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Stages in Corporate Stability and the Risks of Corporate Failure

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Stages in Corporate Stability and the Risks of Corporate Failure

FEW would deny that the U.S. economy is today dominated by huge corporations. Much recent writing has proposed that these corporations form a stable and monopolistic (or oligopolistic) "core" around which a more competitive "peripheral" sector exists. Firms in the core are said to be "eternal," while firms in the periphery demonstrate the mortality and high turnover expected in competitive industries.[1] In another context, Paul Baran and Paul Sweezy emphasized the permanence of big corporations when they noted:

> The real capitalist today is not the individual businessman but the corporation. . . . The giant corporation of today is an engine for maximizing profits and accumulating capital to at least as great an extent as the individual enterprise of an earlier period. But it is not merely an enlarged and institutionalized version of the personal capitalist. There are major differences between these types of business enterprise, and at least two of them are of key importance to a general theory of monopoly capitalism: the corporation has a longer time horizon than the individual capitalist, and it is a more rational calculator.[2]

From an historical perspective, however, it appears to be an open question whether big corporations are long-lived or whether they tend to be "paper tigers" of glorious but relatively short longevity. For example, the most influential study, A. D. H. Kaplan's *Big Enterprise in a Competitive System,* finds that only thirty-one of the one hundred largest (by assets) corporations in 1909 would qualify for the 1960 "top one hundred" list. Although no absolute criterion exists for what would constitute "high" or "low" turnover, Kaplan's figures hardly impress one as evidence of a "stable" core. Apparently

Many of the ideas in this paper were worked out jointly with David Gordon and Michael Reich. I would like to thank Jane Baird and Winnie Edwards for their research help and an anonymous referee for suggestions.

[1] See, for example, Robert Averitt, *The Dual Economy: The Dynamics of American Industry Structure* (New York: W. W. Norton, 1968); J. K. Galbraith, *Economics and the Public Purpose* (New York: Houghton Mifflin, 1972); James O'Connor, *The Fiscal Crisis of the State* (New York: St. Martin's Press, 1973); and Richard Edwards, David Gordon, and Michael Reich, "Labor Market Segmentation in American Capitalism" (mimeo).

[2] Paul Baran and Paul Sweezy, *Monopoly Capital* (New York: Monthly Review Press, 1966), pp. 43, 47.

Forbes magazine is correct in asserting that the "corporate eminence is located on a slippery slope."

This article focuses on the issue of corporate stability. I concentrate rather narrowly on the data on turnover and longevity of the biggest U.S. corporations in order to show that big business has passed through two quite different phases. The initial period of consolidation and transition (roughly 1890 to 1920) was a time of considerable instability for big corporations. But by the early twenties—certainly by 1923—the system had "stabilized," and relatively little change has occurred since then.

SOURCES OF EVIDENCE ON CORPORATE STABILITY

The conclusion that big corporations lead precarious lives is well entrenched in the historical literature. This conclusion exists in somewhat surprising contrast to prevailing notions about present corporate structure. For example, critics of J. K. Galbraith (or Baran and Sweezy or Berle and Means) often argue that big corporations are less powerful and more constrained by markets than Galbraith asserts, but the critics rarely maintain that the giants are not durable.

Yet such appears to be the historical consensus. Several studies have appeared which attempt to trace the fortunes of big corporations since the merger movement at the turn of the century.[3] Gen-

[3] One of the earliest works was John Moody's *The Truth about the Trusts* (New York: Moody Publishing Co., 1904); A. A. Berle and Gardiner C. Means, *The Modern Corporation and Private Property* (New York: Macmillan Co., 1932) presented the first time series; recent work has been spurred by A. D. H. Kaplan's *Big Enterprise in a Competitive System* (Washington, D.C.: *The Brookings Institution*, 1954; revised edition, 1964) and the annual (since 1956) appearance of the *Fortune* "500" lists. Other studies are Norman Collins and Lee Preston, "The Size Structure of the Largest Industrial Firms, 1908-1958," *American Economic Review* (December 1961); Seymour Friedland, "Turnover and Growth of the 50 Largest Industrial Firms, 1906-1950," *Review of Economics and Statistics* (February 1957); Thomas R. Navin, "The 500 Largest Industrials in 1917," *Business History Review* (Autumn 1970); "Management," *Forbes Magazine* (September 15, 1967); David Mermelstein, "Large Industrial Corporations and Asset Shares," *American Economic Review* (September 1969); and Alfred D. Chandler, Jr., "The Structure of American Industry in the Twentieth Century: A Historical Overview," *Business History Review*, XLIII (Autumn 1969).

Most authors have not felt compelled to offer a justification for focussing on the largest corporations, provoking George Stigler to remark that "the statistical universe of the hundred or two hundred largest corporations is inappropriate to studies of monopoly and competition. . . ." in "The Statistics of Monopoly and Merger," *Journal of Political Economy* (February 1956). Most authors, especially Kaplan, intend their studies to be relevant to the monopoly issue on the assumption that high turnover is a sufficient condition for the existence of competition. David Mermelstein, among others, has attempted to be more explicit in relating a corporation's overall size to its power, which presumably affects its exercise of power in product markets.

erally these studies probe the meager historical sources to develop lists of the top one hundred (or fifty or five hundred) industrial corporations, for a series of benchmark years at roughly decade intervals. A. D. H. Kaplan, for example, presented lists of the largest (by asset size) one hundred industrial firms for 1909, 1919, 1929, 1935, 1948, and, in the revised edition, 1960. The data come primarily from such reference works as *Standard and Poor's* and *Moody's* manuals. "Stability" is measured by the number of firms that survive from earlier to later lists.

Kaplan found that of the top one hundred firms in 1909, only thirty-one firms remained among the top one hundred in 1960. Norman Collins and Lee Preston, after revising Kaplan's lists somewhat, report thirty-six firms which were in the top one hundred in both 1909 and 1958. Seymour Friedland prepared a list very similar to Kaplan's but restricted his attention to the top fifty in 1906. He found that only eighteen of the original firms survived to the 1950 list. Similarly, *Forbes* magazine investigated turnover among the top one hundred industrials between 1917 and 1967 and found that forty-five on the earlier list survived to the 1967 list. Finally, Thomas Navin prepared a list of the top five hundred industrials in 1917. According to his list, forty-two of the top one hundred firms (by assets) in 1917 continued to be large enough to rank in the top one hundred (by sales) on *Fortune*'s 1967 list. Kaplan and *Forbes* concluded that turnover was "high," while Collins and Preston and Friedland decided that size was indeed related to "stability," although clearly the evidence used is quite similar. Navin contented himself with a careful presentation of the evidence, adding only the astute observation that turnover between 1917 and 1967 among the largest forty firms seemed substantially less than among the remaining four hundred and sixty.

These studies provide the basis for a consensus on the turnover issue. Apparently of the top one hundred firms in the opening decades of the century, roughly thirty to forty-five would appear on the list fifty years later. Whether or not that figure is large seems to de-

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See "Large Industrial Corporations and Asset Shares: Reply," *American Economic Review* (March 1971). Nevertheless, for studies of concentration per se, industry studies would appear to be more appropriate. The focus here is directly on corporate power, for which the largest corporations are precisely the correct "statistical universe," though of course there is nothing magical about any particular cutoff point (e.g., the top 100).

pend on one's inclinations, but it does not provide much basis for viewing the big corporation as an "eternal life" institution.

