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## FIXED CAPITAL EXPENDITURES

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WHEN WE THINK OF LARGE CORPORATIONS, we think in terms of acres of factories belching smoke. We think of huge machines stamping automobile bodies in single, heavy strokes, or of blast furnaces tipping out streams of molten iron. These impressions are correct as far as they go. Large corporations are most common in those industries whose technological processes demand large-scale plant and equipment, as in the iron and steel, and petroleum, industries. In addition, fixed or "long-lived" capital makes up a greater part of the total assets of large than of small corporations.

For purposes of this study, fixed capital is divided into property and investments in subsidiaries and affiliates. Property includes land, plant, buildings, machinery, equipment, and fixtures. In this chapter we are interested in discovering what have been the fixed property expenditures of large corporations during two decades; whether they have been as large in the late thirties as they were in the late twenties; and whether changes in their volume have tended to lead or to lag behind changes in business activity. We want to know also how the technological and economic conditions of individual industries have affected the volume and variation of their fixed property expenditures, and how such expenditures have been related to annual depreciation, depletion, and amortization charges as well as to sales volume.

As for the other broad category of fixed assets, investments in subsidiaries or affiliates, what has been their dollar volume during the past twenty years? Have they been concentrated in certain industries? Did they take place during the prosperous years of the late twenties or were they "bargain purchases" during the great depression?

### VOLUME AND FLUCTUATIONS OF FIXED PROPERTY EXPENDITURES

Property, unlike certain other business assets (for example, inventory), is purchased for use in the day-to-day operations of a business rather than for subsequent sale. It is usually long-lived,

containing a stock of services which are "used up" over an extended period of time through wear and tear and obsolescence. Property in fact may never wear out if it is adequately maintained. Perishable raw materials must be purchased continuously while expenditures for factory maintenance or new plant construction can sometimes be postponed for years. This characteristic of property expenditures, as well as their dollar magnitude, makes their study of great importance in an analysis of corporate financial requirements.

In 1937, business property absorbed from one-third to one-half of the \$17.5 billion of durable goods produced in that year.<sup>1</sup> An estimate made by George Terborgh of the Board of Governors of the Federal Reserve System for new durable producers' goods (plant and equipment) in 1937 amounts to \$7.6 billion, distributed among broad industrial groups roughly as follows:<sup>2</sup>

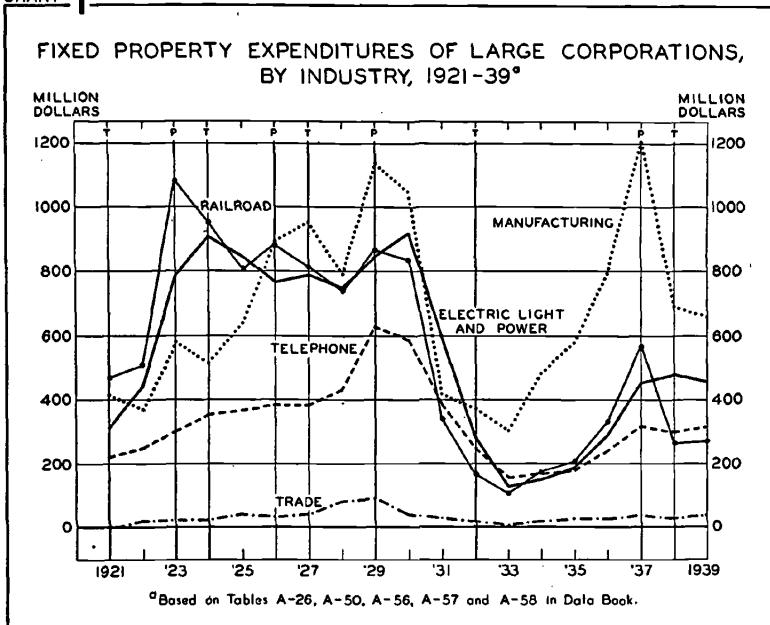
	Amount (billions)	Percent
Mining and manufacturing	\$3.1	41%
Commercial and miscellaneous	2.0	26
Agriculture	.9	12
Railroads	.5	7
Electric light and power	.4	5
Telephones	.4	5
Other utilities	.2	3
Transit	.1	1
<b>TOTAL</b>	<b>\$7.6</b>	<b>100%</b>

Fixed property expenditures<sup>3</sup> of big business have fluctuated violently during the past two decades. The 1933 expenditures of large corporations in all five broad industrial categories were only a fraction of 1929 expenditures. This precipitous decline was due, of course, to the inflated level of property expenditures during the late twenties as well as to the decline in sales and profits in the early thirties which affected future expectations and, consequently, expansion programs.

The 1930 property expenditures of many of the large corporations in our sample were almost equal to their 1929 expenditures, primarily because of the completion of large-scale expenditures which had been begun in earlier years.

