Volume Title: Economic Tendencies in the United States: Aspects of Pre-War and Post-War Changes

Volume Author/Editor: Frederick C. Mills

Volume Publisher: NBER

Volume ISBN: 0-87014-020-5

Volume URL: http://www.nber.org/books/mill32-1

Publication Date: 1932

Chapter Title: Other Economic Changes, 1922-1929

Chapter Author: Frederick C. Mills

Chapter URL: http://www.nber.org/chapters/c4859

Chapter pages in book: (p. 416 - 528)

CHAPTER IX

Other Economic Changes, 1922-1929

THE first phase of the economic era which was ushered in by the World War ended, for the United States, in 1921. The next phase, falling between 1922 and 1929, was a period of prosperity, marked by increasing industrial productivity, rising living standards, generally advancing wages and rapidly increasing profits. The preceding chapters have described changes in production and prices occurring during this period. It remains to consider movements in certain factors which in part conditioned, in part reflected, the changes already discussed.

A detailed treatment of the complex economic movements of this period is not here possible. The discussion must be restricted to four or five elements of dominant importance. We shall consider, in turn, changes in total population and shifts in industrial employment, alterations in the volume and cost of capital and credit, movements of foreign trade, and changes in the aggregate values of the contributions of various productive agents and in their shares in the national income. Reference will be made throughout to the production and price movements already considered, and to the conditions and tendencies prevailing during the pre-war period discussed in earlier chapters.

Population Changes and Industrial Displacement

Movements of population and of certain related series are defined by measurements in the following table. The original series are plotted, for the post-war years, in Figure 84.

One of the most important of post-war developments has been a slowing up in the rate of increase of population. The data [1] indicate

[1] The measurements for the recent period relate to annual estimates of the population of continental United States made by P. K. Whelpton of The Scripps Foundation. (See "Trends in Population Increase and Distribution during 1920-30", *American Journal of Sociology,* May, 1931, p. 867.) The series is based upon census tabulations for 1920 and 1930, and upon statistics of births, deaths and migration for inter-censal years. The general trend is doubtless well reflected in these estimates, but year-to-year fluctuations in the actual population may not be

TABLE 165

MEASUREMENTS RELATING TO THE GROWTH OF POPULATION IN THE UNITED STATES, 1922-1929, WITH CORRESPONDING FIGURES FOR THE PERIOD 1901-1913

(1) Element of population	(2) Average annual rate of change 1922-1929 (per cent)	(3) Index of instability 1922-1929	(4) Average annual rate of change 1901-1913 (per cent)	(5) Index of instability 1901-1913
Total population	+ 1.4	0.3	+2.0	0.3
Number of wage-earners, manufacturing plants	+ 1.0	2.9	+2.7	2.7
Farm population [a]	— 1.3	0.4	——	——
Immigration [b]	—12.3	15.3	+2.4	15.8

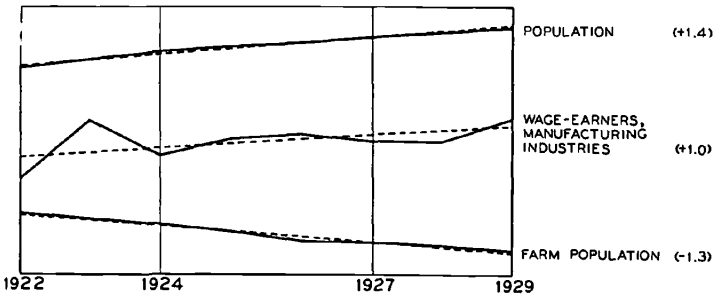
[a] No estimates of farm population are available for the pre-war period.

[b] A more exact measure of population movement is afforded by figures on net immigration (immigration less emigration). Net immigration declined at an average rate of 14.1 per cent between 1922 and 1929. The lack of statistics on emigration prior to 1907 prevents a comparison with the pre-war years.

It is to be noted that the data of immigration relate to increments, whereas the three other series in the table relate to aggregates.

FIGURE 84

CHANGES IN THE TOTAL POPULATION OF THE UNITED STATES, IN THE FARM POPULATION AND IN THE NUMBER OF WAGE-EARNERS IN MANUFACTURING INDUSTRIES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

so faithfully depicted. The estimates (revised), as of July 1 for the years 1922-1929, are as follows:

	(In thousands)
1922	110,328
1923	112,243
1924	114,415
1925	116,137
1926	117,707
1927	119,307
1928	120,682
1929	121,888

a rate of increase of 1.4 per cent a year between 1922 and 1929, distinctly less than the average annual rate of 2.0 per cent which prevailed during the thirteen years preceding the war. The declining rate of population increase is due in part to immigration restriction. Immigration declined, between 1922 and 1929, at a rate of 12.3 per cent a year (net immigration declined by 14.1 per cent a year). That there is a more fundamental cause is suggested by recent researches of Drs. Louis I. Dublin and Alfred Lotka, of the Metropolitan Life Insurance Company. Their studies [1] indicate that the true rate of natural increase of the population of the United States in 1928 was 2.3 per 1000, instead of 7.8 per 1000, the apparent rate. The apparent rate is deceptively high because of the relatively large proportion of our population at present in the reproducing groups, as a result of the higher birth rates of two to three decades ago and of the unrestricted immigration then prevailing. Conditions in the United States, it is held by these authorities, are not far from those characteristic of a stationary population.

The measurements in column (3) of Table 165 indicate the same degree of stability in the growth of population for both pre-war and post-war periods.[2] Slightly less stability is shown during recent years in the series measuring the number of industrial wage-earners. Immigration, always highly unstable, appears to have been as variable in post-war as in pre-war years. The magnitude of post-war instability in immigration is due largely to a sharp rise in 1923, in anticipation of immigration restriction, and a sharp drop in 1924 when new regulations went into effect. The absolute volume of immigration has been, of course, much smaller in recent years.

The data relating to changes in the farm population and in the number of employees of manufacturing plants throw light on certain of the occupational shifts occurring between 1922 and 1929.[3] These series indicate that the farm population has been declining,

[1] "On the True Rate of Natural Increase", *Journal of the American Statistical Association,* Vol. XX, No. 152, September, 1925, pp. 305-339, and "The True Rate of Natural Increase of the Population of the United States", *Metron,* Vol. VIII, No. 4, July, 1930, pp. 107-119.

[2] It must be recalled that all inter-censal population figures are estimates, and that the pre-war estimates are based on fragmentary data. Greater confidence attaches to the measures of population trends than to the measures of instability.

[3] Farm population figures are estimates made by the U. S. Department of Agriculture. The series relating to manufacturing employees was secured from biennial census figures, with annual interpolations based on the factory employ-

while at the same time the industrial population (the employees of manufacturing establishments) has been increasing at a rate lower than that at which the entire population has been growing. The reason for this apparent inconsistency is probably found in the very rapid increase in the number of those rendering personal service and engaged in the distribution of goods. Estimates based upon compilations of the Census of Occupations indicate that the number of persons employed in the service industries (transportation, trade and finance, public service, professional service and domestic and personal service) increased from 35 per cent of the total number of persons gainfully employed in 1920 to 42 per cent in 1930.[1] While no precise statistics covering these occupations are available, there is clear evidence of a rapid increase in the number of persons thus employed. These three related shifts—an absolute decline in the farm population, a relative decline in the number of industrial employees, and a marked increase in the number of those engaged in mercantile pursuits and in personal service occupations—are important aspects of economic tendencies in the United States during post-war years.

§ *On the extent of industrial displacement, 1899-1929.*—A more detailed study of these industrial shifts, which have been speeded up with the increasing pace of economic growth, throws further light on recent tendencies. The present figures relate to changes occurring among manufacturing industries. Variations, by census periods, in the total number of employees (wage-earners) of manufacturing plants in the United States are measured by the entries at the top of page 420.

These figures reveal an uninterrupted increase in number of manufacturing employees between 1899 and 1919, decline and recovery during the next two periods, followed by two periods of decline and a final period of advance from 1927 to 1929. But this picture fails to show the actual displacements of labor occurring during these years, the shifts from factory to factory and from industry to industry that were taking place even during periods of general advance. We do not possess records by factories which would show the actual movements of labor, but it is possible to trace the shifts among industries, and to measure the degree of industrial readjustment which such shifts necessitated.

ment index of the Federal Reserve Board. The interpolation of the pre-war census data on employment is based on annual estimates of Cobb and Douglas (*American Economic Review, Supplement,* March, 1928, p. 148).

[1] Persons engaged in clerical occupations are not included either in this group or in the total. If they be included in the service industries the above figures become 40 and 47. If they be included among persons in industries producing physical commodities the above percentages become 33 and 39.

Census period	Net gain or loss in number employed in identical industries [1]
1899-1904	+ 750,972
1904-1909	+1,161,467
1909-1914	+ 406,590
1914-1919	+2,105,141
1919-1921	−2,018,903
1921-1923	+1,826,048
1923-1925	− 411,637
1925-1927	− 59,294
1927-1929	+ 365,132

[1] The coverage of decennial census tabulations (1899, 1909, 1919, 1929) is somewhat greater than that of other census tabulations. This makes a considerable difference in the number of establishments recorded, since a larger proportion of small establishments is included in the decennial tabulations, but is not believed materially to affect the records of total wage-earners employed.

The data given in this and the following tables have been secured from a comparison by census periods of the returns for identical industries. Industries for which comparable statistics are not available for successive census periods are omitted. For the period 1899 to 1919 the figures include employees of establishments reporting a value of product over $500; for later years the limit is $5,000.

These shifts are measured by the following figures. Accession and separation rates are shown graphically in Figure 85.

TABLE 166

ACCESSIONS AND SEPARATIONS OF WAGE-EARNERS, MANUFACTURING INDUSTRIES OF THE UNITED STATES, 1899-1929

(1) Census period	(2) Number of industries	(3) Average number of wage-earners [a]	(4) Accessions	(5) Separations	(6) Accession rate [b]	(7) Separation rate [c]
1899-1904	295	5,076,197	820,322	69,350	16.2	1.4
1904-1909	316	6,105,264	1,247,920	86,453	20.4	1.4
1909-1914	338	6,933,670	637,310	230,720	9.2	3.3
1914-1919	353	8,305,476	2,368,496	263,355	28.5	3.2
1919-1921	306	7,819,308	36,989	2,055,892	0.5	26.3
1921-1923	318	7,766,304	1,912,916	86,868	24.6	1.1
1923-1925	320	8,483,768	234,554	646,191	2.8	7.6
1925-1927	323	8,267,736	263,539	322,833	3.2	3.9
1927-1929	321	8,514,427	626,267	261,135	7.4	3.1

[a] Average of numbers employed in the two years compared. The entries relating to the period prior to 1919 include the employees of establishments with output valued at more than $500. For later years the limit is $5,000.

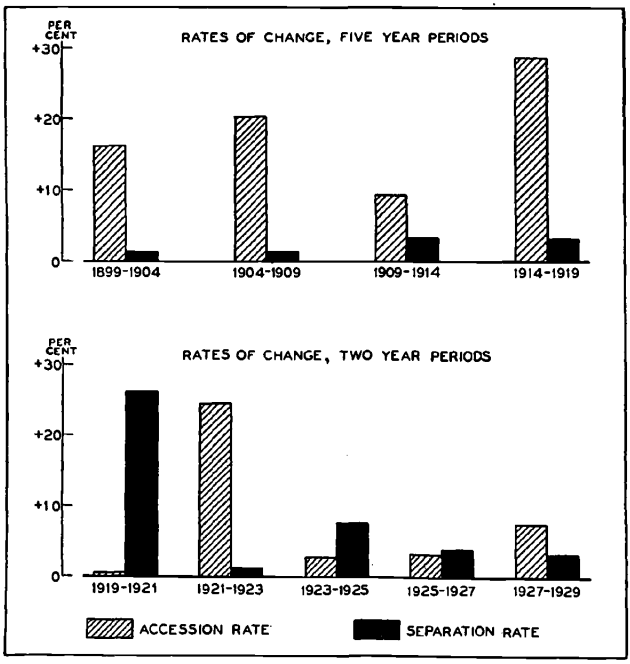
[b] Accessions as percentage of average number employed.

[c] Separations as percentage of average number employed.

FIGURE 85

ACCESSION AND SEPARATION RATES BY INDUSTRIES

WAGE-EARNERS IN MANUFACTURING INDUSTRIES OF THE UNITED STATES



The comparisons set up in the preceding table are affected somewhat by the change in the length of the census period from five to two years after 1919, but account may be taken of this change in interpreting the results. For the present purpose we may neglect the periods between 1914 and 1923, concentrating attention on the first three and the last three census periods.

During the three pre-war periods absolute accessions (i.e., entrances of wage-earners into new manufacturing industries) averaged 901,851 during a census period of five years. The average accession rate was 14.9 per cent. On the average, during each of these periods, approximately one new man was brought in for each seven men on the payroll. During the three most recent periods (biennial periods) absolute accessions averaged 373,787. The average accession rate was 4.5 per cent. During each of these census periods, on the average, one new man was brought in for each 22 men on the payroll. Making due allowance for the difference in the length of the census interval, it is clear that there has been a marked reduction in the relative number of accessions. If we accept the accession rate as a measure of the demands placed upon industry for the training of new men, for the fitting of new men into

the working mechanism of factory life, we may conclude that these demands have been lightened in recent years. The era of rapid growth, in respect of number employed, has been followed by one of comparative stability, and the influx of new employees has been lessened.

A study of separations yields different results. During the three pre-war census intervals absolute separations (i.e., reductions in the number of men employed in specific industries) averaged 128,841. The average separation rate was but 2.1 per cent. On the average, only one of every 48 men employed withdrew from or was forced out of the industry in which he was working, during each of these five-year periods. (The figures relate, of course, to net changes between the terminal years of census periods.) But during the three biennial census periods from 1923 to 1929 absolute separations averaged 410,053 men. Separations from specific industries during an average two-year period were more than three times as great, in absolute terms, as they were during an average five-year period before the war. (Again, the figures are based on net changes between terminal years of census periods.) The average separation rate was 4.9 per cent between 1923 and 1929. During each two-year period, on the average, between 1923 and 1929, 49 men out of every thousand employees withdrew from or were forced out of the industry in which they were working, as compared with 21 men out of every thousand during a five-year pre-war period.

As the industrial accession rate measures the demands placed upon industry for the training of new men, so does the industrial separation rate measure the demands placed upon manufacturing employees for the finding of employment in other industries. (The fact must be emphasized that the basic figures from which we are working relate to accessions and separations *by industries,* not by establishments. The unit of study is the individual industry, e.g., petroleum refining. The net change in employment in each of some three hundred odd industries constitutes a single observation, for the present purpose. Separations, then, measure the number of men actually forced to find employment in other industries, not in other plants within the same industry. The demands of readjustment are, accordingly, more severe than they would be if the data related to individual plants.) It is an impressive fact that under the prosperous industrial conditions prevailing between 1923 and 1929 one individual worker out of 20 was forced, every two years, to seek employment in a new manufacturing industry, or in a non-manufacturing industry. These conditions placed lighter demands upon industry for the training of new men, but placed much heavier demands upon wage-earners, and enforced a degree of adaptability not required under pre-war conditions. This marked lessening of the permanence of job tenure must be borne in mind, along with the wage changes, if we are to secure a just appreciation of the situation of industrial labor during the last decade.

There is not space here to trace the record through by large industrial groups. Data on separations, which are most significant as regards

the strain of readjustment placed on wage-earners, are summarized below for six major groups.

TABLE 167

SEPARATIONS OF WAGE-EARNERS BY INDUSTRIAL GROUPS, 1899-1914, 1923-1929

(All figures, absolute and relative, relate to average changes during census intervals. Such intervals were of five years' duration during the period 1899-1914, of two years' duration during the period 1923-1929.)

(1)	(2)	(3)	(4)	(5)
	Separations, 1899-1914		Separations, 1923-1929	
Industrial group (manufacturing)	Average number	As percentage of average number employed	Average number	As percentage of average number employed
Foods	3,888	1.0	18,869	2.8
Textiles	19,096	1.5	78,073	4.8
Products of petroleum and coal	3,672	5.0	4,523	3.2
Iron and steel	7,473	1.5	33,991	4.0
Machinery	1,427	0.2	23,787	2.6
Transportation	21,590	4.2	62,897	11.5

Separations increased during the post-war period, both absolutely and in relation to the number of wage-earners employed, among all but one of the industrial groups listed above. These groups do not cover the entire industrial field, but they are sufficiently comprehensive to indicate that permanence of tenure had declined for wage-workers in a large proportion of manufacturing industries. They do not, of course, tell the whole story; many types of industrial displacement are not reflected in such measurements of net change between large industrial groups. This record under-emphasizes the difficulties of workers in manufacturing industries, under modern industrial conditions.

AVAILABILITY OF CAPITAL AND CREDIT

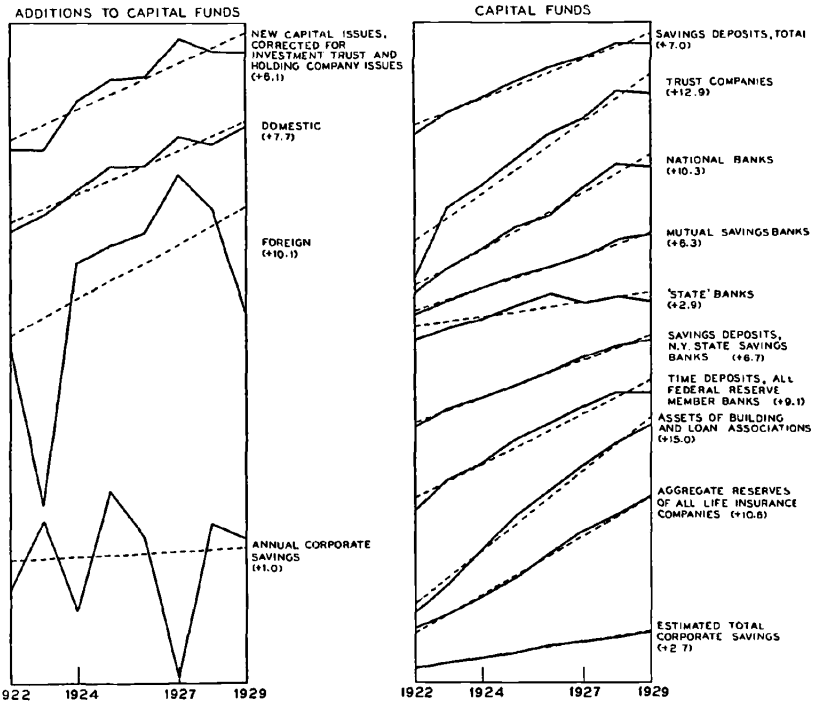
Capital and credit stand at the very center of the complex of inter-related elements which condition the working of a modern economic system. In the post-war development of the American economy they were particularly active factors. Conditions prevailing in markets for capital and credit help to explain many of the distinctive developments of this era. In the present brief survey there are brought together certain currently available materials bearing on changes in the supply and cost of capital and of various types of credit during this period.

Supply of Capital

Since no accurate measurements of the total invested capital of the United States or of the amount of new capital funds available for investment each year are available, it is impossible to secure definitive figures as to the rate of increase in capital accumulation. However, there are a number of series which reflect, directly or indirectly, changes in the supply of savings and of capital available for business and industrial uses. Measurements of the rates of change and of the degree of instability of certain of these series are shown in Table 168. These are divided into two classes, those which relate to increments, or annual additions to capital funds, and those which relate to aggregate amounts, or funds. (No attempt is here made to correct for over-lapping among the various items.) The series listed are plotted in Figure 86.

FIGURE 86

CHANGES IN CERTAIN ELEMENTS OF THE SUPPLY OF CAPITAL FUNDS IN THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

TABLE 168

SHOWING CHANGES IN CERTAIN ELEMENTS OF THE SUPPLY OF CAPITAL FUNDS AND IN ANNUAL ADDITIONS TO CAPITAL FUNDS IN THE UNITED STATES, 1922-1929 [a]

Sources or elements of capital funds [b]	Absolute values (in millions of dollars)		Average annual rate of change (per cent)	Index of instability
	1922	1929		
Additions to Capital Funds				
New capital flotations				
New capital issues, corrected for investment trust and holding company issues	4,304	7,052	+ 8.1	6.9
Domestic issues, total, corrected.	3,669	6,294	+ 7.7	3.8
Foreign issues, total	635	758	+10.1	27.4
Annual corporate savings (estimated)	1,747	2,320	+ 1.0	22.2
Capital Funds				
Total savings deposits [c]	17,579	28,261	+ 7.0	2.3
'State' banks	6,105	7,413	+ 2.9	2.9
Mutual savings banks	5,818	8,904	+ 6.3	0.8
National banks	4,074	7,889	+10.3	2.8
Trust companies	1,525	4,023	+12.9	6.9
Savings deposits, New York State savings banks	2,800	4,419	+ 6.7	1.1
Time deposits of all Federal reserve member banks	7,161	13,279	+ 9.1	3.2
Aggregate reserves, life insurance companies	7,176	14,272	+10.6	0.7
Assets of building and loan associations [d]	3,117	8,356	+15.0	2.8
Total corporate savings (estimated)	73,818	88,840	+ 2.7	0.3

[a] The capital funds represented by the series in this table are measured in current dollars, but no material distortion is introduced thereby. The period covered was marked by only a slight secular change in the value of the dollar.

[b] New capital flotations are from *The Commercial and Financial Chronicle*, supplemented by special compilations made for the National Bureau of Economic Research; details are given in Table 169. Total savings deposits, as of June 30, are derived from figures collected by the Savings Bank Division of the American Bankers Association. The figures for savings deposits of New York State savings banks are monthly averages, as published in the *Survey of Current Business*, 1931 Annual Supplement, p. 210. Time deposits of Federal reserve member banks are averages of the figures given on 'call dates'; they are from the *Annual Report* of the Federal Reserve Board, 1930, p. 95. The December 31 figures for reserves of life insurance companies as published in the *Insurance Yearbook*, 1930, The Spectator Co., p. 516, have been averaged to give figures as of June 30, as have the figures for assets of building and loan associations, from the *Statistical Abstract of the United States*, 1931. p. 279. (The latter figures were originally compiled by the United States Building and Loan League.) Additions to corporate savings and total corporate savings are from tables below.

[c] Includes the relatively small savings deposits of private banks.

[d] The assets of building and loan associations constitute a 'revolving fund' of savings, rather than an aggregate fund of capital in the proper sense.

Of the series listed in this table the following are of chief significance as indexes of the volume of savings proper in the United States:

Annual increments to total capital supply:
- New capital issues, corrected by the elimination of issues covering financing by investment trusts and holding corporations.
- Additions to aggregate corporate savings.

Elements of total capital supply:
- Total savings deposits, all banks.
- Total reserves, life insurance companies.
- Assets of building and loan associations.
- Total corporate savings.

Each of these requires some attention.

Annual Increments to Capital Funds: New Issues.—The first two of these series represent additions to existing capital funds, a fact which must be considered in interpreting their rates of change. Thus if new capital issues were constant in amount from year to year, it would mean that absolute annual increments to existing funds were constant. Total funds would be increasing under these conditions. Rates of change in such increments may not properly be compared with rates of change in total volumes.

Flotations of new capital issues are partly financed, in the first instance, out of bank credit. But this is ordinarily a passing phase of the process of flotation, for in the ultimate absorption of the securities true savings are called forth.[1] It is probable that this ultimate absorption by investors was somewhat longer delayed, during the period immediately preceding the 1929 recession, than it was under earlier conditions. In part, the volume of new security flotations was doubtless carried out of the reservoir of credit connected with the stock market, a reservoir which was greatly increased between 1922 and 1929. Accordingly, we should probably not consider the volume of new issues within recent years to be as accurate an index of savings proper as in earlier years when the reservoir of stock market credit was more stable in volume.

In tracing changes in capital issues we should deduct, from the total amount of new issues, amounts representing refunding issues

[1] If the volume of credit has been such as to cause price inflation this may not be true. The 'saving' out of which capital has been derived may in such a case have been involuntary—'automatic lacking', in D. H. Robertson's phrase (*Banking Policy and the Price Level,* King, London, 1926, p. 47).

and issues floated by investment trusts and trading and holding companies for the purchase of securities. Between 1922 and 1929 an increasing proportion of stock issues consisted of the offerings of investment trusts and of various types of holding companies. The proceeds of issues of this sort are not used to increase the capital equipment of the country, or to swell the country's circulating capital. The amounts of such issues, and corrected figures for issues from which the creation of capital goods proper may be expected, are shown in the following table. Three of these series are plotted in Figure 86.

TABLE 169

NEW CAPITAL ISSUES IN THE UNITED STATES, AND ISSUES OF INVESTMENT TRUSTS, TRADING AND HOLDING COMPANIES, 1922-1929 [a]

(In millions of dollars)

(1) Year	(2) Total new capital issues [b]	(3) Issues of investment trusts, trading and holding companies	(4) Net new capital issues	(5) Foreign issues, total new capital	(6) Domestic net new capital issues
1922	4,304	—	4,304	635	3,669
1923	4,304	11	4,293	280	4,013
1924	5,593	59	5,534	997	4,537
1925	6,220	46	6,174	1,086	5,088
1926	6,344	102	6,242	1,145	5,097
1927	7,791	271	7,520	1,561	5,959
1928	8,114	1,033	7,081	1,319	5,762
1929	10,183	3,131	7,052	758	6,294
Average annual rate of change (per cent) ..	+13.0	—	+8.1	+10.1	+7.7
Index of instability	5.1	—	6.9	27.4	3.8

[a] Data are from *The Commercial and Financial Chronicle*. The entries in column (3), which were compiled for the National Bureau of Economic Research by W. M. Cahill of *The Commercial and Financial Chronicle*, represent issues clearly intended for 'unproductive' purposes. Entries in other columns include municipal and other governmental issues but exclude Federal issues.

[b] Excluding refunding issues.

The series listed in column (4), in which our present interest lies, increased between 1922 and 1929 at a rate of 8.1 per cent a year, with an index of instability of 6.9. The aggregate amount of

new issues in 1929, corrected by the subtraction of investment trust and holding company issues, was 7,052 millions of dollars. The magnitude of this figure may be realized when it is recalled that this represents an annual increment, not an existing volume. Foreign issues showed a much more rapid increase than domestic issues, for the period as a whole. The margin of difference would have been much greater had the period studied terminated in 1928. Between 1922 and 1928 the rate of increase in foreign capital issues in the United States averaged 19.0 per cent per year—a phenomenally rapid rise. This rapidly swelling volume of foreign issues played an important rôle in both domestic and international economic developments during this period. We shall touch upon this again.[1]

Annual Increments to Capital Funds: Corporate Savings.—Corporate savings, in the form of additions to surplus and undivided profits, constitute another important source of new capital. The amount of such savings may be estimated from corporate returns to the Bureau of Internal Revenue, by subtracting Federal taxes and cash dividends from net profits, with due correction for losses suffered by corporations showing no net profits. These figures appear in the next table.

Savings of this type show no marked increase during this period. A maximum value of almost three billions of dollars was registered in 1925, with the entries for 1923, 1928 and 1926 next in order of magnitude. In 1925, indeed, additions to corporate capital funds through this process of ploughing back profits amounted to 58 per cent of reported net domestic capital issues. For the entire period of eight years corporate savings amounted to 42

[1] The reduction of the public debt of the Federal government was a factor of some importance in augmenting the volume of savings during this period. Taxation which provides funds for the retirement of a public debt representing consumptive expenditure in the first place is a form of compulsory creation of new capital funds. For in the retirement of the debt, funds secured by taxation are made available for investment in private enterprise, or in state or municipal securities.

Between 1922 and 1929 the gross debt of the Federal government was reduced by approximately six billions of dollars. It is reasonable to assume that practically all of this was reinvested. Part of this sum would doubtless have been saved by the original recipients, if it had not been absorbed in taxes. But the swelling of the large volume of corporate and private saving by the addition of this huge sum representing, in some part, forced saving on the part of tax-payers contributed to the growth of capital funds and to the favorable conditions in capital markets which characterized this period.

TABLE 170

ESTIMATES OF CORPORATE SAVINGS IN THE UNITED STATES
Annual Additions to Surplus and Undivided Profits, 1922-1929 [a]

Year	Estimated corporate savings (in millions of dollars)
1922	1,747
1923	2,528
1924	1,575
1925	2,957
1926	2,335
1927	1,115
1928	2,479
1929	2,320
Average annual rate of change (per cent)....	+1.0
Index of instability.....	22.2

[a] *Statistics of Income,* for 1922-1929, Bureau of Internal Revenue. The figures represent net profits, less taxes and cash dividends.

per cent of net domestic capital issues and to 51 per cent of net new capital issues floated for domestic corporations, as recorded in current compilations.[1] This would indicate that about 34 per cent of the new capital requirements of American corporations were met out of corporate savings. But this figure is subject to a considerable margin of error, since the degree of coverage of the relevant statistics cannot be determined exactly.[2]

We pass to a consideration of certain of the elements of total capital supply, dealing now with funds and not with annual increments.

Savings Deposits.—Total savings deposits of all banks in the United States, as compiled and published by the Savings Bank Division of the American Bankers Association, show an increase

[1] See Table 173.