The issue of corporate power and longevity is not quite so simple, however. The work as it now stands can be faulted on several counts.[4] First, the focus on gross turnover fails to distinguish among entrants and exits resulting from mergers, court-ordered dissolutions, or "normal" growth or decline of companies. For example, if two firms on the top one hundred list in 1919 merged to form a new company, "turnover" would be increased (two exits, one entrant) yet economic power would have become more concentrated. Second, artificial distinctions among categories also create "turnover" where real industrial power continues: Cities Service Co. (now Citgo), although a large enterprise before 1954, was classified as a utility; in that year it disposed of its remaining domestic utility holdings, thus

[4] All of the studies concerning "Big Business" take the size of the firm's assets as the means of determining "bigness." The choice of assets as basis for categorization represents an unfortunate but necessary compromise. Whether or not it is theoretically the appropriate variable, its measurement is sufficiently difficult to cause unease. The assets of a firm pass through a market—and hence are properly valued—only when the firm is actually sold. At all other points, the asset values must be estimated. In this respect, annual sales (on which the *Fortune* list is based), number of employees, or value added would provide a much more accurate measurement.

The "errors in variables" problem for assets can be simply illustrated. For extractive industries, a considerable part of each firm's assets consist of unmined minerals, oil, coal, etc. still in the ground. Not only is it difficult to measure the quantity of such stores, the value of those quantities obviously depends on such variables as the future costs of extracting them and future product prices. Thus none of the consequent estimates can be said to be based at all directly on market values—the only "true" test. A different form of the problem emerges most dramatically from the steel industry. Early estimates of the assets of U.S. Steel rely on the gross stock capitalization at its formation. Yet the merger of Carnegie Steel and several other firms to form U.S. Steel resulted in the new firm having stock worth, at face value, more than twice the combined assets of the merged companies. Some increase in the capitalized value of future earnings could legitimately be expected as a result of cost savings, increased monopoly power, and the like, and the larger value was what the J. P. Morgan promoters estimated the stock market would bear. The subsequent decline of the stock value indicated their mistake, but it does not help the historian attempting to calculate asset values.

It might be argued that the value of the firm can be estimated from the stock prices of publicly traded shares, which prices should reflect the present value of the discounted stream of expected future net earnings. Even if this hypothesis on stock price behavior is accepted, two considerations argue against its application: (1) for many firms early in the century, the shares were not publicly traded, so this method does not provide a general approach; and (2) for many firms whose shares were traded, large blocks of stock were held off the market by individual families (e.g., the Mellons with Gulf stock), upwardly biasing the market price of those shares traded.

These methodological problems are not trivial, but the meagerness of historical data sources allows no alternative. Evidence for asset size, though scanty, inaccurate, and not always comparable, exists; evidence for other variables does not.

"enabling" it to be classified as an industrial and thereby becoming a recent "entrant." Third, an extremely restrictive standard was applied to determine when a "new" company had emerged: for example, Kaplan declares that the "Maxwell Motor Co. was the predecessor of Chrysler Corp.," yet he and others list Maxwell as an exit and Chrysler as an entrant.[5]

Fourth, there is a basic question as to whether turnover among the top one hundred constitutes an adequate measure of "stability." As Collins and Preston note, new entrants are rarely new to the economy, and exits, except those by merger or liquidation, rarely disappear. Moreover, most of the "action" in turnover is concentrated near the cutoff point: of all two hundred and forty-six entrants and exits between their six benchmark years listed by Collins and Preston, one hundred and nine (forty-four percent) were ranked eighty-one to one hundred in their last or first year of appearance.

Fifth, the choice of a base period seems to influence substantially the conclusions obtained. Kaplan's data provide an illustration of this base-year sensitivity. According to his work, only thirty-one firms in the top one hundred in 1909 survive to the 1960 list; sixty-nine fail to do so. But of these sixty-nine failures, fully thirty-eight (fifty-five percent) had moved off the list by 1919 and *never reappeared.* If the sixty-nine failures had been spaced evenly over the fifty-one-year span, only 13.5 would have been expected to fail by 1919 versus the thirty-eight that actually failed. Appendix Table I indicates that the rate of exits in the period 1909-1919 was never less than twice, and usually many times greater than in succeeding periods.

If choice of the base period makes a significant difference, that choice should not be made arbitrarily but rather derive from an interpretation of American economic development. The authors of previous studies place the base before the First World War. Kaplan chose 1909; Collins and Preston and others (for example, Mermelstein; Chandler) followed his lead. Friedland chose 1906. *Forbes* chose 1917 because it was the year the magazine was founded. Navin accepted 1917, but indicates he would have preferred an earlier year. Yet none of these authors provides a plausible historical justification for his choice of base year.

[5] Kaplan, *Big Enterprise,* p. 152-153, notes 13 and 37. On the basis of the "majority of assets" rule given below, Dodge is here treated as parent of the modern Chrysler Corporation and Maxwell is counted as an "exit;" see Appendix Table V.

Finally, focusing on industrials alone underemphasizes the extent of the consolidation of power achieved by the early twenties. The exclusion of public utilities, railroads, merchandising firms, banks, and insurance companies is particularly serious.

In order to minimize these problems, I adopt the following procedures when considering the data. First, I separate the "exits" by whether they are due to mergers, liquidations, or simple failures to grow. Second, no firm that appears on an earlier list will be excluded from a later list because it is "reclassified." Although excluding reclassified firms might be appropriate if the category "industrials" had a strict and economically meaningful boundary, which it does not, it is clearly unjustified in any attempt to understand the concentration of economic power. Third, I consider a newly-named company as simply a "successor" and not a new company if the assets of the acquired company constitute fifty percent or more of the "new" company. Fourth, I look beyond gross turnover; I not only consider the strict criterion of whether a firm in an earlier year (for example, 1919) has survived to the top one hundred in a later year (for example, 1969), but also the more sensible criterion of whether it survives as a large and powerful firm—for example, whether it has been able to maintain the real value of its assets in the later year. I also analyze the category of failures: those firms that go bankrupt, enter receivership, or fail to maintain their capital. Fifth, rather than casually choose a base, I hypothesize stages which justify the treatment of the 1890-1920 period as separate from the period which began in the early twenties. Finally, I analyze "industrials" separately so that my results can be compared directly with earlier work, but I also present some evidence for turnover among railroad, utility, merchandising, banking, and insurance companies as well.

The issue here resolves itself into two parts. First, was there (relatively) great change in the status of big industrial corporations between the turn-of-the-century merger movement and the end of the war and a constrastingly great (relative) stability between the early twenties and the present?[6] While there still is no absolute cri-

[6] Since specific points in time are required for the analysis, the earlier period is defined as 1903 to 1919, the latter as 1919 to 1969. Operationally I take 1919 as an acceptable compromise for the start of the latter period in order that my results can be compared directly with earlier work, but some later year, perhaps 1923, would be a better cutoff point (see footnote 8). Since these are continuous economic processes, an "exact" cutoff point is not possible nor important.

terion for "high" or "low" stability, the comparison between periods, when adjusted to account for the difference between the lengths of the periods, provides one yardstick. Second, was the stability achieved by the early twenties generalized throughout the economy or restricted to a few sectors?

INSTABILITY (1903-1919) VERSUS STABILITY (1919-1969)

Data for the earlier period are sketchy and much less accurate than for the later period. John Moody, the major source for all these studies, did not begin publishing data on industrials until 1900, and understandably coverage during the early years was less than comprehensive. Nonetheless, the pattern seems pretty clear.