As a group the 80 large manufacturing corporations represented in Chart 1 had larger fixed property expenditures in 1937 than in 1929. Expenditures in 1933, on the other hand, were but a little over one-quarter of 1929. The sample is, however, weighted by profitable, long-lived, heavy industries. The expenditures of these

CHART 1



manufacturing corporations compared with those of all manufacturing enterprises in 1929, 1933 and 1937 were as follows:<sup>4</sup>

	All Manufacturing		Manufacturing Sample		Sample as a Percent of All Manu- facturing
	Amount (millions)	Index (1929 = 100)	Amount (millions)	Index (1929 = 100)	
1929	\$2,739	100%	\$1,135	100%	41%
1933	717	26	307	27	43
1937	2,160	79	1,205	106	56

It will be noted that our sample of large corporations accounted for an increasing proportion of total fixed property expenditures. Breaking down the manufacturing sample into major industries, we have the following proportions of fixed property expenditures:

	Percentage of 1929	
	1933	1937
Textiles	140%	510%
Tobacco	53	94
Meat packing	35	88
Petroleum	33	99
Chemicals	26	127
Machinery	21	127
Automobiles	17	97
Iron and steel	16	189
Food other than meat packing	14	51
Building materials and equipment	14	52
Rubber	13	53

The large percentages for textile concerns in both 1933 and 1937 were due to the depressed state of the industry in 1929, with resultant low expenditures on fixed property, and also to the increased use of rayon, necessitating plant expansion and alteration. The large percentage for iron and steel companies in 1937, on the other hand, was due primarily to the construction of continuous sheet and wide strip mills. In that year four such mills were built, with an annual capacity of more than two million gross tons.<sup>5</sup> Since 1929 the chemical industry has shown exceptional growth. This has been due to an expansion in sales of old products as well as to the development of new products. Monsanto Chemical Co., for example, has reported to stockholders that products they began to manufacture after 1929 accounted for 39 percent of total sales by 1939.<sup>6</sup> The drop in fixed property expenditures of building material and equipment corporations from 1929 to 1937 was due to the continued low volume of private construction.

Among individual companies we find that 39 of the 80 manufacturing concerns had higher fixed property expenditures in 1937 than in 1929. By industries, the number of individual concerns which expended more or less on property in 1937 than in 1929 was as follows:

	<i>More</i>	<i>Less</i>
Textiles	6	1
Chemicals	4	2
Iron and steel	5	3
Automobiles	4	3
Food other than meat packing	3	3
Meat packing	2	2
Tobacco	1	1
Machinery	6	8
Petroleum	4	8
Rubber	2	4
Building materials and equipment	2	6
 TOTAL	 39	 41

Large concerns in every industry, excepting textiles, decreased their expenditures drastically during the great depression, five (rubber, building materials and equipment, iron and steel, food other than meat packing, and automobiles) to less than one-fifth of 1929 expenditures. Of the eleven manufacturing industries analyzed, seven reached the low point of the early thirties in 1933, and four in 1932.

Property relative to total assets is less important in trade than in manufacturing. While the fixed property expenditures of the

manufacturing sample decreased 73 percent from 1929 to 1933, those of trade decreased 87 percent. In 1937, the net property (land, buildings and equipment, less depreciation and depletion reserves) of all manufacturing corporations was 39 percent of total assets; for our sample it was 51 percent. For all trade it was only 19 percent; for our sample it was 34 percent.<sup>7</sup> Nevertheless, the fixed property expenditures of large trade corporations were quite substantial during the two decades.

Several characteristics of large trade corporations might have led us to expect a more even rate of property expansion than actually occurred during this period. First, the sales of retail trade corporations are more stable than those of manufacturing corporations. The sales of 27 trade and 60 manufacturing concerns were as follows:

Trade			Manufacturing		
	Amount (millions)	Index (1929 = 100)		Amount (millions)	Index (1929 = 100)
1929	\$3,120	100%		\$12,857	100%
1933	2,410	77		6,097	47
1937	3,306	106		12,886	100

Second, the profits of large trade concerns over the period studied tended to be greater and more stable than those of other large corporations. Professor Crum's estimates from *Statistics of Income* data of the rate of profit (or loss) after taxes to estimated average stockholders' equity for all manufacturing and trade corporations with total assets over \$50 million are as follows:<sup>8</sup>

	Trade	Manufacturing
1931	4.24%	1.71%
1932	2.59	—.23
1933	6.09	1.72
1934	9.05	3.84
1935	8.38 <sup>a</sup>	6.68
1936	11.01 <sup>b</sup>	8.46 <sup>b</sup>

<sup>a</sup> Includes corporations in the \$10-50 million size classes.

<sup>b</sup> Arithmetic averages of the \$50-100 million and over \$100 million size classes.

Third, the technological characteristics of the property of most of the trade concerns in our sample would enable the individual concern to expand gradually rather than discontinuously. In order to expand its selling facilities, S. S. Kresge, for example, has but to build or lease a store, to furnish and equip it. A relatively small outlay is required for such expansion. If, on the other hand, Standard Oil of New Jersey wants to build a new refinery or

United States Steel wants to construct a new continuous strip mill, large outlays are required.

In spite of the relatively stable sales and earnings positions of large trade concerns and the technological conditions making piecemeal expansion possible, fixed property expenditures have exhibited large cyclical fluctuations during the past two decades. A possible explanation for these large fluctuations is that the executives of the chain stores that dominate our sample may consider expansion by territory rather than by store a unit expenditure. The fact that great property expenditures occur during years of prosperity rather than during years of depression when costs are low is to be explained in terms of the reluctance of business to make large-scale, permanent expenditures during depression years.

