'ing the World War I expansion periods the need to increase iness assets and to modify their composition presented serious ncing problems to companies engaged in manufacturing and e. Financing needs and methods of meeting them varied consid- ›ly from company to company and from industry to industry, the response to war stimuli was sufficiently consistent to warrant conclusion that the aggregate reactions of manufacturing and e enterprise constituted a financial force of some magnitude.

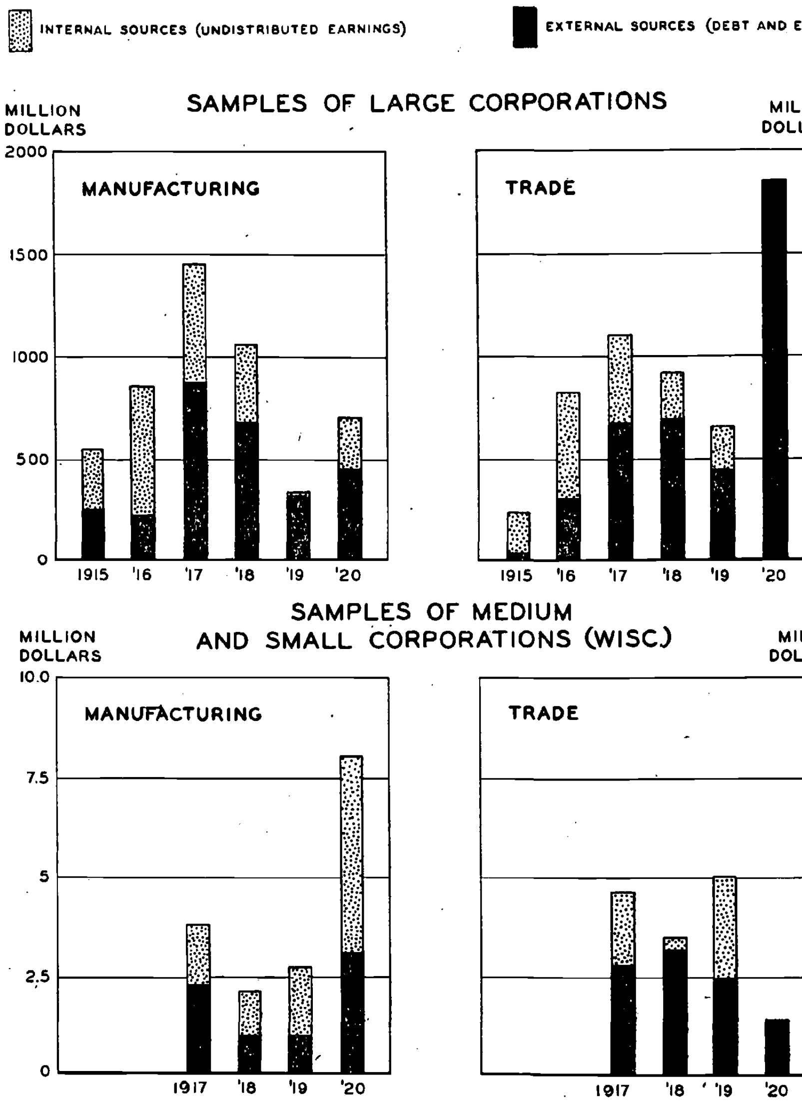
ıcreases in the book value of business assets may result either ı actual business transactions or from the arbitrary revaluations sset accounts; but only the former additions result in actual enditures and thus require financing. The term corporate asset stment is consistently used in the following discussion to mean ıges in the book value of assets, net of disclosed revaluations.

'wo major sources of financing asset increases may be distin- hed: first, external sources, that is, short-term borrowing, chiefly ı banks and trade suppliers, and long-term financing through sale of bonds and stocks; and second, internal sources, that is, istributed earnings prior to appropriations for contingency rves.[48] In each of the expansion years of World War I external ncing played a substantial role in enterprise development art 11), both for large and for medium and small companies. s tendency was accompanied by an increase in financing needs nselves, an increase that resulted from the inflation process of period and also stimulated it.

n the whole, average corporate asset investment, expressed in tion to total assets at the beginning of the year, was substantially ıer in the wartime expansions than in those after 1920 (Table Γhe average proportion of this investment financed externally not only heavy during the war expansions, but was also larger he peacetime expansions than is commonly believed to have ı the case.

finance changes in the composition of assets (as distinguished from asset ex- on) two additional financing sources, both internal, should be recognized. One liquidation of assets; the other consists of depreciation of plant, machinery and ›ment, and depletion of natural resources, to the extent that these charges are ed by earnings and the funds so represented are not expended on replacements isting assets.

CHART 11 – DOLLAR EXPANSION OF TOTAL ASSETS, AND AMOUNT FINANCED FROM EXTERNAL AND INTERNAL SOURCES, 1915-20[a]



[a] For each year the figures are exclusive of the companies that did not expand total assets in that year. In calculating the amounts of asset expansion financed internal sources, funds used to retire short-term debt, and long-term debt ex of refundings, were deducted from undistributed earnings. The resulting figure internal sources was then compared with the total of external sources (bank and credit, other current liabilities and security sales). For description of the samp Appendix A.