Data for the early period derive from several sources.[7] First, we have the lists prepared by Kaplan and by Collins and Preston for 1909. Second, for 1903 I have prepared a list (Appendix Table IV) of the one hundred largest industrial firms listed in Moody's manual for that year. Finally, for the end of the period I use two sets of data. For gross turnover, I use the Kaplan and Collins and Preston lists for the top one hundred in 1919. For all other analysis, I rely on Navin's 1917 data. Although 1919 or 1920 would have been a better end-date, the comprehensiveness and accuracy of Navin's list more than compensate for the two year lapse.

For the later period, we have lists provided by Kaplan (1919-1960), Collins and Preston (1919-1958), Navin (1917-1967), *Forbes* (1917-1967), and a comprehensive list (1919-1969) I have compiled from all these sources, cross-checked with the Moody manuals and other sources.

I consider successively three comparisons of the two periods. First, I look at gross turnover—simply the movement of firms in an earlier (1903, for example) list of the top one hundred industrials out of a later list (for example, out of the 1919 list). Interestingly, comparison of this crude measure for the pre- and post-1919 periods fairly accurately indicates the differences between the two periods although it overstates turnover in both. Second, I consider a different

[7] These are not, strictly speaking, entirely independent sources. All begin with the Moody's manuals. However, each supplements this basic source with investigation of company records and reports, correspondence with surviving firms, corporate histories, and similar material. Moreover, each uses a slightly different definition for what constitutes "industrial" firms. Finally, treatment of assets and estimates differ somewhat.

and "weaker" criterion of turnover: I first take the assets of the smallest firm (that is, that listed one hundred) in an earlier list; I then inflate this figure by the ratio of prices in the end and base periods, so that the new figure represents the constant-dollar analog for the asset cutoff of the base period. Firms are listed as "survivors" if during the period they maintained assets equal or greater in constant-dollars than the smallest firm in the base year. Firms that were acquired, were dissolved, or failed to maintain their assets are listed as exits. Third, I consider the *types* of exits from the "weak" criterion list and the relative success of the survivors.

Gross turnover is given in Table 1. As indicated in column (4), the

TABLE 1
GROSS TURNOVERS—TOP 100

	(1) *Survivors*	(2) *Exits*	(3) *Other*	(4) *Rate of Exits Per 100 Firms Per Year*
1903-1919 (Edwards)	45	55	0	3.4[a]
1909-1919 (Kaplan)	61	39	0	3.9[a]
1909-1919 (Collins & Preston)	61	39	0	3.9[a]
1917-1967 (Navin)	47	54	0	1.1[c]
1917-1967 (*Forbes*)	47	51	2[b]	1.0[c]
1919-1960 (Kaplan)	53	45	2[b]	1.1[c]
1919-1958 (Collins & Preston)	52	45	3[b]	1.2[c]
1919-1969 (Edwards)	51	59	0	1.0[c]

[a] These figures can be corrected for the Standard Oil and American Tobacco dissolutions, which created 10 new entrants to the top 100 list by 1919, by defining "survivors" as being in the top 110 according to Navin's 1917 list; no change occurs in the Edwards list and only two more firms survive in each of Kaplan's and Collins and Preston's lists.

[b] Excluded as inappropriate: Great Northern Iron Ore Properties (excluded from *Forbes*, Kaplan, and Collins and Preston lists) was in fact simply a trust to collect royalties from iron ore lands owned by the James Hill family; Mexican Petroleum (excluded from *Forbes* list) was owned by Pan-American Petroleum, which also appears on list; Magnolia Petroleum (excluded from Kaplan and Collins and Preston lists) controlled by Standard Oil of N.Y., which acquired Magnolia starting in 1918 (see N.Y. *Times*, Feb. 2, 1918, p. 15, and Nov. 10, 1925, p. 33). American Express (excluded from Collins and Preston list) was and is primarily a financial corporation.

[c] Adjusted for base different from top 100 firms (i.e., Navin base 101; *Forbes* 98; Kaplan 98; Collins and Preston 97; Edwards 110).

Source: See text and footnote 3.

TABLE 2
"WEAK" TURNOVER—TOP 100[a]

	Survivors	*Failures*	*Excluded Due to Reclassification, etc.*	*Rate of Failure Per 100 Top Firms Per Year*
1903-1917 (Edwards)[c]	66	34	0	2.4
1909-1917 (Kaplan)[d]	65	35	0	4.4
1909-1917 (Collins & Preston)[d]	65	35	0	4.4
1917-1967 (Navin)[e]	69	32	0	0.6[b]
1917-1967 (*Forbes*)[f]	67	31	2	0.6[b]
1919-1960 (Kaplan)[g]	73	25	2	0.6[b]
1919-1958 (Collins & Preston)[h]	72	25	3	0.6[b]
1919-1969 (Edwards)[i]	70	40	0	0.7[b]

[a] All prices used in calculations given in Appendix Table VI.
[b] Adjusted for base different from top 100 firms (i.e., Navin base 101; *Forbes* 98; Kaplan 98; Collins and Preston 97; Edwards 110).
[c] Smallest firm 1903 had assets of $15 million; price change = +97%; firms are survivors if 1917 assets exceed $29.6 million.
[d] Smallest firm 1909 according to both Kaplan and Collins and Preston had assets of $25 million; price change = +74%; firms are survivors if 1917 assets exceed $43.5 million.
[e] Smallest firm in 1917 according to Navin had assets of $50.0 million; price change = +65%; firms are survivors if 1967 assets exceed $82.5 million.
[f] Smallest firm in 1917 according to *Forbes* had assets of $54 million; price change = +65%; firms are survivors if 1967 assets exceed $87.1 million.
[g] Smallest firm in 1919 according to Kaplan had assets of $54 million; price change = +33%; firms are survivors if 1960 assets exceed $71.8 million.
[h] Smallest firm in 1919 according to Collins and Preston had assets of $60.5 million; price change = +33%; firms are survivors if 1958 assets exceed $79.9 million.
[i] Smallest firm in 1919 according to Edwards had assets of $50.0 million; price change = +49%; firm is survivor if 1969 assets exceed $89.5 million.
Source: See text and footnote 3.

rate of exits per year is more than three times greater in the pre-1919 period than it is in the post-1919 period. Moreover, as note (a) indicates, these results do *not* reflect "spurious" turnover due to the 1911 Standard Oil and American Tobacco dissolutions.

Table 2 gives the number of survivors and failures on the "weak" turnover criterion. Firms listed as "failures" necessarily disappeared or suffered a decline in the real value of their assets; some listed as "survivors" also suffered a decline, but not sufficient to move them entirely out of the group. The rate of failures per one hundred firms

TABLE 3
BREAKDOWN OF EXITS ON "WEAK" TURNOVER

	(1) Total Exits	(2) Exits By Merger	(3) Exits By Dissolution	(4) Exits By Failure to Grow	(5) Exits By Liquidation	(6) col. 2/col. 1	(7) col. 4 + 5/years	(8) col. 5/years
1903-1917 (Edwards)	34	7	0	18	9	0.20	1.93	0.64
1909-1917 (Kaplan)	35	3	1	27	4	0.09	3.88	0.50
1909-1917 (Collins & Preston)	35	3	1	27	4	0.09	3.88	0.50
1917-1967 (Navin)	32	25	0	2	5	0.78	0.14	0.10
1917-1967 (*Forbes*)	31	23	0	1	7	0.74	0.16	0.14
1919-1960 (Kaplan)	25	16	0	4	5	0.64	0.22	0.12
1919-1958 (Collins & Preston)	25	16	0	5	4	0.64	0.23	0.10
1919-1969 (Edwards)	40	30	0	2	8	0.75	0.20	0.16

Source: See text and footnote 3.

per year is again at the least three times as great (2.4/0.7) in the pre-1917 as post-1919 period.