The fixed property expenditures of large trade corporations, contrary to those of large manufacturing corporations, were substantially less in 1937 than in 1929. In the late twenties chain systems leased, bought, and built stores on a large scale. It was during these years that the mail-order houses began to establish retail stores. Sears, Roebuck & Co. expended \$148 million on fixed property from 1925, the year in which its first retail store was built, to 1939; \$97 million of this amount was used to develop its retail store system.<sup>9</sup> In the thirties, however, expansion was retarded by taxation and restrictive legislation.

The fixed property expenditures of department stores were also substantial during the late twenties. During this period the department store executive sought to attract customers to his store by creating in their minds an impression of its magnitude, prosperity and luxury. Expenditures took the form of frequent general redecoration and of new facilities such as escalators. Thus substantial property outlays are made not only by growing industries but also by industries that have reached their peak or are losing their relative share of the market. In these cases they represent a form of non-price competition. Since the depression, however, statements by trade executives (particularly department store officials) in trade journals show a pronounced change of attitude. It is evident that rapid fashion changes have led to the use of inexpensive modern construction materials and methods.<sup>10</sup>

The dollar sales of our sample of 14 large department stores exhibited no particular trend during the two decades. Certainly during this period department stores have been feeling more and more the effect of competition from other types of retail outlets

which have been experiencing rapid growth. The sales of mail-order houses, for example, have trebled and those of chain variety stores have more than doubled since the early twenties. The combined sales of J. C. Penney and W. T. Grant have almost quadrupled since 1923-25.

Railroad expenditures in the early twenties were high because of the years during World War I in which railroads deferred property expenditures. The largest annual expenditure<sup>11</sup> was reached in 1923, when fixed property expenditures amounted to \$1,080 million. Sizable expenditures were also made in the relatively prosperous years of 1924-29. These included expenditures on additions, betterments, new lines, extensions of transportation property, and on miscellaneous physical property not specifically related to railroad operation. The major portion of expenditures during this period (possibly 95 percent) went for additions and improvements to existing railroad property.

Railroads also made large expenditures in 1930. As in the case of trade companies, however, railroad expenditures on fixed property failed to rise in the thirties to the level of the twenties. In fact, the 1937 volume was exceeded in all years of the twenties except 1921 and 1922.<sup>12</sup> This lack of expansion is a corollary of the failure of the volume of carloadings and railroad profits to reach the level of the twenties. In addition, the terminal building of the earlier period far exceeded the current demands for such facilities.

Fixed property expenditures of the telephone industry averaged \$391 million per year during the period 1921-30, \$244 million in 1931-34, and \$273 million during the years 1935-39. A great increase in property took place during 1924-30 when new buildings, main conduit routes, and cables adequate to supply service for many years were constructed. During this period the long-lines plant expanded almost threefold. A slower rate of expansion of demand in the thirties made a repetition of this type of expenditure unnecessary. However, there was a tendency for the curve to rise in 1937 (see Chart 1).

The electric light and power industry has also made a substantially smaller volume of fixed property expenditures since 1930. Whereas such expenditures averaged about \$739 million during the years 1921-30, they dropped to a \$338 million average in 1931-39. In the decade preceding the depression the utilities constructed 50 percent of their combined property account.<sup>13</sup> Many of

these expenditures were large, non-continuous outlays on generating stations which, once completed, could serve communities for decades. During the twenties electric light and power company officials thought of their industry as a continuously expanding one.

The large drop in expenditures after 1930 appears to have been as much a result of the exceptionally large expansion during the late twenties as it was a result of declining sales and operating revenues, and increasing legislative controls. During the thirties expenditures on transmission and distributing plants have absorbed the lion's share of electric light and power outlays. This development has been due both to the greater expansion in rural areas, requiring as it does greater relative expenditures on transmission and distribution facilities, and to the more efficient use of generating plant and equipment.

#### FIXED PROPERTY EXPENDITURES, DEPRECIATION, AND PROPERTY REVALUATIONS<sup>14</sup>

Business property expenditures are made to replace as well as to expand productive facilities. No satisfactory statistical method is available, however, to distinguish between replacements and new property expenditures. One method commonly used is to compare fixed property expenditures with the accounting depreciation accruals charged to income. These annual charges, however, are only loosely related to replacement. The primary function of depreciation charges is to indicate roughly the magnitude of property costs attributable to specific goods and services. Historically, these charges have been greatly affected by corporate income tax legislation, although tax administrators have attempted through frequent consultations with officials in specific industries to set rates consistent with the original cost, life, and salvage value of the property.

Replacement obviously does not take place in discrete units like depreciation accruals but rather in non-continuous mass expenditures quite large in relation to the size of the concern. Once a piece of property, say a factory, has been constructed, even though depreciation is accrued annually thereafter, replacement may not, and probably does not, occur until many years have passed. Even when replacements are made, they need occur neither when the factory has been written off completely, nor when it has been worn out physically. They may be made, for example, as a result of technological change or the development of a new product.<sup>15</sup>

The charging of depreciation, the retirement of property, and property expenditures, whether for replacement or additions, are independent decisions of management not immediately connected one with the other. Over a very long period of time, of course, all these items become identical.

The considerable independence of property expenditures and depreciation accruals is of particular importance to a study of financial requirements. Depreciation accruals are non-cash charges to income which (unless adjusted net income after dividends<sup>16</sup> is less than depreciation) represent a volume of disposable funds that can be used for property expenditures or, at least temporarily, for other corporate purposes.