ABLE 5—CORPORATE ASSET INVESTMENT IN PERCENT OF GINNING-OF-YEAR TOTAL ASSETS, AND PROPORTION NANCED FROM EXTERNAL SOURCES, ANNUAL AVERAGE [a]

Industry-Size Group	World War I Expansions		Peacetime Expansions	
	War 1915-18	Postwar 1919-20	1922-29[b]	1933-37
NUFACTURING SAMPLES				
Large companies				
Asset investment	15%	5%	5%	2%
Proportion financed externally	51	76	46	63
Medium and small cos. (Wisc.)				
Asset investment	13 [c]	19	3	d
Proportion financed externally	49 [c]	33	58	..
ADE SAMPLES				
Large companies				
Asset investment	13	14	15	6
Proportion financed externally	49	82	47	59
Medium and small cos. (Wisc.)				
Asset investment	13 [c]	7	2	1
Proportion financed externally	69 [c]	87	33	100

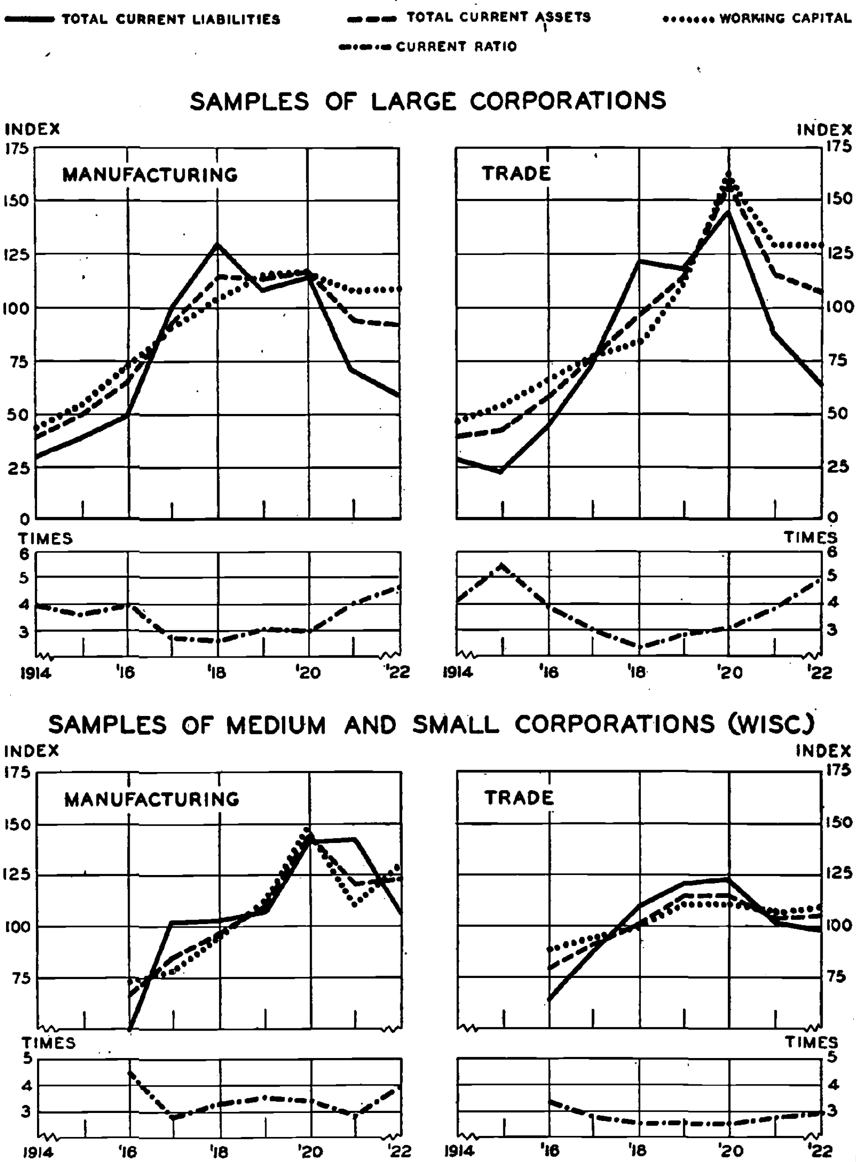
ee text footnote 27. For description of the samples see Appendix A.
xclusive of 1924 and 1927.
verage for 1917-18 only.
sset decrease.

inancing Current Asset Expansion

ort-term debt, the principal element in external financing during e years 1915-18, was important also in 1919 and 1920. Chart 12 mpares the increase of current debt with that of current assets. urrent liabilities, although smaller in dollar amount than current sets, showed for each sample a greater increase, during the war ars proper, than the increase in current assets, with the result at current ratios were lowered. Quick ratios, shown in Chart 13, so declined during the war for each group of corporations, and mained below the early war year levels through the 1919-20 pansion.

Indexes of inventory expansion are also shown in Chart 13. Pre- mably such expansion was financed largely by notes and accounts ayable, the chief component of total current debt; therefore it is ot surprising to find that the curves representing current liabilities nform more closely to the inventory curves than to those for uick assets.