[2] Between December 31, 1928, and December 31, 1929, total capital stock, plus bonds and mortgages, of corporations submitting balance sheets to the U. S. Bureau of Internal Revenue increased by 17,183 millions of dollars. New domestic capital issues (including investment trust, trading and holding corporations) as compiled by *The Commercial and Financial Chronicle,* amounted to 9,425 millions of dollars during the year 1929. Making due allowance for stock dividends and for possible variations in the coverage of the Federal statistics, it is clear that current compilations of new security issues, though carefully made, fail to include all additions to outstanding corporate stocks and mortgage obligations.

between 1922 and 1929 at an average annual rate of 7.0 per cent. (See Table 168 in connection with this figure, and those cited below.) The figure 7.0 is probably somewhat too high if taken as a measure of the rate of accumulation of funds in savings deposits proper. The totals on which it is based include the time deposits of Federal reserve member banks and certain deposits of other banks, which do not represent savings, exclusively. Reference to the figures for certain of the constituent items in this total reveals important differences among their rates of change. Savings in 'state' banks increased at a relatively low rate (2.9 per cent a year). Deposits in mutual savings banks increased at a rate of 6.3 per cent a year, with a measure of instability of but 0.8. This steady, regular growth probably indicates rather accurately the true rate of change in savings in that section of the country in which mutual savings banks are located (the New England states, New York, New Jersey, Delaware and Maryland). Deposits which are classed as 'savings' have increased much more rapidly in national banks and in trust companies. For the former, the average annual rate of change was 10.3 per cent, for the latter 12.9 per cent. Both figures are to be accepted with reservations arising from the growth of time deposits in member banks of the Federal Reserve System, and from the relatively rapid increase in the number of trust companies in recent years.

Time deposits of all member banks increased during this period at an annual rate of 9.1 per cent. The fact that such deposits are subject to lower reserve requirements than are demand deposits has induced banks to encourage the building up of time accounts. There is reason to believe that a considerable proportion of these time deposits do not represent accumulations of savings, or true primary deposits of the type found among mutual savings banks, but arise from the conversion of slow demand accounts into time accounts. In so far as these are derivative deposits resulting from lending operations, rather than primary deposits of true savings, they cannot be accepted as an accurate index of capital accumulation; accordingly, the relatively rapid rate of change in time deposits of all member banks, as well as the figure for total savings deposits cited above, must be discounted somewhat.

Savings deposits in New York state banks, which increased at an annual rate of 6.7 per cent during this period, are not subject to the defects pointed out above. Here, as in the case of the mutual

savings banks, we have a steady growth marked by only slight variations from year to year. For the eastern part of the country the true rate of increase in this form of capital accumulation was probably in the neighborhood of six per cent a year.

Properly to interpret these figures it is necessary to have some idea of the magnitudes involved, since a given percentage rate of growth is more significant for a series of large magnitude than for one of small magnitude. For all banks, savings and time deposits in 1929 amounted to 28,261 millions of dollars. Of this aggregate almost nine billions of dollars was in mutual savings banks, over seven billions in state savings banks, close to eight billions in national banks, and four billions in trust companies.

Reserves of Life Insurance Companies.—Another important source of capital accumulation is found in premiums paid to life insurance companies. Changes in capital funds coming from this source are best measured in terms of the reserves of life insurance companies. These, which in 1929 amounted to over 14 billions of dollars, increased between 1922 and 1929 at a rate of 10.6 per cent a year, with an index of variability of 0.7. (See Table 168.) Here was a pronounced and steady rise in one of the highly important sources of new capital.

Assets of Building and Loan Associations.—Assets of this type, which represent, primarily, funds invested in residential construction, increased between 1922 and 1929 at a rate of 15.0 per cent a year, with an index of instability of 2.8. The aggregate value of such assets amounted, in 1929, to 8,356 millions of dollars. This remarkable increase was in part a reflection of the great expansion in residential building during this period. (It may be noted, by reference to Figure 86, that the line of trend does not in this case define the true rate of growth accurately throughout. In the earlier years the rate exceeded 15.0 per cent, while toward the end of the period there was an appreciable decline in the rate of increase.)

Corporate Savings.—The elements of total capital supply discussed above are all important, but their absolute magnitude, in combination, is exceeded by the aggregate savings of corporations. Such savings, appearing in the first instance as additions to corporate surplus, or to undivided profits, and perhaps later passing

into the capital stock account through the medium of stock dividends, are a major factor in capital accumulation.[1] Figures defining the *annual* amounts of corporate savings have been given in an earlier section; our present problem is the more difficult one of determining the aggregate capital fund accumulated through corporate savings, and the rate of increase of this fund between 1922 and 1929. Estimated figures appear in the next table. The entries in the last column are plotted in Figure 86.

TABLE 171

ESTIMATES OF AGGREGATE CORPORATE SAVINGS, AND OF ANNUAL CORPORATE SAVINGS, 1922-1929

(In billions of dollars)

Year	Additions to corporate savings during year	Total corporate savings at end of year	Total corporate savings at middle of year
1921	—	73	—
1922	1.7	75	74
1923	2.5	77	76
1924	1.6	79	78
1925	3.0	82	80
1926	2.3	84	83
1927	1.1	85	85
1928	2.5	88	86
1929	2.3	90	89

§ *On the method of estimating the volume and rate of increase of corporate savings.*—(a) Between 1923 and 1929[2] approximately 15 billions of dollars were added to corporate capital funds by corporate savings, as shown in Table 170 above. Of this sum about 5 billions,

[1] Economists have differed somewhat as to the extent to which additions to corporate surplus may be accounted true savings. Oswald W. Knauth, after an investigation of this subject, concludes that "between 80 per cent and 90 per cent of the reported surpluses may be considered to be real savings." ("The Place of Corporate Surplus in the National Income," *Journal of the American Statistical Association*, June, 1922, p. 161.) Colonel M. C. Rorty is inclined to believe that this figure is too high, in that insufficient account is taken of the possibility of drafts on surpluses to meet contingencies. In the present study the full amount of reported corporate surpluses has been included. If some portions of these surpluses do not constitute real savings, the absolute figures should be correspondingly reduced. The rate of growth of this element of capital would not be materially modified by such a change.

[2] While data are available for 1922 they are excluded because of the exceptional amount of stock dividends declared in that year. Stock dividends (amounting to 3,348 millions of dollars) were considerably in excess of corporate savings for the same year (1,747 millions).

as reported by the Bureau of Internal Revenue, were transferred to capital account through the medium of stock dividends, leaving 10 billions as additions to surplus and undivided profits. Such additions thus included only two-thirds of all corporate savings between 1923 and 1929.

(b) On December 31, 1929, surplus and undivided profits (less deficits) of all corporations in the United States amounted to approximately 60 billions of dollars.[1]

(c) If we assume that this figure constitutes two-thirds of all savings by corporations prior to December 31, 1929 [it was noted under point (a) that this proportion prevailed between 1923 and 1929] we have 90 billions of dollars as the approximate aggregate value of such savings as of December 31, 1929. Of this amount approximately 60 billions represented funds then classified as surplus and undivided profits, while approximately 30 billions represented funds previously transferred from surplus to the capital stock account, through the agency of stock dividends.

(d) From the total of 90 billions for December 31, 1929, are deducted the successive amounts shown annually in the table representing additions to corporate surplus and undivided profits. This procedure gives a series of figures representing total corporate savings as of December 31, for the years from 1921 to 1929.

(e) Total corporate savings as of June 30, each year, are computed from the December 31 figures. Figures thus centered at the middle of each year are more directly comparable with our other data than are figures relating to December 31 of each year. (To avoid a fictitious appearance of accuracy, the figures in the last two columns are given only to the nearest billion.)

We should note that the annual increments to corporate savings have been determined, with a fairly high degree of accuracy, from corporate returns to the Treasury. The margin of error attaching to estimates of total corporate savings is much greater. The process of stepping up, by ten per cent, surplus and undivided profits reported by corporations submitting balance sheets, as a means of correcting for unreported items, involves an error of indeterminable magnitude. The assumption that one-third of corporate savings was distributed in the form of stock dividends, because that was the approximate fraction prevailing between 1923 and 1929, involves a similar error. The assumption that corporate surplus and undivided profits consist only of corpo-

[1] The precise figure given in the 398,815 balance sheets submitted was 55,111 millions. But 456,021 income tax returns were made by active corporations for 1929. Since most of the corporations not filing balance sheets are small, we are not justified in estimating capital funds of all corporations on the basis of a simple proportion, that is, by multiplying the given figure by 456,021/398,815. A reasonable approximation is made by increasing by ten per cent the figure derived from the balance sheets submitted. This gives an estimated total surplus and undivided profits of 60 billions of dollars in 1929.

rate savings is not entirely accurate. Again, the process of working backward from an estimated value of corporate savings as of December 31, 1929, makes the range of absolute values of the entire series rest upon the magnitude of the 1929 estimate. However, the present purpose will be served by an approximation to the absolute magnitude of aggregate corporate savings. Our immediate interest is in the rate of growth of this series. Having accurate data on annual increments, this rate may be determined with reasonable accuracy even though the estimate of the absolute magnitude of the series be subject to a considerable error. Thus we have 2.7 per cent as the rate of increase in corporate savings between 1922 and 1929. If one assumes that the 1929 estimate of the magnitude of aggregate savings is subject to an error of as much as 20 per cent, this means that the true rate of gain in corporate savings is not less than 2.2 per cent a year, and not more than 3.4 per cent. These limits may be accepted as reasonable, in view of the nature of the present estimates.

There is reason to think that the fraction of corporate savings distributed in the form of stock dividends was greater between 1923 and 1929 than during earlier periods. If this is so, the present method overestimates corporate savings prior to 1922, and gives absolute figures for total corporate savings (as in Table 171) which are too large. It is likely that any error in these estimates lies in this direction. If such an error is present, the 1922-29 rate of growth of corporate savings, as given in the text, is too low.

As of December 31, 1921, total savings of corporations in the United States, as represented by surplus and undivided profits, or by prior disbursements of stock dividends, amounted to approximately 73 billions of dollars. This figure had increased by December 31, 1929, to approximately 90 billions. Shifting the data to June 30th of each year, to improve comparability with other series, we find an average increase of 2.7 per cent a year, with an index of instability of 0.3. In magnitude, this item materially exceeds the other elements of total capital supply listed above, and the rate of increase falls below those of the other items. Yet, because of the magnitude of the item, and the relative importance of this source of capital, the rate of advance is notable. It materially exceeds the figure of 1.4 per cent, which defines the growth of another important social 'fund'—aggregate population.

The four series discussed represent four important elements in the total savings of the country. Accepting these as constituting a fair sample of the aggregate, and summarizing them, we have the following picture of the growth of savings in the United States between 1922 and 1929. A graphic portrayal appears in Figure 87.

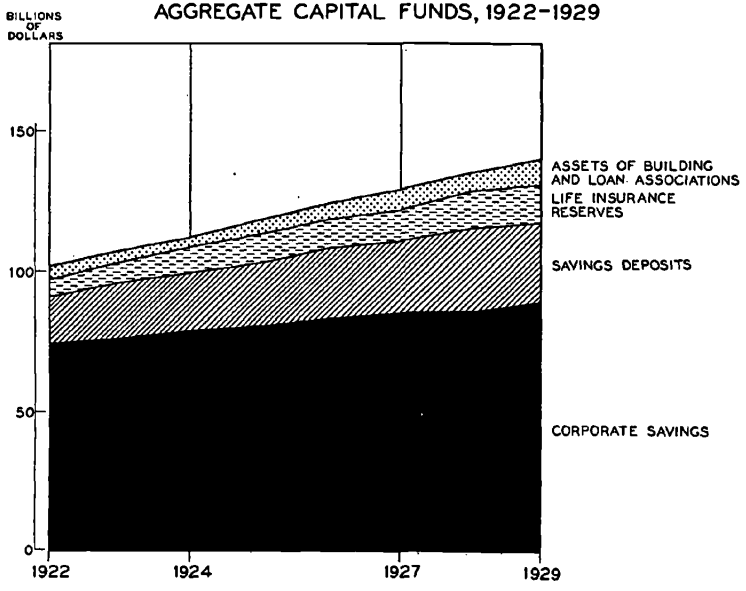
TABLE 172

GROWTH OF CERTAIN ELEMENTS OF CAPITAL FUNDS IN THE UNITED STATES, 1922-1929

Series	Absolute values, 1929 (millions of dollars)	Average annual rate of increase 1922-1929 (per cent)	Index of instability of growth
Corporate savings (estimated)	88,840	+ 2.7	0.3
Savings deposits, all banks.....	28,261	+ 7.0	2.3
Aggregate reserves, life insurance companies	14,272	+10.6	0.7
Assets of building and loan associations	8,356	+15.0	2.8
Total, four preceding items.....	139,729	+ 4.7	0.5

FIGURE 87

GROWTH OF CERTAIN ELEMENTS OF AGGREGATE CAPITAL FUNDS, 1922-1929



The rates of increase of the four series are inversely correlated with their absolute magnitudes. This is a reasonable relationship, since a given rate of increase involves greater absolute gains for a series of large magnitude than for one of small magnitude.

Judged with reference to the other economic series studied, two of the series listed (corporate savings and life insurance reserves) have been marked by notable stability of growth between 1922 and 1929.

There is probably little overlapping among the items in the above series, and it appears not illegitimate to add them and to measure the rate of change and the stability of the aggregate. When this is done we secure a series which amounted in 1929 to 139,729 millions of dollars and which increased between 1922 and 1929 at a rate of 4.7 per cent a year, with an index of instability of 0.5.

This aggregate falls short, of course, of including all the accumulated savings of the country. It is probable that the figure 4.7 overstates the rate of increase in the capital funds of the country as a whole. Of the elements included in the above total, two were subject to somewhat exceptional forces during the period under review. Sales of life insurance increased at a rate much higher than that of pre-war days, and the building boom which set in after the post-war recession is reflected in the great increase in the assets of building and loan associations. It seems probable, therefore, that the elements of the country's total supply of capital funds not included in this list increased at a somewhat lower rate than that derived above. Yet it is of the highest significance that the elements of our capital supply here represented, amounting to an aggregate of about 140 billions of dollars, increased with the degree of regularity evidenced by the instability index of 0.5, and at a rate of 4.7 per cent a year. This exceeds the rate of increase in the physical volume of production and construction (a rate of approximately 4.1 per cent a year) and is substantially greater than the rate of growth of population.[1]

An Estimate of the Growth of Aggregate Corporate Capital.— We may employ another approach to the problem of determining

[1] It is to be recognized, of course, that not all the savings included in the above figures went into the creation of industrial capital equipment. Practically the entire sum represented by the assets of building and loan associations, some 40 per cent of the resources of life insurance companies, and a considerable part of the savings deposits of banks were loaned on real estate mortgages. The proceeds of a large proportion of such loans were used to finance the construction of private residences. It is probable, too, that an increasing proportion of the surpluses and undivided profits of corporations remained in liquid form during this period.

the rate of gain in one important element of the capital funds of the United States—corporate capital. On December 31, 1929, total corporate bonds and stocks, as reported to the United States Treasury [1] in 398,815 corporate returns amounted to 156,501 millions of dollars. There were, however, 57,206 corporations filing income tax returns but not submitting balance sheets. As explained in the preceding section (see footnote, p. 433) we may take rough account of those not reporting by stepping up the total for December 31, 1929, by 10 per cent. (Only approximate accuracy is required in this total, since interest attaches to the rate of increase, not to absolute amounts.) The estimated total of corporate bonds and stocks outstanding, as of December 31, 1929, is 172.2 billions of dollars. (There is, it may be assumed, a certain amount of water in this total, but since it is unlikely that the percentage of stock issues not represented by actual investment changed materially between 1921 and 1929, this may be ignored.) By adding to the estimated figure for bonds and stocks outstanding on December 31, 1929, the estimated total of corporate surplus and undivided profits, we secure 232.8 billions of dollars as the estimated total of corporate capital funds on that date.[2]

It is desired to carry this series back, by years, to December 31, 1921. For each year of this period data on the additions to corporate capital funds are available. Thus, between December 31, 1928, and December 31, 1929, there were added to aggregate corporate capital funds 2.3 billions of dollars through additions to corporate surplus and undivided profits,[3] and 8.0 billions of dollars through the flotation of domestic corporate securities.[4] Subtracting the sum of these items from total corporate capital funds as of December 31,

[1] *Statistics of Income for 1929,* Bureau of Internal Revenue, p. 25.

[2] The combination of statistics of corporate stocks with those of surplus and undivided profits avoids any error arising from the existence of no-par stock.

[3] Net profits, less total taxes and total cash dividends paid, and less deficits on the part of corporations suffering losses.

[4] Since the capital funds of investment trusts and holding companies are included in the Treasury statistics, the issues of such companies are included in the total given. Refunding issues have been deducted.

The procedure here employed rests on the assumption that the Treasury data and the compilations on new issues are comparable. In detail, there are doubtless discrepancies, in addition to those for which correction has been made. But for the purposes of approximating the general magnitude of the sums involved, and of estimating the rate of growth of these funds, minor discrepancies may be ignored.

1929, we secure 222.5 billions of dollars as the total of corporate capital funds on December 31, 1928. The same procedure was followed for earlier years, successive annual increments being subtracted from year-end totals. The results (rounded off to the nearest billion) are shown in columns (5) and (6) of the following table.

TABLE 173

ESTIMATED GROWTH OF CORPORATE CAPITAL FUNDS IN THE UNITED STATES, 1922-1929

(In billions of dollars)

(1)	(2)	(3)	(4)	(5)	(6)
Year	Additions to total corporate capital funds during year			Total corporate capital funds at end of year	Total corporate capital funds at middle of year
	Through corporate savings	Through sales of new securities [a]	Total		
1921	——	——	——	182	——
1922	1.7	2.4	4.1	186	184
1923	2.5	2.8	5.3	191	189
1924	1.6	3.1	4.7	196	194
1925	3.0	3.7	6.7	203	199
1926	2.3	3.8	6.2	209	206
1927	1.1	4.6	5.7	215	212
1928	2.5	5.4	7.8	222	219
1929	2.3	8.0	10.3	233	228

[a] Data on sales of new securities are the figures for domestic corporate issues, as compiled by *The Commercial and Financial Chronicle*, plus new issues of joint-stock land banks. Since financing by closed corporations and by small corporations would not find its way into the investment market, this series understates the absolute amount of financing through sales of new securities.

These are, of course, only estimates, and are to be looked upon merely as approximations to the figures desired. They indicate that the aggregate capital at the disposal of American corporations increased from approximately 182 billions of dollars at the end of 1921 to 233 billions of dollars at the close of 1929. The annual increase in aggregate capital during this period averaged about 6.4 billions of dollars. The year 1929, when something in excess of ten billions of dollars was added to corporate capital funds, marked the maximum increase.[1]

[1] Duplications affect this figure, since investment trust and holding company issues are included in the annual increments and in the aggregate fund. To the extent that industrial corporations in general employed surplus and undivided

The figures of greatest interest for our present purpose are those defining the rate of increase and the stability of aggregate capital funds at the disposal of corporations. Such aggregate funds (values computed as of the middle of each year) increased at an average annual rate of 3.1 per cent, and their oscillations averaged only four-tenths of one per cent. This estimate of the rate of growth of corporate capital funds has a much broader statistical base than had the data relating to separate elements of the capital supply, cited above. One may be confident that if it errs it is on the side of understatement.[1] It is an impressive figure, in view of the magnitude of the accumulations represented. The capital supply at the disposal of corporations was increasing during the period through which we have just passed at a rate more than twice that at which population was growing. These facts indicate that the innumerable and complicated instruments of round-about production were being

profits in the purchase of securities of other corporations, instead of utilizing these funds in their own business, a further duplication is introduced into the above calculations.

Difficulties arise, also, because of lack of complete information concerning the retirement of bond issues during the period covered, and because of the probability that some of the proceeds of new issues were used for refunding purposes, though not specifically so designated. However, errors due to these causes, which would tend to increase the apparent rate of growth of corporate capital funds, were undoubtedly more than balanced by errors due to incomplete coverage of data relating to new issues.

[1] The possibility of duplication through utilization of corporate surpluses in the purchase of new securities has been noted. Another source of possible error lies in the necessarily incomplete coverage of the current statistics of new issues. Figures previously cited (footnote, p. 429) indicate that the actual annual additions to the total stock and bond issues of domestic corporations rather materially exceed the values given in the compilations of *The Commercial and Financial Chronicle.* Many issues of closed and of small corporations would naturally be excluded from this record. If we make the assumption that the current statistics of new issues require a stepping-up of 50 per cent, and correct the figures in Table 173 correspondingly, we secure a series for total corporate capital funds which increases between 1922 and 1929 at a rate of 4.4 per cent a year.

Professor S. H. Nerlove, in his study *A Decade of Corporate Incomes* (University of Chicago Press, 1932), gives two series of estimates of the invested capital of all corporations in the United States. One of these shows a rate of increase of 4.3 per cent per year between 1922 and 1929, the other a rate of 5.0 per cent. (Nerlove's 'invested capital' is not equivalent to our 'corporate capital funds', since he is dealing with equity values only.)

For various reasons, then, it is safe to say that the estimates of corporate capital funds given in the text err on the side of conservatism, as regards their rate of growth. We may conclude that the true rate of increase in these funds, between 1922 and 1929, was in excess of 3.0 per cent and was probably in the neighborhood of 4.0 per cent per year.

created in ever greater volume during this period. The rate of increase, in fact, was one which, if maintained, would have resulted in a doubling of the total supply of these instruments in from 16 to 23 years. Whether this rate of increase in capital funds would be likely to engender unstable conditions, whether, in fact, it contributed to the recession which terminated this period of advance, is a natural question, but one which cannot at this stage of our knowledge be definitely answered.

The remarkable stability of this capital fund is worthy of note. The fluctuations in the aggregate were only slightly greater than the variations from year to year in population, and were distinctly smaller than the oscillations in any other economic series we have studied.

Independent evidence as to the rate of change in the aggregate capital funds at the disposal of corporations is furnished by the following index of the aggregate assets of American industrial corporations, compiled by the Statistical Division of the American Telephone and Telegraph Company.[1] This series, together with estimated corporate capital funds, is plotted in Figure 88.

TABLE 174

INDEX NUMBERS MEASURING CHANGES IN THE ASSETS OF AMERICAN INDUSTRIAL CORPORATIONS, 1922-1929

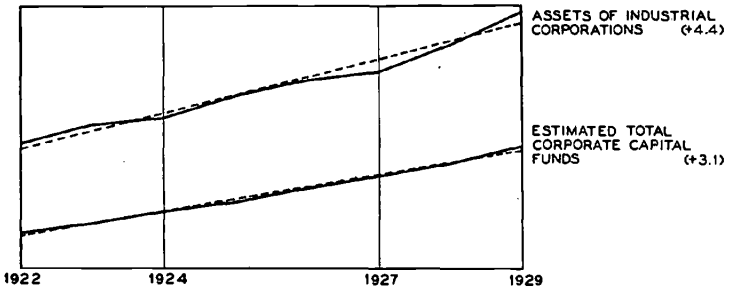
Year	Index of corporate assets
1922	100.0
1923	104.6
1924	106.7
1925	111.9
1926	116.4
1927	119.4
1928	127.3
1929	137.8

These data indicate a change in the aggregate assets of industrial corporations at an average annual rate of + 4.4 per cent, between 1922 and 1929. This series and that which has just been

[1] This index has been placed at our disposal through the courtesy of Mr. Seymour L. Andrew, Chief Statistician. It is constructed from the published reports of somewhat over 400 important corporations, by the process of chaining links based on identical companies for pairs of successive years.

FIGURE 88

GROWTH OF ASSETS OF INDUSTRIAL CORPORATIONS AND OF TOTAL CORPORATE CAPITAL FUNDS IN THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

discussed are drawn from different sides of the balance sheets of industrial corporations and are based upon somewhat different corporate groups. The rates of change derived from them differ somewhat, but are of the same general order of magnitude. A figure in the neighborhood of four per cent a year may be taken to define the rate of increase in corporate capital funds during the period between the recessions of 1920 and 1929.

The index of instability for industrial assets is 1.4, materially greater than the corresponding measurement for aggregate capital funds. Variations in inventories and in other liquid assets which vary with business conditions would affect industrial assets, from year to year, without there being any necessary change in aggregate capital.

It is clear from the preceding discussion that, with respect to the volume of capital available to American industry, no restriction was placed upon industrial expansion. Though the precise rate of increase in our capital resources may not be determined, for reasons pointed out above, the evidence indicates that the most important single element in the total supply has been increasing at a rate close to four per cent a year. Various other elements of the capital supply have increased at rates materially greater than this. The aggregate in Table 172 (which overlaps the above series to some extent, since corporate surpluses were included) shows an increase at the rate of 4.7 per cent a year. These various bits of evidence, supplementing data relating to the physical volume of production of capital equip-

ment, indicate that a constantly increasing percentage of the total national income was diverted, during the period 1922-1929, to the replacement and accumulation of capital goods, and to the building up of circulating capital.[1]

The Supply of Credit

We turn now to a survey of changes in the supply of credit. In so far as we are dealing with bank credit it is possible to secure fairly accurate measurements of the variations in the credit supply, but it is impossible accurately to measure changes in the total volume of book credit [2] and of certain other forms of consumer credit. Only to the extent that consumer credit is reflected in the business of commercial banks, therefore, does this highly important element enter into this survey.

It will be useful in tracing credit changes to distinguish between what may be called *primary funds,* funds available for use

[1] Chapter VI contains data relating to the production of capital goods which may be compared with the present statistics of capital funds.

Lack of data render it impossible to include in the above summary investments by individuals in farm improvements, farm equipment, drainage and similar additions to capital equipment, investments which were not financed by public offerings of securities.

[2] The U. S. Bureau of Internal Revenue has published statistics of notes and accounts receivable for all reporting corporations for the years 1926 to 1929. (See *Statistics of Income.*) For all corporations, excluding the finance group (in which banks fall) we have the following figures:

	Notes and accounts receivable (in millions of dollars)
Dec. 31, 1926	17,761
Dec. 31, 1927	18,829
Dec. 31, 1928	21,775
Dec. 31, 1929	22,682

The magnitude of this item is apparent, if we compare it with a figure of 58,474 millions of dollars representing total bank credit (loans and investments of all banks in the United States) as of June 29, 1929. Equally striking is the fact that such notes and accounts receivable increased by almost 5 billions of dollars over a period of but three years.

Notes and accounts payable, for the same body of reporting corporations, increased from 17,360 millions of dollars on December 31, 1926, to 20,799 millions on December 31, 1929. Of the total for December 31, 1926, accounts payable made up 8,056 millions, notes payable made up 9,304 millions. On the broad assumption that all notes payable were for bank loans, we have, as the approximate amount of net receivables on December 31, 1926, 17,761 millions less 8,056 millions, or almost 10 billions of dollars. Though these are not definitive figures, they suggest the general order of magnitude of this particular form of credit.

as bank reserves and, in part, as media of circulation, and *secondary funds,* the latter consisting of credit extended by all banks other than Federal reserve banks. Our first concern is with changes in the supply of and in the demand for primary funds during the period 1922-1929.

Primary Funds.—In the following table are shown the elements of the total supply of primary funds. These are plotted in Figure 89.

TABLE 175

CHANGES IN AGGREGATE PRIMARY FUNDS IN THE UNITED STATES AND IN THE CONSTITUENT ELEMENTS OF THIS AGGREGATE, 1922-1929 [a]
(Averages of daily figures, in millions of dollars)

(1) Year	(2) Stock of money gold	(3) Treasury currency outstanding	(4) Total Federal reserve bank credit outstanding	(5) Aggregate primary funds
1922	3,802	1,604	1,226	6,632
1923	4,061	1,736	1,205	7,002
1924	4,439	1,757	996	7,192
1925	4,381	1,755	1,195	7,331
1926	4,452	1,743	1,258	7,453
1927	4,564	1,774	1,175	7,513
1928	4,206	1,783	1,505	7,494
1929	4,283	1,785	1,459	7,527
Average annual rate of change (per cent)	+1.3	+1.1	+3.6	+1.6
Index of instability	4.4	1.6	7.5	1.6

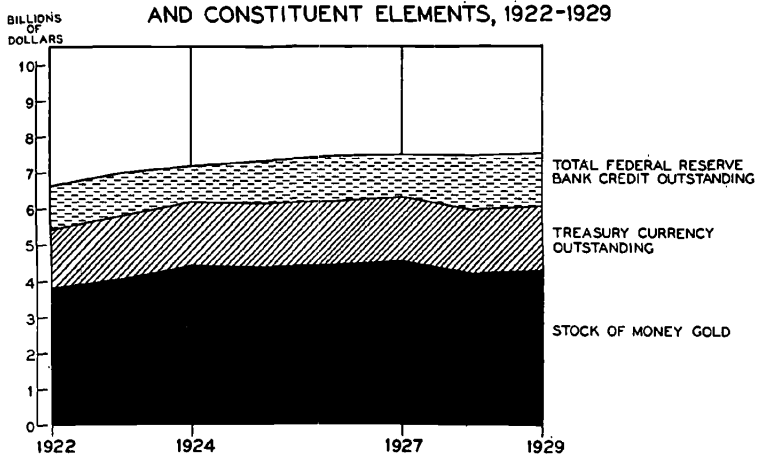
[a] The data in this table are from the *17th Annual Report of the Federal Reserve Board* (1930), p. 31.

The stock of money gold [1] is the major element of the primary funds of the United States, constituting 57.3 per cent of the aggregate in 1922, 56.9 per cent in 1929. This is available for use either in the form of bank reserves, in which it may form the basis of expansion of secondary funds, or as circulating media. Next in

[1] This stock consists of gold coin in circulation, plus gold held by the Treasury and by Federal reserve banks, except gold earmarked for foreign account. See *Federal Reserve Bulletin,* July, 1929, pp. 432-438.