Table 3 gives the distribution of the failures listed in Table 2. As shown in column (6), in the pre-1917 period few exits were caused by firms disappearing through mergers (nine to twenty percent), whereas in the post-1917 period most (sixty-four to seventy-eight percent) were due to this cause. Mergers may reflect either a firm's weakness (and hence susceptibility to takeover) or strength (attractiveness of its earnings to the acquiring firm) or simply consolidation (for example, merger of three or more firms where no firm provided at least half of the assets of the consolidated company). Thus the category of "mergers" represents exits of both strong and weak companies, and little can be concluded about whether they are "successful" or "unsuccessful" companies.

On the other hand, exits caused by "failure to grow" and "liquidation" are unambiguous failures. As the last two columns show, firms failed far more frequently in the pre-1917 than in the post-1919 period—by at the least a factor of 8 (1.93/0.23).

Thus we can conclude, I believe, that the period from the 1898-1902 merger movement through the First World War was a period of relatively great instability compared to the post-war period. Moreover, the magnitudes themselves are important. In the earlier period, on the average two to four firms every year dropped below the minimum (constant dollar) assets of the smallest firm in the top one hundred in the base year. In the later period, it took approximately five years for one firm to drop out of the group.

Table 4 gives the number of firms listed in 1903 and in 1919 which continued until 1917 or 1969 as independent firms. Even for those that remained independent throughout each (or both) of the periods, the 1903-1917 span was a time of considerable risk for big corporations—column (7) indicates that sixty-eight percent of the survivors suffered a decline in their real assets between 1903 and 1917, whereas only three percent of the survivors did so between 1919 and 1969. Moreover, this does not appear to be simply a price phenomenon: seventeen firms between 1903 and 1917 suffered declining asset values measured in *current* dollars, versus only one in the later period.

Finally, we can use Navin's list for another type of stability test. The top one hundred (or so) corporations in 1917 constituted true

TABLE 4

DISTRIBUTION OF SURVIVORS ON "WEAK" TURNOVER CRITERION WHICH CONTINUE AS INDEPENDENT FIRMS (EDWARDS LIST)

	(1) *Total No. of Firms in Series (col. 2 + 6)*	(2) *Total No. of Firms Which Continue as Independents (col. 3 + 4)*	(3) *Firms whose Assets Increased or Remained the Same in Real Value*	(4) *Firms Whose Assets Declined in Real Value*	(5) *Firms Whose Assets Declined in Current Dollars (subset of col. 4)*	(6) *Firms Which Disappeared by Merger or Liquidation*	(7) *col. 4/col. 2*
1903-1917	100	84	27	57	17	16	68%
1919-1969	110	70	68	2	1	40	3%

Source: See text and footnote 3.

industrial "giants." They were generally integrated firms which had significant national market power, they had extensive political influence, and they obtained access to outside capital through the major capital markets. On the other hand, the bottom one hundred or two hundred firms in Navin's list of five hundred can only be seen as medium-sized firms; they were largely local or regional firms, their market power was usually minimal, their stocks were not widely traded, and their political power was minimal except through groups like employer's associations or the National Association of Manufacturers. As a consequence, their fates were also quite dissimilar: while ninety-five of the top one hundred firms escaped liquidation, only seventy-four of the firms listed four hundred and one to five hundred (one hundred and sixty of those listed three hundred and one to five hundred) escaped liquidation. The differences are significant (chi-square test) at the .001 levels. The big firms survive; medium-sized (and presumably small) firms face relatively high odds of failure.[8]

ANTI-TRUST ACTIVITY

In addition to the instability during the 1903-1919 period reflected in the turnover data, the anti-trust activities of the Federal government created great uncertainty.[9] The first big case was the Northern Securities case, decided in 1904, which dissolved J. P. Morgan's railroad consolidation. In the following ten or so years, major anti-trust suits were filed against Standard Oil, American Tobacco, International Harvester, U.S. Steel, Armour, Swift, American Sugar Refining—all among the top ten industrial corporations in 1909—as well as Aluminum Co. of America, General Electric, Corn Products Refining, duPont, and many other big firms. Standard Oil and American Tobacco were dissolved into thirty-four and sixteen parts, respectively. International Harvester, Corn Products, and duPont were forced to sell portions of their operations. Armour, Swift, and

[8] The choice of 1919 rather than, say, 1923 as the starting point of the later period may result in a conservative bias to the evidence for differences in stability between the two periods: 7 of the 40 "failures" listed in the bottom row of Table 2 had already occurred by 1923 (see Appendix Table V); the rate of "failure" during these four years (1.75 failures per 100 top firms per year) is very close to halfway between the failure rates for the two periods on either side. This and, as an anonymous referee has suggested, other evidence (e.g., consolidation in the auto and steel industries) make 1922 or 1923 a more plausible cutoff date.

[9] For a discussion of early anti-trust suits, see Eliot Jones, *The Trust Problem in the United States* (New York: Macmillan, 1921).

the other big packing companies were forced to give up a mutually owned processing firm which had served as the agency for industry-wide collusion.

This unprecedented—and unrepeated—intervention by Federal agencies contributed to the uncertainty which surrounded the birth of big corporations. For example, U.S. Steel, when incorporated, controlled sixty-five percent of the steel market. For a time, it appeared that the government would define "unreasonable" restraint of trade as a situation which existed when, along with a number of other conditions, it could be shown that one firm controlled more than fifty percent of the market. U.S. Steel apparently decided to forego further consolidation, indeed even allow some erosion of its position, in order to escape anti-trust action.[10] Big corporations did not find comfortable a situation in which the Anti-Trust Division could attack seven of the largest ten companies and actually force dismemberment of two.

COMPREHENSIVENESS OF THE POST-WORLD WAR I CONSOLIDATION

Turning now to the character of the capitalist consolidation achieved by the early 1920's, I attempt to demonstrate two assertions. First, I argue that the consolidation was achieved across most of the industrial categories. Firms which would continue to dominate those industries had emerged in industries processing or manufacturing food, tobacco, lumber and paper products, chemicals, petroleum, rubber, metals of all sorts, farm and construction machinery, electrical machinery, communications equipment, motor vehicles, and photographic equipment. With few exceptions—new industries like airplanes and computers and a few old ones like furniture, textiles, and drugs—the industrial structure which continues at present was set by 1920.

Second, I attempt to show that the consolidation extended far beyond the usual category of "industrials" and in fact included transportation, utilities, insurance, banking, and to a lesser extent, merchandising. Firms in these areas that had achieved dominance by 1920—again with a few exceptions—continue to dominate today.

Appendix Table II gives the distribution of those sixty-three firms

[10] Ida Tarbell, *The Life of Elbert H. Gary* (New York: Appleton, 1926), pp. 257-258. Although the strategy proved to be in vain as far as avoiding prosecution, since U.S. Steel was prosecuted anyway, the company later obtained a favorable judgment.

which survive to 1969 from the 1919 list, by industry category, along with their 1969 sales and 1969 rank in that industry. The data on industry and firm sales for 1919 do not exist, so no comparison between the beginning and end of the period is possible. The industries are divided by two- and three-digit SIC (Standard Industrial Classification) categories. Those categories in which no 1919 firms survive to 1969 have been grouped. Since the categories vary considerably in total sales (for example, some three-digit industries have more sales than some two-digit ones), the economic importance of each category differs but can be interpreted from the total industry figures for "value of shipments."