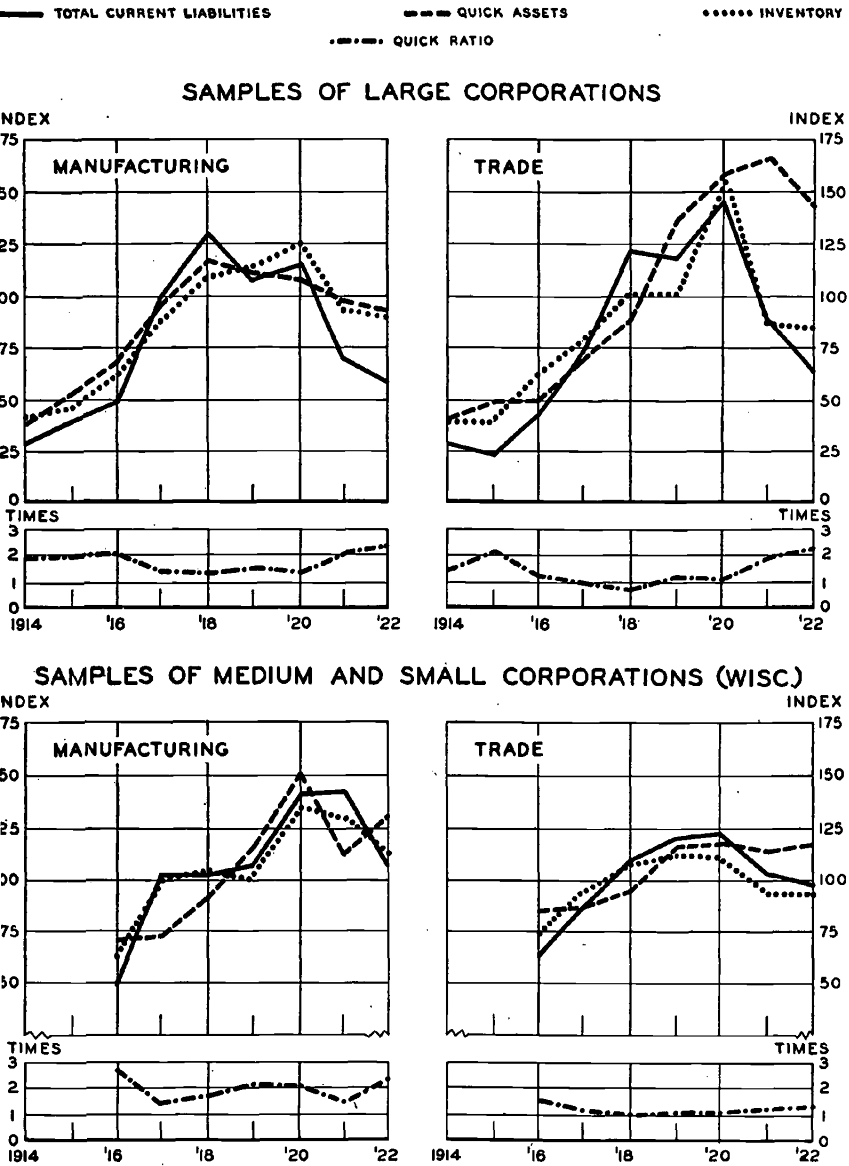
CHART 12—INDEXES OF TOTAL CURRENT LIABILITIES, TOTAL CURRENT ASSETS, AND WORKING CAPITAL, 1914-22, AND CURRENT RATIOS [a]
(1916-20 average = 100)



[a] For description of the samples see Appendix A.

CHART 13 – INDEXES OF TOTAL CURRENT LIABILITIES, QUICK ASSETS, AND INVENTORY, 1914-22, AND QUICK RATIOS [a]

(1916-20 average = 100)



[a] For description of the samples see Appendix A.

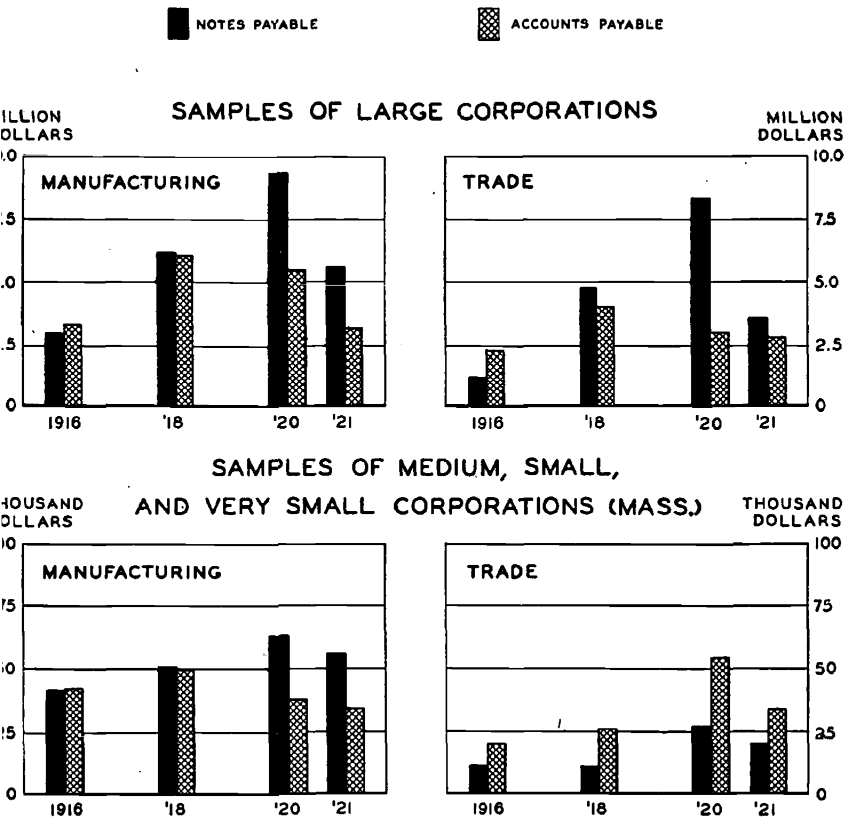
Despite some variation among industry-size groups, the expa sion of quick assets over the entire period 1915-20 was parallele in general, by a growth in working capital (current assets mint current liabilities). Superficially, this growth in working capit represented a greater margin of protection for short-term creditor in spite of lower quick ratios, and hence made the increase of shor term debt appear to be financially sound. But the rise in workir capital was the product of an increase in inventory at book valu as well as of the increase in quick assets; therefore working capit was extremely vulnerable to sudden sharp price declines such occurred in 1920 and 1921. In view of the lower level of quic ratios, it would appear that among our industry-size groups the was actually a tendency toward a progressive immobilization working capital in 1915-18, and that this tendency was accentuate in 1919-20. That is to say, working assets decreased in quality they increased in quantity; the deterioration in quality over tl war years was gradual, but during the two postwar years it w more rapid.