FIGURE 89

CHANGES IN AGGREGATE PRIMARY FUNDS AND CONSTITUENT ELEMENTS, 1922-1929



importance is Treasury currency, or Treasury credit,[1] constituting slightly less than one-quarter of the aggregate. This element, again, is available for use either in the form of bank reserves, or as part of the circulating media. The third element of the total volume of primary funds consists of Federal reserve bank credit, credit which is emitted in various ways. This credit constitutes the primary source of member bank reserve balances. Reserve bank credit made up slightly less than one-fifth of the total volume of primary funds in the United States between 1922 and 1929.

In absolute magnitude secondary funds are far more important than are primary funds. As compared with a total of 7,527 millions of dollars of primary funds in 1929, secondary funds (loans and investments of all banks in the United States) amounted to 58,474 millions,[2] almost eight times as much. But the growth of secondary funds, which supply the major part of the credit needs of the country, is conditioned by the available supply of primary funds, and, accordingly, the latter occupy a place of strategic importance in the credit and monetary structure of the country.

The relative importance of different elements in aggregate pri-

[1] This is made up of silver coin, silver certificates, Treasury notes of 1890, Federal reserve bank notes, national bank notes, United States notes, and minor coin, less Treasury holdings of cash.

[2] As of June 29, 1929. The daily average of primary funds for the week ending June 29 was 7,402 millions of dollars.

mary funds and the major changes in these elements are shown clearly by Figure 89. The stock of money gold increased substantially between 1922 and 1924 with imports of gold from abroad, and reserve bank credit contracted. Aggregate primary funds increased 560 millions of dollars. During the next two years the aggregate increased by about 260 millions of dollars, practically all of this coming from expanding reserve bank credit. Between 1926 and 1927 the stock of money gold again increased, by something over 100 millions of dollars, and reserve bank credit contracted by a slightly smaller amount. From 1927 to 1928 the stock of money gold dropped sharply, the loss amounting to over 350 millions of dollars, and reserve credit expanded, by an almost equal amount. Changes between 1928 and 1929 were slight.

These movements illustrate very well the rôle of Federal reserve credit as a factor regulating the total supply of primary funds. The stock of money gold, the largest element in the supply of these funds, moves, in the main, in response to forces not immediately connected with domestic business conditions and with domestic currency and credit requirements. Treasury credit, in total volume more important than reserve bank credit, has been a similarly insensitive factor. The elastic portion of this important aggregate of primary funds has consisted of reserve bank credit, the smallest element in the total. It is this element which must not only respond to the demands of business but must also correct the aggregate for such fluctuations in the other factors as are ill-adapted to the immediate needs of domestic business.

Total primary funds increased between 1922 and 1929 at an average annual rate of 1.6 per cent. The sharpest relative increase occurred in reserve bank credit, which rose at an average rate of 3.6 per cent a year, as against rates of 1.3 per cent and 1.1 per cent for the stock of money gold and Treasury credit. In absolute figures, however, the greatest addition to the aggregate came from the swelling stock of gold.

The other side of the picture is revealed by a study of the uses to which primary funds have been put, or, in other words, by a survey of the demand factors. Table 176, on the following page, shows the volume of primary funds flowing into each of four channels.

TABLE 176

USES OF PRIMARY FUNDS IN THE UNITED STATES, 1922-1929

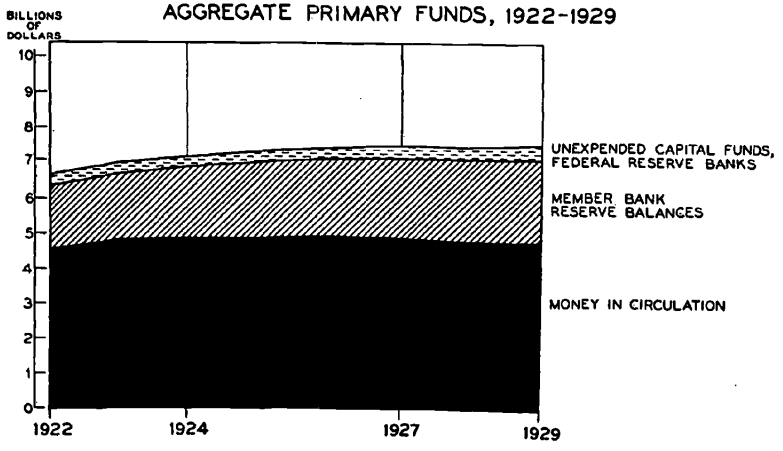
(Averages of daily figures, in millions of dollars) [a]

(1) Year	(2) Money in circulation	(3) Member bank reserve balances	(4) Non-member deposits in Federal reserve banks	(5) Unexpended capital funds, Federal reserve banks	(6) Aggregate primary funds
1922	4,535	1,781	30	286	6,632
1923	4,822	1,873	27	280	7,002
1924	4,879	2,023	27	263	7,192
1925	4,869	2,167	31	264	7,331
1926	4,932	2,209	28	284	7,453
1927	4,892	2,290	31	300	7,513
1928	4,783	2,355	29	327	7,494
1929	4,763	2,358	30	376	7,527
Average annual rate of change (per cent)	+0.4	+4.2	+0.8	+4.1	+1.6
Index of instability	2.0	2.3	4.6	6.4	1.6

[a] *17th Annual Report of the Federal Reserve Board* (1930), p. 31.

FIGURE 90

CHANGES IN THE USES MADE OF AGGREGATE PRIMARY FUNDS, 1922-1929



The constitution of the aggregate, with reference to the uses to which primary funds are put, is shown graphically in Figure 90.

By far the largest portion of aggregate primary funds (about two-thirds of the total) is used to provide media of circulation. An additional five per cent is practically withdrawn from the market, appearing as unexpended capital funds of the reserve banks. Non-member deposits make up a very small portion (less than one-half of one per cent) of the total. The balance, averaging some 30 per cent of the total, is used to provide member bank reserve balances at Federal reserve banks. These balances provide the basis of the major portion of the credit supply of the country.

From 1922 to 1926 aggregate primary funds increased by something over 800 millions of dollars. Approximately half of this was used to provide additional money in circulation, while half went to augment member bank reserve balances. From 1926 to 1929 total primary funds increased by approximately 70 millions of dollars. Money in circulation had declined, during this period, by 170 millions of dollars, making available, altogether, some 240 millions of dollars of primary funds. About 150 millions of this went to swell member bank reserve balances, while about 90 millions were withdrawn through the increase in unexpended capital funds of reserve banks. The major part of the increase in primary funds over the whole period was used to increase member bank balances, the average rate of increase per year in this series being 4.2 per cent.

The story of the changes in primary funds between 1922 and 1929 is, therefore, fairly simple. For the first four years the net change in reserve bank credit was negligible; the inflow of gold from abroad, plus an increase of about 150 millions of dollars in Treasury credit, furnished the additional funds needed to supply an expansion of money in circulation and a steady advance in member bank balances. During the remainder of the period primary funds were released by a declining volume of money in circulation. There was a still greater decline, however, in the stock of money gold, owing to heavy exports. Additional Federal reserve credit was needed to supply funds for expanding member bank reserves, and to replace funds withdrawn through the increase in unexpended capital funds of the reserve banks. Reserve bank credit in 1929 was 200 millions of dollars greater than in 1926, and almost 300 millions of dollars greater than in 1927.

Secondary Funds.—We turn to the changes occurring between 1922 and 1929 in the volume of secondary funds, that is, in the volume of bank credit available to the business community. For purposes of comparison there are brought together in the following table series relating to aggregate primary funds, to that portion of total primary funds flowing into member bank reserve balances and hence serving directly as a basis of secondary funds, to member bank credit and to total bank credit.

TABLE 177

ELEMENTS OF THE MONEY AND CREDIT STRUCTURE, 1922-1929

(In millions of dollars)

(1)	(2)	(3)	(4)	(5)
			Secondary funds	
Year	Aggregate primary funds (daily average) [a]	Member bank balances (daily average)	Member bank credit [b] (June 30)	Total credit, all banks [c] (June 30)
1922	6,632	1,781	24,182	39,956
1923	7,002	1,873	26,507	43,738
1924	7,192	2,023	27,167	45,180
1925	7,331	2,167	29,518	48,830
1926	7,453	2,209	31,184	51,562
1927	7,513	2,290	32,756	53,750
1928	7,494	2,355	35,061	57,265
1929	7,527	2,358	35,711	58,474
Average annual rate of change (per cent)	+1.6	+4.2	+5.8	+5.6

[a] Stock of money gold, Treasury currency outstanding and Federal reserve credit.
[b] Loans and investments of all member banks.
[c] Loans and investments of all banks in the United States.

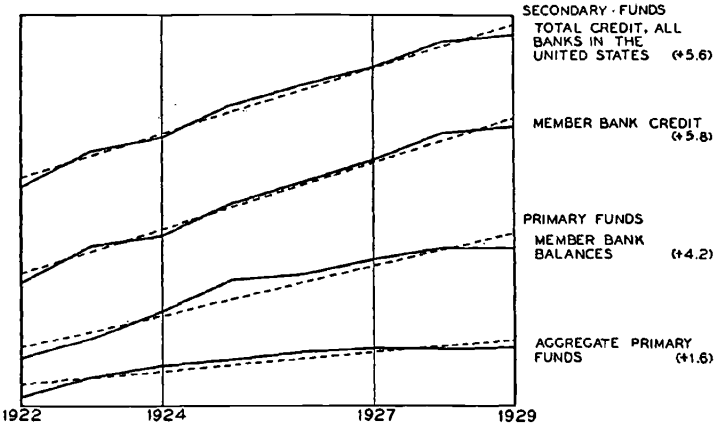
These series are shown graphically in Figure 91.

As a basic element we have the aggregate mass of primary funds, increasing at an average annual rate of 1.6 per cent between 1922 and 1929. More definitely linked to the credit superstructure is that portion of this aggregate (some thirty per cent) which is used as legal reserve balances by member banks. This portion increased by 577 millions of dollars between 1922 and 1929, at an average annual rate of 4.2 per cent.

Of a different order is the mass of bank credit directly avail-

FIGURE 91

CHANGES IN ELEMENTS OF THE MONEY AND CREDIT STRUCTURE OF THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

able to the business community. About sixty per cent of the total bank credit of the country consists of member bank credit, and this rests directly upon the member bank reserve balances. Member bank credit increased from 24,182 millions of dollars on June 30, 1922, to 35,711 millions on June 29, 1929, the average annual rate of increase being 5.8 per cent. Total bank credit increased over the same period from 39,956 millions of dollars to 58,474 millions, at an average annual rate of 5.6 per cent.

It is this last figure which measures the increase in the volume of credit actually available to the business world, an increase of more than 18,500 millions of dollars in seven years. The rate of increase, it should be noted, is materially greater than the rate of increase in the physical volume of production of movable goods during this period (approximately 3.8 per cent) and still greater than the rate of increase in the aggregate value of goods produced (approximately 3.3 per cent). It exceeds, also, the rates of increase in the capital funds and in the industrial assets of corporations.

It is possible to investigate the nature of this increase by studying some of the details given in the reports of certain Federal reserve member banks, a group which constitutes approximately 38 per cent of the banking strength of the country. For this group of reporting member banks the average annual rate of increase in

volume of credit extended between 1922 and 1929 was 5.9 per cent, slightly above the rate for the banks of the country at large. The total may be broken up into two elements significant for the present purposes, credit extended for commercial purposes and credit employed in connection with security purchases or arising out of loans based upon securities.[1] By combining loans on securities (which increased at a rate of 10.5 per cent a year during this period) and total investments of reporting member banks (which increased at a rate of 5.2 per cent a year), we secure a series which may be taken to represent non-commercial credit. Loans not based on securities ('all other' loans) are conventionally regarded as a measure of the volume of commercial credit, and may be here employed for that purpose.

TABLE 178

GROWTH OF BANK CREDIT, REPORTING MEMBER BANKS, 1922-1929[a]

(In millions of dollars)

(1) Year	(2) Loans on securities	(3) Total investments	(4) Loans on securities plus total investments	(5) All other loans
1922	3,863	4,086	7,949	7,261
1923	4,117	4,473	8,590	7,750
1924	4,456	4,747	9,203	8,001
1925	5,336	5,219	10,555	8,248
1926	5,722	5,250	10,972	8,588
1927	6,166	5,560	11,726	8,679
1928	6,894	6,052	12,946	8,909
1929	7,651	5,717	13,368	9,230
Average annual rate of change (per cent)	+10.5	+5.2	+7.9	+3.2
Index of instability	1.8	2.8	1.7	1.1

[a] The entries in this table are based upon monthly averages of weekly figures, as given in the *17th Annual Report of the Federal Reserve Board*, p. 98.

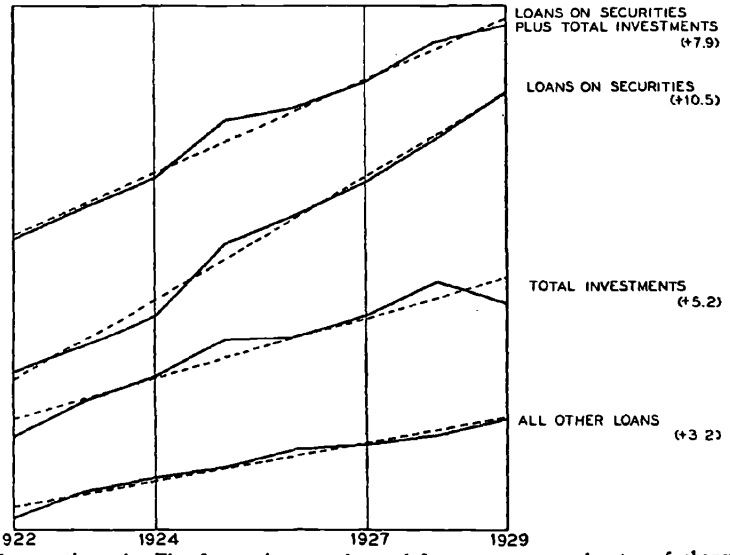
These series are plotted in Figure 92.

[1] The classification of total loans into loans on securities and 'all other' loans is not available for all Federal reserve member banks for the full period under review. Loans and investments of reporting member banks constitute, however, over 60 per cent of the total loans and investments of all member banks; the average annual rates of change are practically identical.

FIGURE 92

GROWTH OF BANK CREDIT IN THE UNITED STATES, 1922-1929

REPORTING MEMBER BANKS



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

This division reveals a pronounced difference between the courses taken by commercial and by non-commercial credit between 1922 and 1929. The volume of commercial credit increased at a rate of 3.2 per cent a year; the volume of credit connected with the security markets increased at a rate of 7.9 per cent a year. The former rate is actually lower than the figures measuring the trends of industrial production and of the volume of distribution of goods. The second rate stands close to the measurements defining the course of events in the security markets.

There are differing views as to the extent to which credit extended in connection with security transactions may flow into channels of commercial use. We need not here debate the question. It seems clear, however, that the full force of the purchasing power represented by a volume of credit increasing at a rate of 5.6 per cent a year was not felt in commodity markets. For if it had been, this figure is hardly consistent with a rate of increase of 3.8 per cent in the volume of production of movable goods and a rate of decline of 0.5 per cent in the level of wholesale prices. The state of

demand was such, during this period, that the effect of the new credit was felt in certain markets (notably markets for securities and for urban realty) and not to the same extent in others. Credit may be free to flow from market to market but the state of demand and the direction of consumers' (or buyers') interests will determine the direct incidence of new credit.

It is true that the apparent discrepancy between the trends of prices, production and credit volume from 1922 to 1929 may have been due to the existence of a form of masked inflation in commodity markets. Excess credit emission may have maintained prices during a period when declining production costs tended toward lower prices. Such a tendency did prevail, as has been shown in Chapter VIII, but the drop in costs was not sufficient to account for the divergence noted.

Increase in Mortgage Indebtedness.—The preceding discussion has dealt solely with commercial bank credit. In a related field, that of mortgage indebtedness, important developments occurred during the period under review.[1] The last decade witnessed a tremendous expansion in the aggregate value of real estate mortgages in the United States, particularly of urban real estate mortgages. We are not justified in considering the increase in mortgage values to be exclusively due to credit expansion. The very considerable investments of life insurance companies, of building and loan associations and of mutual savings banks represent, primarily, the flow of savings. To the extent that real estate security offerings have been purchased by ultimate investors the same is true. In this field we are dealing with an expansion which combined elements of both credit and savings.

Changes in some of the elements of the total mortgage indebtedness of the country are indicated by the entries in the following table. It should be recognized that certain of the figures are estimates, subject to considerable margins of error. These series are charted in Figure 93.

Total estimated holdings of urban real estate mortgages more than doubled between 1922 and 1929. From an estimated value of approximately 13 billions of dollars in 1922, urban mortgage hold-

[1] See "Credit Expansion, 1920 to 1929, and its Lessons", Charles E. Persons, *Quarterly Journal of Economics,* Vol. XLV, November, 1930, pp. 94-130, for a discussion of this subject.

TABLE 179

ELEMENTS OF MORTGAGE INDEBTEDNESS IN THE UNITED STATES, 1922-1929
Estimated Holdings of Urban Real Estate Mortgages [a]

(In millions of dollars)

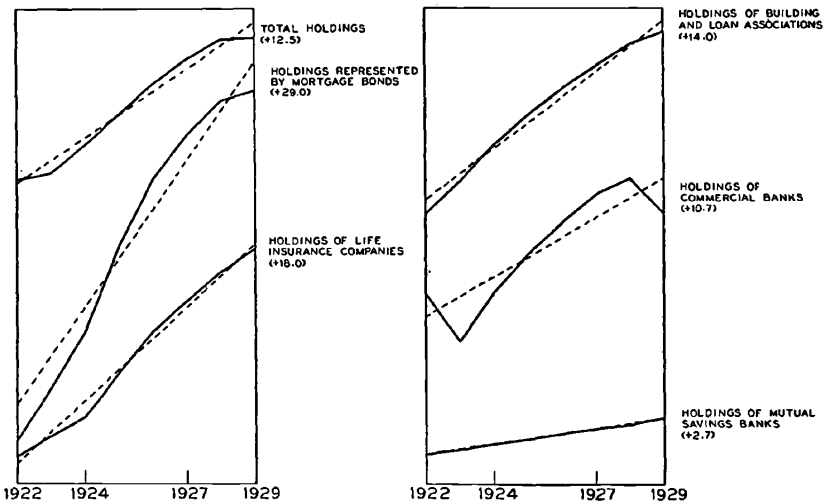
(1) Year	(2) Commercial banks	(3) Mortgage bonds outstanding	(4) Mutual savings banks	(5) Life insurance companies	(6) Building and loan associations	(7) Total
1922	3,393 *	682	4,250 *	1,634 *	3,065 *	13,024
1923	2,677 *	900	4,375 *	1,825 *	3,627 *	13,404
1924	3,449 *	1,190	4,500 *	2,019	4,384 *	15,542
1925	4,221 *	1,883	4,625 *	2,507	5,085	18,321
1926	4,993 *	2,654	4,750 *	3,153	5,827	21,377
1927	5,767	3,305	4,875 *	3,701	6,583	24,231
1928	6,221	3,972	5,000 *	4,290	7,336	26,819
1929	5,195	4,169	5,125 *	4,831	7,787 *	27,107
Average annual rate of change (per cent) ..	+10.7	+29.0	+2.7	+18.0	+14.0	+12.5

* Estimated.

a From Charles E. Persons, *op. cit.*, p. 104.

FIGURE 93

CHANGES IN THE ESTIMATED HOLDINGS OF URBAN REAL ESTATE MORTGAGES IN THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

ings increased to a figure in excess of 27 billions of dollars in 1929. Some idea of the relative values involved may be had from the fact that the figure for 1922 was equal to about one-third of the total outstanding credit of all banks in the United States in that year, while the figure for 1929 was equal to almost one-half of the total bank credit then outstanding. The average annual rate of increase in urban mortgage holdings between 1922 and 1929 was 12.5 per cent. This rate is far in excess of those relating to aggregate savings, in so far as these may be estimated, and to total volume of commercial credit. Here was one of the points at which a bulge developed in the economic system between 1922 and 1929. The amount of savings and, probably, the amount of credit devoted to urban realty development during this period was excessive, if the average pace of economic growth may be accepted as a criterion.

The rapid development of mortgage bonds as a means of financing real estate operations was a notable feature of this period. The aggregate amount of such bonds increased more than six-fold between 1922 and 1929, the annual rate of increase averaging 29.0 per cent. Next in order, with an average annual rate of increase of 18.0 per cent, were the mortgage holdings of life insurance companies. Holdings of building and loan associations, of commercial banks and of mutual savings banks ranked next, with reference to rates of growth.

Exact data on the aggregate amount of farm mortgage loans for these years are not available, but it is certain that the rate of increase was much lower. Between 1922 and 1929 aggregate farm mortgages probably increased from a figure not far above 8 billions of dollars to something in the neighborhood of 9.5 billions.[1]

Cost of Capital and Credit

In treating of the availability of capital and of credit, the supplies of these factors are not alone important. Their *cost* is of equal concern to commercial and industrial borrowers. In ordinary times, indeed, the availability of capital and of credit is measured by the business man solely in terms of costs. It is to a consideration of these costs that we now turn.

Various series measuring the cost of capital and of credit to dif-

[1] Cf. Persons, *ibid.*, p. 107.

ferent classes of borrowers between 1922 and 1929 are given in the following table, and are shown graphically in Figure 94.

TABLE 180

BOND AND STOCK YIELDS, REDISCOUNT RATES AND INTEREST RATES, 1922-1929

(1) Year	(2) Bond yields [a] (per cent)	(3) Stock yields [b] (per cent)	(4) Rediscount rates, Federal reserve banks, 60-90 day commercial paper [a] (per cent)	(5) Rates charged customers on prime commercial paper, 32-36 cities [c] (per cent)	(6) Interest rates, 4-6 months commercial paper [a] (per cent)	(7) Call loan renewal rates [d] (per cent)
1922	4.94	6.74	4.56	6.24	4.43	4.29
1923	4.98	6.92	4.48	6.10	4.98	4.85
1924	4.85	6.88	4.11	5.76	3.91	3.08
1925	4.72	5.86	3.81	5.57	4.03	4.20
1926	4.60	5.77	3.99	5.61	4.24	4.50
1927	4.47	5.20	3.81	5.55	4.01	4.06
1928	4.49	4.40	4.43	5.67	4.84	6.04
1929	4.70	4.17	4.99	6.08	5.78	7.61
Average	4.72	5.74	4.27	5.82	4.53	4.83
Average annual rate of change (per cent) ..	−1.4	−7.2	+0.6	−0.8	+2.5	+8.4

[a] The index of bond yields is that of 60 high-grade bonds. The rediscount rates are unweighted averages of the weekly average rates of 12 Federal reserve banks. The 4-6 months interest rates relate to choice, double-name commercial paper. The three series are computed by the Standard Statistics Company, and are published in the *Standard Statistical Bulletin.*

[b] Industrial common stock yields, computed by Leonard P. Ayres of the Cleveland Trust Company.

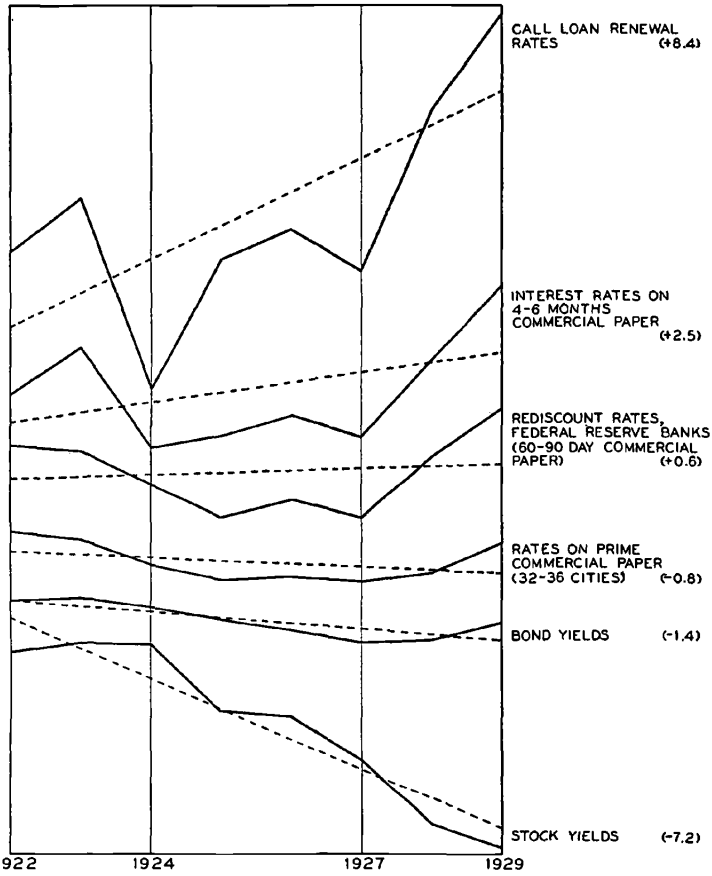
[c] Simple average of the prevailing rates published in the *Federal Reserve Bulletin.*

[d] Average rate, New York Stock Exchange. *17th Annual Report of the Federal Reserve Board* (1930), p. 80.

The period opens with relatively low official rediscount rates and open-market commercial paper rates. The rate of 4.43 per cent on 4-6 months commercial paper was distinctly below the average of 5.99 for the five years preceding (1917-21), and was also lower than the average rate of 4.85 for the years 1901-13. Bond yields stood at 4.94, below the average of 5.39 for the five years preceding, but above the average of 4.32 for the period 1901-13. Rediscount rates of the twelve Federal reserve banks averaged 4.56 per

FIGURE 94

CHANGES IN INTEREST RATES, REDISCOUNT RATES AND BOND AND STOCK YIELDS IN THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

cent, materially lower than the figures of 5.96 and 6.13 for the two years preceding. These relatively low rates became lower still during the five years following. The charge to bank customers in the country at large, as determined by averaging rates charged customers on prime commercial paper in 32 cities, stood on a much higher level. This was 6.24 per cent in 1922, as compared with an average of 6.81 for the two years preceding. These rates were not only much higher in absolute terms than were the other series of

discount rates cited, but they showed a much smaller decline from the high rates of the preceding two years. Call loan renewal rates on the Stock Exchange in 1922 averaged 4.29 per cent, the lowest of all the rates given. Highest of the rates cited was the average yield on common industrial stocks (Ayres' index). This amounted to 6.74 per cent in 1922.

From 1922 to 1927 the general movement of interest and discount rates was downward. This was an era of cheap money, a cheapness that was stimulated, as we have seen, by heavy increases in the stock of money gold in the country. Certain series reached their lowest points in 1924, but in general the low rates persisted until 1927. In that year the average of the rediscount rates of the Federal reserve banks on 60-90 day commercial paper was 3.81, which was below all market rates. Highest of the rates was the charge to bank customers in various cities, which averaged 5.55 per cent. From 1927 to 1929 all the series listed in Table 180, except stock yields, rose. The advance was sharp in average rediscount rates, in open market rates on commercial paper, and on call loan renewal rates. Stock yields alone continued to decline, a reflection of the continued advance in stock prices.

Because of the shift in direction of movement of interest rates that occurred in most series after 1927, figures defining net average rates of change for the period as a whole must be used with some reservations. Measures of net change for the period are useful in such cases, but their descriptive value is not so great as it is for series with unbroken trends for the period as a whole. Measurements of net annual change are given, with the data to which they relate, in Table 180.

Changes in the cost of capital are perhaps most accurately measured by the trend of high-grade bond yields. Between 1922 and 1929 the yield of 60 high-grade bonds declined at an average rate of 1.4 per cent a year. This decline was quite regular through 1927; there was a very slight advance in 1928 and a sharper rise in 1929. The decline was most rapid in the case of public utility bonds (rate of change —2.2 per cent a year), and least rapid in the case of municipal bonds (rate of change —0.4 per cent a year). Though the direct cost to borrowers must be measured with reference to new issues, this may be taken to indicate that the cost of capital to public utility borrowers declined more rapidly than it did for borrowers in other fields. For railroad bonds the decline was

at the rate of 1.6 per cent a year, and for industrial bonds at a rate of 1.0 per cent.[1]

A somewhat different story is told when changes in the cost of capital are measured with reference to the trend of stock yields. One of the most striking features of the post-war investment situation was the great increase of financing through stock issues, accompanied by a relative decline in the amount of financing by bond issues. The yields of stocks at large, as priced in the security markets, do not afford the most accurate index of the cost of new capital to corporate borrowers, but they furnish a general indication of the course which such costs are following. During the period 1922-1929 the yields of common industrial stocks declined at a rate of 7.2 per cent a year. The yields on preferred industrial stocks, on the other hand, declined at an average annual rate of but 2.1 per cent. Preferred stocks stand much closer to bonds, in this respect, than to common stocks. With the yields of these different classes of securities following these courses, it is not strange that corporate borrowers resorted, in greater and greater degree, to common stock issues.[2]

The best single index of the cost of bank credit to borrowers at large is probably the rate charged bank customers on prime commercial loans. The average for the country at large declined during this period at a rate of 0.8 per cent a year. The corresponding series for New York City advanced at an annual rate of 0.8 per cent.