What is important in the table is the broad range of industries represented by 1919 firms. Although the biggest concentration occurs, as expected, in heavy industry (steel, non-ferrous metals, metal fabrication, petroleum, communication equipment, autos, chemicals, electrical and other industrial machinery, and farm and construction machinery), the post-war consolidation also included a series of lighter, consumer-oriented industries—meat packing, sugar, tobacco, and lumber and paper.[11]

Appendix Table III shows some of the consolidation which occurred in economic activities other than manufacturing and mining. Leaders which had emerged by 1919 continued in 1969 to dominate these other areas. The thirty-six telephone, gas, and electric companies listed as "large" in 1919 include eight of the top ten utility companies in 1969, as well as Cities Service Co., which, although now classified as an industrial, has sufficient assets to rank in the top ten.[12] Of the top fifteen life insurance companies in 1917, fourteen continue among the top fifteen half a century later. The eight merchandising firms with 1919 assets greater than $20 million include six of the largest ten merchandising firms by assets in 1969. Nine of the largest fifteen banks in 1922 continued among the top fifteen in 1967; five of the remaining six were acquired by banks now among the top fifteen. The list could go on, but what is important is the extent to which the industrial structure established by the end of the First World War has continued to the present.

The evidence reviewed above indicates that corporate capitalists

[11] These results thus broadly conform to those given by Alfred Chandler in "The Structure of American Industry."

[12] These data do not show the several large utility consolidations which were created in the 1920's nor the dissolutions under the Public Utility Holding Company of 1935. The persistence of the original companies is hence all the more remarkable.

had achieved a quite widespread and enduring consolidation of their positions by 1919. The industrial system which emerged out of this consolidation has been termed "monopoly capitalism"—a system in which the industrial center of the economy is dominated by large, oligopolistic, "eternal-life" corporations.[13] The industrial structure might therefore be said to have passed through an earlier, unstable period and moved into the stable monopoly capitalist phase. For the remaining corporations, as the data reviewed above reveal, the risks of doing business in a "competitive" economy were considerably reduced. It was on the foundation of this stable industrial structure that the latest phase, that of multinationalism, developed and is still unfolding.

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[13] For a more complete discussion of monopoly capitalism see the sources cited in footnotes 1 and 2 above.

APPENDIX TABLE I
FOR 100 LARGEST FIRMS IN 1909 THAT DID NOT APPEAR ON 1958 OR 1960 TOP 100 LISTS
EXPECTED AND ACTUAL EXITS
(corrected for length of period)

	(a) 1909-1919	(b) 1919-1929	(c) 1929-1935	(d) 1935-1948	(e) 1948-1960
	Kaplan's Data				
(1) Actual Number	38	14	3	5	9
(2) Expected Number	13.5[a]	7.6[b]	4.5[b]	9.8[b]	9.1[b]
(3) Ratio of (1) to (2)	2.8	1.8	0.7	0.5	1.0
(4) Ratio of Actual Exits in (a) to (b) . . . (e), corrected for length of period	—	2.7	7.6	9.8	5.1
	Collins' and Preston's Data				
(5) Actual Number	35	16	3	7	3
(6) Expected Number	13.1[c]	7.4[d]	4.5[d]	9.7[d]	7.4[d]
(7) Ratio of (5) to (6)	2.7	2.2	0.7	0.7	0.4
(8) Ratio of Actual Exits in (a) to (b) . . . (e), corrected for length of period	—	2.2	7.0	6.5	11.7

[a] Calculated on assumption that all (69) exits in period 1909-1960 were evenly distributed over 51-year period. Rows may not add due to rounding.
[b] Calculated on assumption that all (31) exits in period 1919-1960 were evenly distributed over 41-year period.
[c] Calculated on assumption that all (64) exits in period 1909-1958 were evenly distributed over 49-year period.
[d] Calculated on assumption that all (29) exits in period 1919-1958 were evenly distributed over 39-year period.

APPENDIX TABLE II
DISTRIBUTION OF LARGEST FIRMS IN 1919 (EDWARDS LIST) WHICH SURVIVE AS INDEPENDENTS IN 1969, BY INDUSTRY, WITH 1969 COMPANY SALES AND INDUSTRY VALUE OF SHIPMENTS
(Millions of dollars)[a]

SIC 201 (meat)	*24,878*
1. Swift	3,108
2. Armour	2,152
9. Cudahy	353
SIC 202 (dairy products)	*13,445*
2. Borden	1,740
SIC 203(canned and preserved foods)	*10,705*
7. Libby, McNeill and Libby	346
SIC 204(grain mill products)	*10,390*
2. Corn Products Refining (CPC International)	1,218
SIC 205(bakery products)	*7,040*
2. National Biscuit	726
SIC 206(sugar)	*2,469*
1. American Sugar Co.	486
2. Great Western Sugar	269
8. Cuban Amer. Sugar (No. Am.)	91
SIC 208(beverages)	*11,090*
4. National Distillers and Chemical	700
SIC 207(confectionary) and 209(misc. foods)	*13,507*
none	
SIC 21(tobacco)	*5,151*
1. R. J. Reynolds	1,575
2. American Tobacco	1,361
4. Ligget and Myers	489
SIC 22(textiles)	*23,112*
none	
SIC 23(apparel)	*24,250*
none	
SIC 24(lumber) and 26(paper and pulp)	*38,083*
1. International Paper	1,777
4. Weyerhauser	1,239
SIC 25(furniture)	*9,251*
none	
SIC 27(printing and publishing)	*25,068*
none	
SIC 283(drugs)	*6,228*
none	
SIC 284(soaps and toilet articles)	*7,620*
1. Procter and Gamble	2,708
SIC 281, 282, 286, 287, and 289 (all other chemicals)	*34,315*
1. duPont	3,655
2. Union Carbide	2,933
5. W. R. Grace	1,792
7. Allied Chemical	1,316
SIC 29(petroleum)	*24,411*
1. Standard Oil (N.J.)	17,538
2. Mobil Oil	6,621
3. Texaco	5,868
4. Gulf Oil	4,953
5. Standard Oil (Calif.)	3,825
6. Standard Oil (Ind.)	3,469
8. Atlantic Richfield	2,691
11. Union Oil (Calif.)	1,660
14. Getty Oil	1,140
18. Ohio Oil (Marathon)	924
SIC 30(rubber)	*15,728*
1. Goodyear	3,215
2. Firestone	2,279
3. U.S. Rubber (Uniroyal)	1,554
4. B. F. Goodrich	1,229
SIC 31(leather)	*5,561*
none	
SIC 32(stone, clay, glass)	*17,075*
none	
SIC 331(basic steel) and 332(iron and steel foundries)	*26,345*
1. U.S. Steel	4,754
2. Bethlehem Steel	2,928
4. Republic Steel	1,500
5. National Steel	1,225
6. Inland Steel	1,216
7. Jones and Laughlin	1,062
8. Lykes Youngstown	928
10. Wheeling Steel	506
SIC 333, 334, 335, 336, and 339(all other basic metal work)	*23,786*
1. Aluminum Corp. of Amer.	1,545
2. Anaconda	1,411
3. Kennecott	1,050
6. National Lead	930
7. American Smelting & Refining	771
[8] Internat'l. Nickel of Canada	684
8. Phelps Dodge	672
23. U.S. Smelting, Mining & Refining	175