In each year of the war period there were some companies in ou samples that apparently used short-term funds to finance fixe property expansion; that is, they reported fixed property expend tures exceeding the sum of the amount of funds available fro operations, plus proceeds from the sale of securities, plus amoun derived from the disposal of assets. This was true of a few lar manufacturing companies in 1915, 1916 and 1918, and of a fe small manufacturing and trade companies in 1917, 1919 and 192 While such financing proved less risky than usual in the ear phases of the war period, the companies that practiced it in pos war years were undoubtedly confronted with an embarrassing fina cial problem in 1921.

Bank Credit vs. Trade Credit

The rise in short-term debt during World War I expansions w much more noticeable in the samples of large than in those medium and small companies. Before the war large corporations manufacturing and trade, unlike the medium and small companie were not, as a rule, heavy short-term debtors. Therefore the rise their current debt, shown in Chart 14, was one of the most signi cant features of the entire wartime financial development. Tl

:HART 14—Average Year-End Amount per Corporation of Notes and Accounts Payable Outstanding, Four Selected Years [a]



The Massachusetts samples consist of 166 to 235 manufacturing corporations and 8 to 162 trade corporations, non-identical. For description of the samples see Appendix A.

hort-term debt of smaller companies followed the same pattern, out to a lesser degree.[49]

Assuming that the notes payable reported in corporate balance sheets represent, for the most part, borrowings from commercial banks (an assumption whose validity is stronger for the large concerns than for the small ones), it appears that large manufacturing

9 The Wisconsin identical sample could not be used in Charts 14 and 15, because notes and accounts payable were combined as a single item in the tax returns of the Wisconsin State Tax Commission, from which the data were compiled.

and trade corporations borrowed heavily from the banks to finan both war and postwar operations. The larger company groups i creased their bank borrowing by about the same amount from 19 to 1918 as from 1918 to 1920, while the smaller company grou incurred a greater increase from 1918 to 1920.[50]

Loans and discounts of all commercial banks increased by 5 percent during the 1915-18 expansion, and by 28 percent in t 1919-20 expansion, or at average annual rates of 12 percent ar 13 percent respectively.[51] The data of Chart 14 suggest that t short-term credit demands of large corporations — especially large manufacturing corporations, which were numerically mo important than large trade concerns — constituted a significa influence in this rise of bank credit.[52] The same conclusion is su gested by the following tabulation, which shows, in percent total loans and discounts of all banks, the notes payable of o large manufacturing and trade samples, together with estimat notes and accounts payable of *all* large manufacturing and tra corporations.[53]

	1916	*1918*	*1920*	*19*
Notes payable, samples of large manufacturing and trade corporations	1.5%	2.6%	3.1%	2.0
Notes payable, all large manufacturing and trade corporations (estimated)	4.3	8.1	10.4	8.6

Although the average dollar amount of the bank debt owed large manufacturing and trade corporations increased so sharp the proportion of such companies having bank indebtedness d not increase (Chart 15). The percentage of large manufacturi companies indebted on notes payable was higher in 1914 than any of the subsequent years checked, and the same was true in