Various other series measuring interest rates are significant for particular purposes. Certain of these are listed above. Between 1922 and 1929 the average rediscount rate on commercial paper at Federal reserve banks advanced at a rate of 0.6 per cent a year. The interest rate on 4 to 6 months commercial paper showed a net ad-

[1] These rates are based upon figures from the *Standard Statistical Bulletin.*

[2] This is particularly true for the years between 1926 and 1929. For the five years 1922-1926 new capital flotations in the form of long-term bonds and notes increased at a rate of 10.8 per cent a year, while those in the form of common stocks increased at a rate of 17.4 per cent. For the three-year period 1927-1929 new capital issues in the form of bonds fell off sharply, in the face of high interest rates, at an annual rate of 30.0 per cent, while new capital issues of common stocks, exclusive of issues of holding companies and investment trusts, increased at the phenomenal rate of 91.8 per cent a year. (In the depression year, 1927, the new issues of bonds were relatively much higher than those in the form of common stocks; the rates cited reflect, in part, the conditions prevailing in that year.)

vance at a rate of 2.5 per cent a year during this period, a rate materially affected by the sharp advance in 1929. The call loan renewal rate increased at an average annual rate of 8.4 per cent.

Summary: Capital and Credit

This brief survey does not purport to be a comprehensive account of the developments occurring in the markets for capital and credit in this country between 1922 and 1929, nor does it trace the powerful influence of these developments upon the course of economic events at large. We have here attempted merely to define the outlines of these movements, to measure the broader tendencies prevailing in these markets, and to place them against the background of concurrent production and price changes.

These facts have been noted as outstanding: a population increasing at a rate approximating 1.4 per cent a year; an aggregate volume of production and construction growing at a rate slightly above 4 per cent a year; total corporate capital funds being augmented by approximately 6.4 billions of dollars a year, at an average annual rate falling between 3 and 4 per cent. Streams of savings flowing into use through various other channels were increasing in volume at more rapid rates. The effects of the expansion of capital equipment which this swelling volume of funds permitted have only been touched upon; indeed, we lack the knowledge which would permit us to trace them in detail. Technical improvements were facilitated, opportunity for the development of excess capacity presented, the way opened for the release in great volume of loanable funds not subject to control through usual banking channels. Whether the increase in savings (of which corporate capital funds constitute only one embodiment) was such as to disturb economic equilibrium we may not now say. There is every reason to believe, however, that the rapid expansion and subsequent sharp checking of the flow of American capital funds abroad, a phase of the growth of capital touched upon in a later section, played a disturbing part in the working of the world economy.

During this same period primary funds (funds available for use as reserves against bank credit) increased at a rate of 1.6 per cent a year; the aggregate volume of bank credit based upon these reserves increased at a rate of 5.6 per cent a year, a figure well in

excess of the growth of production and trade. Here, however, we have a sharp contrast between the movements of the two main streams into which bank credit may be divided. Credit related directly to the market for securities increased by 7.9 per cent a year, while commercial credit (as reflected in 'all other' loans) increased at a rate of but 3.2 per cent a year. To what extent these two streams actually intermingle we do not know, but the external evidence of sharp inflation in the volume of credit based on securities accords with common understanding of the events of this period.

Finally, our statistical record indicates a most spectacular increase in the total volume of urban real estate mortgages during these years, an increase at an average annual rate of 12.5 per cent. In the security markets and in urban realty—here the bulges of excessive activity occurred. Credit expansion in these fields was far out of line with the pace of economic advance in general.

The funds of capital and of credit which were being made available in constantly increasing volume for business and for speculative purposes were to be had at relatively low costs over a large part of the period here studied. The cost of long-term funds (as measured by stock and bond yields) declined steadily, except for a slight advance in bond yields in 1929. The cost of short-term loans for commercial and speculative purposes remained at low levels through 1927, advancing thereafter. In concrete terms, it is noteworthy that stock yields remained below 6.0 per cent between 1924 and 1929 and below 5.0 per cent in 1928 and 1929, that the basic rediscount rates of the Federal reserve banks were below 4.0 per cent in 1925, 1926 and 1927, and that during the four years from 1924 to 1927 call loan renewal rates (annual averages) never exceeded 4.5 per cent.

A variety of causes contributed to the sustained cheapness of both long-term and short-term funds. The great volume of domestic savings, the popularity of common stocks for investment and speculative purposes, the existence of large corporate surpluses in the form of free funds, our large gold holdings, the desire of banking authorities to facilitate restoration of monetary stability abroad—these were instrumental in varying degrees in maintaining cheap money in the United States. The result was that brimming reservoirs of capital and credit could be tapped at will, and at but

slight expense, by those in position to borrow in highly organized financial markets. Probably never before in this country had such a volume of funds been available at such low rates for such a long period. Here was one of the major conditioning factors operating in the era of post-war expansion.

International Movements of Goods and of Capital

At the opening of the twentieth century, the date at which the present survey of economic tendencies begins, the United States was entering upon an era of industrial and commercial expansion. The fruits of the Spanish War extended American territories, and the stimulus of new horizons was felt in all our commercial activities. New points of contact with other nations were established, new channels of trade were opened up, and new responsibilities were assumed. The United States was on the way to become a world power. The World War and all the economic and political forces it released completed the process. Thereafter the course of economic events in the United States was to be more closely tied to world developments than ever before. The domestic processes of the last decade may not be studied in isolation. We proceed to a brief review of certain phases of our international economic relations between 1922 and 1929.

Changes in the Foreign Trade of the United States

Between 1922 and 1929 the aggregate value of imports of merchandise into the United States increased from 3,113 to 4,399 millions of dollars, at an average annual rate of 3.9 per cent; exports (excluding re-exports) increased from 3,765 to 5,157 millions of dollars, at an average rate of 4.0 per cent a year. These value figures indicate approximate equality of the trends of exports and imports. But values reflect the combined influence of volume and price changes. Account must be taken of each of these factors if a true picture of trade movements is to be secured. These series appear in the next table. They are plotted in Figure 95.

The approximate equality of value trends conceals striking divergences of both quantities and prices. The average unit price of exported goods declined during this period at a rate of 2.2 per

TABLE 181

EXPORTS AND IMPORTS OF THE UNITED STATES

Index Numbers of Quantity, Unit Price and Aggregate Value, 1922-1929 [a]

(1) Year	(2)	(3)	(4)	(5)	(6)	(7)
	Exports			Imports		
	Quantity	Unit price	Value	Quantity	Unit price	Value
1922	100	100	100	100	100	100
1923	102	106	110	104	117	122
1924	116	104	120	101	114	116
1925	123	105	129	107	126	136
1926	131	97	125	115	124	142
1927	141	91	127	117	114	135
1928	148	91	135	118	112	132
1929	151	92	137	134	105	142
Average annual rate of change (per cent) ..	+6.5	−2.2	+4.0	+3.9	0.0	+3.9
Index of instability	1.9	3.1	2.9	2.9	5.6	5.8

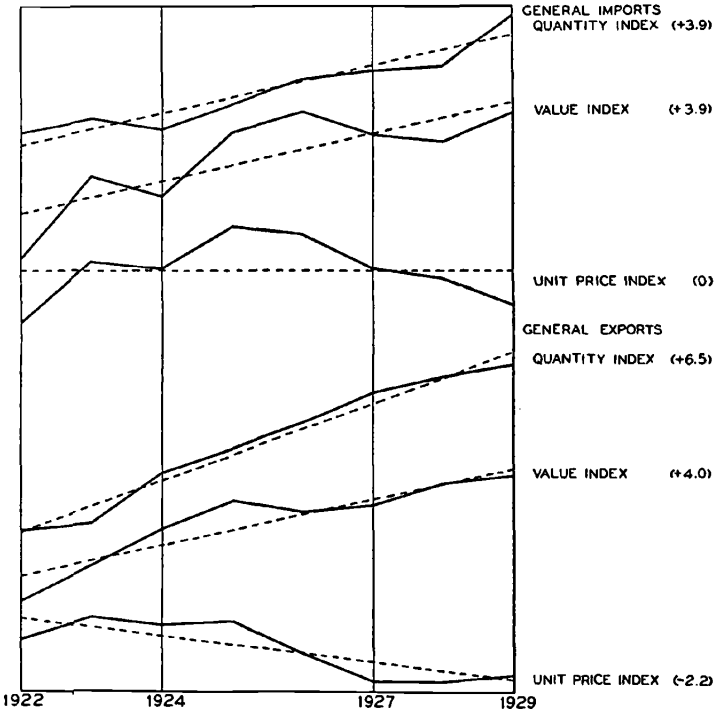
[a] Index numbers compiled by the U. S. Department of Commerce. For an explanation of the procedure, see *Commerce Yearbook*, 1930, Vol. 1, p. 85.

cent a year, while there was no appreciable net change in the average price paid for goods imported. (There was an upward movement from 1922 to 1925 in the average price of imported goods, a downward movement thereafter.) Equality of value trends was maintained, under these conditions, by an advance in the quantity of goods exported which was much more rapid than the increase in quantity of goods imported. The rate of increase in the physical volume of exports was 6.5 per cent a year, well above the rate at which domestic production as a whole was expanding. The export trade was an unmistakable positive factor in the economic growth of the United States during this period.

The terms of exchange between imported and exported goods seem to have been changing to our disadvantage over this period. Changes in average export and import prices, and the ratio of export unit prices (i.e., prices received) to import unit prices (prices paid), are shown in Table 182 for the years from 1913 to 1929, excluding 1914-1918.

FIGURE 95

CHANGES IN THE QUANTITIES, VALUES AND AVERAGE PRICES OF IMPORTS AND EXPORTS OF THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

The ratios in the last column of Table 182 (expressed for convenience as relatives) may be taken to define changes in the number of units of goods received in exchange for one unit of goods exported.[1] In the present case changes in the ratio may be due to alterations in average exchange values of specific goods, or to changes in the make-up of our foreign trade. These latter changes were so pronounced on the export side during the years covered by the above table that interpretation of the index is clouded.

[1] A ratio of this type was first employed by A. L. Bowley in a study of alterations in the terms of exchange between England and her commercial customers. See *The Economic Journal,* Vol. 7, 1897, pp. 274-278, Vol. 13, 1903, p. 628. See also articles by J. M. Keynes in the same journal, Vol. 22, 1912, p. 630, and Vol. 33, 1923, p. 477, for a similar use of the ratio.

TABLE 182

CHANGES IN EXPORT AND IMPORT PRICES, AND IN THE TERMS OF EXCHANGE BETWEEN IMPORTED AND EXPORTED GOODS, 1913-1929 [a]

(1) Year	(2) Export unit price	(3) Import unit price	(4) Ratio of export to import price (in relative form)
1913	100	100	100
1919	223	174	128
1920	241	213	113
1921	150	117	128
1922	138	113	122
1923	146	132	111
1924	143	129	111
1925	144	142	101
1926	133	139	96
1927	124	130	95
1928	125	126	99
1929	125	119	105

[a] The index numbers of unit prices of exports and imports given in columns (2) and (3) have been constructed by the U. S. Department of Commerce (*Commerce Yearbook*, 1930, Vol. 1, p. 85). Entries in column (4) have been computed from these index numbers by dividing the entries in column (2) by the entries in column (3).

Ignoring for the moment changes in the character of our trade, the index numbers show a condition extremely favorable to the United States from 1919 to 1922. Thereafter the advantage continued, but in lesser degree, until 1925. Not until 1926 was the foreign seller receiving as much in exchange for his goods as he was in 1913.

The wide margin of advantage which import and export price relations yielded to the American exporter during the years prior to 1926 was undoubtedly a factor in domestic business expansion. We have remarked upon the price advantage enjoyed by American manufacturing interests in domestic markets as a result of the price shifts occurring in 1920-21. To some extent the same was true of the American economy as a whole, in its dealing with foreign traders during the troubled years immediately following the war. In physical terms we received more for what we exported than we had during the pre-war years. Our own swelling volume of exports, combined with European industrial recovery, served to lessen this

advantage, and by 1926 it had disappeared, so far as we may judge from the present index numbers. The aggregate value of the foreign trade of the United States was maintained in the face of falling export prices through an expansion of the physical volume of exports.[1]

Certain details of the changes in the character of our import trade during this period are shown in the following table. The series are plotted in Figure 96.

TABLE 183

FOREIGN TRADE OF THE UNITED STATES, 1922-1929

Changes in Aggregate Values of Imports, by Major Classes of Commodities

Commodity group	Absolute value (in millions of dollars)		Average annual rate of change (per cent)
	1922	1929	
All commodities	3,113	4,399	+3.9
Crude materials	1,180	1,559	+3.2
Semi-manufactures	553	885	+4.8
Finished manufactures	663	994	+5.1
Crude foodstuffs	330	539	+7.1
Manufactured foodstuffs	387 [a]	424	−1.6

[a] The 1922 figure for imports of manufactured foodstuffs was abnormally low. In 1923 the value of such imports amounted to 530 millions of dollars.

The differences among the rates of change of the several groups shown above are much greater than among the corresponding pre-war rates of change. Imports of crude foodstuffs, and of finished and semi-finished manufactured goods, which were growing most

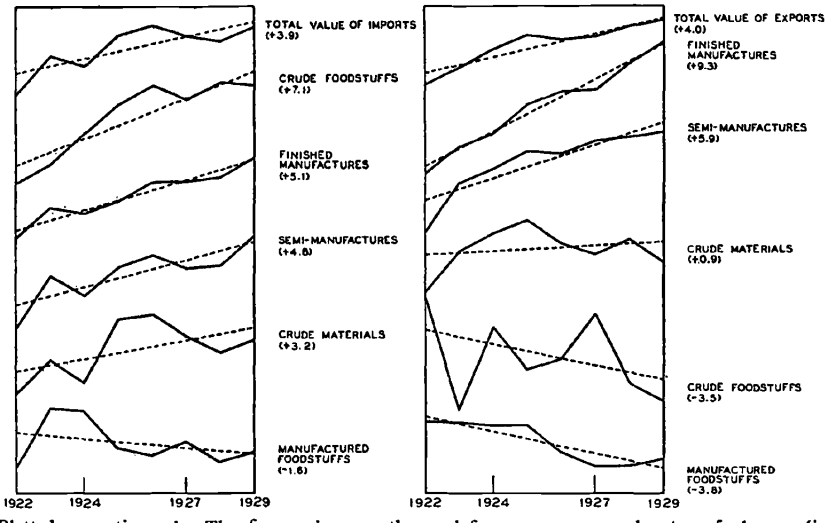
[1] Index numbers of volume and price of domestic exports show an advance of 23 per cent in aggregate volume of exports and a decline of 13 per cent in average per-unit price of exported goods, between 1925 and 1929. This drop may be compared with a decline of less than 8 per cent in domestic wholesale prices during the same period.

It has been suggested above that these price index numbers may be ambiguous because of the changing constitution of our trade. It may be noted, however, that raw materials, raw foodstuffs and manufactured foodstuffs, which dropped most sharply in price between 1925 and 1929, were declining in relative importance among exports, while semi-manufactures and finished manufactures, which showed the smallest price declines among exported goods, were increasing in relative importance. We cannot say, therefore, that the drop in export prices after 1925 was due to the increasing weight given to goods which were falling in price.

FIGURE 96

CHANGES IN THE FOREIGN TRADE OF THE UNITED STATES, 1922-1929

IMPORTS AND EXPORTS, MAJOR CLASSIFICATIONS



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

rapidly, were increasing in volume at rates more rapid than the corresponding pre-war rates (allowance being made for changes in the purchasing power of the dollar). Imports of crude materials were increasing in value less rapidly than before the war, while imports of manufactured foodstuffs were declining in value in the recent period.[1]

Changes in the values of exports, by major commodity groups, are shown in Table 184, on the following page, and are pictured graphically in Figure 96.

The decline in exports of foodstuffs is due, in considerable part,

[1] Price changes enter, of course, to complicate the picture when values alone are considered. The following rates of change have been derived from volume and value index numbers constructed by W. R. Peabody (*Statistical Bulletin,* American Tariff League, February, 1930).

Annual Rates of Change in Imports, 1922-1929

Group	Price index	Volume index	Index of aggregate value
Total imports	0.0	+3.9	+3.9
Crude materials	**−0.8**	+4.4	**+3.2**
Semi-manufactures	+0.7	+4.1	+4.8
Finished manufactures	−0.6	+5.7	+5.1
Crude foodstuffs	+4.8	+2.4	+7.1
Manufactured foodstuffs	−3.0	+1.4	−1.6

TABLE 184

FOREIGN TRADE OF THE UNITED STATES, 1922-1929

Changes in Aggregate Values of Exports, by Major Classes of Commodities

Commodity group	Absolute value (in millions of dollars)		Average annual rate of change (per cent)
	1922	1929	
All commodities	3,765	5,157	+4.0
Crude materials	988	1,142	+0.9
Semi-manufactures	438	729	+5.9
Finished manufactures	1,292	2,532	+9.3
Crude foodstuffs	459	270	—3.5
Manufactured foodstuffs	588	484	—3.8

to a natural falling off from the abnormally large volume of such goods exported to various European countries during the critical period following the war. The recovery of the devastated areas and the general increase in the production of farm products in other areas account for the decline recorded. This decline in the foreign sales of foodstuffs has been a major factor, of course, in the domestic agricultural situation.

The development of American manufacturing and the intensive exploitation of foreign markets in recent years is reflected in the rapid growth of exports of manufactured and semi-manufactured goods, and in the slight advance in our exports of crude materials. In fact, the more rapid increase of exports in recent years, in comparison with the period 1901-13, is attributable entirely to the increased volume of exports of manufactured goods. The decline in exports of foodstuffs was more rapid in the recent than in the earlier period, and the rate of increase in exports of crude materials and semi-finished goods was below the rate of pre-war advance. Exports of finished manufactures, by value, almost doubled between 1922 and 1929.[1]

§ *On the proportion of American manufactured products entering into foreign trade.*—Between 1923 and 1929 exported manufactured

[1] Price and volume index numbers for exports by commodity groups have been constructed by D. J. Cowden for the period 1923-1929 (*Measures of Exports of the United States,* Columbia University Press, New York, 1931). Index numbers

goods constituted a constantly increasing percentage of all manufactured goods produced in the United States. (Data for 1922 on the value of manufactured goods produced are not available.) Figures for census years follow:

Year	Value of exports of manufactured foods, semi-manufactured goods and finished manufactures (millions of dollars)	Estimated value of manufactured goods produced in United States, excluding duplications [1] (millions of dollars)	Value of exports of manufactured goods as percentage of total value of manufactures
1923	2,625	38,200	6.9
1925	3,079	39,550	7.8
1927	3,145	40,150	7.8
1929	3,745	46,250	8.1

[1] Estimates of the value of manufactured goods are based upon the 'value added' by manufacturing industries and the approximate value of materials used, excluding duplications. The average of maximum and minimum estimates made by the U. S. Department of Commerce (*Commerce Yearbook*, 1931, p. 89) has been used.

---

of price, volume and value changes for this period will help to explain the value movements noted above:

INDEX NUMBERS OF QUANTITY, AVERAGE PRICE AND AGGREGATE VALUE OF DOMESTIC EXPORTS BY ECONOMIC CLASSES, 1923-1929

(1923-25 = 100)

Year	Quantity	Average price	Aggregate value	Quantity	Average price	Aggregate value
	Total exports			Raw materials		
1923	90	101	92	84	109	91
1924	102	99	101	100	101	101
1925	106	101	108	116	93	108
1926	113	93	105	131	73	95
1927	121	88	106	126	71	90
1928	126	89	113	125	78	98
1929	129	88	115	113	76	86
	Semi-manufactures			Finished manufactures		
1923	89	101	92	91	100	90
1924	105	97	100	97	100	97
1925	106	102	108	112	100	113
1926	105	101	107	119	101	120
1927	121	95	114	130	93	121
1928	122	94	117	149	92	138
1929	116	99	119	166	91	155
	Raw foodstuffs			Manufactured foodstuffs		
1923	94	86	80	105	95	101
1924	122	101	122	105	95	99
1925	82	117	98	88	113	99
1926	103	99	104	81	108	87
1927	134	99	130	80	100	80
1928	98	94	91	82	97	81
1929	93	90	84	85	97	84

The increase in value of manufactured goods exported was substantial, amounting to something more than 40 per cent during this six-year period. In absolute terms the increase amounted to more than one billion dollars. The total value of manufactured goods produced in the United States increased by eight billions of dollars between 1923 and 1929. About one-eighth of this increase was due, therefore, to the increasing value of foreign sales. In comparison with the figure of 46 odd billions of dollars, the total value of manufactured goods, these sums are not great, but as marginal amounts, increments to an existing volume, they were important factors in the developments of this period. In a later section reference is made to the financing of this increased volume of foreign sales.

A clearer picture of the changes in our foreign trade during this period may be secured by considering the alterations occurring among the constituent elements of the total. In the following table the various elements of our import trade are shown as percentages of the total in 1901, 1913, 1922 and 1929.

TABLE 185

COMPONENT ELEMENTS OF THE IMPORT TRADE OF THE UNITED STATES, 1901, 1913, 1922 AND 1929

Commodity group	Percentage of total imports, by value			
	1901	1913	1922	1929
Crude materials	34.2	34.3	37.9	35.4
Semi-manufactures	16.4	16.9	17.8	20.2
Finished manufactures	25.6	23.7	21.3	22.6
Crude foodstuffs	13.3	13.1	10.6	12.2
Manufactured foodstuffs	10.5	12.0	12.4	9.6

The outstanding feature of this table is the constancy of the different elements, as percentages of the total. Semi-finished goods made up a slightly larger fraction of the whole in 1929 than in 1901, and finished goods made up a slightly smaller part, but these changes were relatively slight. With reference to this classification, at least, our import trade has shown remarkable stability.

A similar table relating to exports appears on the next page.

Notable changes in the character of American export trade have occurred within the period of 29 years covered by this table. The decline in exports of foodstuffs, both crude and manufactured, has already been commented upon. This decline, clearly in evidence

TABLE 186

COMPONENT ELEMENTS OF THE EXPORT TRADE OF THE UNITED STATES, 1901, 1913, 1922 AND 1929

Commodity group	Percentage of total exports, by value			
	1901	1913	1922	1929
Crude materials	28.6	34.3	26.2	22.2
Semi-manufactures	9.7	16.1	11.7	14.1
Finished manufactures	23.8	31.1	34.3	49.1
Crude foodstuffs	13.6	5.9	12.2	5.2
Manufactured foodstuffs	24.3	12.6	15.6	9.4

before the war, was resumed after 1922; in 1929 exports of these classes of foodstuffs were lower, as percentages of the total, than in any of the earlier years for which figures are given. There was some advance in the relative position of semi-finished goods; crude materials have declined in relative importance. Most impressive was the increase in the exports of finished manufactures. These made up less than 24 per cent of the total in 1901 and more than 49 per cent in 1929. This remarkable growth of exports of manufactures, from 322 millions of dollars in 1901 to 2,532 millions of dollars in 1929, represents an eight-fold increase in 28 years. The effects of this increase have been far-reaching. Concurrent and related changes on the financial side are considered in the next section.

The Balance of International Payments

The international economic relations of the United States during the period 1922-29 cannot be understood if attention be paid to the record of merchandise movements alone. Studies made by the Department of Commerce permit the major movements in the international flow of goods, services, capital and gold to be followed, though it is not possible accurately to measure all the items entering into the balance of international payments. For the purposes of the present survey it is desirable to trace the broader movements only, and this end is served by re-classifying the items given in the balance sheet prepared by the Department of Commerce.[1]

[1] More detailed figures and an explanation of the estimates upon which these are based will be found in *The Balance of International Payments of the United States in 1930*, a publication of the U. S. Department of Commerce.

The various items in the international balance sheet may be placed in four general classes. The first group includes items relating to the movements of goods and to services—commodities, services in the transportation of goods and passengers, insurance, advertising, motion picture royalties, cable charges and tourist expenditures. The services rendered foreign tourists in this country are classed with our exports, while services rendered American tourists abroad are classed with our imports. The combination gives a truer picture of the balance of trade, in a broad sense, than is given by merchandise imports and exports alone.

The next class contains items relating to the payment of debts and to charitable and other remittances not arising out of the purchase of goods or services. War debt payments (including both interest and principal), interest on private loans, immigrant remittances, charitable contributions and payments arising out of certain governmental transactions fall in this group. A third class contains all items relating to the movement of capital, long- and short-term,[1] while the fourth group includes gold and currency movements.

The following table gives the estimates of the Department of Commerce, grouped in these four major divisions. Only net figures are given. A final item covers the discrepancies arising from inaccuracies in the estimates.

In following the complex movements of international trade we are not justified in balancing specific items against other specific items, yet it is suggestive to compare the figures in the major classes set up in Table 187. During five of the eight years here covered the balance of trade, in the broad sense implied by lumping together all goods and services, was in our favor; there was a net amount due us for goods sold and services rendered in every year except 1923, 1926 and 1929. In each of the eight years, moreover, a substantial sum was due us as payment of principal on war debts and interest on all debts and investments abroad, after subtracting corresponding amounts owed by us and deducting charitable contri-

[1] In accordance with the classification of the Department of Commerce, bond discounts and underwriters' commissions on foreign securities floated in the United States have been placed in this group, and treated as a deduction from the net increase in American long-term investments abroad (par value). For the present purpose underwriters' commissions, as payments for services, should be included with other services, while bond discounts, although legitimately deducted at first, should in succeeding years be amortized and treated as interest. However, these changes would make no significant difference in the figures as given in Table 187.

TABLE 187

BALANCES OF INTERNATIONAL PAYMENTS OF THE UNITED STATES, 1922-1929 [a]

(In millions of dollars)

Class of transaction	1922	1923	1924	1925	1926	1927	1928	1929	Annual average	Total 1922-1929
Goods and services, net	+364	−100	+513	+213	−149	+147	+240	− 31	+150	+1197
Payment on debts, net	+193	+308	+289	+300	+354	+441	+418	+408	+339	+2711
Net credits	+557	+208	+802	+513	+205	+588	+658	+377	+489	+3908
Net capital movement	−378	+ 33	−517	−621	−181	−695	−944	−306	−451	−3609
Net movement of currency and gold (including earmarked gold)	−194	−245	−236	+ 72	− 72	+154	+272	−120	− 46	− 369
Net debits	−572	−212	−753	−549	−253	−541	−672	−426	−497	−3978
Correction for net discrepancy	+ 15	+ 4	− 49	+ 36	+ 48	− 47	+ 14	+ 49	+ 8	+ 70

[a] Explanation: A plus sign on the net item for goods and services means that the United States has exported more in the form of goods and services than it has received.

A plus sign on net debt payments means that the United States has received more in the form of interest payments on private debts abroad, and principal and interest on government debts, than it has paid in the form of immigrant remittances, charitable contributions, payments connected with governmental transactions and payments of interest on foreign debts of the United States.

A minus sign on net capital movement means that the United States has made heavier loans and investments abroad (long- and short-term) than have been made by foreigners in this country.

A minus sign on net movement of gold and currency means that the United States has received more in the form of gold and currency than it has sent away.

butions and immigrant remittances. The net credits, equivalent to the balances due the United States on account of net exports of goods and services and amounts due as war-debt principal and interest on debts abroad, varied from 205 millions of dollars in 1926 to 802 millions of dollars in 1924. The annual average, from 1922 to 1929, was 489 millions of dollars.

The major item on the debit side relates to the net movement of capital. In one year, 1923, the net movement of new capital was toward this country, but in all other years since 1923 the flow was steadily outward. During the eight years covered, the average net investment of new American capital (short- and long-term) was

451 millions of dollars. We have seen, in the preceding paragraph, that when account has been taken of all the goods imported, of all the services rendered, of all the amounts due citizens of other countries on account of investments in this country and of remittances arising out of contributions of various sorts, there remained a net average annual balance due this country of 489 millions of dollars. In large part, this was balanced by new loans and investments abroad made by private American citizens, loans and investments which averaged 451 millions of dollars a year between 1922 and 1929. The difference between these figures (ignoring the discrepancies in the estimates) is accounted for by imports of gold into the United States, and by earmarkings of gold.[1] During five of the eight years studied the net movement of gold was inward. The average amount imported in each of the eight years was about 46 millions of dollars.

We are not here concerned with the mechanism of adjustment of international balances of various sorts, or with the question of causal relations among factors of trade and exchange. For our purpose, accordingly, we may lump the annual items and consider the gross relations prevailing when the eight-year period is treated as a unit. This is done in the last column of Table 187.

During this period a credit balance of 1,197 millions of dollars was accumulated, as a result of the excess of exports of goods and services of various sorts over corresponding imports. In addition, there was due the United States an aggregate net amount of 2,711 millions of dollars in the adjustment of war-debt principal and interest of debts owed the government and citizens of the United States. Total credits amounted to 3,908 millions of dollars. A small portion of this, some 369 millions of dollars, was offset by imports of gold. The major factor in the balancing of accounts, however, was the outward movement of American capital and credits. Between 1922 and 1929 the net outward capital movement amounted to 3,609 millions of dollars, in the aggregate. It was this heavy export of capital which permitted the large export balance of goods and services, and which facilitated the payments made to the government and to citizens of the United States on account of principal and interest of foreign debts and investments.