APPENDIX TABLE II (*Continued*)

SIC 34(fabricated metals)	*39,574*
2. American Can	1,724
6. Crane Co.	551
SIC 352(farm machinery) and 353(construction mach.)	*13,400*
1. International Harvester	2,653
3. Deere and Co.	1,043
4. Allis Chalmers	805
SIC 355(special industrial machinery, except metal-working)	*5,790*
1. United Shoe Machinery (USM)	356
SIC 351, 354, 357, 358, 359 (all other machinery, except elect. mach.)	*28,950*
none	
SIC 361, 362(electrical industrial mach.) and 369(misc. elect. mach.)	*13,001*
1. General Electric	8,448
2. Westinghouse	3,509
SIC 363(household appliances)	*6,161*
1. Singer Mfg. Co.	1,902
SIC 365, 366(communications equip.)	*17,638*
1. Western Electric	4,883
SIC 364, 369(all other elec. mach.)	*15,735*
none	
SIC 371(motor vehicles)	*51,522*
1. General Motors	24,295
2. Ford	14,756
3. Dodge (Chrysler)	7,052
SIC 374(railroad equipment)	*2,260*
1. Pullman	739
2. American Car and Foundry (ACF Ind.)	270
SIC 372, 373, 375, 376, 379 (other transportation equip.)	*28,670*
none	
SIC 386(photographic equipment)	*4,317*
1. Eastman Kodak	2,747
SIC 381, 382, 383, 384, 385 (other instruments)	*6,383*
none	
SIC 391, 392, 393, 394, 395, 396, and 399(misc. mfg.)	*9,665*
New Jersey Zinc (Gulf & Western)	1,564
United Fruit (United Brands)	1,371
Crucible Steel (Colt Ind.)	729

[a] The total sales for all companies in an industry may exceed the industry's total "value of shipments" since company sales figures include foreign sales and sales in other industries.

Sources: Industry "value of shipments" taken from U.S. Bureau of the Census, Annual Survey of Manufactures, 1969, *General Statistics for Industry Groups and Industries*, M69(AS)-1 (Washington, D.C.: U.S. Government Printing Office, 1971), Table 1; sales for individual companies taken from *Fortune* magazine, "The 500 Largest Industrial Corporations" (May 1970), and *Moody's Industrial Manual, 1971* (New York: Moody's Investor Service, 1971); rank within industry calculated from *News Front* magazine, "The 1000 Leading U.S. Manufactures" (Midsummer 1970).

APPENDIX TABLE III

FIRMS, OTHER THAN MANUFACTURING CONCERNS, WHICH WERE LARGE IN 1919, WITH SUBSEQUENT FATES

Industry	*Total Number Listed*	*Companies With Assets in Excess of $1 Billion in 1969*	*Companies Whose Assets Increased by 1969 (in Constant Dollars)*	*Independent Companies Whose Assets Declined by 1969 (in Constant Dollars)*	*Merged Companies*	*Liquidated Companies*	*Other*
Telephones	1[a]	1	1	0	0	0	0
Gas and Electric	35[a]	15	24	0	8	1	2[b]
Urban Transit	15[a]	0	0	2	—	10	3[c]
Railroads	22[d]	10	12	5	4	1	0
Life Insurance[e]	18[f]	16	18	0	0	0	0
Commercial Banks[g]	16[h]	9	9	0	6	1	0
Merchandising Firms	8[i]	3	8	0	0	0	0

[a] Listed by Moody in 1919 as having assets equal to or greater than $50 million.
[b] Dissolved by court orders.
[c] Purchased by municipal governments, usually after liquidation proceedings had begun.
[d] Listed by Moody in 1919 as having assets in excess of $300 million.
[e] Period covered is 1917-1967.
[f] Listed by *Forbes* as having assets in excess of $50 million.
[g] Period covered is 1922-1967.
[h] Listed by *Forbes* as having deposits in excess of $200 million.
[i] Listed by Moody in 1919 as having assets in excess of $2 million.

Sources: See text.

APPENDIX TABLE IV
LARGE INDUSTRIALS IN 1903
FIRMS WITH 1903 ASSETS EXCEEDING $15 MILLION

Name	*1903 Assets (Millions of $)*	*1917 Assets (Millions of $)*	*1917 Name if Different*	*Date and Nature of End as Independent*
U.S. Steel	1,547	2,450		
Consolidated Tobacco	187	164	Amer. Tobacco	(1911 divided into 16 cos.)
Intl. Mercantile Marine	170	204		
Amalgamated Copper	155	226	Anaconda	
U.S. Leather	141	145	Central Leather	
American Sugar Ref.	126	137		
Intl. Harvester	120	265		
Amer. Smelt. & Ref.	100	222		
Consolidated Lake Superior	98	49	Lake Superior Corp.	
Standard Oil	98	574		(1911 divided into 34 cos.)
Distillers Securities	90	56		
American Can	81	133		
Corn Products Ref.	80	112		
Pullman	74	143		
U.S. Shipbuilding	73	382	Bethlehem Steel	
American Woolen	69	123		
National Biscuit	61	74		
Amer. Car & Foundry	60	127		
Pittsburgh Coal	60	113		
U.S. Realty Construction	60	32	U.S. Realty & Improvement	
U.S. Rubber	59	258		
International Paper	59	78		
Republic Iron & Steel	56	122		
Crucible Steel	55	90		
Virginia-Carolina Chem.	53	94		
Amer. Locomotive	50	84		
United Copper	50	—		1913 liquidated
Swift	50	306		
Lackawanna Steel	50	117		
Cambria Steel	45	—		1916 acq. by Midvale Steel
American Writing Paper	42	41		
General Electric	42	232		
Monongahela River Coal	40	—		1914 acq. by Pittsburgh Coal
Intl. Salt	38	12		
Pressed Steel Car	37	45		
American Bicycle	37	—		1915 bankrupt
American Ice	36	35		
Amer. Agric. Chemical	35	83		
Pennsylvania Steel	34	—		1916 acq. by Bethlehem
Lehigh Coal & Navigation	34	81		
International Nickel	34	63		

APPENDIX TABLE IV (*Continued*)

Name	*1903 Assets (Millions of $)*	*1917 Assets (Millions of $)*	*1917 Name if Different*	*Date and Nature of End as Independent*
American Linseed	34	39		
American Malting	33	18		
American Cotton Oil	33	42		
American Hide & Leather	33	44		
Lehigh & Wilkes-Barre Coal	33	40		
Intl. Steam Pump	33	—		1915 liquidated
Marsden	32	4	Amer. Milling	
Amer. Steel Foundries	32	39		
United Box Board & Paper	31	—		1912 receiver/ liquidated
Tenn. Coal & Iron	31	—		1907 acq. by U.S. Steel
Colorado Fuel & Iron	30	95		
Singer Mfg.	30	193		
Jones & Laughlin Steel	30	160		
National Lead	30	59		
Copper Range Consolidated	29	8		
New York Dock	28	33		
Houston Oil	28	34		
Union Bag and Paper	27	19		
Rubber Goods Mfg.	27	—		1917 acq. by U.S. Rubber
Railway Steel Spring	27	43		
Chicago Junction RR and Union Stockyards	27	31		
U.S. Cotton Duck	26	—		1913 acq. by Intl. Cotton Mills
U.S. Coast Iron Pipe	25	31		
Bordens Condensed Milk	25	48		
Natl. Enameling & Stamping	24	39		
Standard Rope & Twine	23	—		1906 liquidated
Homestake Mining	22	29		
Westinghouse Electric	21	165		
United Shoe Machinery	21	74		
Amer. Shipbuilding	20	34		
Associated Oil	20	81		
Royal Baking Powder	20	30		
Pacific Mill & S.S.	20	10		
Natl. Sugar Refining	20	13		
Allis-Chalmers	20	59		
Eastman Kodak	20	64		
Amer. Beet Sugar	19	31		
Intl. Silver	19	18		
Electric Vehicle	18	—		1912 liquidated
Sloss-Sheffield Steel	18	28		
American Thread	18	30		
Union Typewriter	18	32	Remington Typewriter	