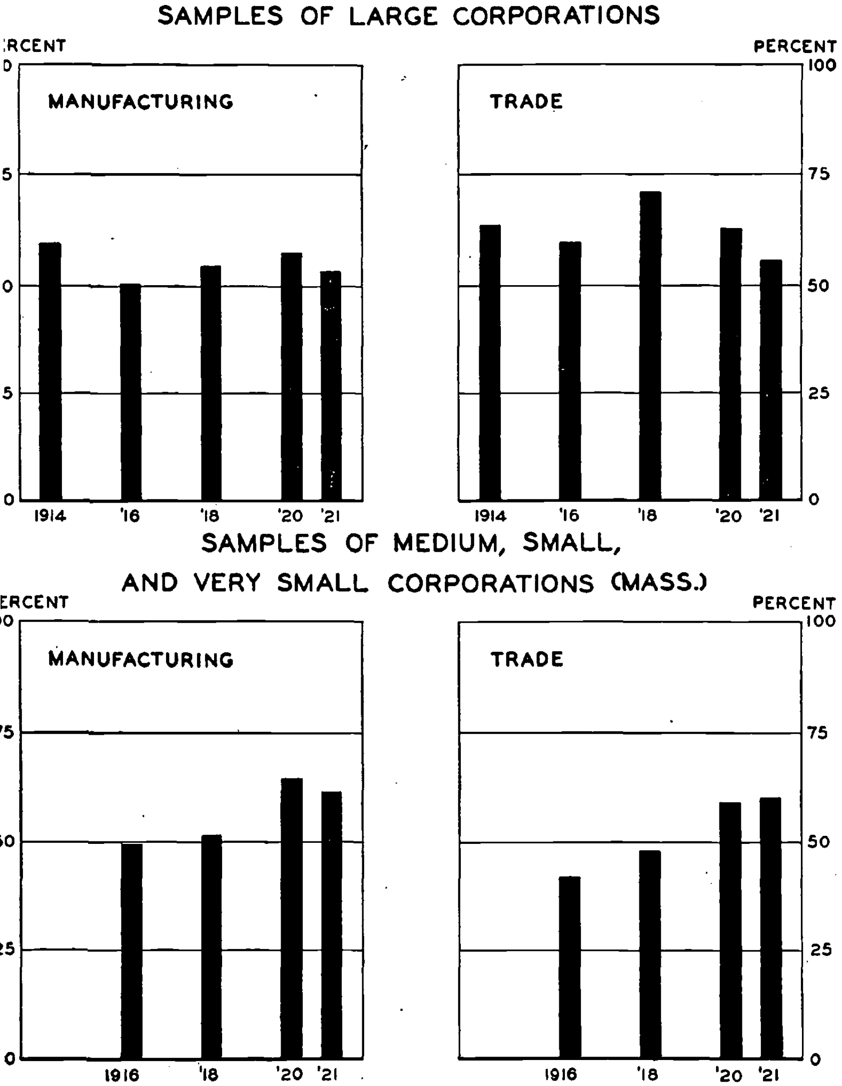
50 The movement of average notes payable shown by our samples of large man facturing and trade corporations is confirmed, for the same years, by the average all manufacturing and trade corporations whose statements were reported in Mood *Manuals.*

51 Computed by the compound interest rule from interpolated year-end figures.

52 Loans and discounts to manufacturing and trade enterprise amounted to 47 perce of the $13.8 billion of total loans and discounts of all national banks on Novem 15, 1920, according to the *Report of the Comptroller of the Currency, 1920,* p. Data on the industrial composition of national bank loans and discounts were n compiled by the Comptroller for earlier dates.

53 The method of estimate was similar to that employed in determining the ca balances of all large corporations; see above, footnote 44.

HART 15 — PERCENTAGE OF CORPORATIONS REPORTING NOTES PAYABLE OUTSTANDING, FIVE SELECTED YEARS [a]



The samples of large corporations consist, for each year, of all domestic corporations n Moody's *Manuals* (industrials) which in that year recorded notes payable as a eparate balance sheet item. The Massachusetts samples consist of 166 to 235 manufacuring corporations and 78 to 162 trade corporations, non-identical. For descripition f the samples see Appendix A.

gard to large trade corporations, except for 1918. In contrast, the percentage of smaller corporations having bank debt increased from 1916 through 1920, the greatest rise occurring between 1918 and 1920 in response to postwar stimuli.

A growth in the total population of manufacturing and trade enterprises seems to have occurred over the World War I period and also a change in its composition by size classes, but the increase in the number of enterprises having assets in excess of $5 million was apparently not large.[54] It therefore appears that the marked expansion of bank loans and discounts to manufacturing and trade during 1914-20 reflected increased borrowing by a relatively stable, or only slightly growing, number of large manufacturing and trade companies, and by an expanding number of medium and small companies. Borrowing by the smaller companies seems to have been an especially strong influence in the continued credit inflation of the 1919-20 expansion; in fact, the asset expansion of the thousands of smaller enterprises in the country, financed by current debt, was apparently a major stimulant in the immediate postwar boom. Circumstantial evidence in support of this conclusion is the fact that in these two years there were fewer business failures per

54 The available evidence on this matter is by no means complete. The total number of business establishments listed by Dun & Bradstreet, Inc. increased from 1,655,000 in July 1914 to 1,821,000 in July 1920. The number of manufacturing and trade corporations reporting to the Bureau of Internal Revenue increased from 111,000 in 1916, the earliest year for which information by industry is available, to 157,000 in 1920. The magnitude of the year-to-year changes suggests that this increase resulted from changes in the classification practice of the Bureau of Internal Revenue as well as from a rise in the absolute number. The number of reporting manufacturing corporations was lower in 1918-19 than in 1916-17, but this may have reflected a disincorporation movement to avoid excess profits taxes. A comparison of the corporations in Moody's *Manual* for 1916 with those in the *Manual* for 1923 (there listed by date of incorporation), in combination with evidence compiled under the Financial Research Program's Studies in Business Financing, suggests that there were about 1000 manufacturing and trade corporations with assets exceeding $5 million in 1916 and 1300 in 1920. We know of no reliable base from which to estimate the number of corporations having total assets between $50 thousand and $5 million (medium and small companies), but it is to be doubted that the number decreased between 1914 and 1920. For the purposes of the present discussion a shift from incorporated to unincorporated status would be of little consequence; according to another paper in the Financial Research Program's Studies in Business Financing, unincorporated enterprise does not differ substantially from incorporated enterprise as regards bank borrowing; see Carl Kaysen, *Industrial and Commercial Debt — A Balance Sheet Analysis, 1939* (ms. 1942).