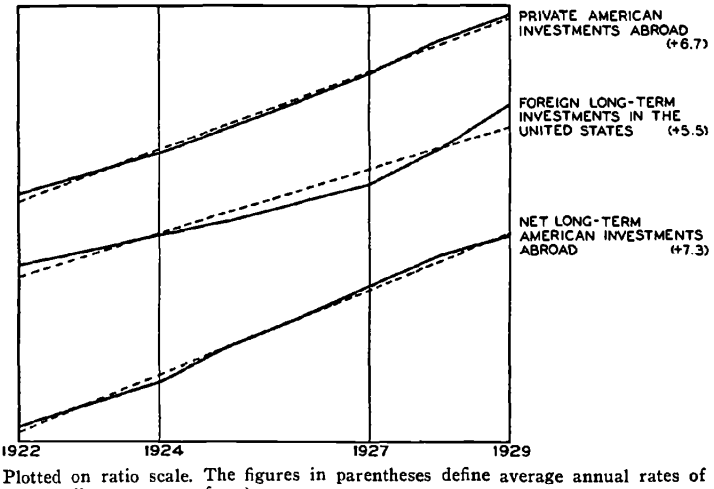
These capital movements which have played such an important

[1] Certain relatively small movements of American currency are included with the gold figures.

part in international trade relations in recent years merit further attention. We have so far considered only the annual movements, without reference to the aggregate amounts of American investments abroad, and of foreign investments in this country. In the following table are given approximate aggregate amounts of long-term investments of these two classes by years, from 1922 to 1929, together with estimates of net American long-term investments abroad. The series are shown graphically, with lines of trend, in Figure 97.

FIGURE 97

CHANGES IN AMERICAN CAPITAL INVESTMENTS ABROAD AND IN FOREIGN CAPITAL INVESTMENTS IN THE UNITED STATES, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

The data in Table 188 are subject to a considerable margin of error, as regards absolute magnitudes. Except for convenience in calculation, the last three figures could be omitted, for they suggest an accuracy which the estimates do not possess. However, the rates of change in the series given probably approximate the actual changes with a reasonable degree of accuracy.

From this record it appears that private American investments abroad increased, between 1922 and 1929, from 9,209 millions of dollars to 14,412 millions. The absolute annual increments averaged over 700 millions of dollars, and the average annual rate of increase

TABLE 188

FOREIGN INVESTMENTS OF THE UNITED STATES

Estimated Amounts of American Long-term Investments Abroad, of Foreign Long-term Investments in the United States, and of Net Long-term American Investments Abroad, 1922-1929

(In millions of dollars)

(1)	(2)	(3)	(4)	(5)	(6)
Year	Private American investments abroad [a]		Foreign investments in the United States [b]		Net long-term American investments abroad at middle of year [c]
	at end of year	at middle of year	at end of year	at middle of year	
1921	8,831	——	3,025	——	——
1922	9,587	9,209	3,028	3,026	6,183
1923	9,797	9,692	3,268	3,148	6,544
1924	10,541	10,169	3,279	3,273	6,896
1925	11,294	10,918	3,472	3,376	7,542
1926	11,981	11,638	3,619	3,546	8,092
1927	12,834	12,408	3,777	3,698	8,710
1928	14,029	13,432	4,254	4,016	9,416
1929	14,794	14,412	4,700	4,477	9,935
Average annual rate of change (per cent)		+6.7		+5.5	+7.3
Index of instability		0.9		2.3	0.7

a Excluding war debts to the United States Treasury and short-term loans to foreigners. The entries are based upon estimates of nominal capital, in the case of securities, and upon estimates of original outlay or of present capitalized earning power, in the case of investments in physical property. The end of the year figures as given are derived from the Department of Commerce's estimate as of January 1, 1931; from this have been subtracted, successively, the annual increases in American long-term investments abroad, less discounts and commissions. See *Balance of International Payments of the United States in 1930*, p. 35. The estimate for January 1, 1931, is the mean of the range estimates given by the Department of Commerce.

It should be noted that while the basic January 1, 1931, figure includes securities valued at par, the annual deductions (in working backward) do not relate to increases in par values, but to par values less discounts and commissions. If increases in par values are used as deductions from the base figure, a series is obtained with an average annual rate of change equal to 8.1 per cent instead of 6.7 per cent; the series in column (6) then has a rate of growth of 9.4 per cent instead of 7.3 per cent. It is evident that the figures in the above table do not overstate the rates of growth.

b Excluding holdings by alien residents of the United States and all short-term foreign capital kept in this country for dollar-exchange purposes, or invested in acceptances and brokers' loans. The figures are based upon the estimated value of investments, that is, the estimated capitalized value of earnings.

The annual figures given are derived from an estimate as of December 31, 1929, made by Ray Hall (*Balance of International Payments of the United States in 1929*, p. 32); from this have been subtracted, successively, the annual net increases in long-term foreign investments in the United States.

c Difference between items in columns (3) and (5).

was 6.7 per cent. During the same period foreign long-term investments in this country increased from 3,026 millions to 4,477 millions, at an average annual rate of 5.5 per cent. Net long-term American investments abroad, derived by taking the difference between the two series already named, increased from 6,183 millions of dollars in 1922 to 9,935 millions in 1929, the average annual rate of increase being 7.3 per cent.

These are large figures. In 1929 aggregate private American investments abroad constituted approximately 6.3 per cent of the total capital funds at the disposal of American corporations. The absolute annual increment in these foreign investments constituted some 10 per cent of the absolute amount by which American corporate capital funds increased annually over the same period.[1] The rate of increase in foreign investments, 6.7 per cent a year, was substantially higher than the rate of increase in American corporate capital funds, which probably approached 4 per cent a year during this period. Net American investments abroad increased at the rate of 7.3 per cent a year. This heavy export of American capital, increasing at rates materially above those characteristic of our domestic economic growth, is, of course, the financial side of the foreign trade picture discussed above. It was this which permitted our favorable balance of trade to continue.

The remarkable stability of growth of American investments abroad is to be noted. From 1922 to 1923 the increase was retarded slightly; from 1927 to 1928 the increase was accelerated. But for the period as a whole the growth was even and regular. The measure of instability indicates an average annual fluctuation of but 0.9 per cent. The increase of foreign investments in this country was less steady. After a rapid increase from 1922 to 1923 the growth was retarded until 1926. Between 1926 and 1929 the increase was rapid, at a rate well above the average figure given for the period as a whole.

Changes in Distributive Shares

Wages

The period 1922-29 was marked by a steady advance in both the money earnings and the real earnings of American workers.

[1] A figure of 12 per cent would be derived from the values cited in preceding tables. Since our records of domestic capital issues are incomplete, this figure is undoubtedly too high. Eight or ten per cent is closer to the truth.

Measurements derived from various index numbers of earnings and of wage rates are given in the following tables. The major series are plotted in Figure 98.

TABLE 189

CHANGES IN EARNINGS AND IN WAGE RATES IN THE UNITED STATES, 1922-1929

Index number or wage series	Average annual rates of change, 1922-1929	
	In current dollars (per cent)	In purchasing power [a] (per cent)
Composite index of wages (Snyder) [b]	+2.3	+2.1
Per capita earnings of factory labor [c]	+1.6	+1.4
Weekly earnings of factory labor [d]	+1.8	+1.6
Men	+2.1	+1.9
Skilled	+1.8	+1.6
Unskilled	+2.6	+2.4
Women	+0.8	+0.6
Weekly earnings of factory employees in New York State [e]	+2.2	+2.0
Hourly earnings of factory labor [d]	+1.9	+1.7
Wage rates, union [f]		
Per hour	+4.3	+4.1
Per week	+3.9	+3.7
U. S. Steel Corporation, wage rates per hour [g]	+4.2	+4.0
Wages, common labor, road building [h]	+1.8	+1.6
Farm wages, without board [j]	+1.6	+1.4

[a] Secured by deflating money wages by the U. S. Bureau of Labor Statistics index of cost of living.

[b] Teachers, clerks, factory and unskilled labor. See Carl Snyder, *Business Cycles and Business Measurements*, Macmillan Co., New York, 1927, p. 289. This index combines both wage rates and per capita earnings. Later figures are published in the *Monthly Review* of the Federal Reserve Bank of New York. A revision of this index on the basis of a broader sample was made in July, 1932. The revised index shows rates of increase between 1922 and 1929 of 2.1 per cent a year in money earnings, of 1.9 per cent a year in real earnings.

[c] Derived from aggregate wages paid and average number employed, as given in the Census of Manufactures, with interpolations based on the Federal Reserve Board's indexes of payrolls and factory employment.

[d] These measurements relate to index numbers constructed by the National Industrial Conference Board (*Wages in the United States, 1914-1930*, pp. 54 ff.).

[e] The data for New York State, which include earnings of factory office workers, are collected by the State Department of Labor (*The Industrial Bulletin*, December, 1931, p. 77).

[f] *Monthly Labor Review*, December, 1929, pp. 26-28.

[g] *Survey of Current Business*, 1931 Annual Supplement, p. 180.

[h] U. S. Department of Agriculture, Bureau of Public Roads, *Yearbook of Agriculture*, 1931, p. 1066. The original figures relate to average wage rates per hour.

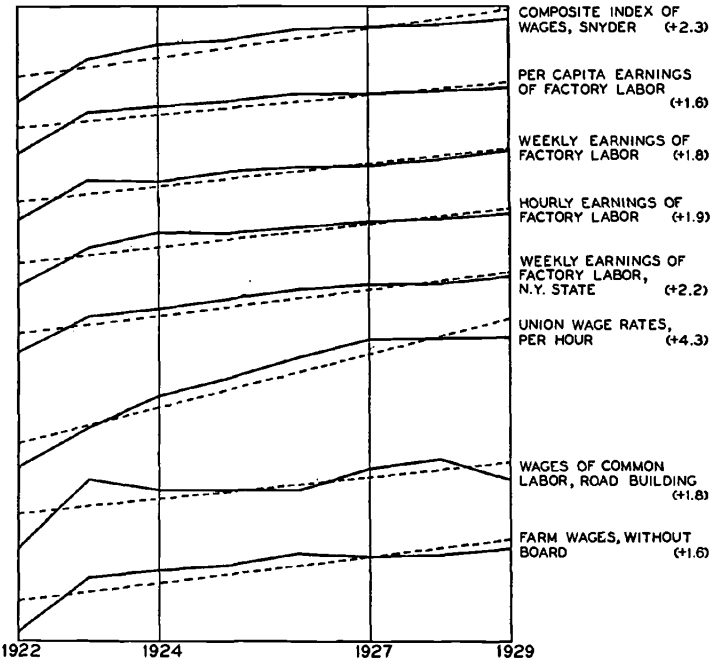
[j] U. S. Department of Agriculture, Bureau of Agricultural Economics, *Yearbook of Agriculture*, 1931, p. 1023. The original figures relate to average yearly wages.

These index numbers, compiled by various agencies and derived in different ways, tell a story of steadily advancing wages between

FIGURE 98

CHANGES IN THE EARNINGS AND WAGE RATES OF EMPLOYED LABOR IN THE UNITED STATES, 1922-1929

(IN CURRENT DOLLARS)



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

1922 and 1929. For labor in manufacturing establishments the annual rate of advance in per capita money earnings averaged 1.6 per cent; as regards real earnings per capita, the rate was 1.4 per cent. The former figure stands very close to the pre-war advance in money wages (the average rate of advance from 1901 to 1913 was 1.7 per cent a year for manufacturing wage-earners), but the change in real wages is in sharp contrast to the decline at the rate of 0.1 per cent a year during the pre-war period. The fact that living costs were advancing between 1922 and 1929 at a rate of but 0.2 per cent a year, as compared with a rate of 1.8 per cent a year for the pre-war period, accounts for the difference in the rates of change in real wages.

Considering the separate classes of factory workers, we find that earnings were advancing more rapidly for men than for women,

more rapidly for unskilled male workers than for skilled male workers.

Wage rates show a sharper advance during this period than do earnings, for a steady shortening of the working day was in process between 1922 and 1929. Union wage rates per hour advanced at the rate of 4.3 per cent a year, while union wage rates per full-time week increased at a rate of 3.9 per cent a year.

Other indexes bear out the general evidence of those cited. Real earnings were advancing at rates between 1.4 and 2.0 per cent a year for most classes of employed workers. The group lagging farthest behind in the advance consisted of women factory workers.

§ *Changes in earnings, industrial groups.*—For various groups of manufacturing industries index numbers of changes in aggregate payrolls and in number of employees are available. From these we may derive measurements of per capita earnings of employees in different industrial groups. Rates of change between 1922 and 1929 in money earnings and in real earnings of employees in these industrial divisions are given in the table following.

TABLE 190

CHANGES IN PER CAPITA EARNINGS OF MANUFACTURING LABOR, BY INDUSTRIES, 1922-1929 [a]

Industry	Average annual rates of change (per cent)	
	In money earnings	In real earnings [b]
Nonferrous metals	+2.7	+2.5
Paper and printing	+2.3	+2.1
Iron and steel	+2.2	+2.0
Machinery	+2.1	+1.9
Automobiles	+1.7	+1.5
Lumber products	+1.7	+1.5
Transportation equipment	+1.5	+1.3
Food products	+1.3	+1.1
Textiles	+1.0	+0.8
Cement, clay and glass	+1.0	+0.8
Chemicals	+0.9	+0.7
Leather products	+0.1	−0.1
Tobacco products	0.0	−0.2
All manufacturing industries	+1.8	+1.6

[a] Derived from the Federal Reserve Board's index numbers of factory employment and payrolls. See the *Federal Reserve Bulletin.*

[b] Secured by deflating money earnings by the U. S. Bureau of Labor Statistics index of cost of living.

Employees in but two industrial groups, those manufacturing leather products and tobacco products, suffered declines in their real earnings during this period. In the eleven other industrial groups represented above the real earnings of employed workers advanced at rates varying from 0.7 to 2.5 per cent a year.

The rate of change in per capita earnings, as derived in the present study, depends upon the relation between changes in aggregate payrolls and total employment. For all manufacturing industries, in combination, payrolls increased substantially between 1922 and 1929 (the rate being 2.4 per cent a year), while employment increased only slightly (at a rate of 0.6 per cent a year). In the four industries marked by advances in per capita earnings above the average, employment and payrolls both advanced. Total employment declined in five industrial groups, the tobacco, lumber, leather, textile, and cement, clay and glass industries. Aggregate payrolls remained constant in industries producing lumber products, and declined in the leather and tobacco industries.

The industrial groups covered by the pre-war summary of trends of earnings are not in all respects identical with those shown in the post-war summary. For seven groups comparable figures are obtainable. Rates of change in real earnings in these seven groups during the pre-war and post-war periods are given in the next table.

TABLE 191

CHANGES IN PER CAPITA REAL EARNINGS OF MANUFACTURING LABOR IN SEVEN INDUSTRIAL GROUPS, 1901-1913 AND 1922-1929

Industrial group	Average annual rates of change in real earnings (per cent)	
	1901-1913	1922-1929
Land vehicles	+1.5	+1.4 [a]
Textiles	+0.3 [b]	+0.8
Paper and printing	+0.3	+2.1
Leather products	+0.1	−0.1
Iron and steel products	−0.1	+2.0
Tobacco products	−0.8	−0.2
Lumber products	−1.0	+1.5

[a] An average of the rates pertaining to transportation equipment and to automobiles.
[b] An average of the rates pertaining to clothing and to textiles.

Industries producing land vehicles were the only ones to show a substantial gain in the real earnings of labor between 1901 and 1913. The rate of post-war gain has been slightly below the pre-war advance. Workers in iron and steel and lumber, who suffered declines in real wages before the war, showed steadily rising real earnings during the period just passed. Earnings of workers in tobacco manufacturing

plants declined in both periods, the rate of decline being smaller in the post-war period. In only two groups of industries, those producing leather goods and land vehicles were post-war conditions (as regards wage trends) less favorable than pre-war.

This brief statistical record of advancing wage rates and earnings constitutes a mere skeleton outline of a movement of the broadest importance. After two decades during which labor in general did little more than preserve its status, the war brought an improvement in the position of the wage-worker. This gain was consolidated and enhanced during the recession of 1920-21, and in 1922, when the present survey begins, the level of real earnings was probably higher than it had ever been before. The gains recorded in the preceding summary were added to those of the years 1914-21. During the period we are studying the position of the employed industrial laborer was relatively advantageous. His output was high, and was growing, and his standard of living was one which permitted luxuries and comforts probably never before available to wage-workers in general.

Some difficulties there were. Even before the period of expansion was terminated in 1929 a widening margin of unemployed was accumulating. The turn-over of men, the shifting of labor among industries, the enforced displacement of labor—these were becoming more prominent features of industrial progress than they had ever been before.[1] Security of tenure was declining, a condition particularly true as regards men past the prime of life. The rewards for employed men were high, but mechanical improvements and a faster pace were making it harder to hold on. Social instruments of alleviation adequate to the demands of the new technology had not been perfected. These were difficulties already apparent before the check to prosperity occurred. Recession brought them into sharp relief, and precipitated problems which were bound to arise with the persistence of prevailing industrial tendencies.

[1] It is necessary to be cautious in subscribing to the current belief that technological unemployment has greatly increased during recent years, if we disregard special occupational shifts due to war conditions. It is probable that a larger proportion of the working population is technically employed, and that it is less easy on the average for those thrown out of employment by technical changes to revert to farm living, but it is not at all certain that the rate of technical displacement among those employed in technical occupations is appreciably greater than at any time since the Civil War.—Note by M. C. Rorty.

Profits

The comprehensive statistics of the Bureau of Internal Revenue on corporate incomes, as these are reported in connection with Federal tax returns, are a primary source of information concerning the trend of profits. Changes in net income for the chief corporate divisions are shown in the following table. They appear graphically in Figure 99.

TABLE 192

NET INCOMES [a] OF CORPORATIONS CLASSIFIED BY MAJOR INDUSTRIAL GROUPS, 1922-1929

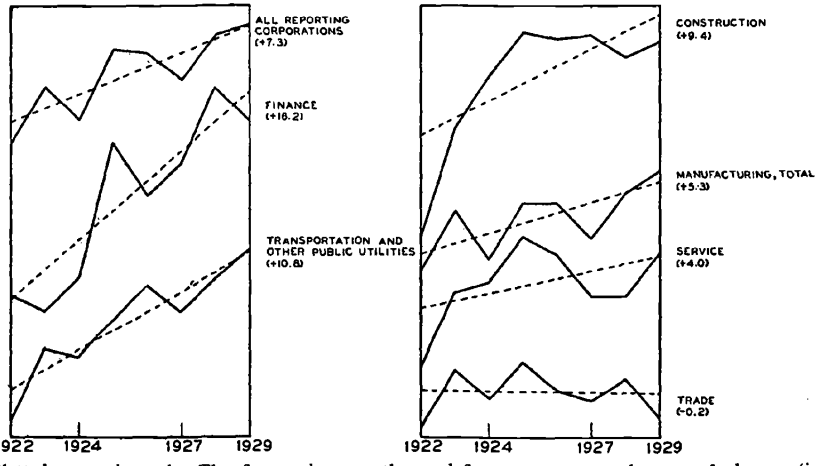
(1) Year	(2) Total [b]	(3) Manufacturing	(4) Construction	(5) Transportation and other public utilities	(6) Public service, professional, amusement, etc.	(7) Trade	(8) Finance [c]
	Relative numbers						
1922	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1923	132.2	135.2	176.5	144.6	145.5	134.2	93.3
1924	112.4	104.6	231.4	139.7	152.6	115.4	109.2
1925	159.8	140.1	288.5	170.4	196.2	139.1	218.0
1926	157.3	140.4	277.8	204.7	177.0	120.1	165.1
1927	136.5	116.9	284.9	177.7	143.5	114.4	195.3
1928	172.5	148.1	253.8	209.5	143.6	128.2	286.7
1929	183.2	166.8	276.3	242.9	180.4	105.0	242.7
Average annual rate of change (per cent) ...	+7.3	+5.3	+9.4	+10.8	+4.0	−0.2	+16.2
Index of instability	9.0	9.8	17.2	8.1	13.3	9.1	13.7
	Absolute values (in millions of dollars)						
1922	4,770	2,641	39	783	89	695	490
1929	8,740	4,406	108	1,902	160	730	1,189

[a] Statutory net income (net profits less tax-exempt interest and dividends received on capital stock of domestic corporations) less deficits of corporations reporting no net income.
[b] The total includes corporations from minor groups not here listed.
[c] Banking, insurance, real estate and holding companies, stock and bond brokers, etc.

Here is a record of rapid but irregular gains in earnings. For all corporate groups the rate of advance averaged 7.3 per cent a year, a figure well in excess of the rate of growth in aggregate value of goods produced, and appreciably higher than the rate of increase

FIGURE 99

CHANGES IN CORPORATE NET INCOME IN THE UNITED STATES AS REPORTED TO THE BUREAU OF INTERNAL REVENUE, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

in the earnings of labor.[1] The figures suffer from one drawback, the effects of which cannot be approximated with any accuracy. The number of reporting corporations varies from year to year. This variation may serve to swell somewhat the returns reported for later years, but the distortion is probably not serious. Incomes of corporations added to or withdrawn from the total probably constitute but a small percentage of the aggregate figures reported.

Of the constituent corporate groups, enterprises in the fields of finance showed the most striking gains in net income, averaging no less than 16 per cent a year. The net income of construction and public utility corporations (including railroads) increased at rates approximating 10 per cent a year. Here, as phases of the stock market, public utility, and real estate booms, were the spheres of most rapid expansion.

Somewhat more conservative, but impressive enough, is the in-

[1] If to *net income* we add dividends received from other corporations, and interest on tax-exempt bonds, thus approximating *net profits* in customary accounting usage, we secure a series increasing between 1922 and 1929 at a rate of 8.9 per cent a year.

Colonel M. C. Rorty remarks that a great part of the increase of corporation profits during the period 1922-1929 was merely a readjustment of real profits to the post-war level of commodity prices.

TABLE 193

NET INCOMES [a] OF MANUFACTURING CORPORATIONS CLASSIFIED BY INDUSTRIAL GROUPS, 1922-1929

(1) Year	(2) Food products, beverages and tobacco	(3) Textiles and textile products	(4) Leather and leather products	(5) Rubber and related products	(6) Lumber and wood products	(7) Paper, pulp and products	(8) Printing and publishing	(9) Chemicals, and allied substances	(10) Stone, clay and glass products	(11) Metal and metal products	(12) All other manufacturing industries	(13) Total
	Relative numbers											
1922	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1923	128.7	107.6	56.9	140.3	166.9	154.2	88.0	82.3	159.0	196.7	135.4	135.2
1924	148.3	28.2	60.2	239.3	75.8	120.6	91.2	98.7	132.4	172.6	49.5	104.6
1925	148.6	65.3	73.8	627.8	92.2	160.7	99.8	137.0	150.0	244.9	48.4	140.1
1926	167.1	26.2	72.7	73.3	65.0	172.2	106.7	181.3	158.7	253.7	53.0	140.4
1927	160.6	65.0	121.3	293.1	19.5	179.2	101.2	97.5	118.1	198.4	37.2	116.9
1928	188.2	42.9	77.4	—— [b]	44.3	168.2	129.6	199.5	127.9	260.6	49.3	148.1
1929	195.1	35.2	63.3	98.6	42.0	169.6	138.0	216.5	119.3	334.2	37.4	166.8
Average annual rate of change (per cent) ...	+8.2	−13.6	+0.4	——	−18.1	+6.0	+5.9	+13.4	−0.5	+11.9	−15.9	+5.3
Index of instability	5.5	27.7	21.0	——	26.5	11.3	7.0	16.6	12.4	15.7	22.8	9.8
	Absolute values (in millions of dollars)											
1922	297	457	64	17	160	62	162	395	109	635	284	2,641
1929	580	161	40	17	67	104	223	855	130	2,122	106	4,406

[a] Statutory net income, less deficits of corporations reporting no net income.
[b] Deficit of 1.3 millions of dollars.

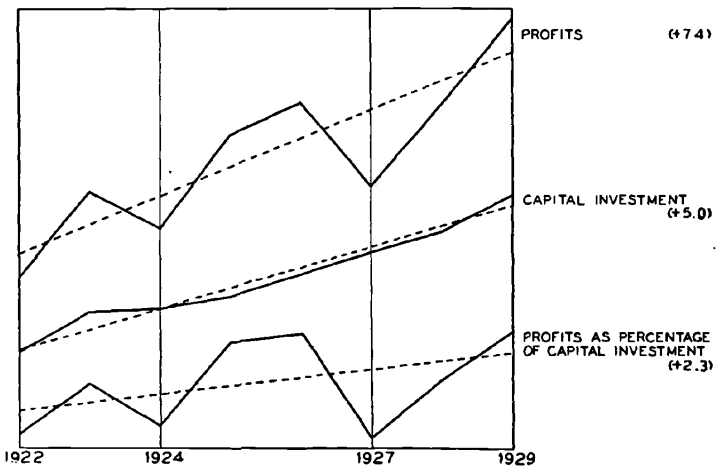
crease of 5.3 per cent a year in the net income of manufacturing corporations, the largest single group in the aggregate. Breaking this group into its component parts we have the figures given on page 484, descriptive of the fortunes of industrial groups.

There is not space here for detailed comment on these figures. The variety of fortunes within the field of manufacturing enterprise is noteworthy. Four industrial groups actually showed declining tendencies in aggregate incomes between 1922 and 1929. The instability of net income is a common characteristic of nearly all the groups.

The Growth of Profits, Manufacturing Corporations.—Additional light is thrown on the course of corporate profits between

FIGURE 100

CHANGES IN THE PROFITS AND THE CAPITAL INVESTMENT OF 2,046 MANUFACTURING CORPORATIONS, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

1922 and 1929 by the statistics on profits of manufacturing corporations which were cited in the preceding chapter.[1] The next table contains data relating to the profits and the capital investment of a group of 2,046 manufacturing corporations. The figures are plotted in Figure 100.

[1] These statistics are from *A Source-Book for the Study of Industrial Profits*, R. C. Epstein and F. M. Clark, U. S. Department of Commerce, 1932.

TABLE 194

PROFITS, CAPITAL INVESTMENT AND PROFITS AS PERCENTAGE OF CAPITAL INVESTMENT, 2,046 MANUFACTURING CORPORATIONS, 1922-1929 [a]

Year	Profits (millions of dollars)	Capital investment [c] (millions of dollars)	Profits as percentage of capital investment
1922	1,784	18,305	9.7
1923	2,210	19,800	11.2
1924	2,023	20,048	10.1
1925	2,564	20,641	12.4
1926	2,759	21,663	12.7
1927	2,252	22,965	9.8
1928	2,736	24,319	11.3
1929 [b]	3,395	26,523 [d]	12.8 [d]
Average annual rate of change (per cent)	+7.4	+5.0	+2.3

[a] The terms here used are defined as follows by R. C. Epstein, who made the study for the Department of Commerce: "Net profit is taxable net income, plus non-taxable items where present (i.e., dividends from other corporations and tax-exempt interest), after all charges, but, unless otherwise stated, before Federal taxes. Invested capital, unless otherwise stated, is the total of 'entrepreneurial investment', i.e., common and preferred stock, surplus and undivided profits."

[b] The entries for 1929 are estimated from data relating to 71 manufacturing corporations. The records for the 71 corporations are sufficiently close to those for the larger sample to justify the making of estimates for the larger group for 1929.

[c] The capital investment figures here given differ from those appearing in the report of the Department of Commerce. In that study the sales and profits items were aggregate figures for calendar years. The investment figure for 1922 was given as of the beginning of the year; that for 1923 was a composite of items relating some to the beginning, some to the end of the year; from 1924 on the data were given as of the end of each year. Since capital investment was growing rapidly, an error is introduced in comparing profits made during a given year with capital investment at the end of that period. It has seemed advisable to estimate the capital investment as of the middle of each year, and to set this estimated figure against aggregate profits for the year.

It is these estimates of capital investment which appear above. The figure for 1923, as given in the original source, has been taken as the best approximation to a middle-of-the-year figure. The entry for 1922 was secured by adding to the item as given (relating to the first of the year) one-third of the difference between that item and the figure for 1923. The entry for 1924 was derived by adding to the 1923 figure two-thirds of the difference between that and the given 1924 figure (which related to the end of the year). For 1925 the entry is an average of the original figures relating to the end of 1924 and to the end of 1925. Entries for succeeding years were derived in like manner.

[d] The estimate of profits for 1929 is based upon the relation between profits and investment for a small sample of 71 corporations and for the large sample of 2,046 corporations in 1926 (the year closest to 1929 in the rate of return earned by the corporations in the small group). Capital investment in 1929 for the larger group is estimated from the 1929 investment for the smaller sample, on the basis of the relationship prevailing in 1928.

Among this group of manufacturing corporations aggregate net profits increased at a rate of 7.4 per cent a year between 1922 and 1929. This exceeds by a considerable margin the rate of 5.3 per cent at which the taxable net income of all reporting manufacturing

corporations advanced during this period. The coverage of the latter group is greater, of course, but this coverage is not constant, as it is for the group of 2,046 corporations. The difference is doubtless due in part to the fact that net profits, as defined in the Department of Commerce publication, are not identical with net taxable income. Non-taxable items such as dividends from other corporations and tax-exempt interest are included in net profits. Finally, we should note that the completion of mergers, a process of considerable importance during this period, might serve to swell the rate of apparent increase in the profits of a constant number of corporations. As regards manufacturing corporations in general, we shall probably be safe in concluding that the average annual rate of increase in net profits between 1922 and 1929 falls between 5.3 per cent, as a minimum, and 7.4 per cent, as a maximum.[1]

It is a notable fact that aggregate profits increased more rapidly than aggregate capital investment, for this substantial group of manufacturing corporations. The rates of growth between 1922 and 1929 were 7.4 per cent and 5.0 per cent, respectively. The margin between the two represents a definitely rising tendency in profits as a percentage of capital investment. The average rate of advance was 2.3 per cent a year, a noteworthy growth during a period of increasing prosperity. As regards the fortunes of this group there is no evidence that competition and rising costs encroached upon earning power.[2]

[1] Financing through stock issues, with corresponding reduction in bonded indebtedness, would tend to swell net income and profits figures. Such financing, which was a prominent feature of the period under review, doubtless had some effect on data of net earnings, but in the aggregate the effect was not great. Interest payments of manufacturing corporations reporting to the Bureau of Internal Revenue show no evidence of substantial changes in the use made of bonds in corporate financing. The following table gives the percentage of gross receipts paid as interest by manufacturing corporations in the years 1922-29.