APPENDIX TABLE IV (*Continued*)

Name	*1903 Assets (Millions of $)*	*1917 Assets (Millions of $)*	*1917 Name if Different*	*Date and Nature of End as Independent*
Fairmont Coal	18	—		1912 acq. by Consolidation Coal
American Express	18	59		
Central Foundry	18	11		
Virginia Iron, Coal, & Coke	17	16		
Standard Milling	17	29		
Consol. Ry. Lighting and Refrigeration	17	—		1909 liquidated
General Chemical	17	57	Allied Chemical & Dye	
Pacific Coast Co.	17	24		
Brooklyn Ferry of N.Y.	17	—		1908 liquidated
Kirby Lumber	16	17		
United Fruit	16	110		
Electric Storage Battery	16	25		
Armour	16	314		
New England Cotton Yarn	16	8		
Newport News Shipbuilding and Drydock	15	31		
Pacific Packing & Navig.	15	—		1904 liquidated
Diamond Match	15	22		

Source: See text.

APPENDIX TABLE V
LARGE COMPANIES IN 1919

Name	1919 Assets (Millions of $)	1969 Assets (Millions of $)	Name in 1969 if Different	Date and Nature of End as Independent
(a) *Industrials—Firms with 1919 Assets in Excess of $50 Million*				
U.S. Steel	2,366	6,560		
Standard Oil (N.J.)	853	17,537		
Armour	491	607		
Swift	490	744		
General Motors	447	14,820		
Bethlehem Steel	347	3,224		
Ford	333	9,199		
U.S. Rubber	305	1,258	Uniroyal	
Socony Mobil	300	7,163	Mobil Oil	
Midvale Steel & Ordinance	200	—		1923 acq. by Bethlehem
General Electric	277	6,007		
Intl. Mercantile Marine	269			1968 acq. by Walter Kidde
International Harvester	267	2,026		
Anaconda	237	1,763		
Sinclair Oil	232	—		1968 acq. by Atlantic-Richfield
Texas Oil	224	9,281	Texaco	
Amer. Smelting & Ref.	215	824		
duPont	214	3,453		
Amer. Tobacco	206	1,508	Amer. Brands	
Union Carbide	200	3,355		
Phelps Dodge	186	811		
G.F. Goodrich	176	1,256		
Standard Oil (Calif.)	174	6,146		
Jones & Laughlin	169	1,223		
Pullman	169	461		
Pittsburgh Consolidation Coal	161	—		1966 acq. by Continental Oil
Westinghouse Electric	160	2,478		
Standard Oil (Ind.)	155	5,151		
Weyerhauser Timber	153	1,646		
Liggett & Myers	151	545		
Chile Copper	149	—		1923 acq. by Anaconda
United Fruit	148	479	United Brands	
American Sugar	147	304		
Central Leather	147	—		1953 liquidated
Gulf Oil	143	8,104		
Singer	140	1,439		
Amer. Car & Foundry	139	420	A.C.F. Industries	
Corn Products	138	931	C.P.C. International	
Kennecott Copper	136	1,652		
American Can	135	1,372		
Consolidation Coal	135	—		1945 acq. by Pittsburgh Coal
Aluminum Co. of America	133	2,429		

APPENDIX TABLE V (*Continued*)

Name	*1919 Assets (Millions of $)*	*1969 Assets (Millions of $)*	*Name in 1969 if Different*	*Date and Nature of End as Independent*
American Woolen	133	—		1955 acq. by Textron
Ohio Cities Service (Pure)	132	—		1965 acq. by Union Oil
Prairie Oil & Gas	130	—		1932 acq. by Sinclair
Crucible Steel	127	588	Colt Industries	
Wilson	127	—		1967 acq. by Ling-Temco-Vought
Republic Steel	126	1,782		
Virginia-Carolina Chemical	121	—		1962 acq. by Mobil Oil
Willys-Overland	113	—		1953 acq. by Kaiser
Wheeling Steel	113	617		
Goodyear Tire	113	2,763		
Amer. Agric. Chem.	111	—		1963 acq. by Continental Oil
Cuba Cane Sugar	110	—		1958 liquidated
Youngstown Sheet and Tube	109	1,402	Lykes-Youngstown	
Western Electric	108	3,172		
Morris	103	—		1923 acq. by Armour
R. J. Reynolds	103	1,693		
Philadelphia & Reading	100	—		1968 acq. by Northwest
Calumet and Hecla	100	—		1968 acq. by Universal Oil
Atlantic Gulf and West Indies S.S.L.	99	—		1953 liquidated
W. R. Grace	97	1,541		
Lackawana Steel	95	—		1923 acq. by Bethlehem
Atlantic Refining	95	4,235	Atlantic-Richfield	
Proctor and Gamble	94	1,692		
Amer. Locomotive	93	—		1964 liquidated
Cudahy Packing	92	72		
Steel & Tube	92	—		1923 acq. by Youngstown S. & T.
Union Oil of Calif.	90	2,476		
Eastman Kodak	89	2,830		
P. Lorillard	88	—		1968 acq. by Loews
Pan-American Pet.	88	—		1929 acq. by St. Oil (Ind.)
Studebaker	88	—		1967 acq. by Worthington
National Lead	88	695		
International Paper	86	1,887		
Lehigh Coal & Nav.	85	—		1965 liquidated

APPENDIX TABLE V (*Continued*)

Name	*1919 Assets (Millions of $)*	*1969 Assets (Millions of $)*	*Name in 1969 if Different*	*Date and Nature of End as Independent*
Deere	84	1,405		
Colorado Fuel & Iron	83	—		1969 acq. by Crane
Ohio Oil	82	1,300		
U.S. Smelt, Min. & Ref.	80	254		
Vacuum Oil	80	—		1931 acq. by Mobil Oil
Utah Copper	79	—		1923 acq. by Kennecott
United Shoe Machinery	79	—	USM Co.	
National Biscuit	78	474		
Baldwin Locomotive	76	—		1965 acq. by Armour
New Jersey Zinc	75	2,172	Gulf & Western	
Firestone Tire	74	2,019		
Midwest Refining	73	—		1923 acq. by St. Oil (Ind.)
Associated Oil	69	1,859	Getty Oil	
Libby, McNeill, & Libby	68	263		
Prairie Pipe Line	67	—		1932 acq. by Sinclair
Maxwell Motor	67	—		1927 acq. by Dodge
Crane	66	577		
International Nickel[a]	65	1,477		
Packard Motor	63	—		1954 acq. by Studebaker
American Cotton Oil	63	—		1925 reorganized/liquidated
Greene Cananea Copper	61	—		1929 acq. by Anaconda
Allis-Chalmers	61	702		
Borden	61	1,069		
Pierce Oil	60	—		1939 liquidated
Tidewater Oil	60	—		1926 acq. by Associated Oil
Cuban Amer. Sugar	60	39	North Amer. Sugar	
Inland Steel	59	1,326		
United Verde Extension Mining	57	—		1937 liquidated
Distillers Securities	55	889	Nat'l Distillers & Chem.	
Great Western Sugar	54	222	Great Western United	
Allied Chemical & Dye	54	1,524		
United Verde Copper	50	—		1934 acq. by Phelps Dodge
Weirton Steel	50	1,454	Nat'l Steel	
Dodge Brothers	50	4,668	Chrysler	
(b) *Railroads—Firms with 1919 Assets in Excess of $300 Million*				
Pennsylvania	1,500	6,851	Penn-Central	
New York Central	1,243	—		1968 acq. by Pennsylvania RR