.o,ooo enterprises, and a higher ratio of new business enterprises o discontinued enterprises, than in any other year between 1914 ınd 1939.[55]

An interesting feature of the increased bank borrowing by busiıess concerns in 1917-18 is its possible relation to the purchase of Liberty Bonds. Individuals often financed the purchase of Liberty 3onds by loans, and business concerns were also urged in the bond lrives to adopt this method of financing if necessary or expedient. Among the companies included in our samples, particularly the maller ones, there is some evidence of an increase in both marketble securities and notes payable in 1917 and 1918, and of a reducion of both in 1921 or 1922. It is obviously impossible, however, o establish any direct causal relationship from our data.[56]

New Security Issues

Sales of securities to investors, net of refunding, were decidedly less mportant in financing the expansion of business assets during 1915-18 than during 1919-20 (Table 6). In the first period the comoined sales of bonds and stocks were a much less important external

55 Based on the Insolvency Index issued by Dun & Bradstreet, Inc., and on data concerning business names added to and dropped from the Dun and Bradstreet *Reference Book*. Data for the period 1915-37 are published in Temporary National Economic Committee, Monograph No. 17, *Problems of Small Business* (1941) pp. 66-67. The average number of commercial and industrial failures per 10,000 listed concerns, and the average ratio of new enterprises to discontinued enterprises listed n the *Reference Book* for the World War I and two peacetime expansions, are as follows (the 1922-29 period being exclusive of 1924 and 1927):

	Number	*Ratio*
1915-18	93	1.0
1919-20	43	1.4
1922-29	105	1.0
1933-37	63	1.0

56 Among the 91 large manufacturing and trade corporations included in our samples, 14 increased both marketable securities and notes payable in 1917, and 20 in 1918. A considerably larger proportion of the medium and small companies in the Wisconsin identical sample increased "investments"—a category that includes marketable securities—simultaneously with an increase in notes and accounts payable. Unfortunately, these notes and accounts payable are combined in the tax reports, and cannot be broken down. Since the item "investments" was zero in 1916, we have assumed that during 1917-20 it represented chiefly holdings of government obligations, an assumption that appears warranted by the behavior of the account and also by the fact that smaller corporations do not customarily hold securities of other corporations as assets.

source than short-term debt; in the 1919-20 period they were a lit tle more important than short-term debt for the medium and smal groups, and roughly twice as important for the large concerns. Als in comparison with their use in the '20s new security issues were minor source of funds in 1915-18.

In each of the years 1915-18 about 33 percent of the large cor porations in our samples issued new securities, and in 1919 anc

TABLE 6—PERCENTAGE OF CORPORATE ASSET INVESTMENT, FINANCED THROUGH NEW SECURITY SALES AND SHORT-TERM DEBT [a]

Industry-Size Group	*World War I Expansions* War 1915-18	*World War I Expansions* Postwar 1919-20	*Peacetime Expansions* 1922-29[b]	*Peacetime Expansions* 1933-37
MANUFACTURING SAMPLES				
Large companies				
Bonds	4%	7%	0%	0%
Stocks	10	42	34	18
Short-term debt	37	27	12	45
Medium and small cos. (Wisc.)				
Bonds	0 [c]	6	0	[d]
Stocks	12 [c]	11	55	[d]
Short-term debt	31 [c]	16	3	[d]
TRADE SAMPLES				
Large companies				
Bonds	2	42	0	0
Stocks	6	17	37	28
Short-term debt	41	23	10	31
Medium and small cos. (Wisc.)				
Bonds	0 [c]	4	18[e]	0
Stocks	15 [c]	43	13	0
Short-term debt	54 [c]	40	2	100

[a] The external financing sources shown in Table 5 equal the sum of stocks, bond and short-term debt as given above, except among the medium and small manufac turing companies in 1917-18, when "other liabilities" were a source of some sligh importance. The large corporation samples for the peacetime expansions differ i composition from those for the wartime expansions; for description of the sample see Appendix A.

[b] Exclusive of 1924 and 1927.

[c] Average for 1917-18 only.

[d] Net contraction of total assets; very small amount of bonds sold; no stock sold.

[e] This particularly high percentage was caused by 2 out of the 30 companies: on in one year of the 1922-29 period, and the other in another year, floated an unusuall large amount of long-term debt, and since the net asset expansion of the entire 3 companies was small, these issues counted high in percentage terms.

1920 about 43 percent did so. Among the medium and small corporations, which are local enterprises and must rely on local funds to finance long-term indebtedness and new stock issues, the percentages for the 1917-18 and 1919-20 periods were 17 and 26 respectively. The highest percentages of any year occurred of course in 1920.

In 1918 two factors sharply restricted bond and stock financing. The first was the influence exerted by the Capital Issues Committee, organized early in the year to review and discourage new offerings with the object of facilitating Treasury financing. The second was the limitation of plant and equipment expenditure because of priorities and shortages of labor and materials. Soon after the termination of hostilities, however, the pressure exerted by Treasury financing of wartime expenditures through the capital markets, and the restraining influence of the Capital Issues Committee, came to an end. Corporate profits of the preceding years had been high and, despite a temporary recession in business activity, the outlook for postwar prosperity seemed reasonably bright. Taking advantage of the reopening of the capital markets under favorable conditions, manufacturing and trade concerns issued new securities in substantial volume. Proceeds were applied in some cases to the reconversion and expansion of productive facilities, in others to retirement or refunding of short- and long-term debt.