The relationship between depreciation accruals and fixed property expenditures is also important for a study of the savings and investment of the national economy. Excess accruals over expenditures and excess expenditures over accruals of individual companies do not cancel out. Excess accruals are characteristic of most concerns during the recession and depression phases of the business cycle, while excess expenditures are characteristic of most concerns during recovery and prosperity.

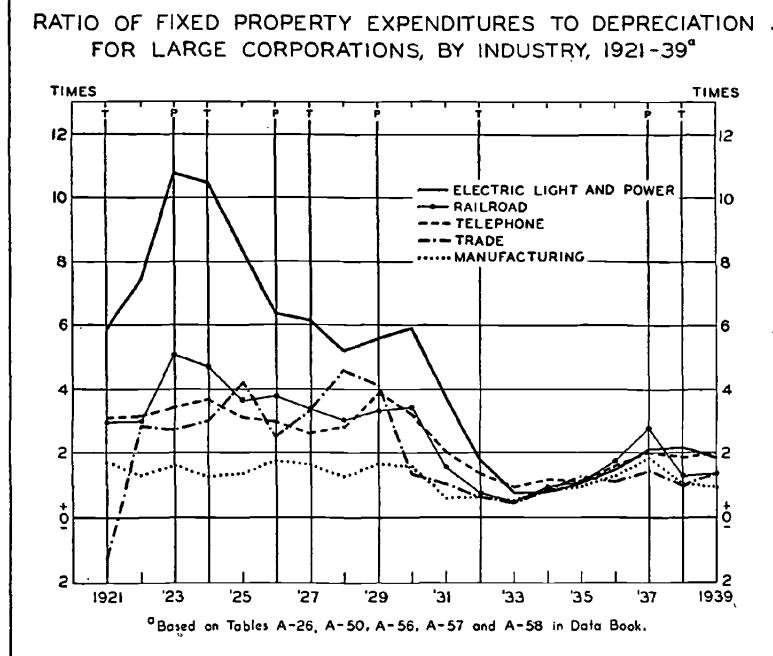
For business as a whole, fixed property expenditures in 1929 and again in 1937 were approximately one and one-half times depreciation accruals (see Chart 2). In 1932, on the other hand, they were but three-fifths of provisions for depreciation.<sup>17</sup> The relationship of the fixed property expenditures of our sample of large manufacturing corporations to their depreciation accruals was very similar to that of business as a whole. Over the entire period these corporations expended more on property than they set aside in depreciation accruals. The ratio fell from 1.5 in 1921-29 to .9 in 1930-33 and increased again to 1.2 in 1934-39. From an annual low of .6 in 1933, the ratio reached an annual peak of 1.8 in 1937.

The size of this ratio is due to the fact that a large part of manufacturing property additions during the thirties was made by the heavy industries which are dominated by large corporations and hence are best represented in our sample. The variation in this ratio over the period is largely the result of the stability of depreciation accruals while expenditures were changing.

Among the major manufacturing industries, the four with the highest ratios of fixed property expenditures to depreciation for the entire period were chemicals, building materials and equip-

ment, petroleum, and iron and steel. Only two industries, textiles and meat packing, spent less than their depreciation accruals on property during these years.

CHART 2



It is evident that the rate of increase in property tends to be greatest in expanding manufacturing industries, as shown in the rankings by percentage increase in average annual sales from 1921-23 to 1937-39 and by the ratios of fixed property expenditures 1921-39 to aggregate property at the beginning of the period:

	Rank by Percentage Increase in Sales	Rank by Ratio of Expenditures to Aggregate Property
Chemicals	1	3
Automobiles	2	4
Petroleum	3	1
Building materials and equipment	4	2
Tobacco	5	5
Rubber	6	6
Machinery	7	7
Iron and steel	8	10
Meat packing	9	8
Food other than meat packing	10	9
Textiles	11	11

The ratio of fixed property expenditures to depreciation fluctuated markedly over time for practically all of the various industries. During the depression years, corporations, even when their current sales and profit positions were relatively favorable, were unwilling to anticipate the future by modernizing and expanding their plant and equipment, although the cost of doing so was low relative to prosperous years. In tobacco, for example, although sales dropped only 13 percent and net income before dividends actually increased 22 percent from 1929 to 1932, the fixed property expenditures/depreciation ratio dropped from 2.8 to 1.4, or 50 percent.

The group of trade corporations expended about one and three-fourths times their depreciation accruals on property. The fixed property expenditures/depreciation ratio was above 1 in every year since 1921 except during the period 1932-34, averaging 2.9 in 1921-29, .9 in 1930-33, and 1.2 in 1934-39.

Among the major trade groups, chain variety stores had the largest ratio, 2.1. The magnitude of the department store ratio, 2.0, may be somewhat surprising in view of the lack of growth experienced by this branch of distribution. The explanation is probably to be found in competitive pressures necessitating property expenditures.

Factors other than changes in sales volume can be important in determining the magnitude of property expenditures as shown by the rankings of the various trade groups by the percentage increase in average annual sales from 1921-23 to 1937-39 and by the ratios of fixed property expenditures 1921-39 to aggregate property at the beginning of the period:

	<i>Rank by Percentage Increase in Sales</i>	<i>Rank by Ratio of Expenditures to Aggregate Property</i>
Mail-order houses	1	4
Chain grocery stores	2	2
Miscellaneous chain stores	3	3
Chain variety stores	4	1
Department stores	5	5

In the case of manufacturing industries a significant positive correlation between the rankings of major industries by these variables was secured; in trade, the correlation is not so clear. The large expenditures of chain variety stores relative to the increase in their sales may have been due in part to the acquisition of costly urban sites.

