,400	3,789	81.1	36.6	55.80
	1953	860,800	4,477	93.1	34.2	55.80
	1954	762,000	3,888	82.9	36.9	61.70
	1955	810,400	4,709	104.3	33.7	55.60
1953-5	Average	811,100	4,358	93.7	34.8	57.40
	1956	825,200	5,082	100.9	33.5	61.00
	1957	841,800	5,528	94.9	35.1	69.20
	1958	719,500	4,783	83.1	38.5	79.90
1956-8	Average	795,500	5,131	93.4	35.8	69.00

Source: American Iron & Steel Institute.

The information herein contained has been obtained from sources considered by us to be reliable but is not to be construed as guaranteed or represented by us.