Large corporations have greater freedom than smaller ones in choosing between bond and stock financing. In the financing of manufacturing and trade enterprise, however, bond or long-term debt financing has always had a subordinate part compared to its use in the transportation and public utility fields. At the beginning of the World War I period such debt was carried by one-half of the companies represented in our large corporation samples, and by somewhat less than a quarter of those in the medium and small corporation samples. Among smaller companies long-term debt is likely to include mortgages, long-term notes to individuals, or other instruments not accurately describable as bonds. For the purposes of the present discussion, however, bond debt and long-term debt are sufficiently synonymous to justify using them interchangeably.

But though stock issues are the chief basis of permanent financing in manufacturing and trade, our samples indicate that during the wartime expansions, particularly during 1919-20, bond offerings were relied on to a more than negligible degree. This is in strikin contrast with the expansions of the '20s and '30s, and also with th three expansions preceding 1914.[57] Moreover, these relatively heav bond offerings of 1919-20 were floated by a higher percentage o the companies in our samples than were the bond offerings of an other years from 1915 to 1939 inclusive. A conspicuous feature o the immediate postwar investment market was the bond issues o large trade companies: bond offerings in 1919-20 were more thar twice as important as stock issues in financing the asset increases o our sample of such companies.

Wartime Earnings and Savings

The wartime expansions have been aptly described as years o profit inflation. Business failures decreased sharply, from an esti mated 133 per 10,000 concerns in 1915 to 37 in 1919 and 48 ir 1920.[58] Also, a larger proportion of all manufacturing and trad corporations reported profits to the Federal tax collector in 1916-2

57 The evidence for this generalization is from scattered sources, including unpublishe corporate financial data collected by the Financial Research Program. For the larg corporations, which finance through the securities market, it is corroborated by th following data on the various expansion periods between 1904 and 1937; the figure show the percentage relationship of the average annual volume of new industria bond offerings (manufacturing, trade, mining and agriculture) to the average annua volume of total new industrial, rail and utility bond offerings, and also, for purpose of comparison, the volume of all reported stock issues (of which the majority are rail and utilities), both sets of dollar figures being given in millions.

1904-07	11%	of $	842;	stock	issues $	553
1908-10	16	"	786;	"	"	452
1912-13	13	"	871;	"	"	678
1915-18	35	"	675;	"	"	479
1919-20	57	"	1,016;	"	"	1,377
1922-29	35	"	1,473;	"	"	2,178
1933-37	37	"	317;	"	"	253

The data on bond issues, which pertain to all cash offerings on the securities mar ket, exclusive of refundings, of domestic corporations in the industrial divisions indi cated, were assembled by the National Bureau's Corporate Bond Project. The data on stock issues, which include conversions, are from the *Journal of Commerce;* in the 1904-07 period they pertain only to 1906-07, information on the earlier years being unavailable. All data on the period 1922-29 are exclusive of 1924 and 1927.

58 Based on the Insolvency Index issued by Dun & Bradstreet, Inc. In the 1915-2 period the highest rate for insolvencies occurred in January 1915 (161), and the low est in January 1920 (31).

than in either of the subsequent peacetime expansions, as shown by the following figures:[59]

	1916-18	*1919-20*	*1922-29*	*1933-37*
Manufacturing	73%	69%	59%	41%
Trade	79	75	63	40

Sales of each of our samples rose sharply in the 1915-18 expansion (Chart 16), and continued to increase during the 1919-20 expansion except among large manufacturing concerns. For large corporations, net income after taxes rose in relation to sales in both 1915 and 1916, but then declined, on the whole, through 1920. Also for the medium and small company samples, net income after taxes tended to decline after 1916 in relation to sales, though the fall was interrupted by an increase for both industry groups in 1919, and for the manufacturing sample in 1920 as well.

This tendency for profit per sales dollar to decline after the second year of wartime sales expansion reflected the interplay of many factors, among them rising costs of labor, material and maintenance; utilization of plant and equipment beyond the point of lowest average cost; resort to stand-by equipment and facilities; and increased normal and excess profits taxes. Although it is difficult to judge the relative importance of these various factors, taxation was certainly one of the most significant. Data on corporate profits taxes are not available for all of our samples; but the aggregate of all net income corporations in the country reported to the Treasury the following percentages of total net income paid out in normal, excess and war profits taxes:[60]

	1916	*1917*	*1918*	*1919*	*1920*	*1921*
Manufacturing	2%	23%	45%	26%	24%	22%
Trade	2	22	36	26	21	20