1922	1.39	1926	1.05
1923	1.09	1927	1.06
1924	1.13	1928	1.05
1925	1.02	1929	0.99

[2] The provisional character of the 1929 figures should be noted in this connection. However there is ample supplementary evidence as to the high profits of 1929. A sample of 722 industrial corporations selected by the Federal Reserve Bank of New York shows aggregate profits in 1929 some 17 per cent greater than in 1928.

Estimates of S. H. Nerlove (*A Decade of Corporate Incomes*, p. 42) relating to all manufacturing corporations in the United States indicate an increase at a rate of 1.6 per cent a year, between 1922 and 1929, in net profits as a percentage of

The actual rates of return on investment are shown in the last column of Table 194. These figures, which define the relation of net corporate profits, before deduction of Federal taxes, to 'entrepreneurial investment' (as represented by common and preferred stock, surplus and undivided profits) range from 9.8 per cent, in 1927, to 12.8 per cent, in 1929. (The figures for 1929 are estimated from returns for a smaller sample.) For the entire period the average rate of return was 11.3 per cent. Between 1922 and 1928, the years covered by the complete record, the rate of return was slightly in excess of 11.0 per cent. Among the corporations here represented, a group which includes the dominant elements among American manufacturing industries, the rate of return on investment was relatively high during these years. Whether it would be equally high if the available statistics covered all manufacturing corporations in the country cannot be definitely determined. The present sample, while comprehensive and well selected, includes a heavy representation of fairly large corporations. But such corporations would still dominate were the sample all-inclusive.[1]

Dividend Payments.—The above data relating to profits may be supplemented by figures on dividend payments by all corporations,

---

capital investment. Nerlove's figures, by years, fall somewhat below those secured by Epstein from the Department of Commerce sample. Nerlove's results follow.

Year	Return on invested capital, manufacturing corporations (per cent)
1922	7.5
1923	9.9
1924	7.5
1925	9.6
1926	9.2
1927	7.6
1928	9.2
1929	9.7

In comparison with these measurements, the Department of Commerce figures indicate that the group of 2,046 relatively large corporations earned somewhat greater returns, year by year, than did manufacturing corporations at large, and that the rate of advance in these returns between 1922 and 1929 was somewhat greater for the large corporations than for manufacturing corporations in general.

Nerlove's figures for all corporations show an increase, between 1922 and 1929, at a rate of 2.4 per cent a year in net profits as a percentage of capital investment.

[1] The general conclusions of the study summarized above are supported by independent evidence gathered by Joseph H. Forest, in a survey of a group of 141 corporations, primarily, but not exclusively, engaged in manufacturing. (The results appear in an essay entitled *An Analysis of the Rates of Income of Several Industries in the United States, 1930,* which is on file in the Columbia University Library.) In determining rate of return, capital investment was taken to be the

as reported by the Treasury Department. Total disbursements by all reporting corporations are given in the second column of the table below, for the years 1922-1929. During this same period sub-

sum of the common and preferred stock outstanding, plus the profit and loss surplus. Annual income, as used in this study, consisted of net income, after deduction of taxes and interest, as given in published corporation balance sheets.

Treating first the 141 corporations as a group we have the following figures defining the rate of return on capital investment, by years, from 1922 to 1928.

1922	1923	1924	1925	1926	1927	1928	Average, 1922-28
8.7	8.9	8.9	11.8	11.7	9.1	11.0	9.6

The lowest rate of return, secured in 1922, was 8.7 per cent; the highest, secured in 1925, was 11.8 per cent. The average return for the seven-year period was 9.6 per cent of invested capital, as defined and determined in the manner indicated above. It should be noted that net profits are here taken *after* the payment of all taxes. Net profits in the Department of Commerce study were determined before the deduction of Federal taxes.

Classifying these 141 corporations by industrial groups, Forest secures the following rates of return, as averaged for the period 1922-28:

Industrial group	Number of corporations	Average rate of return on capital investment, 1922-1928 (per cent)
Motor parts	13	17.4
Automobiles	16	16.8
Stores	16	16.7
Chemicals	9	16.2
Tobacco	9	12.8
Oil	18	9.5
Rubber	10	7.6
Steel	20	6.7
Copper	20	6.7
Coal	10	2.5

These figures relate, of course, to groups of corporations, not to individual companies, yet the average return on investment over this eight-year period varied from 2.5 per cent to 17.4 per cent. If we had figures for individual corporations the rates of return would vary over a much wider range.

Further evidence as to variations of return on investment among manufacturing corporations is furnished by the following figures, based on the data for 2,046 corporations compiled by R. C. Epstein and F. M. Clark. (Net profits are here determined *before* the deduction of Federal income taxes.)

Industrial group	Number of corporations	Average rate of return on capital investment, 1922-1928 (per cent)
Printing and publishing	100	21.2
Miscellaneous	89	18.4
Stone, clay and glass products	114	15.0
Leather and leather products	54	12.6
Lumber and wood products	190	11.6
Metal and metal products	648	10.9
Food products, beverages and tobacco	215	10.7
Textiles and textile products	289	9.9
Chemicals and allied substances	210	9.7
Paper, pulp and products	111	8.5
Rubber and related products	26	7.5

These figures are based on samples much more comprehensive than those of Forest, and probably represent actual returns more accurately.

stantial amounts were reported as 'dividends received' by these corporations. Subtracting these sums from total dividends paid, we may approximate the amounts actually distributed to individual stockholders. The data, shown below, are portrayed graphically in Figure 101.

TABLE 195

AGGREGATE DIVIDEND PAYMENTS OF ALL CORPORATIONS, 1922-1929

(In millions of dollars)

Year	Total dividend payments	Dividend payments to individuals
1922	3,437	2,634
1923	4,169	3,299
1924	4,339	3,424
1925	5,189	4,014
1926	5,945	4,439
1927	6,423	4,766
1928	7,074	5,157
1929	8,356	5,763
Average annual rate of change (per cent)	+12.8	+10.8
Index of instability.....	2.8	3.1

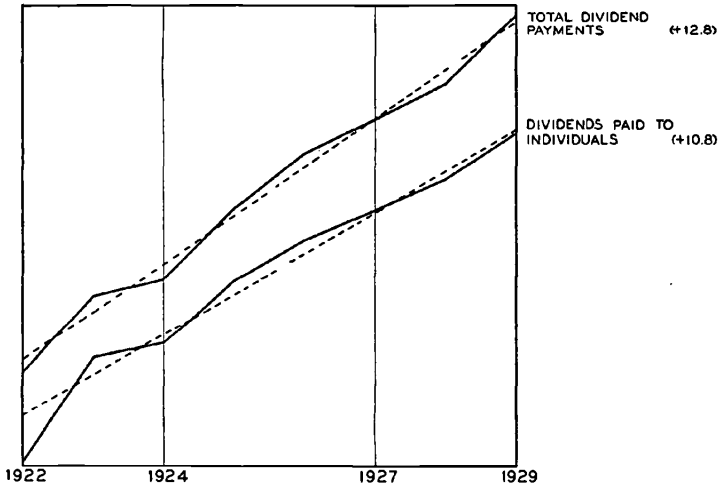
Aggregate dividend payments, which include payments on preferred as well as on common stocks, show an increase between 1922 and 1929 at a rate of 12.8 per cent a year. This is substantially higher than the rate of 7.3 per cent which measures the increase in the taxable net income of American corporations during this period, as reported to the Bureau of Internal Revenue.[1] The index of instability in dividend payments is 2.8, much smaller than the corresponding index of 9.0 for net income of all reporting corporations. The passing fluctuations of business which are reflected in corporation earnings do not so immediately affect dividend disbursements. Many of these fluctuations are absorbed by the buffers of surplus and undivided profits.

The distribution of dividends to individuals shows an increase somewhat below that for total dividend disbursements. The average

[1] The difference in rates of change is mainly due to the increase in the percentage of profits disbursed. Total cash dividend payments as a fraction of profits available for distribution ('compiled net profits after deducting tax') increased from about 66 per cent in 1922 to 78 per cent in 1929.

FIGURE 101

CHANGES IN AGGREGATE DIVIDEND PAYMENTS OF ALL CORPORATIONS, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

annual rate of change for the years 1922-29 was + 10.8 per cent; the index of instability was 3.1.

Cash Receipts and Capital Gains of Stockholders.—We secure another view of the fortunes of dividend recipients by tracing the actual dividend disbursements of a selected group of corporations, and measuring, at the same time, changes in the values of rights of various sorts accruing to stockholders, and changes in the market values of the capital sums invested. The sample includes 102 corporations (industrials, public utilities and railroads).[1] Results are summarized in the following tables, and are shown graphically in Figure 102. The changes traced in these tables relate to the total stock outstanding on January 1, 1922. Subsequent issues are disregarded, for the present purpose.

During the year 1922 aggregate dividend payments to stockholders, as of January 1 of that year, amounted to 389.3 millions of

[1] The sample included, in 1922, 34.5 per cent of the number of shares listed on the New York Stock Exchange.

TABLE 196

CASH INCOME RECEIVED FROM 1922 TO 1929, INCLUSIVE, BY THE HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

102 Industrial, Public Utility and Railroad Corporations [a]

(1) Year	(2) Cash income (in millions of dollars) Including rights	(3) Cash income (in millions of dollars) Excluding rights	(4) Cash income, including rights, per $10,000 investment on January 1, 1922 (dollars)
1922	416.6	389.3	640.5
1923	462.3	453.6	710.7
1924	559.5	471.9	860.1
1925	522.1	512.4	802.6
1926	660.0	614.1	1,014.6
1927	784.1	690.4	1,205.4
1928	955.7	755.4	1,469.2
1929	1,191.8	857.7	1,832.2
Total receipts, eight years	5,552.1	4,744.8	8,535.3
Average annual rate of change (per cent)	+16.5	+11.9	+16.5
Index of instability	6.5	2.2	6.5

[a] Following are the corporations included in the sample:

	Market value of stock as of January 1, 1922 (millions of dollars)
Railroads (12)	
Atlantic Coast Line R.R. Co.	56.8
Chesapeake and Ohio Ry. Co.	35.0
Chicago and Northwestern Ry. Co.	91.6
Chicago, Rock Island and Pacific Ry. Co.	23.9
New York Central R.R. Co.	184.1
New York, New Haven and Hartford R.R. Co.	20.4
Northern Pacific Ry. Co.	191.6
Pennsylvania Railroad Co.	335.7
Pere Marquette Ry. Co.	9.7
Southern Pacific Co.	257.1
Southern Railway Co.	22.2
Union Pacific R.R. Co.	280.4
Total	1,508.5
Public Utilities (18)	
American Telephone and Telegraph Co.	629.7
Commonwealth Edison Co.	63.6
Consolidated Gas Co. of New York	91.0
Consolidated Gas, Electric Light and Power Co. of Baltimore	13.6
Detroit Edison Co.	27.9
Edison Electric Illuminating Co. of Boston	36.8
El Paso Electric Co.	3.2
Fall River Gas Works Co.	1.9

(Footnote continued on following page)

(*Footnote continued from preceding page*)

	Market value of stock as of January 1, 1922 (millions of dollars)
Public Utilities (cont.)	
Lone Star Gas Corp.	9.2
Massachusetts Gas Cos.	15.8
Mississippi River Power Co.	2.1
North American Co.	15.3
Pacific Gas and Electric Co.	21.9
Pacific Lighting Corp.	7.2
Public Service Co. of Northern Illinois	9.8
Public Service Corp. of New Jersey	20.6
Twin City Rapid Transit Co.	7.0
Western Union Telegraph Co.	90.4
Total	1,067.0
Industrial Corporations (72)	
Allied Chemical and Dye Corp.	124.7
American Agricultural Chemical Co.	10.1
American Beet Sugar Co.	5.2
American Can Co.	14.3
American Car and Foundry Co.	43.8
American Cotton Oil Co. (Gold Dust Corp.)	4.4
American Hide and Leather Co.	1.5
American International Corp.	20.3
American Linseed Co.	5.2
American Locomotive Co.	27.0
American Radiator Co.	48.0
American Smelting and Refining Co.	27.6
American Steel Foundries	21.0
American Sugar Refining Co.	25.5
American Tobacco Co.	114.8
American Woolen Co.	32.7
Anaconda Copper Mining Co.	149.6
Baldwin Locomotive Works	19.6
Bethlehem Steel Corp.	31.4
Calumet and Arizona Mining Co.	37.9
Central Leather Co.	12.4
Chicago Pneumatic Tool Co.	7.5
Colorado Fuel and Iron Co.	8.6
Computing-Tabulating-Recording Co. (International Business Machine Co.)	7.7
Continental Can Co., Inc.	6.3
Corn Products Refining Co.	48.3
Cudahy Packing Co.	8.7
Endicott-Johnson Corp.	26.4
Famous Players-Lasky Corp.	16.3
General Electric Co.	240.2
General Motors Corp.	205.5
Goodrich (The B. F.) Co.	21.7
Hart, Schaffner and Marx	11.0
International Harvester Co.	78.1
International Nickel Co.	20.1
Kayser (Julius) and Co.	5.6
Kelsey Wheel Co., Inc.	6.0
Kresge (S. S.) Co.	27.7
Lehigh Coal and Navigation Co.	39.9
Liggett and Myers Tobacco Co. (Class "B")	17.9
Loose-Wiles Biscuit Co.	3.0
Lorillard (P.) Co.	45.6
Marland Oil Co.	21.1
Mathieson Alkali Works, Inc.	2.6
Maxwell Motor Corp. (Class "B"), Chrysler Corp.	7.4
May Department Stores Co.	21.6

(*Footnote continued on following page*)

dollars, and the cash value of rights accruing in that year amounted to 27.3 millions of dollars. Total cash income, on the assumption that rights were turned into cash, was 416.6 millions. This increased, with a slight check in 1925, to 1,191.8 millions of dollars in 1929. The average rate of change was 16.5 per cent per year. The increase in actual dividend disbursements was at the rate of 11.9 per cent a year, but the addition of the cash values of rights brings this up to the rate cited.

This figure relates to aggregate cash income received by all stockholders as of January 1, 1922, but it may also be taken to define the rate of increase in the cash income of a person investing a fixed sum, say $10,000, in the stocks of these corporations on that date, divided precisely as the aggregate amount was divided [see column (4) of preceding table].

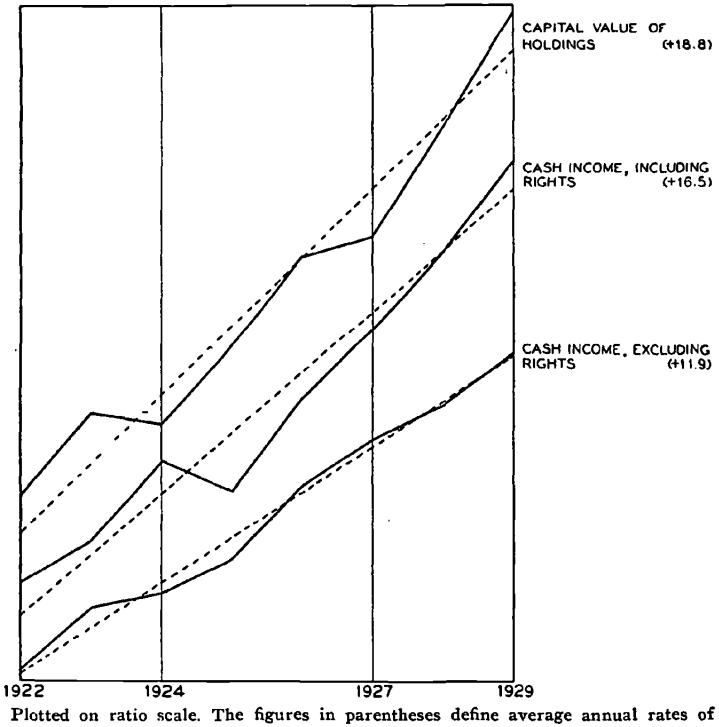
To complete the picture we must trace changes in the capital value of the aggregate investment over the same period. This is done in Table 197, following. To facilitate comparison with changes in the cash returns on these stocks the data given in the preceding

(Footnote continued from preceding page)

Industrial Corporations (cont.)	Market value of stock as of January 1, 1922 (millions of dollars)
National Biscuit Co.	36.9
National Lead Co.	18.0
New Jersey Zinc Co.	56.8
Pacific Mills	33.6
Pan-American Petroleum and Transport Co. (Class "B")	19.0
Pittsburgh Coal Co.	20.3
Pressed Steel Car Co.	8.2
Pullman Co.	146.1
Railway Steel Spring Co.	13.4
Republic Iron and Steel Co.	15.5
Sears, Roebuck and Co.	64.1
Sloss-Sheffield Steel and Iron Co.	3.7
Standard Oil Co. of New Jersey	717.9
Stewart-Warner Speedometer Corp.	11.8
Studebaker Corp.	50.0
Texas Co.	303.4
Union Bag and Paper Corp.	10.6
U. S. Cast Iron Pipe and Foundry Co.	2.1
U. S. Industrial Alcohol Co.	9.6
U. S. Realty and Improvement Co.	9.9
U. S. Rubber Co.	44.1
U. S. Steel Corp.	428.2
Virginia-Carolina Chemical Co.	8.1
Westinghouse Air Brake Co.	54.2
Westinghouse Electric and Manufacturing Co.	71.2
Woolworth (F. W.) Co.	90.8
Total	3,929.3
Grand Total	6,504.8

FIGURE 102

GRAPHIC REPRESENTATION OF INVESTMENT EXPERIENCE OF HOLDERS OF COMMON STOCK IN 102 CORPORATIONS, 1922-1929



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

table are repeated, in relative form. The series here given are those plotted in Figure 102.

At prevailing market prices the capital value of the aggregate investment increased 235 per cent between January 1, 1922, and January 1, 1929.[1] Over the entire period the average annual rate of increase in the capital value of the investment, as of January 1, was 18.8 per cent.

In explanation of these figures it must be noted that common stock values and dividends on common stocks alone are included. The dividend series derived from Treasury statistics includes pay-

[1] At market prices as of January 1, 1930, the increase in the value of the investment was 189 per cent.

TABLE 197

RELATIVE NUMBERS DEFINING THE INVESTMENT EXPERIENCE OF HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

102 Industrial, Public Utility and Railroad Corporations

Year	Cash income		Capital value [a]
	Including rights	Excluding rights	
1922	100	100	100
1923	111	117	122
1924	134	121	120
1925	125	132	145
1926	158	158	183
1927	188	177	191
1928	229	194	252
1929	286	220	335
Average annual rate of change (per cent)	+16.5	+11.9	+18.8
Index of instability	6.5	2.2	7.3

[a] The market price as of January 1 of each year (or the nearest date for which figures were available) has been used to determine the capital value of the investment. For each company this price is multiplied by the number of shares of common stock outstanding on January 1, 1922, plus shares representing stock dividends declared after that date.

ments on preferred stocks, as well as on common stocks. The inclusion of stock dividends and of rights serves also, of course, to swell the returns represented in the above tables. Again, we are here dealing with a group of corporations whose earnings during this period may well have been above the average corporate return. Finally, we stop short of the period of severe liquidation in stock values and of retrenchment in dividend payments which began in 1929. Our figures relate to a prolonged period of prosperity. The comparison of tendencies within this period is our immediate concern.

§ *Returns to stockholders, various corporate groups.*—Changes in dividend disbursements, in the values of rights and in capital values occurring among the constituent groups of the total sample are shown in the several tables following.

Railroads, for which dividend disbursements and value of rights increased at a rate of 8.8 per cent a year, while capital value increased at a rate of 11.5 per cent a year, showed the lowest rates of advance. For

TABLE 198

MEASUREMENTS DEFINING THE INVESTMENT EXPERIENCE OF THE HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

72 Industrial Corporations

(1) Year	(2) Cash income[a] Including rights: In millions of dollars	(3) Including rights: In relative numbers	(4) Excluding rights: In millions of dollars	(5) Excluding rights: In relative numbers	(6) Capital value * in relative numbers
1922	200.7	100	200.2	100	100
1923	253.0	126	251.7	126	125
1924	275.1	137	260.7	130	123
1925	307.6	153	301.3	150	152
1926	390.9	195	388.6	194	197
1927	502.9	251	456.7	228	208
1928	585.5	292	511.7	256	287
1929	791.6	395	601.3	300	402
Total receipts, eight years	3,307.3		2,972.2		
Average annual rate of change (per cent)	+21.8		+17.0		+22.4
Index of instability	5.5		3.4		8.9

* As of January 1 of each year.

[a] It is unavoidable that the records of a limited number of large corporations should dominate such aggregates as these. Indeed, these corporations would tend to dominate an all-inclusive sample. If we omit from the above aggregates statistics for four large corporations (General Motors Corp., Standard Oil Co. of N. J., General Electric Co. and the U. S. Steel Corp.), we have the following income record for the remaining companies in the group:

MEASUREMENTS DEFINING THE INVESTMENT EXPERIENCE OF THE HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

68 Industrial Corporations

(1) Year	(2) Cash income Including rights: In millions of dollars	(3) Including rights: In relative numbers	(4) Excluding rights: In millions of dollars	(5) Excluding rights: In relative numbers	(6) Capital value* in relative numbers
1922	130.8	100	130.4	100	100
1923	166.8	128	165.6	127	125
1924	179.3	137	164.9	126	122
1925	198.9	152	192.6	148	156
1926	225.0	172	222.8	171	207
1927	242.7	186	240.8	185	201
1928	304.1	232	247.0	189	265
1929	429.0	328	297.1	228	366
Average annual rate of change (per cent)	+ 16.8		+ 11.2		+ 20.0
Index of instability	7.1		4.1		8.2

* As of January 1 of each year.

TABLE 199

MEASUREMENTS DEFINING THE INVESTMENT EXPERIENCE OF THE HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

18 Public Utility Corporations

(1)	(2)	(3)	(4)	(5)	(6)
	Cash income [a]				
Year	Including rights		Excluding rights		Capital value * in relative numbers
	In millions of dollars	In relative numbers	In millions of dollars	In relative numbers	
1922	110.5	100	84.1	100	100
1923	96.3	87	88.7	105	116
1924	128.4	116	87.3	104	117
1925	91.3	83	88.0	105	131
1926	133.7	121	91.0	108	155
1927	109.3	99	91.8	109	164
1928	183.2	166	94.2	112	203
1929	208.4	189	98.9	118	255
Total receipts, eight years	1,061.1		724.0		
Average annual rate of change (per cent)	+10.5		+1.9		+14.1
Index of instability	14.9		1.3		5.9

* As of January 1 of each year.

a If one large corporation (the American Telephone and Telegraph Co.) be excluded from this group, we have somewhat different results:

MEASUREMENTS DEFINING THE INVESTMENT EXPERIENCE OF THE HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

17 Public Utility Corporations

(1)	(2)	(3)	(4)	(5)	(6)
	Cash income				
Year	Including rights		Excluding rights		Capital value * in relative numbers
	In millions of dollars	In relative numbers	In millions of dollars	In relative numbers	
1922	40.0	100	34.8	100	100
1923	46.9	117	39.4	113	128
1924	55.1	138	38.0	109	127
1925	42.0	105	38.6	111	157
1926	50.1	125	41.7	120	200
1927	60.0	150	42.5	122	212
1928	58.5	146	44.8	129	271
1929	128.9	323	49.5	142	381
Average annual rate of change (per cent)	+ 15.3		+ 4.3		+ 20.5
Index of instability	21.4		2.8		7.4

* As of January 1 of each year.

TABLE 200

MEASUREMENTS DEFINING THE INVESTMENT EXPERIENCE OF THE HOLDERS OF ALL COMMON STOCK OUTSTANDING ON JANUARY 1, 1922

12 Railroads

(1) Year	(2) Cash income, Including rights: In millions of dollars	(3) Cash income, Including rights: In relative numbers	(4) Cash income, Excluding rights: In millions of dollars	(5) Cash income, Excluding rights: In relative numbers	(6) Capital value * in relative numbers
1922	105.4	100	104.9	100	100
1923	113.1	107	113.1	108	121
1924	156.0	148	123.8	118	112
1925	123.2	117	123.2	117	138
1926	135.5	129	134.4	128	166
1927	171.8	163	141.8	135	167
1928	187.0	177	149.5	143	194
1929	191.9	182	157.6	150	216
Total receipts, eight years	1,183.9		1,048.3		
Average annual rate of change (per cent)	+8.8		+5.8		+11.5
Index of instability	7.6		1.2		3.9

* As of January 1 of each year.

stockholders of the group of 72 industrial corporations, cash income advanced at 21.8 per cent a year,[1] while the market value of the invest-

[1] We may secure some check upon this figure, which shows a phenomenally rapid advance in the income received by stockholders of industrial corporations, by constructing an index of dividend payments per share, for industrial corporations. The Standard Statistics Company publishes comparable index numbers of stock prices and of dividend yields on 50 industrial common stocks, which are available weekly from 1926 to date. The price index is the total market value of the stocks in the Standard Statistics sample divided by the number of shares outstanding; the yield index is derived by dividing total dividends paid by the total market value. The product of these two indexes gives the ratio of total dividends to number of shares outstanding, or dividends per share. To secure strict comparability the calculation of this ratio has been carried out on a weekly basis. To the extent that weekly estimates of dividend policy do not correctly reflect actual dividend payments, the annual average may be somewhat in error. It should be noted that the index does not cover the returns to the stockholder in the form of subscription privileges, although correction is made for stock dividends and split-ups. The derived index of dividends per share for 50 industrial corpora-

ment, as of January 1 of each year, increased at a rate of 22.4 per cent a year.[1] Utilities stood between these two limits.

At a later point we shall compare these returns with those received by other economic groups.

Investment Experience of Bondholders

The returns going to one other group of income recipients, bondholders, are summarized below. The measurements relate to the

TABLE 201

INVESTMENT EXPERIENCE OF A FUND OF $10,000 INVESTED IN BONDS IN JANUARY, 1922, AND REDISTRIBUTED SEMI-ANNUALLY TO MAINTAIN EQUAL DISTRIBUTION, 1922-1929

(These bonds are those included in the Dow-Jones index of bond prices.)

Year	Interest paid per year	Value of fund[a]
1922	$548	$10,268
1923	550	10,446
1924	554	10,573
1925	548	10,942
1926	554	11,316
1927	552	11,605
1928	553	11,810
1929	553	11,362
Average annual rate of change (per cent)	+0.1	+1.9
Index of instability.....	0.3	1.5

[a] Average of the market values as of January 1 and July 1 of each year.

tions from 1926 to 1929 is given below. Index numbers of aggregate dividends received by those holding stocks in the base year, and of dividends plus rights, derived from the data employed in the present study, are shown in comparison with it.

Year	Index numbers of dividends per share (derived from Standard Statistics index numbers)	Present sample of 72 industrial corporations	
		Dividends	Dividends plus rights
1926	100.0	100.0	100.0
1927	121.1	117.5	128.7
1928	135.4	131.7	149.8
1929	155.7	154.7	202.5

Over this four-year period the agreement between the index numbers of dividends per share (for 50 industrial corporations), and of aggregate dividends for a constant number of shares (for 72 industrial corporations) is very close.

[1] The Dow-Jones index of prices of industrial stocks, based on average monthly

bonds included in the Dow-Jones index of bond prices.[1]

Actual cash returns to these bondholders increased at an average annual rate of 0.1 per cent, while the value of the investment increased at a rate of 1.9 per cent. The slight increase in return is due to changes in the Dow-Jones sample, and to the shifting of the investment in the averaging process.

Summary of Changes in Distributive Shares

The fortunes of different classes of income recipients between 1922 and 1929 are indicated by the series brought together for comparison in Table 202, following. These series are not all strictly comparable,[2] but general trends may be traced and compared, with a recognition of the differences among the quantities measured. The data are shown graphically in Figure 103.

Income in current dollars increased for all these classes of recipients, but there were wide differences among the rates of increase of the returns secured by the members of the groups represented. Labor fared well during the eight-year period we are considering, but the holder of common stocks fared even better. Cash receipts alone, without regard to the enhancement of capital values, advanced at rates well above the gains shown for the other classes.[3]

Index numbers relating to the same series, but defining changes

---

high and low prices of 20 stocks (30 since October, 1928), rose at the average annual rate of 19.4 per cent, with an index of instability of 6.3. This index is published in the *Wall Street Journal.*

[1] Use has been made of the compilations of Dwight C. Rose, *Investment Management,* New York, Harpers, 1929, pp. 392-3. The Dow-Jones sample during this period included 40 industrial, public utility and railroad bonds.

[2] The wage figures relate to rates, or to per capita earnings of such workers as are employed; the dividend figures relate to the aggregate returns of those holding all the common stocks of certain corporations at the beginning of the period, or to the returns of one investing a fixed sum, distributed among these stocks. Receipts of bondholders are also of this type.