The ratio of fixed property expenditures to depreciation accruals and retirements of railroads was 2.5. This ratio decreased from an average of 3.7 during the twenties to 1.5 during the thirties. These data are not comparable to those in manufacturing and trade because of depreciation practices peculiar to the railroad industry.<sup>18</sup> For example, although expenditures to acquire cars and locomotives are depreciated over the expected life of the equipment, expenditures for maintenance of way and of equipment (unless they represent net additions to property) are charged directly to operating expenses. Structure and track are not depreciated, on the assumption that they never wear out in entirety if they are kept up to the required standard, the services being replaced as consumed. Railroads may depreciate such large structures as bridges and buildings, but even in such cases they are not required to do so by the Interstate Commerce Commission.

In the case of the telephone industry also, depreciation accruals are but one measure of property consumption, maintenance expenditures being as large as, if not larger than, depreciation. The Bell Telephone System expended about two and one-quarter times the volume of its depreciation and amortization accruals on "gross additions to telephone plant." In only one year, 1933, did gross additions fall below depreciation. There has been, however, a decided downward tendency in the ratio, despite the fact that toward the end of the period total telephone operating revenues equaled the peak level of the late twenties and early thirties.

Finally, the ratio of construction expenditures to depreciation and retirement accruals for electric light and power companies exhibited the most marked downward tendency, declining from an annual high of 10.7 in 1923 to an annual low of .8 in 1933. Since 1933 the ratio increased again to 2.1 in both 1937 and 1938. It is interesting to note that although this ratio has decreased markedly, it has been less than one in only two years, 1933 and 1934.

For a period of 19 years, depreciation accruals alone are very rough measures of the property "used up" (capital consumption, as it has sometimes been called). These accruals are only approximations of the decrease in value of fixed property over time, as evidenced by the numerous revaluations of property which business concerns make from time to time.

If depreciation and net property revaluations are taken as a measure of capital consumption and if capital consumption is

taken as a measure of that portion of property expenditures that constitutes replacements rather than additions to property, the replacements of our combined sample of large manufacturing and trade concerns over the entire period amounted to 87 percent, the additions to 13 percent, of fixed property expenditures (Table 4).<sup>19</sup> The variation among major industrial classifications is great. The additions to property of our sample of large chain variety stores, for example, about equaled replacements. On the other hand, six major manufacturing groups—food other than meat packing, iron and steel, machinery, meat packing, rubber, and textiles—have failed to maintain the value of their property intact. Indeed, our large textile concerns have consumed almost twice the amount of property they acquired.

The changing importance of property revaluations relative to depreciation is indicated in Table 5. For the manufacturing corporations, net property writedowns were 8 percent of depreciation accruals; for trade, they were 6 percent. Property writedowns occurred more frequently than property writeups and were greater in dollar volume than property writeups. As might be expected, writedowns were heaviest in years of recession and depression. In 1932, for example, net property writedowns for the manufacturing sample amounted to \$232 million, or 41 percent of depreciation accruals while for trade writedowns were \$13 million, or 45 percent. The large manufacturing writedown in 1929, unusual for a prosperous year, was due primarily to property revaluations of the United States Steel Corporation. The only years in which substantial writeups occurred were 1921 and 1922. The major part of the dollar volume of these writeups was due to petroleum, meat packing, and mail-order companies.

#### FIXED PROPERTY EXPENDITURES AND SALES

Fixed property expenditures differ considerably among industries in relation to sales or total operating revenues. For example, there are great differences in ratios of fixed property expenditures to aggregate sales in the five major industrial groups for the period 1921–39 (electric light and power 1926–39) as shown below:<sup>20</sup>

Telephones	37.1%
Electric light and power	26.6
Railroads	11.1
Manufacturing	6.1
Trade	1.6

Table 4—FIXED PROPERTY EXPENDITURES, DEPRECIATION, AND PROPERTY REVALUATIONS OF A SAMPLE OF LARGE MANUFACTURING AND TRADE CORPORATIONS, 1921-39, BY INDUSTRY<sup>a</sup> (dollar figures in millions)

Industry	(1) Number of Cor- porations	(2) Fixed Property Expenditures	(3) Depreciation	(4) Property Reval- uations <sup>b</sup>	(5) Capital Con- sumption (3-4)	(6) Net Property Additions (2-5)	(7) Additions as a % of Expenditures
Manufacturing				\$10,376	\$11,254	\$1,551	12%
Automobiles and trucks	80	\$12,805	\$10,376	\$-978	935	94	9
Building materials and equipment	7	1,029	920	-15	330	101	23
Chemicals	8	431	291	-39	479	207	30
Food other than meat packing	6	686	406	-73	168	-14	-9
Iron and steel	6	154	139	-29	2,134	-25	-1
Machinery	8	2,109	1,685	-449	521	-25	-5
Meat packing	14	496	483	-38	350	-25	-8
Petroleum	4	325	329	-21	5,700	1,293	18
Rubber	12	6,993	5,569	-131	474	-14	-3
Textiles	6	460	413	-61	125	-61	-95
Tobacco	7	64	103	-22	38	20	34
Retail trade	2	58	38	°	°	°	°
Chain grocery stores	26	642	383	-24	407	235	37
Chain variety stores	4	166	125	-8	133	33	20
Department stores	4	221	104	-4	108	113	51
Mail-order houses	14	40	20	-8	28	12	30
Miscellaneous chain stores	2	201	125	-2	127	74	37
TOTAL	106	\$13,447	\$10,759	\$-902	\$11,661	\$1,786	13%

<sup>a</sup> See Appendix A for coverage of the sample. Data for some corporations were not available in the earlier years.