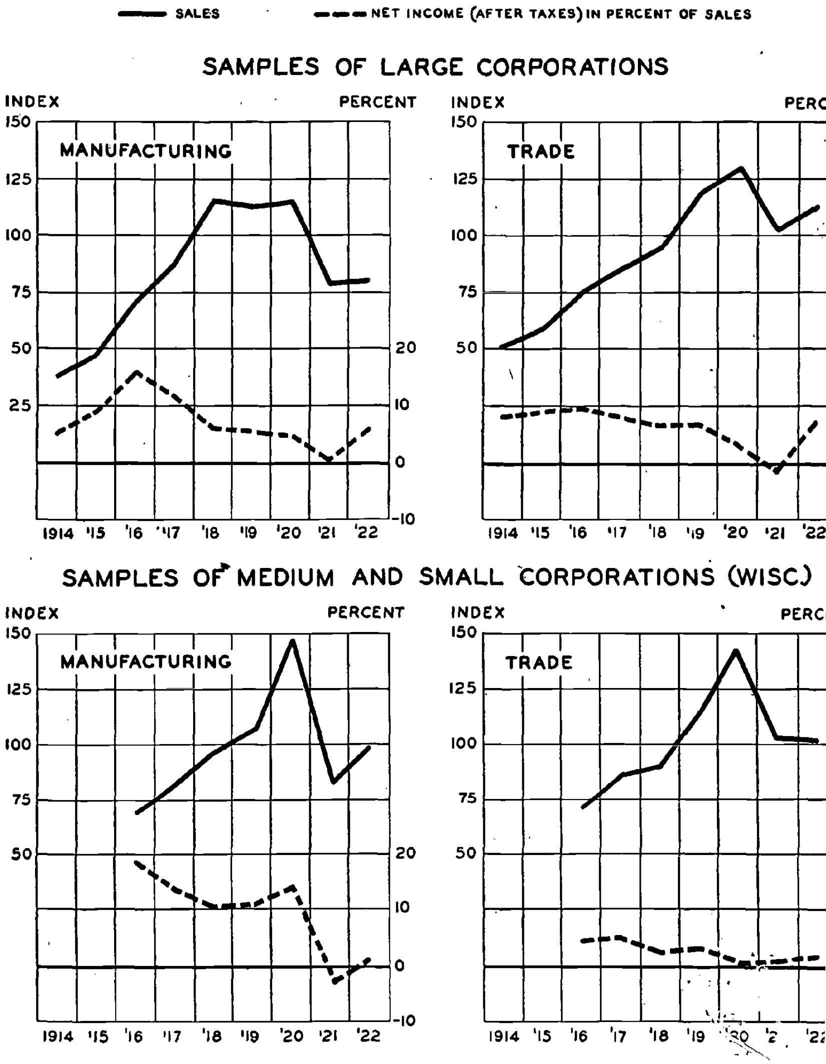
For all of our samples, however, corporate profits, even after heavy taxes, were high in relation to net worth (Table 7). They were higher on the average in the 1915-18 expansion than in that

59 Computed from U. S. Bureau of Internal Revenue, *Statistics of Income*, 1916-37. Figures for 1914 and 1915 not available. Figures for 1922-29 are exclusive of 1924 and 1927.

60 Based on U. S. Bureau of Internal Revenue, *Statistics of Income*, 1916-21. See also *Hearings* before the Special Committee Investigating the Munitions Industry, United States Senate (73rd Congress, S.R. 206) Part 26, pp. 7941-8090.

CHART 16 – INDEX OF SALES, AND NET INCOME (AFTER TAXES) IN PERCENT OF SALES, 1914-22 [a]

(1916-20 average = 100)



a For each year the figures are exclusive of the companies for which no sales figu are available. Net income represents book net income adjusted for all non-c expenditures and receipts, other than depreciation and depletion; the amount of su adjustment was relatively small. For description of the samples see Appendix A.

ABLE 7—NET INCOME (AFTER TAXES) IN PERCENT OF EAR-END NET WORTH, AND PERCENT OF NET INCOME SAVED, NNUAL AVERAGE [a]

Industry-Size Group	World War I Expansions		Peacetime Expansions	
	War 1915-18	Postwar 1919-20	1922-29[b]	1933-37
NUFACTURING SAMPLES				
Large companies				
Net income to net worth	16%	11%	10%	6%
Net income saved	62	57	45	25
Medium and small cos. (Wisc.)				
Net income to net worth	18 [c]	18	9	1
Net income saved	53 [c]	72	29	d
ADE SAMPLES				
Large companies				
Net income to net worth	14	11	17	11
Net income saved	56	48	63	37
Medium and small cos. (Wisc.)				
Net income to net worth	14 [c]	9	6	2
Net income saved	40 [c]	13	30	d

Net income represents book net income adjusted for all non-cash expenditures and ceipts, other than depreciation and depletion; the amount of such adjustment was latively small. The large corporation samples for the peacetime expansions differ composition from those for the wartime expansions; for description of the samples e Appendix A.

Exclusive of 1924 and 1927.

Average for 1917-18 only.

Dividends greater than net income.

f 1919-20, and, except among large trade companies, they were igher in both wartime expansions than in the peacetime expanions of 1922-29 and 1933-37.

A large part of these high-level wartime profits was reinvested, ne proportion being higher for manufacturing than for trade conerns in the same size group. During the 1915-18 expansion large ianufacturing companies earned a little less, in relation to owner's quity, and saved more of these earnings, than did medium and mall ones; in 1919-20 they not only earned less but saved less; but n the two peacetime expansions they both earned and saved more. Large trade companies, on the other hand, although their average arnings in relation to net worth were the same as those of the maller trade companies in 1915-18, otherwise both earned more nd saved more than the smaller companies in all four expansions.

The wartime savings effected by the manufacturing and trade companies in our samples constituted a large percentage of high profits, and their magnitude was of great importance to these companies in the postwar economy. In view of the wartime accumulation of inventory at inflated prices, financed to a large extent by short-term debt, it seems self-evident that the retention of a high proportion of large earnings contributed much to the capacity of these companies to make peacetime adjustments and thus to survive through the '20s and '30s.