[3] All these index numbers are, of course, limited in their strict application to the samples actually studied. Generalizing from these samples is particularly hazardous in the field of corporate returns, because of the wide diversity of corporate fortunes during this period. For this reason the study of different samples may yield inconsistent results.

The various figures cited in this chapter, defining changes in corporate net income and in dividend disbursements, come from several different sources, but

TABLE 202

INDEX NUMBERS OF INCOMES RECEIVED BY WAGE-EARNERS, STOCKHOLDERS AND BONDHOLDERS IN AMERICAN INDUSTRIES, 1922-1929

(In current dollars)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Composite index of wages [a]	Average earnings of employees, manufacturing [b]	Cash receipts of holders of common stock in 102 corporations [c]				Cash receipts of bondholders [d]
			All corporations	72 industrials	12 railroads	18 public utilities	
1922	100	100	100	100	100	100	100
1923	111	110	111	126	107	87	100
1924	115	112	134	137	148	116	101
1925	116	113	125	153	117	83	100
1926	119	115	158	195	129	121	101
1927	120	114	188	251	163	99	101
1928	121	116	229	292	177	166	101
1929	122	117	286	395	182	189	101
Average annual rate of change (per cent)..	+2.3	+1.6	+16.5	+21.8	+8.8	+10.5	+0.1

[a] Snyder's composite index of wages, a combination of the New York State Department of Labor's index of wages of factory workers and index of the wages of clerks in factories, with the Federal Reserve Bank's index of hiring rates for unskilled labor, and the National Education Association's index of average wages for teachers in the United States. See Carl Snyder, *Business Cycles and Business Measurements*. Macmillan Co., New York, 1927, pp. 137 and 289.

[b] Aggregate wages paid, as reported in the Census of Manufactures, divided by the average number of wage-earners. Figures for inter-censal years are based upon the Federal Reserve Board's index numbers of factory payrolls and employment.

[c] Dividends plus cash value of rights. See Tables 197-200.

[d] See Table 201.

reflect with a fair degree of consistency the tendencies of the period. For convenience, they are here summarized:

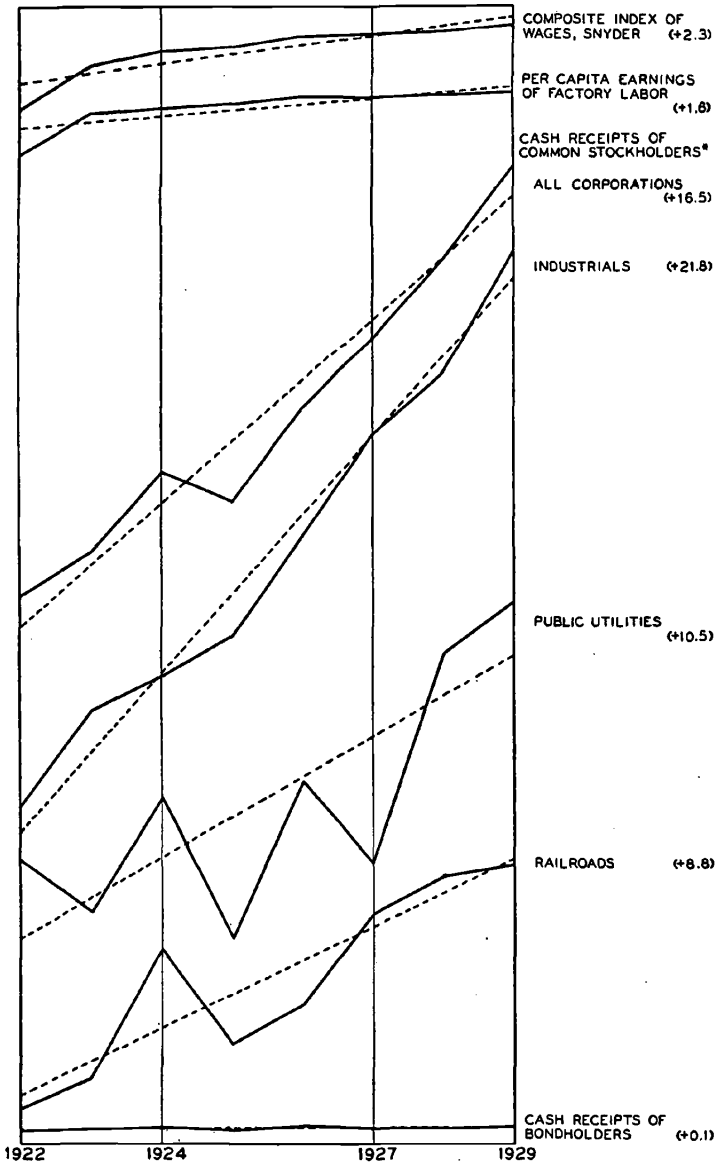
Economic element	Average annual rate of increase (per cent) 1922-1929
Net income of all corporations (Bureau of Internal Revenue)	+ 7.3
Net income of all manufacturing corporations (Bureau of Internal Revenue)	+ 5.3
Net profits of 2,046 manufacturing corporations (Epstein and Clark)	+ 7.4
Dividend payments of all corporations (Bureau of Internal Revenue)	+ 12.8
Dividend payments to individuals, all corporations (Bureau of Internal Revenue)	+ 10.8
Cash income of holders of common stock, including cash value of rights (102 corporations	+ 16.5
Cash income of holders of common stock, not including rights (102 corporations)	+ 11.9

The difference between the rates of growth of net income and of dividend disbursements is explained, in part, by the fact that an increasing percentage of profits available for distribution was disbursed as dividends, during this period. The percentage was 66 in 1922, 78 in 1929. (These figures are derived from statistics of the Bureau of Internal Revenue.)

FIGURE 103

CHANGES IN INCOMES RECEIVED BY WAGE-EARNERS, STOCKHOLDERS AND BONDHOLDERS, IN AMERICAN INDUSTRIES, 1922-1929

(IN CURRENT DOLLARS)



Plotted on ratio scale. The figures in parentheses define average annual rates of change (in percentage form).

* Index numbers derived from sample corporate returns.

in terms of dollars of constant purchasing power, are shown in the next table. Rates of change in corresponding pre-war series are given for comparison with the post-war rates.

TABLE 203

INDEX NUMBERS OF INCOMES RECEIVED BY WAGE-EARNERS, STOCKHOLDERS AND BONDHOLDERS IN AMERICAN INDUSTRIES, 1922-1929 [a]

With Pre-war and Post-war Rates of Change

(In dollars of constant purchasing power)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Composite index of wages	Average earnings of employees, manufacturing	Receipts of holders of common stock in 102 corporations				Receipts of bondholders
			All corporations	72 industrials	12 railroads	18 public utilities	
1922	100	100	100	100	100	100	100
1923	109	108	109	123	105	85	98
1924	113	109	132	134	145	114	99
1925	110	107	119	146	111	79	94
1926	114	109	151	186	123	116	97
1927	116	111	182	243	158	96	98
1928	118	113	225	286	174	162	99
1929	120	114	280	386	178	185	99
Average annual rate of change (per cent)							
1922-1929 ...	+2.1 [b]	+1.4	+16.4	+21.7	+8.6	+10.4	−0.1
1901-1913 ...	+0.4 [c]	−0.1	+ 1.2	+ 0.9 [d]	+1.7	——	−1.2

[a] The entries are the index numbers in Table 202 deflated by the U. S. Bureau of Labor Statistics index of cost of living.

[b] A recent revision of the Snyder index shows a gain in real wages, between 1922 and 1929, of 1.9 per cent a year instead of 2.1 per cent as given in the table.

[c] This rate relates to Douglas' index of the earnings of all groups of employed workers, excluding farm labor. Douglas' index is comparable, in general terms, with Snyder's post-war figures. Snyder's index numbers are not strictly comparable for pre-war and post-war years, since factory wages are included for the later period, but not for the earlier.

[d] Industrial and public utility stocks were grouped together in the pre-war sample.

Bondholders, whose incomes declined steadily in purchasing power under the conditions of advancing prices prevailing between 1901 and 1913, held their own between 1922 and 1929. (The probable error of the result exceeds the slight negative rate shown.) The purchasing power of the income of the average wage-earner (as measured by Snyder's index relating to unskilled workers, teachers

and clerks and factory workers) advanced between 1922 and 1929, at a much higher rate than did a corresponding index in pre-war years. Industrial wage-earners, whose incomes declined in purchasing power between 1901 and 1913, showed a steady gain in the recent period. Among common stockholders, however, the most phenomenal advances in the purchasing power of cash receipts occurred. Stockholders enjoyed some advantage in pre-war years, but the gains of this group, both absolute and relative, were far more pronounced in the period preceding the recession of 1929. The increase in cash receipts was augmented, moreover, by a great increase in the market value of the capital investment. While the advance lasted (and, of course, the story that carries only through 1929 is an unfinished one) stockholders occupied the position of greatest strategic advantage in the economic system.

The above record applies to the average returns of wage-earners, bondholders and stockholders, as these have been estimated from sample figures. It does not define changes in the aggregate purchasing power of the different economic groups represented. To this problem we now pass.

Changes in the Aggregate Purchasing Power of Different Economic Classes

In concluding the discussion of the pre-war period an attempt was made to secure a general perspective of the broader changes which had occurred during the thirteen years preceding the war. In that summary three broad streams were distinguished, the stream of population, the stream of physical goods, and the stream of values. Population increased during the pre-war period at a rate of 2.0 per cent a year; the stream of physical goods increased at a rate of about 3.1 per cent a year; while the value stream (the physical volume of goods expressed in monetary terms) increased in volume at a rate approximating 4.9 per cent a year. We may summarize in similar fashion the record of the period 1922-1929.

Between 1922 and 1929 the population of the United States increased at an average annual rate of approximately 1.4 per cent a year. The physical stream of goods (excluding construction) produced by this population increased at an average rate of 3.8 per cent a year. The total stream of values (values, that is, of physical goods alone, not of services) increased at an average annual rate

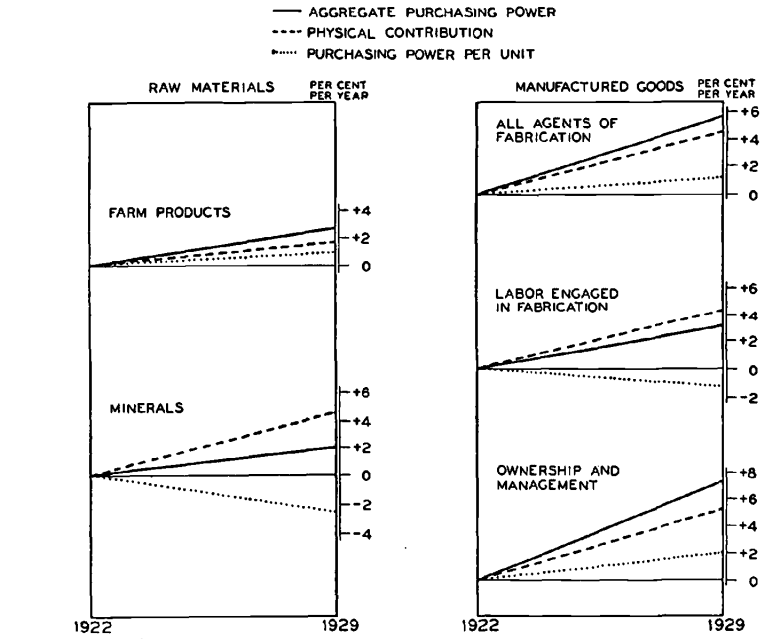
in the neighborhood of 3.3 per cent a year.[1] The rate of increase of population in the recent period was substantially lower than that prevailing in the earlier period, the rate of increase in the physical volume of goods produced was higher, while the rate of increase in values was distinctly lower in the recent period. The post-war rate of change of 3.3 per cent a year in aggregate values contrasts notably with the pre-war rate of 4.9 per cent. The difference is attributable, of course, to post-war price decline, as against pre-war advance.

The effects of these differences in price and value trends have been far-reaching. Certain aspects of these changes may be explored further. Relevant estimates are given in the following table. These are graphically presented in Figure 104.

FIGURE 104

GRAPHIC REPRESENTATION OF POST-WAR TENDENCIES AMONG PRODUCERS OF RAW MATERIALS AND OF MANUFACTURED GOODS*

AVERAGE RATES OF CHANGE IN PURCHASING POWER PER UNIT OF GOODS PRODUCED, IN AGGREGATE PHYSICAL PRODUCTION AND IN AGGREGATE COMMAND OVER GOODS



* Plotted on ratio scale. The slopes of the lines are comparable.

[1] Approximations to the total *net* value of production, secured from estimates of the aggregate value of minerals and farm products, value added by manufacture and rail transportation, show a somewhat greater rate of growth, +3.8 per cent.

TABLE 204

ESTIMATES OF POST-WAR TENDENCIES AMONG PRODUCERS OF ECONOMIC GOODS

Changes in Values of Products and in Command over Goods

(Entries define average annual rates of change, 1922-1929)

(1)	(2)	(3)	(4)	(5)
		Change in command over goods and factors in such change		
Economic group	Change in aggregate value of product (per cent per year)	Change in aggregate command over goods [a] (per cent per year)	Change in command over goods attributable to alterations in purchasing power per unit (per cent per year)	Change in command over goods attributable to alterations in number of physical units (per cent per year)
All producers	+3.3	+3.8	——	+3.8
Producers of:				
Raw farm products.....	+2.2	+2.7	+1.0	+1.7
Raw mineral products.....	+1.5	+2.0	−2.5	+4.6
Manufactured goods: [b]				
All agents of fabrication.....	+5.1	+5.6	+1.1	+4.5
Labor	+2.6	+3.1	−1.2	+4.3
Ownership and management.	+6.8	+7.3	+2.0	+5.2

[a] Value figures have been deflated throughout by the Bureau of Labor Statistics index numbers of wholesale prices, which showed an average rate of decline of 0.5 per cent a year between 1922 and 1929. Thus it is command over goods at wholesale, and real prices in wholesale markets, which are measured by entries relating to purchasing power.

The measurements of per-unit purchasing power given in this table differ somewhat from those given in Chapter VII. This is due in part to differences in classifications and in the deflating index numbers employed. The per-unit purchasing power of the commodity groups cited in Chapter VII is measured in terms of the articles included in the 'all commodities' index constructed by the National Bureau of Economic Research, which differs slightly from that of the Bureau of Labor Statistics.

[b] The rates of change relating to manufacturing output have been secured from data compiled in the biennial Censuses of Manufactures, with interpolated figures for inter-censal years. The measurements relate to all manufacturing industries.

In this table we may trace certain elements of the total value stream, and differentiate between the price and quantity factors contributing to the change in each of these elements between 1922 and 1929. Over this period the total value of raw farm products increased at a rate of 2.2 per cent a year, that of raw minerals gained at a rate of 1.5 per cent a year, while the aggregate value added by manufacture increased at a rate of 5.1 per cent. The grand total

advanced at an average annual rate of 3.3 per cent. These rates of advance in values represent increases in aggregate purchasing power in wholesale markets at slightly higher rates [see column (3)] because of the declining trend of prices. The aggregate purchasing power of agents of fabrication was advancing at a rate of 5.6 per cent a year, a figure notably higher than that for any other group. The group drawing incomes from manufacturing industries enjoyed a position of exceptional power during this period. In this group the most substantial gain was made by 'ownership and management'—owners and salaried workers, and those receiving rent, interest and taxes from manufacturing industries.[1]

In the last two columns of Table 204 are given rates of change in the two factors contributing to aggregate purchasing power. The growth in physical output and changes in the physical contributions of different fabricating agents, to which the rates of change in column (5) relate, have been discussed in preceding sections.[2] The relatively rapid increase in the output of raw mineral products and of fabricated goods, and the slower growth of production of raw farm products have been noted. Concomitant changes in real worth,

[1] To ensure comparability, purchasing power has been measured for all groups with reference to commodity prices in wholesale markets. For farmers and for industrial workers more precise determination of the actual purchasing power of money incomes is possible, using index numbers of the prices of things farmers buy and, for wage-earners, of the cost of living.

Between 1922 and 1929 prices paid by farmers increased at a rate of 0.3 per cent per year. With aggregate values of raw farm products increasing by 2.2 per cent per year, this means that the aggregate purchasing power of such products increased at a rate of approximately 1.9 per cent per year. During the same period the cost of living for industrial wage-earners increased at a rate of 0.2 per cent a year. The average annual increase of 2.6 per cent in aggregate monetary rewards for this group corresponds, therefore, to an advance of 2.4 per cent a year in aggregate purchasing power.

These rates fall below those cited in column (3) of Table 204. Though not comparable with the figures for the other economic groups there listed, they are probably closer to the truth, for the two groups in question. It should be understood, however, that these rates, with the others presented in the preceding table, are to be taken as indicating the general magnitude of the true values, not as final determinations of these values. Quite apart from the troublesome problem of finding appropriate deflators, independently derived figures of prices, quantities and values are seldom mutually consistent, and the task of reconciling them offers many difficulties.

[2] See footnote, p. 378, for comments on the measurement of the physical contributions of agents of fabrication. Index numbers of fabrication (the Federal Reserve Board's index of manufacturing production) have been used to secure inter-censal estimates of the physical contribution of labor and ownership and management.

per unit, swelled the real exchange value (i.e., aggregate purchasing power) of farm products, substantially lowered the real exchange value of mineral products and reduced somewhat the real exchange value of products of fabrication. Within the latter group there were mixed currents. The real price of the services of labor, per unit of product (labor cost per unit, in dollars of constant purchasing power) was being steadily lowered during this period, while the price paid for the services of ownership and management [1] was advancing. As a result, the rates of advance in the aggregate purchasing power of these groups differed greatly, being 3.1 per cent for labor, 7.3 per cent for the mixed group of owners, creditors and salaried workers.

§ *Comparison of pre-war and post-war tendencies among producers of economic goods.*—These rates gain in significance when compared with similar figures for the pre-war period. Table 67 from Chapter IV is repeated, on page 510, for convenience of reference. Graphic representations of pre-war and post-war movements appear in Figures 34 and 104.

Rates of increase in aggregate values were generally lower in the post-war period, because of the difference in price trends. Exceptions are found in the figures defining the increase in the value of the product of all fabricating agents, and of ownership and management, in manufacturing industries. For the latter group we have 6.8 for the recent period, as against 5.0 for the earlier period.

The more rapid increase in the physical volume of production between 1922 and 1929 is reflected in figures relating to command over goods, which are generally higher for the post-war period. This is notably true for agents of fabrication. These producers gained in aggregate command over goods at a rate of 5.6 per cent a year between 1922 and 1929, as compared with 3.1 per cent between 1901 and 1913. The most conspicuous improvement is found, again, among the group of owners, salaried workers and managers of manufacturing industries. The post-war gain of 7.3 per cent a year is far above the pre-war figure of 3.2 per cent. For manufacturing labor, the rate of increase in aggregate command over goods during the period 1922-29 was only fractionally greater than for the period 1901-13. (It will be recalled that the number of workers was increasing in pre-war years at a rate of 2.7 per cent a year, and advanced during the post-war period at a rate of but 1.0 per cent a year. Real earnings *per capita* increased more rapidly during the recent period.)

With reference to the factors in aggregate purchasing power, it is clear that the more advantageous recent trend for agents of fabrication is due to more favorable price relations and to a more rapid increase of output. For the residual group, here termed 'owners and managers' for

[1] This item includes taxes and other residual elements of cost.

TABLE 205

ESTIMATES OF PRE-WAR TENDENCIES AMONG PRODUCERS OF ECONOMIC GOODS

Changes in Values of Products and in Command over Goods

(Entries define average annual rates of change. For manufacturing industries the figures relate to the period 1899-1914, for other industries to the period 1901-1913.)

(1)	(2)	(3)	(4)	(5)
		Change in command over goods and factors in such change		
Economic group	Change in aggregate value of product (per cent per year)	Change in aggregate command over goods [a] (per cent per year)	Change in command over goods attributable to alterations in purchasing power per unit (per cent per year)	Change in command over goods attributable to alterations in number of physical units (per cent per year)
All producers	+4.9	+3.1	—	+3.1
Producers of:				
Raw farm products	+4.0	+2.2	+0.5	+1.7
Raw mineral products	+5.9	+4.1	−1.5	+5.6
Manufactured goods: [b]				
All agents of fabrication	+4.9	+3.1	−1.3	+4.5
Labor	+4.8	+3.0	−1.1	+4.1
Ownership and management	+5.0	+3.2	−1.4	+4.7

[a] The index of wholesale prices of the U. S. Bureau of Labor Statistics has been used as a deflator throughout.

[b] These entries relate to all manufacturing industries covered by the Census of Manufactures.

convenience, favorable price developments were most important in improving their relative position in recent years.

In tracing changes in the aggregate purchasing power of different groups of producers, it is desirable to supplement the figures relating to changes occurring between 1922 and 1929 by measurements covering a longer period. The events of 1914-21 may not be ignored in following more recent movements. In the following table are a series of measurements showing the changes which occurred between 1914 and 1929 in various factors named above. (These are, of course, approximations to the true figures, which may not

be determined with perfect accuracy.) The relative numbers given define net changes between the terminal years of the period covered.

TABLE 206

SHOWING CHANGES OCCURRING IN THE AGGREGATE VALUES OF GOODS PRODUCED BY CERTAIN ECONOMIC GROUPS, AND CORRESPONDING CHANGES IN COMMAND OVER GOODS, 1914 TO 1929

(1)	(2)	(3)	(4)	(5)
		Aggregate command over goods and factors affecting aggregate command over goods [a]		
Economic group	Aggregate value of product, 1929 (1914=100)	Aggregate command over goods, 1929 (1914=100)	Purchasing power per unit, 1929 (1914=100)	Number of physical units, 1929 (1914=100)
All producers	226	161	100	161
Producers of:				
Raw farm products	169	121	97	125
Raw mineral products	290	207	121	171
Manufactured goods:				
All agents of fabrication	328	234	125	187
Labor	291	208	115	182
Ownership and management	353	253	133	191

[a] Command over goods relates to purchasing power in wholesale markets.

Between 1914 and 1929 the aggregate value of goods produced in the United States (excluding construction) increased by approximately 126 per cent. Making due allowance for price changes, this represents an increase of 61 per cent in aggregate command over goods.[1] For the three main groups of producers, those engaged in the production of raw farm and raw mineral products and in the

[1] This figure is identical with that measuring the increase in physical volume of production, as given in column (5). This is theoretically proper, since the volume of goods 'commanded' must equal the volume of goods produced. Given complete coverage of all producers and consumers, and given accurate deflating index numbers, the first entry in column (3) would be a weighted average of all the other entries in the column, while the first entry in column (5) would be a weighted average of all the other entries in that column. This is true, by construction, as regards column (5), but, because of the omission of important groups of consumers, it is not true of column (3), nor of the derived column (4).

processes of manufacture, the increases in aggregate value of output between 1914 and 1929 were, respectively, 69, 190 and 228 per cent [see column (2)]. Taking account (roughly, because of deficiencies of data) of the prices at which these money returns were spent, these increases represent corresponding gains in aggregate command over goods of 21 per cent for farmers, of 107 per cent for producers of raw mineral products and of 134 per cent for agents of fabrication [see column (3)]. The relatively weak position of farmers is clear, when this gain of 21 per cent is contrasted with the advance of 61 per cent in the total physical output of the country during this period.

In columns (4) and (5) are measurements defining changes in purchasing power per unit and in output of physical units—factors which, in combination, account for changes in aggregate purchasing power. (Purchasing power has been measured throughout in terms of prices at wholesale. While this is not a thoroughly appropriate standard for any of the productive agents, it has seemed desirable to use the index of wholesale prices as a common deflator.) For farmers, the increase of 21 per cent in aggregate purchasing power was the resultant of a loss of 3 per cent in purchasing power per unit of goods produced, and an increase of 25 per cent in the number of such units. Producers of raw mineral products gained in both respects, per-unit value of products advancing by 21 per cent, number of units produced advancing by 71 per cent. Similarly, agents of fabrication gained 25 per cent in the average value of their contribution, per unit of goods produced, while the volume of fabrication advanced by 87 per cent.

The figures for labor and for 'ownership and management' represent an attempt to appraise the changes in the contributions and in the per-unit value of the contributions of these two classes to the joint product of agents of fabrication. The meaning and the limitations of the measurements have already been discussed. Gains in aggregate value and in aggregate purchasing power were greater for 'ownership and management' (the residual group the return to which includes all of 'value added' except wages). The greater gain in aggregate purchasing power for this group was due, primarily, to a greater increase in the real value, per unit of product, of the contribution of this group. Profits, overhead, all the items that make up the wages of management, represented a considerably

larger proportion of the selling price of manufactured goods in 1929 than in 1914.[1]

Changes in the Aggregate Physical Contributions of Economic Classes in Relation to Changes in their Aggregate Physical Rewards

An index of aggregate purchasing power, of the type employed above, measures changes in what the community is giving, in physical units, for the services of a group of producers. It defines changes in the aggregate physical rewards of given producers. We have previously employed index numbers of the aggregate physical contributions of various producers. The ratio of aggregate physical

[1] It is impossible, using data now available, to secure consistency among index numbers measuring changes in production, prices and values, when these index numbers are independently computed. The figures cited above are not altogether consistent, nor do they agree in all respects with price and value measurements previously presented. A source of error is introduced, too, by measuring the purchasing power of these various producers in terms of wholesale prices. Rough as the measurements are, however, they indicate the general nature of the changes that were taking place over the fifteen-year period that covers the war and the post-war boom. They may serve too, perhaps, to stimulate a more precise determination of the magnitudes involved in these important shifts.

Probably the most serious distortions in the above table result from the use of an index of wholesale prices in determining purchasing power of farmers and of industrial laborers. Correcting these two sets of results, without regard to consistency with the figures for other groups, we have the following measurements. The purchasing power of farmers has been determined with reference to the prices of things farmers buy, the purchasing power of labor with reference to the cost of living of industrial wage-earners.

Economic group	Aggregate value of product, 1929 (1914 = 100)	Aggregate command over goods and factors affecting aggregate command over goods		
		Aggregate command over goods, 1929 (1914 = 100)	Purchasing power per unit, 1929 (1914 = 100)	Number of physical units, 1929 (1914 = 100)
Producers of raw farm products	169	110	88	125
Manufacturing labor	291	176	97	182

The increases in aggregate purchasing power, as thus measured, are distinctly less for both groups. For farmers there was a gain of but 10 per cent, for industrial labor a gain of 76 per cent. For each unit of goods produced the farmer received 12 per cent less in 1929, in terms of other goods, than he did in 1914. Industrial workers received in actual purchasing power 3 per cent less in 1929 than in 1914, in return for their contribution to each unit of manufactured goods produced. (Purchasing power per unit means, here, per unit of goods produced, not per worker. As a result of increasing productivity, and other factors, the purchasing power of per capita earnings increased substantially between 1914 and 1929.)

contributions to aggregate physical rewards is a significant index of shifting economic relations. A ratio in excess of unity (or a relative above 100) indicates a larger contribution by a given group, in relation to remuneration received (changes in contributions and rewards being measured with reference to some stated base period), while a value below unity (or a relative below 100) indicates a smaller contribution, with reference to the physical goods commanded in exchange. In the present case we are interested in comparing ratios for 1929 with corresponding ratios for 1923 (or 1922), and for 1914 (or 1913). The materials in the following table, relating to selected manufacturing industries, illustrate the procedure.[1]

TABLE 207

SHOWING ALTERATIONS OCCURRING IN THE TERMS OF EXCHANGE RETWEEN GIVEN GROUPS OF MANUFACTURING PRODUCERS AND ALL PRODUCERS, 1923 TO 1929 AND 1914 TO 1929[a]

(1) Producing group	(2) Physical volume of fabrication in 1929 (1923=100)	(3) Aggregate purchasing power of 'value added by manufacture' in 1929 (1923=100)	(4) Ratio of aggregate production to aggregate purchasing power in 1929 (1923=100)	(5) Ratio of aggregate production to aggregate purchasing power in 1929 (1914=100)
All manufacturing industries in sample	113.0	115.4	97.9	79.8
Flour and other grain-mill products	94.5	118.7	79.6	86.4
Slaughtering and meat packing	100.9	117.7	85.7	89.3
Cotton goods	104.6	86.5	121.0	74.0
Woolen goods	83.5	79.7	104.8	60.1
Worsted goods	75.5	71.6	105.4	56.3
Petroleum refining	177.1	174.2	101.6	91.7
Iron and steel: blast furnaces	106.7	96.9	110.1	83.4
Iron and steel: steel works and rolling mills	124.2	138.9	89.4	72.7
Motor vehicles	123.3	144.5	85.3	151.5

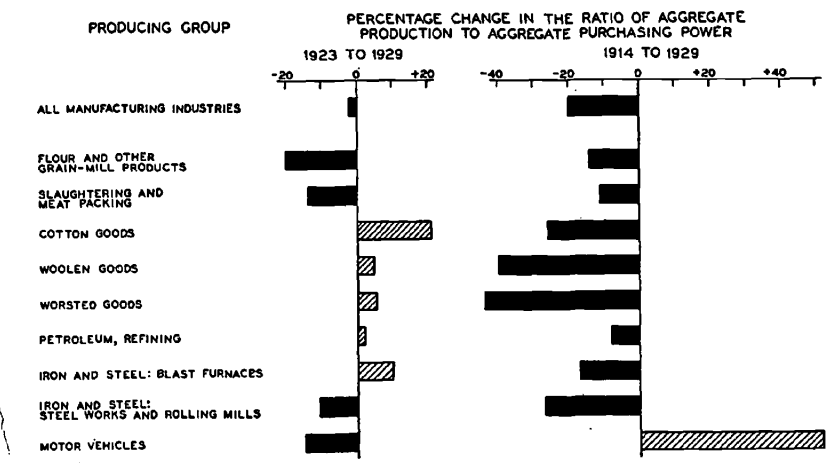
[a] These measurements relate to the products of fabrication, not to the total output. It is the contribution of agents of fabrication which is here in question. Purchasing power is measured in terms of commodities in general at wholesale, as these are represented in the index of wholesale prices of the U. S. Bureau of Labor Statistics.