<sup>b</sup> Net writeups are positive; net writedowns are negative.

° Less than \$500,000.

*Table 5—DEPRECIATION AND PROPERTY REVALUATIONS OF A SAMPLE OF LARGE MANUFACTURING AND TRADE CORPORATIONS, 1921-39<sup>a</sup> (dollar figures in millions)*

Year <sup>b</sup>	MANUFACTURING			TRADE		
	Depre- ciation	Property Revalua- tions <sup>c</sup>	Revaluations as a % of Depreciation <sup>d</sup>	Depre- ciation	Property Revalua- tions <sup>c</sup>	Revaluations as a % of Depreciation <sup>d</sup>
1921 (T)	\$251	\$16	6%	\$ 4.2	\$ 8.3	198%
1922	290	33	11	5.7	.0	0
1923 (P)	361	4	1	6.8	•	•
1924 (T)	392	-29	-7	8.0	.7	9
1925	457	-1	•	9.9	•	•
1926 (P)	520	-26	-5	11.8	.1	1
1927 (T)	583	-17	-3	13.4	•	•
1928	627	-64	-10	17.3	-1.6	-9
1929 (P)	684	-135	-20	22.0	-2.3	-10
1930	651	-24	-4	27.6	-1.5	-5
1931	646	-57	-9	28.0	-5.8	-21
1932 (T)	571	-232	-41	29.2	-13.0	-45
1933	561	-75	-13	27.5	-4.0	-14
1934	559	-108	-19	26.8	-2.2	-8
1935	594	-84	-14	27.1	-1.3	-5
1936	622	1	•	29.2	-.9	-3
1937 (P)	659	-13	-2	29.6	-.4	1
1938 (T)	662	-46	-7	29.6	-.3	1
1939	687	-21	-3	30.0	-.3	1
AVERAGE ANNUAL VOLUME						
1921-39	546	-46	-8	20.2	-1.3	-6
1921-29	463	-24	-5	11.0	.6	5
1930-39	621	-66	-11	28.5	-3.0	-10
'30-33	607	-97	-16	28.1	-6.1	-22
'34-39	608	-51	-8	28.2	-1.2	-4

<sup>a</sup> See Appendix A for coverage of the sample. Data for some corporations were not available in the earlier years.

<sup>b</sup> General business cycle peaks (P) and troughs (T), calendar-year dates as determined by W. C. Mitchell and A. F. Burns of the National Bureau of Economic Research, are so designated.

<sup>c</sup> Net writeups are positive; net writedowns are negative.

<sup>d</sup> Positive ratios are net property writeups; negative ratios are net property writedowns.

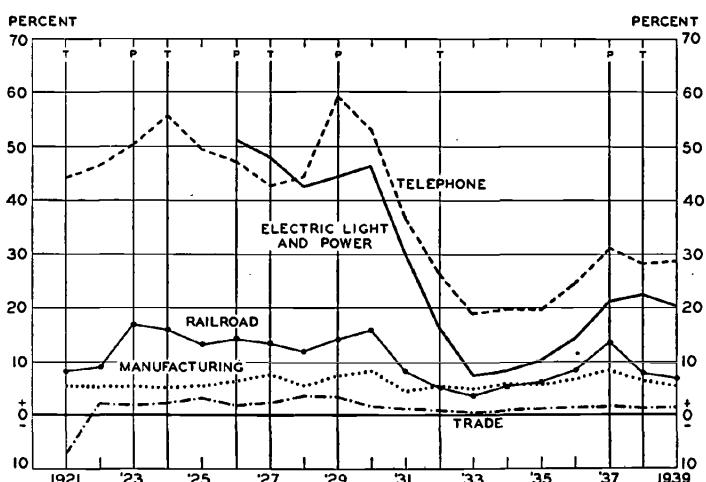
<sup>e</sup> Less than \$50,000.

<sup>f</sup> Less than .5 percent.

These ratios reflect among other things differences in "value added" by the individual industries, the relative importance of fixed property among total assets, the relative age of the property and the relative maturity of the industry. The property of the Bell Telephone System comprised over four-fifths of its total assets in 1935 while the property of trade corporations made up only one-fifth of total assets in 1937. Although railroad property amounts roughly to the same proportion of total assets as that of telephone companies, the ratio of fixed property expenditures to operating revenues of railroads was much less than for telephones. This is due in part to the fact that the long-lived railroad assets were built prior to 1921 and have continued to function subsequently, while much of the expansion in telephone plant occurred during the twenties; and in part to the increased use of maintenance accounting by railroads.

The ratio of fixed property expenditures to sales exhibits marked irregularity for all of the broad industrial classifications (see Chart 3). This is due to the greater amplitude of the fluctuations in fixed property expenditures. For example, the sales of our sample of large manufacturing corporations declined but 35 percent in

## CHART 3

RATIO OF FIXED PROPERTY EXPENDITURES TO SALES  
FOR LARGE CORPORATIONS, BY INDUSTRY, 1921-39<sup>a</sup>

<sup>a</sup>Data for manufacturing and trade are based on a special tabulation of the National Bureau of Economic Research; those for railroad, telephone, and electric light and power are from Tables A-56, A-57 and A-58 in Data Book.

1930-33, while property expenditures declined over 63 percent. In view of the durable character of most property expenditures this relationship is not surprising.

Among the major manufacturing industries, petroleum and chemical companies had the highest ratios of expenditures to sales. In the chemical industry there has been, however, a tendency for the importance of expenditures relative to sales to decline. The level of the expenditures/sales ratio for petroleum companies has, on the other hand, remained relatively stable. Recent property expenditures of oil companies in part reflect investment decisions of executives to build up reserves in order to cope with the policy of proration by which the production of a given oil well is restricted. In addition, they reflect the response of members of the industry to such technical changes as improved processes for cracking crude petroleum, the development of polymerization techniques for the manufacture of high-test airplane gasoline, and the expansion of the Houdry process of oil refining.

A decrease in the importance of fixed property expenditures relative to sales is also apparent in the textile, and building materials and equipment, industries. This is not surprising in view of the depressed condition in these industries. In the other manufacturing industries, there seems to have been no significant change in the relationship between fixed property expenditures and sales over the two decades between the two World Wars.

The level of the ratio in most trade groups has declined somewhat. Among the trade industries, chain variety stores had the largest, and chain grocery stores the smallest, ratio of fixed property expenditures to sales for the entire period. The high ratio for chain variety stores may have been due to the competitive pressures during the twenties to acquire high-cost, urban sites. The low ratio in the case of grocery stores is undoubtedly the result of the high merchandise turnover of these stores.

In the case of the three utility industries, the level of the ratio of fixed property expenditures to operating revenues was substantially lower in the thirties than in the twenties. For telephone companies, for example, the ratio averaged almost 49 percent in 1921-30 and only about 26 percent in 1931-39. The decline in the ratio in all three industries in 1930-33 was precipitous, the ratio for electric light and power companies, for example, falling from 46 to 7 percent.

### THE ACQUISITION OF SUBSIDIARIES

We have already seen that since 1920 large corporations have made substantial expenditures on property. Superimposed upon this internal growth have been acquisitions by these corporations of existing concerns—competitors, suppliers and customers. These acquisitions have been in the form of gradual investments in the equity securities of another enterprise or of taking over at a given point of time the assets and liabilities of such an enterprise, either for cash or by the exchange of securities.

The importance of investments in subsidiaries and affiliates by large corporations was clearly indicated in a report of the Securities and Exchange Commission.<sup>21</sup> Fifty-eight percent of a sample of 1,961 large corporations, registrants with the Commission, had at least one subsidiary in 1937. The smallest registrants (those with total assets of less than \$1 million) averaged only 2 active subsidiaries per registrant, but the largest registrants (those with total assets of \$500 million) averaged 73 subsidiaries per registrant. In addition, only 45 percent of all registrants with total assets below \$10 million reported active subsidiaries but 98 percent of all registrants with total assets over \$50 million reported such subsidiaries. It should be noted, of course, that some of these subsidiaries were set up for legal or financial reasons rather than for purposes of control or expansion.

The large manufacturing corporations in our sample also expanded their facilities considerably by the acquisition of subsidiaries and affiliates. Eighty corporations expended \$2.5 billion for subsidiaries as contrasted to \$12.8 billion for property. These outlays on subsidiaries were highly concentrated in the late twenties and in 1930. This is in accord with Willard Thorp's findings.<sup>22</sup> In Table 6, Thorp's estimates of the number of mergers and acquisitions in manufacturing and mining are compared with the flows of funds through the investment accounts of the 24 large manufacturing corporations. Although Thorp is dealing with numbers of mergers and acquisitions and we are dealing with dollar expenditures on investments only (exclusive of mergers), the extreme fluctuations in the two series are similar.

The large volume of expenditures on subsidiaries by large manufacturing corporations in 1923 was mainly due to the acquisition by Bethlehem Steel Corporation of the Lackawanna Steel Company, and by Youngstown Sheet and Tube Company of the Briar

**Table 6—NUMBER OF MERGERS AND ACQUISITIONS IN MANUFACTURING AND MINING COMPARED WITH INCREASES IN INVESTMENTS IN SUBSIDIARIES AND AFFILIATES OF A SAMPLE OF LARGE MANUFACTURING CORPORATIONS, 1921-39<sup>a</sup>**  
*(dollar figures in millions)*

Year <sup>b</sup>	MERGERS AND ACQUISITIONS IN MANUFACTURING AND MINING		INCREASES IN INVESTMENTS IN SUBSIDIARIES AND AFFILIATES OF MANUFACTURING SAMPLE	
	Number	As a % of 1929	Amount	As a % of 1929
1921 (T)	487	39%	\$192	33%
1922	309	25	69	12
1923 (P)	311	25	290	49
1924 (T)	368	30	61	10
1925	554	44	189	32
1926 (P)	856	69	192	33
1927 (T)	870	70	113	19
1928	1,058	85	224	38
1929 (P)	1,245	100	586	100
1930	799	64	291	50
1931	464	37	183	31
1932 (T)	203	16	54	9
1933	120	10	98	17
1934	101	8	53	9
1935	130	10	39	7
1936	126	10	36	6
1937 (P)	124	10	47	8
1938 (T)	110	9	50	9
1939	87	7	95	16
AVERAGE ANNUAL VOLUME				
1921-39	438	35	151	26
1921-29	673	54	213	36
1930-39	226	18	95	16
'30-33	397	32	157	27
'34-37	120	10	44	8

<sup>a</sup> Data on the number of mergers and acquisitions are from Willard L. Thorp, *The Structure of Industry*, TNEC Monograph No. 27 (Washington, 1941) p. 233. The total number of mergers and acquisitions equals the number of concerns merged less the number of mergers plus the concerns acquired. See Appendix A for coverage of the sample. Data for some corporations were not available in the earlier years.