[1] See Chapter IV for a more detailed discussion of ratios of this type.

For the manufacturing industries included in the present sample (62 industries between 1923 and 1927, 60 in 1929) the physical volume of production (fabrication) increased 13.0 per cent between 1923 and 1929. Over the same period the goods commanded in exchange (at wholesale prices) increased in volume by 15.4 per cent. The ratio of aggregate physical contribution to aggregate physical withdrawal decreased from 1.00 to .979 or, in relatives, from 100.0 to 97.9 [see column (4)]. In 1929 the community was receiving somewhat less from manufacturing industries than in

FIGURE 105

SHOWING ALTERATIONS OCCURRING IN THE TERMS OF EXCHANGE BETWEEN GIVEN GROUPS OF PRODUCERS AND ALL PRODUCERS, 1923 TO 1929 AND 1914 TO 1929



1923, with reference to what the community was paying for manufactured goods. Among the selected industrial groups listed in the table, the contributions of the three textile groups, of the petroleum refining industry and of blast furnaces showed increases, in relation to the goods commanded in exchange, while for milling, slaughtering and meat packing, and the steel and motor industries physical contributions declined, in relation to the rewards received. These movements, expressed as percentage changes in the ratios of aggregate production to aggregate purchasing power, are shown graphically in Figure 105.

But the developments of this six-year period should not be reviewed in isolation. What was the situation prevailing in the base

year, 1923, in relation to earlier years? This question has been answered in the concluding pages of Chapter V. We may take account of these earlier changes by expressing the ratio of contribution to reward in 1929 as a relative on the 1914 base for each of the groups named. These relatives appear in column (5) of the above table.

Here we have a completely different picture. For manufacturing industries as a whole the relative for 1929, on the 1914 base, is 79.8. This means that the aggregate physical contribution of agents of fabrication in 1929 was 20.2 per cent less than in 1914, in relation to a constant volume of withdrawals, or of physical rewards. In other words, the contribution of agents of fabrication, per unit of goods commanded in exchange, was 20.2 per cent less in 1929 than in 1914.[1] This change stands in marked contrast to the movement between 1899 and 1914, when the contribution of agents of fabrication, in relation to their rewards, increased by 24.7 per cent. (In both cases aggregate reward, or aggregate purchasing power, is measured in terms of commodities in general, at wholesale.) The index for the recent period furnishes striking evidence of the improved position of manufacturing industries as a result of the war-time and post-war price shifts.

Of the industrial groups listed only the motor industry increased its contribution (in relation to rewards) between 1914 and 1929. The woolen and worsted industries were contributing in 1929 some 40 per cent less than in 1914, account being taken of the aggregate purchasing power of the money paid for the services of fabricating agents in these industries, while the contribution of the cotton goods industry was 26 per cent less. For steel there was a reduction of 27 per cent. Differences in business conditions in the

[1] The index numbers of physical volume and of aggregate purchasing power cited above for all manufacturing industries are based upon data relating to 62 industries. There is no doubt that these index numbers understate the true gain shown by manufacturing industries in the post-war epoch (see Chapter VI). Corrected index numbers for all industries included in the Census of Manufactures (in this case derived on the assumption that fabrication costs per unit of output changed during this period at the same rate among the industries excluded from the sample as among the 62 industries included) are given below, together with ratios based upon them.

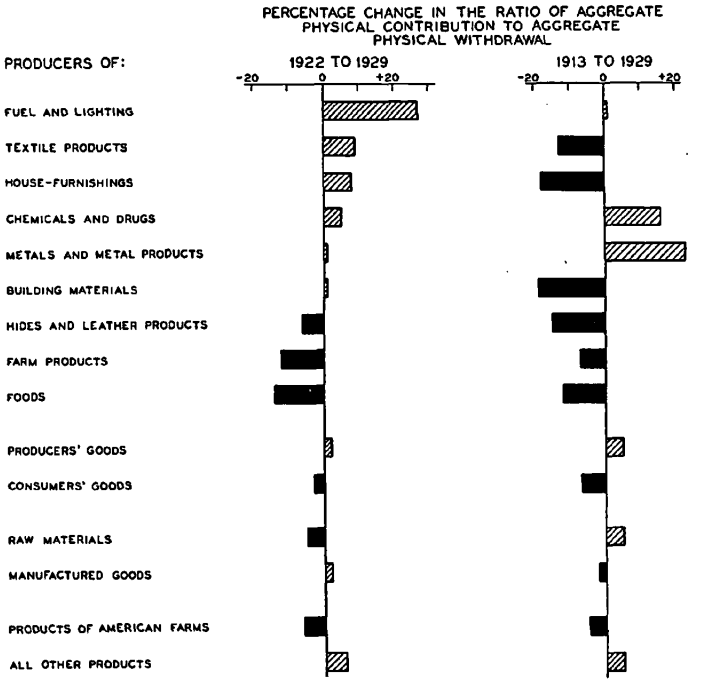
	Physical volume of fabrication in 1929 (1923 = 100)	Aggregate purchasing power of 'value added by manufacture' in 1929 (1923 = 100)	Ratio of aggregate production to aggregate purchasing power in 1929 (1923 = 100)	Ratio of aggregate production to aggregate purchasing power in 1929 (1914 = 100)
All manufacturing industries	127.3	130.1	97.9	79.8

years compared [1] would account in part for these reductions in the ratios of contributions to withdrawals, but not for the extreme changes we have noted. Manufacturing industries were left by the recession of 1920-21 in a position of relative advantage, and preserved a large part of that advantage during the years between 1922 and 1929.[2]

In the next table we summarize a number of ratios of the type just described. Here we compare the situation in 1929 with that prevailing in 1922, and with that of 1913. These movements are shown as percentage changes, in Figure 106.

FIGURE 106

SHOWING ALTERATIONS OCCURRING IN THE TERMS OF EXCHANGE BETWEEN GIVEN GROUPS OF PRODUCERS AND ALL PRODUCERS, 1922 TO 1929 AND 1913 TO 1929



[1] The year 1914 was, of course, depressed, while 1929 was prosperous, so far as annual averages go. These conditions would tend to lower the ratios in column (5), particularly for those industries in which profits are materially reduced in years of depression.

[2] It is to be noted that purchasing power is measured in terms of prices at

TABLE 208

SHOWING ALTERATIONS OCCURRING IN THE TERMS OF EXCHANGE BETWEEN GIVEN GROUPS OF PRODUCERS AND ALL PRODUCERS, 1922 TO 1929 AND 1913 TO 1929

Economic group	Ratio of aggregate physical contribution to aggregate physical withdrawal, 1929	
	(1922=100)	(1913=100)
Producers of:		
Fuel and lighting	127	101
Textile products	109	87
House-furnishings	108	82
Chemicals and drugs	105	116
Metals and metal products	101	123
Building materials	101	81
Hides and leather products	94	85
Farm products	88	93
Foods	86	88
Producers' goods	102	105
Consumers' goods	97	93
All raw materials	95	105
All manufactured goods	102	98
Products of American farms		
Raw	91	99
Processed	95	93
Total	94	95
Products other than those of American farms		
Raw	100	116
Processed	108	102
Total	106	105

The first nine index numbers, relating to commodity groups of the United States Bureau of Labor Statistics, show that during the period between 1922 and 1929 the contributions of producers of

wholesale. This is only an approximation to the truth, justifiable for the present general comparisons because of the impossibility of securing accurate measurements of price changes among all the goods for which the funds represented in 'value added' are expended.

The accuracy of all comparisons is dependent, of course, upon the accuracy of the index of wholesale prices of the U. S. Bureau of Labor Statistics as a measure of changes in the purchasing power of the dollar at wholesale. Here again certain reservations are to be made, but it is not to be doubted that the general drift of prices is reflected in the changes defined by that index.

fuel and lighting, textiles, house-furnishings, chemicals and drugs, metals and metal products, and building materials were increasing, with reference to the physical rewards secured. The other groups made smaller relative contributions than in 1922. More significant in some ways are the figures that contrast the 1929 position with that of 1913. Two groups, producers of chemicals and drugs and of metals and metal products, were making decidedly larger contributions for each unit taken out of the stream of production. The fuel and lighting group made a slightly greater contribution in 1929 than in 1913. Of building materials the contribution in 1929 was 19 per cent less than in 1913 for each unit of goods received in exchange; of house-furnishings, 18 per cent less; of hides and leather products, 15 per cent less; of textiles, 13 per cent less; of foods, 12 per cent less.

A classification of a different type is shown in the second set of figures in the above table. The contribution of makers of producers' goods, relatively to rewards, was in 1929 two per cent greater than in 1922, five per cent greater than in 1913. The relative contribution of makers of consumers' goods was in 1929 three per cent less than in 1922, seven per cent less than in 1913. This decline, reflecting a rise in the real value of consumers' goods, is a movement of considerable importance, which has been commented upon above. Producers of raw materials were constrained to give five per cent more in 1929 than in 1913 for each unit of goods received in return, while producers of manufactured goods contributed two per cent less.[1] Viewing farm and non-farm products as broad groups, it appears that the relative contributions of producers of farm products declined, with reference to the 1913 and 1922 bases, while those of non-farm producers increased. Within each of these groups there is

[1] This is, of course, a quite different index from that cited in Table 207, which showed a decline of 20.2 per cent between 1914 and 1929 in the relative contribution of agents of fabrication. The present index, constructed directly from quoted prices of manufactured goods, relates to selling prices, whereas the index given in Table 207 relates to the cost of *the fabrication process,* per unit of goods, not to the final selling price.

If selling prices of manufactured goods be derived from census data of the type used in securing the measurements in Table 207, the relative for 1929, measuring the ratio of aggregate contribution to aggregate reward, on the 1914 base, is 92.2. This shows a decline of 7.8 per cent in relative contribution, as compared with the decline of 2 per cent shown by an index number derived directly from quoted prices. Differences in procedure and differences in the samples used would account for the discrepancy.

considerable diversity as between the raw and processed divisions. Producers of raw non-farm products contributed no less than 16 per cent more in 1929 than in 1913 with reference to their compensation in terms of physical goods, a situation decidedly weaker than that of producers of farm products in raw state. For this group the contribution in 1929 was one per cent less than in 1913.[1] But the rest of the story may be read from the table.

§ *Contributions and rewards of agents of fabrication.*—By applying this type of analysis to the contributions and rewards of the various

TABLE 209

SHOWING ALTERATIONS OCCURRING IN THE RATIOS OF THE AGGREGATE QUANTITIES PRODUCED BY MANUFACTURING WAGE-EARNERS TO THEIR AGGREGATE PURCHASING POWER, 1923 TO 1929 AND 1914 TO 1929

(Aggregate purchasing power refers to command over items included in the cost of living index of the United States Bureau of Labor Statistics.)

(1) Producing group	(2) Physical volume of production in 1929 (1923=100)	(3) Aggregate purchasing power of wages received in 1929 (1923=100)	(4) Ratio of aggregate production to aggregate purchasing power in 1929 (1923=100)	(5) Ratio of aggregate production to aggregate purchasing power in 1929 (1914=100)
Wage-earners in:				
All manufacturing industries included in the sample	110.0	94.4	116.5	103.5
Flour and other grain-mill products	94.5	83.2	113.7	104.4
Slaughtering and meat packing	100.9	98.3	102.6	86.7
Cotton goods	104.6	81.4	128.5	100.2
Woolen goods	83.5	73.7	113.3	82.0
Worsted goods	75.5	70.3	107.5	73.4
Petroleum, refining	177.1	126.5	140.0	137.5
Iron and steel: blast furnaces	106.7	73.1	146.1	162.9
Iron and steel: steel works and rolling mills	124.2	107.5	115.5	105.4
Motor vehicles	123.3	111.3	110.8	180.5

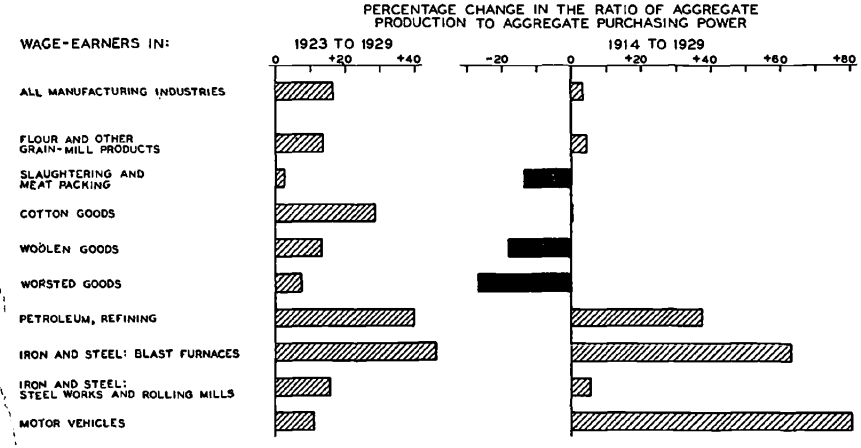
[1] Purchasing power is computed above in terms of general commodity prices at wholesale, a quite faulty instrument in the case of the average agricultural producer. If we utilize an index number of the prices of things farmers buy, together with an index number of the prices received by farmers for their products, we find that farmers as a group contributed 12 per cent more in 1929 than in 1913, 9 per cent less in 1929 than in 1922, in relation to what they received.

agents of production we may better interpret the changes taking place in income distribution. This may be done for labor in manufacturing industries, given statistics of physical output, of aggregate monetary rewards, and the means of converting monetary rewards to physical terms. The index numbers in Table 209 are subject to some margin of error, primarily because of the limitations of all cost of living index numbers, but they probably approximate the truth with reasonable accuracy. As regards volume of production, the terms used must be qualified because there is no means of measuring changes in the specific productivity of any productive agent. Changes in the output of given groups of wage-earners may be due to organizational and mechanical factors, as well as to human factors, and we cannot differentiate these elements.[1]

These movements are shown, as percentage changes, in Figure 107.

FIGURE 107

SHOWING ALTERATIONS OCCURRING IN THE RATIOS OF AGGREGATE QUANTITIES PRODUCED BY MANUFACTURING WAGE-EARNERS TO THEIR AGGREGATE PURCHASING POWER, 1923 TO 1929 AND 1914 TO 1929



The gain in wages of manufacturing labor has been discussed in preceding pages of this chapter. It is clear from the above record that the contributions of manufacturing labor, in so far as these may be measured in terms of output of manufacturing plants, have more than kept pace with the gain in their rewards. From 1923 to 1929 the increase

[1] At an earlier point, in discussing a procedure similar to the present one, care was taken to point out that in speaking of the ratio of physical contribution to physical reward no ethical judgment was involved. The economic factors involved in any shift in the terms of exchange between economic groups are complex. It is not the purpose of the present study to explore the reasons for these changing ratios.

in the physical contribution of labor in all manufacturing industries, in relation to physical rewards, increased 16.5 per cent. For each unit of goods received (through the expenditure of wages) the contribution of labor was 16.5 per cent greater in 1929 than in 1923. With reference to 1914 as base, the contribution of labor in 1929 was up 3.5 per cent.

Among the constituent groups shown above the 'social contribution' of labor, if we may so term it, increased without exception between 1923 and 1929. For three industries, however, the 1929 ratios were lower than those for 1914.

It is, of course, impossible to measure the separate contribution of each agent of production. Within each industry, it must be assumed, an increase of output is to be credited equally to all the agents of production. When combining production figures for different industries it is possible to take account of the varying importance of different productive agents in assigning weights, and thus, in some measure, to allow for changes in the rôle of the several agents. This has been done in constructing the index numbers of production entering into the ratios given in Table 210, but the limitations of these measurements must be borne in mind. Specific productivity is not measured.

In default of thoroughly satisfactory index numbers of the prices of the goods for which the money incomes of the different agents of production are spent, reduction of such incomes to purchasing power terms has been effected on two different bases in the following table. In deriving the measurements of purchasing power, and corresponding ratios, given in Section A, use has been made of an index of wholesale prices. The measurements in Section B are derived on the assumption that the cost of living index measures changes in the prices of the goods for which the incomes of productive agents are spent.

Over the six-year period between 1923 and 1929 all productive agents except the composite group represented by overhead costs plus profits increased their physical contributions by amounts which exceeded the increases in their physical withdrawals from the stream of production. For sellers of materials the excess increase amounted to 8 per cent, for wage-earners, 10 per cent. (These figures are approximately 14 per cent and 16 per cent, respectively, if purchasing power changes be measured with reference to living costs.) For managers and owners there was a decline of 10 per cent between 1923 and 1929 in the physical contribution per unit of goods received in exchange (or of 5 per cent, with reference to cost of living changes). (For convenience we have designated as 'managers and owners' all those whose remuneration is included in overhead costs plus profits. The terms are not accurate, for salaried employees, creditors and recipients of taxes fall also within this group.) This is a significant movement, the more impressive in that this group has been credited with an addition to physical contribution during this period greater by some four per cent than the addition attributed to either of the other productive agents.

The comparison with the situation in 1914 reveals more striking changes. On the assumption that the index of wholesale prices measures

TABLE 210

SHOWING ALTERATIONS OCCURRING IN THE AGGREGATE PRODUCTION OF DIFFERENT AGENTS, AND IN THE AGGREGATE REWARDS OF THESE AGENTS, 1923 TO 1929 AND 1914 TO 1929

(Data relating to 62 manufacturing industries in the United States.)

(1) Economic group	(2) Physical contribution in 1929 (1923=100)	(3) Aggregate purchasing power in 1929 [a] (1923=100)	(4) Ratio of aggregate contribution to aggregate purchasing power in 1929 (1923=100)	(5) Ratio of aggregate contribution to aggregate purchasing power in 1929 (1914=100)
A. Measurements derived when purchasing power is measured with reference to changes in general wholesale prices				
All agents of production	112.3	107.7	104.3	92.2
Sellers of materials	111.8	103.8	107.8	98.9
Agents of fabrication	113.0	115.4	97.9	79.8
Wage-earners	110.0	99.6	110.4	87.3
Others (represented in overhead plus profits)	115.5 [b]	127.8	90.4	75.5
B. Measurements derived when purchasing power is measured with reference to changes in cost of living				
All agents of production	112.3	102.1	110.0	109.2
Sellers of materials	111.8	98.4	113.7	117.2
Agents of fabrication	113.0	109.4	103.2	94.5
Wage-earners	110.0	94.4	116.5	103.5
Others (represented in overhead plus profits)	115.5 [b]	121.1	95.4	89.4

[a] Deflated by index numbers computed by the U. S. Bureau of Labor Statistics.

[b] The increasing importance of technical equipment in production is in some degree responsible for the exceptional increase in output attributed to 'others', meaning those agents represented by overhead costs and profits. Increasing profits also affect the results, since weights are based on total overhead costs plus profits. The effects of these two factors are not distinguishable.

changes in the prices of goods for which money incomes were spent, we find that sellers of materials were contributing approximately the same amount in 1929 as in 1914 for each unit of goods withdrawn from the aggregate stream of production. ('Materials' here include semi-processed goods.) Wage-earners were contributing approximately 13 per cent less. The elements represented in the composite of overhead costs plus profits were contributing 24 per cent less, for each unit of goods received in exchange for their services.

This picture is altered if purchasing power changes be measured with reference to cost of living changes. For the cost of living rose much more between 1914 and 1929 than did the level of wholesale

prices, and the purchasing power of stated sums of money is correspondingly reduced. On this basis, the ratio of contributions to rewards (in relative terms) increased between 1914 and 1929 from 100 to 117 for sellers of materials, from 100 to 103 for wage-earners, and declined from 100 to 89 for the group represented by overhead costs plus profits. Since the cost of living index comes closer than does the wholesale price index to defining changes in the prices of the goods for which final incomes are spent, these latter measurements are probably the more significant.

The fact that 1914 was a year of depression, while the annual averages for 1929 reflect a high level of prosperity, accounts for some part of the changes noted. This is particularly true of the changes in the ratios relating to overhead costs plus profits. The rewards of this group increased substantially over the fifteen-year period. The increasing importance of mechanical equipment doubtless explains part of this movement, but higher profits contributed to the advance.[1]

[1] The limitations of the index numbers of production cited above have been pointed out in earlier sections. They are restricted to standard commodities, for which production statistics are currently compiled, and they fail to take account of the diversification of production and the rapid increase in the production of new and non-standard commodities. Estimates of actual production which are probably closer to the truth than the preceding indexes are shown below, for the several productive agents. The basic ratios are not changed, but the two constituent elements are materially altered. (The index numbers derived from the sample of 62 industries have been corrected on the basis of statistics of aggregate value of product, cost of materials, 'value added', wages, and overhead plus profits for all manufacturing industries covered by the Census of Manufactures.)

ALTERATIONS OCCURRING IN THE AGGREGATE PRODUCTION OF DIFFERENT AGENTS AND IN THE AGGREGATE REWARDS OF THESE AGENTS, MANUFACTURING INDUSTRIES OF THE UNITED STATES

Economic group	Physical contribution in 1929 (1923 = 100)	Aggregate purchasing power in 1929 (1923 = 100)	Ratio of aggregate contribution to aggregate purchasing power in 1929 (1923 = 100)	(1914 = 100)
	1923 TO 1929 AND 1914 TO 1929			
A. Measurements derived when purchasing power is measured with reference to changes in general wholesale prices (index of U. S. Bureau of Labor Statistics).				
All agents of production	127.5	122.3	104.3	92.2
Sellers of materials	125.5	116.5	107.8	98.9
Agents of fabrication	127.3	130.1	97.9	79.8
Wage-earners	123.4	111.7	110.4	87.3
Others (represented in overhead plus profits)	129.9	143.7	90.4	75.5
B. Measurements derived when purchasing power is measured with reference to changes in cost of living (index of U. S. Bureau of Labor Statistics).				
All agents of production	127.5	115.9	110.0	109.2
Sellers of materials	125.5	110.4	113.7	117.2
Agents of fabrication	127.3	123.3	103.2	94.5
Wage-earners	123.4	105.9	116.5	103.5
Others (represented in overhead plus profits)	129.9	136.2	95.4	89.4

A Comparison of the Fortunes of Different Producing Groups, Pre-war and Post-war

The alterations occurring in the ratios of contributions to rewards between the outbreak of the war and the culmination of post-war prosperity in 1929 differ in certain important respects from the alterations occurring during the years preceding the war. These ratios are shown in the next table. All entries relate to prices at wholesale and to purchasing power in wholesale markets.

TABLE 211

COMPARISON OF ALTERATIONS IN THE TERMS OF EXCHANGE BETWEEN GIVEN GROUPS OF PRODUCERS AND ALL PRODUCERS, 1901 TO 1913 AND 1913 TO 1929 [a]

Economic group	Ratio of aggregate physical contribution to aggregate physical withdrawal	
	1913 (1901=100)	1929 (1913=100)
Producers of:		
Chemicals and drugs	133	116
Metals and metal products	129	123
House-furnishings	110	82
Textile products	106	87
Foods	99	88
Building materials	99	81
Farm products	93	93
Fuel and lighting	92	101
Hides and leather products	91	85
Producers' goods	102	105
Consumers' goods	98	93
All raw materials	97	105
All processed goods	101	98
Products of American farms		
Raw	96	99
Processed	95	93
Total	95	95
Products other than those of American farms		
Raw	97	116
Processed	108	102
Total	105	105

[a] These measurements are derived from index numbers of prices, at wholesale, constructed by the U. S. Bureau of Labor Statistics and by the National Bureau of Economic Research.

Of the producers represented in the first classification shown above, four were steadily increasing their social contribution, that is, were giving more in physical goods in relation to what they received, during the years preceding the war. Two of these groups, producers of chemicals and drugs and of metal products, continued to increase their relative contributions between 1913 and 1929. For producers of house-furnishings and of textile products there was a complete reversal of tendencies. The social cost of these goods increased appreciably between 1913 and 1929. Of the five groups marked by declining relative contributions prior to the war, all but one (fuel and lighting) continued to move in the same direction in the years that followed.

The other classifications reveal divergent movements. Makers of producers' goods continued to increase their contributions, while makers of consumers' goods contributed less, in relation to the goods received in return. This increasing social cost of consumers' goods has been a notable feature of recent economic tendencies. The slight margin between these two groups which existed in 1913 had been materially widened by 1929.

More striking, because it represents a sharp reversal of earlier tendencies, is the recent movement of raw materials and of processed goods. In 1913 producers of raw materials were contributing less, in proportion to their physical rewards, than in 1901, while fabricating agents were contributing more. But in 1929 producers of raw materials were constrained to give 5 per cent more than in 1913 for each unit of goods received, while fabricating agents gave 2 per cent less. Here is one of the most significant of post-war tendencies. The constantly increasing contribution of fabricating agents and the steadily decreasing cost of their services were outstanding features of pre-war developments. The subsequent change in their relations to producers of raw materials affected the whole structure of economic relations.

The entries in the next category indicate that this shift in the position of raw materials was pronounced for the non-agricultural producer. For a constant amount of physical goods he was forced in 1929 to give 16 per cent more of his products than in 1913.

The pre-war and post-war fortunes of different groups concerned with the production of manufactured goods are contrasted in the following table. The cost of living index, which is not altogether appropriate in all cases, has been used in reducing monetary

rewards to physical terms. These movements are graphically portrayed, as percentage changes, in Figure 108.

TABLE 212

COMPARISON OF ALTERATIONS IN THE RATIOS OF AGGREGATE PRODUCTION TO AGGREGATE REWARDS, 1899 TO 1914 AND 1914 TO 1929 [a]

Agents of Manufacturing Production

Economic group	Ratio of aggregate contribution to aggregate purchasing power	
	1914 (1899=100)	1929 (1914=100)
Sellers of materials [b]	103.2	117.2
Agents of fabrication	129.2	94.5
Wage-earners	122.7	103.5
Others (represented in overhead plus profits)	133.4	89.4

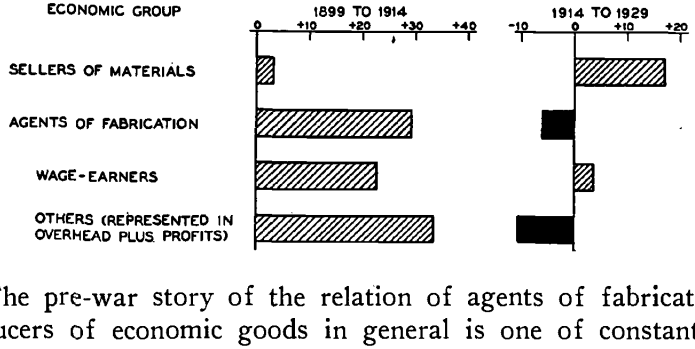
a These measurements are derived from index numbers constructed by the National Bureau of Economic Research. The index numbers are given in Chapter VIII.

b 'Materials' include semi-processed goods, fuel, containers, etc., as well as raw materials proper.

FIGURE 108

SHOWING ALTERATIONS OCCURRING IN THE RATIOS OF AGGREGATE PRODUCTION TO AGGREGATE REWARDS, 1899 TO 1914 AND 1914 TO 1929

AGENTS OF MANUFACTURING PRODUCTION



The pre-war story of the relation of agents of fabrication to producers of economic goods in general is one of constantly increasing contribution or, in other terms, of a steadily declining social cost of their services. Agents of fabrication contributed 29 per cent more in 1914 than in 1899, per unit of goods commanded in exchange. Of this group, wage-earners contributed 23 per cent more, while creditors, managers, and owners contributed 33 per cent

more.[1] Sellers of materials (this group includes sellers of semi-processed goods, containers, fuel, etc., as well as raw materials) contributed 3 per cent more.

Quite different were the movements following 1914. Wage-earners contributed 3 per cent more in 1929 than in 1914, per unit of goods commanded in exchange, while creditors, owners, salaried workers and managers contributed 11 per cent less. As a group, agents of fabrication contributed some 5 per cent less in 1929 than in 1914, a figure which stands in notable contrast to the increase of 29 per cent in the contribution of fabricating agents between 1899 and 1914. The cheapening of materials is reflected in the increase of 17 per cent in the contribution of sellers of materials, per unit of goods taken in exchange. These figures supplement and reënforce previous evidence concerning the striking change in the economic status of agents of fabrication which has occurred within the last fifteen years.

Economic change is, of course, a story of constant alterations in the relations among economic groups. The depletion of supplies, the improvement of productive facilities, technical changes in production, shifts in consumer demand, the creation of surplus quantities —these and other movements are constantly modifying the terms of exchange among the products and services of different groups. The month-to-month and year-to-year changes in market prices, in wage-earnings, in profits, register these shifting economic relations. The measurements cited in the present section define some of the changes which accompanied the drastic movements of the war years and the notable economic developments of the decade which followed. We pass, in the closing chapter, to a summary account of these and of other economic tendencies of the post-war era.

[1] Profits were high in 1899, low in 1914. This difference explains part of the increase in the ratio.