<sup>b</sup> For peaks and troughs, see Table 5, footnote b.

Hill Steel Company and Steel and Tube Company. However, the acquisition movement did not really get under way until 1925. During subsequent years prosperous business conditions and favorable security markets led to frantic promotional activity to create giant enterprises.<sup>23</sup> The relatively large volume of expenditures in 1930 and 1931 was due both to the carrying out of previously planned acquisitions and to "bargain purchases." In 1932, however, the acquisition movement declined precipitously and remained throughout the thirties at a level far below the twenties.

Large trade corporations had an even greater concentration of the acquisition of existing stores or chains of stores during the late twenties. The peak of these investments in 1928 was largely the result of: (1) Montgomery Ward's formation of the Montgomery Ward Properties Corporation, a subsidiary engaged in acquiring warehouses and retail outlets which it leased to the parent company; and (2) Kroger Grocery's expansion in the Middle West through the acquisition of 16 smaller chains of retail food stores operating over 1,200 outlets. In the following two years Montgomery Ward continued its investment in its Properties Corporation, First National Stores acquired five New England retail food chains (1929) and S. H. Kress acquired the variety stores of the John Franklin Corporations of Texas and New York (1930).

Railroad investments in securities of subsidiaries and affiliates were also substantial in the twenties, particularly during 1923, 1924 and 1929. This period of consolidation began with the return of the railroads to their private owners after the war, and was encouraged by the passage of the Transportation Act of 1920. This Act, with its "recapture clause," induced high-earning, low-capitalized roads to combine with low-earning, high-capitalized roads. The Act stated that the Interstate Commerce Commission was to approve such consolidations provided that competition was preserved as fully as possible, and that the Commission itself could submit plans for railroad consolidation that would be in the public interest.

These investments of operating railroads underestimate the degree of railway consolidation that took place during the twenties. It was during this period that the railway holding company came into its own. The most outstanding example of the use of this financing device to create a railroad empire was that of the Van Sweringen brothers. With an original investment of \$2 million borrowed from banks, the two brothers secured control of a network of rail-

roads spanning the country from east to west and north to south, by establishing a structure of 14 holding companies.

With the coming of the depression and the precipitous decline in earnings, railroad credit as well as the desire to build ever-expanding railroad empires declined. Executives were much more intent on salvaging existing structures than on extending them. During the thirties there was a net liquidation of investments in subsidiaries that amounted to over \$500 million.

Comparable annual data on the acquisition of subsidiaries by telephone and electric light and power companies are not available. Because of the corporate structure of these industries any such series of data would not be comparable with those on manufacturing, trade and railroad corporations in any case. The Bell System involves a parent company—the American Telephone and Telegraph Company—subsidiaries, and subsidiaries of subsidiaries. Since 1900 A.T.&T.'s expanding activities have been manifesting themselves in the organization and acquisition of interests in a large number of direct and indirect subsidiaries. It increased its interest in previously acquired subsidiaries, bought up independents, and invested in non-telephone enterprises. These purchases were paid for with cash, and A.T.&T. stocks and bonds.

The major part of the financing was centralized in the parent company. In many cases the financial requirements of subsidiaries were met by loans from A.T.&T. that were later converted into equity securities, thus increasing the interest of the parent in the subsidiary. From December 31, 1920 to December 31, 1935 the investments of A.T.&T. increased \$1.5 billion, from \$.8 to \$2.3 billion.<sup>24</sup> Common stocks in associated Bell companies made up the largest type of investment among the assets of the parent, amounting to \$2.1 out of \$2.3 billion on December 31, 1935.

On the other hand, the electric light and power industry is concentrated in several controlling groups rather than in a single company. These groups built up numerous giant systems during the twenties. In 1927, five of these systems controlled about one-half of the American electricity output. The form of financing was similar to the Bell System in that the major part of the funds of operating companies was secured from parent holding companies. No comprehensive industry data are available on expenditures for the acquisition of subsidiaries by these large systems. Such expenditures undoubtedly were very large in the twenties but they have

subsided since 1930. The passage of the Public Utility Holding Company Act has tended to deconsolidate the industry.

This analysis of the fixed capital outlays of large corporations in selected American industries has shown diverse trends in the demands of these corporations for funds for fixed capital requirements. In the late thirties the fixed property expenditures of many large manufacturing concerns exceeded those of the late twenties. On the other hand, the fixed property expenditures of large trade, railroad, telephone and electric light companies at no time during the thirties attained the level of the twenties. For all the industrial groups studied except manufacturing, fixed property expenditures have tended to decline relative to sales during the past two decades. It is true of all industries that there has been no tendency during the thirties to repeat the feverish acquisition of subsidiaries characteristic of the late twenties.