APPENDIX TABLE V (*Continued*)

Name	*1919 Assets (Millions of $)*	*1969 Assets (Millions of $)*	*Name in 1969 if Different*	*Date and Nature of End as Independent*
Union Pacific	1,000	2,322		
Atchison, Topeka and Santa Fe	930	2,193	Santa Fe Industries	
Baltimore and Ohio	890	—		1968 acq. by Chesapeake & Ohio
Northern Pacific	770	2,876	Burlington-Northern	
Great Northern	757	—		1968 acq. by Northern Pacific
Chicago, Milwaukee, St. Paul & Pacific	732	705		
Chicago, Burlington, & Quincy	620	—		1969 acq. by Northern Pacific
Erie	589	—		1968 acq. by Norfolk & Western
Southern	569	1,511		
Chicago and Northwestern	534	984		
N.Y., New Haven, and Hartford	523	—		1961 bankrupt
Illinois Central	482	914		
Missouri Pacific	433	1,390		
Chicago, Rock Island, and Pacific	430	460		
Chesapeake & Ohio	397	2,672		
Southern Pacific	386	2,979		
Louisville & Nashville	380	1,292	Seaboard Coast Lines	
Norfolk & Western	360	2,633		
St. Louis-San Fran.	358	471		
Reading	322	340		
(c) *Merchandising Firms—Firms with 1919 Assets in Excess of $20 Million*				
Sears, Roebuck	155	7,079		
F. W. Woolworth	94	1,301		
Montgomery Ward	71	2,779	Marcor	
May Dept. Store	45	883		
Great Atlantic & Pacific Tea	38	911		
Gimbel	25	448		
Jewel Companies	21	406		
S. S. Kresge	21	798		
(d) *Life Insurance—Firms with 1917 Assets in Excess of $50 Million*[b]				
New York Life	935	1,169		
Metropolitan of N.Y.	704	23,512	Metropolitan Life	
Mutual of N.Y.	634	3,318		
Equitable of N.Y.	577	12,576	Equitable Life Assurance	
Prudential	475	23,595		
Northwestern Mut.	394	5,229		

APPENDIX TABLE V (*Continued*)

Name	*1919 Assets (Millions of $)*	*1969 Assets (Millions of $)*	*Name in 1969 if Different*	*Date and Nature of End as Independent*
Mutual Benefit (N.J.)	219	2,257		
Penn Mutual	183	2,203		
John Hancock	156	8,380		
Aetna Life	141	7,330		
Travelers	129	5,460		
Union Central of Ohio	121	881		
Mass. Mutual	101	3,436		
New England Mutual	85	2,981	New England Life	
Connecticut Mutual	80	2,250		
National Life of Vt.	69	1,247		
Guardian Life	55	781		
State Mutual of Mass.	55	1,087		
(e) *Banks—Firms with 1922 Deposits in Excess of $200 Million*[c]				
National City Bank, N.Y.	757	12,940	First National City, N.Y.	
Guaranty Trust Co., N.Y.	492	6,445	Morgan Guaranty Trust, N.Y.	
Chase National Bank, N.Y.	466	13,751	Chase Manhattan, N.Y.	
National Bank of Commerce, N.Y.	427	—		1929 acq. by Morgan Guarantee Trust
Continental and Commercial Bank, Chicago	380	4,823	Continental Illinois National Bank and Trust, Chicago	
First National Bank, N.Y.	325	—		1955 acq. by First National City, N.Y.
Bankers Trust, N.Y.	312	5,094		
Equitable Trust, N.Y.	271	—		1930 acq. by Chase Manhattan
Irving National Bank, N.Y.	263	3,219	Irving Trust	
Mechanics and Metals Nat'l Bank, N.Y.	252	—		1926 acq. by Chase Manhattan
Bank of Manhattan, N.Y.	240	—		1955 acq. by Chase Manhattan
Central Union Trust, N.Y.	239	6,787	Manufacturers Hanover Trust, N.Y.	
First National Bank, Chicago	232	4,389		
Bank of Italy, San Francisco	230	16,417	Bank of America, San Francisco	
Union Trust Co., Cleveland	224	—		liquidated 1938
Corn Exchange Bank, N.Y.	214	—		1955 acq. by Chemical Bank, N.Y.
(f) *Utilities Except Urban Transit—Firms with 1919 Assets in Excess of $50 Million*				
American Tel. & Tel.	1,530	43,903		

APPENDIX TABLE V (*Continued*)

Name	*1919 Assets (Millions of $)*	*1969 Assets (Millions of $)*	*Name in 1969 if Different*	*Date and Nature of End as Independent*
Cities Service Co.	532	2,066		
North American Co.	361	1,279	Union Electric	
Western Union	230	829		
Consolidated Gas of N.Y.	176	4,069	Consolidated Edison of N.Y.	
Pacific Gas & Electric	173	4,030		
New York Edison	153	—		1936 acq. by Consolidated Edison of N.Y.
Comonwealth Edison	130	2,948		
Public Service Corp. of N.J.	127	2,349		
Peoples Gas, Light, & Coke	112	1,252	People's Gas of Chicago	
United Gas Improvement	105	185	UGI Corp.	
Southern California Edison	101	3,003		
Montana Power Co.	99	297		
Puget Sound Power & Light	90	405		
Spring Valley Water	80	—		1930 purchased by San Francisco
New Orleans Railroad & Light	76	—		1924 acq. by Electric Power & Light
Detroit Edison	75	1,663		
Columbia Gas & Electric	74	1,894	Columbia Gas System	
Portland Railway, Light, and Power	72	395	Portland Electric	
Utah Securities	69	—		1925 acq. by Electric Power & Light
Consolidated Gas, Electric Light, and Power of Baltimore	66	949	Baltimore Gas & Electric	
Public Service of Northern Illinois	64	—		1939 acq. by Commonwealth Edison
Chicago Utilities Co.	63	—		1924 liquidated
Edison of Boston	63	652	Boston Edison	
Mass. Gas Co.	62	370	Eastern Gas & Fuel	
Niagara Falls Power	61	—		1950 acq. by Niagara Mohawk
Comonwealth Power, Railway, and Light	59	—		1929 acq. by Commonwealth & Southern Corp.
Western Power Corp.	57	—		1925 acq. by Northern American Co.
Ohio Fuel Supply	56	—		1927 acq. by Columbia Gas and Electric

APPENDIX TABLE V (*Continued*)

Name	1919 Assets (Millions of $)	1969 Assets (Millions of $)	Name in 1969 if Different	Date and Nature of End as Independent
Brooklyn Union Gas	56	332		
American Water Works	55	1,091	Allegheny Power	original company divided by court order
		659	American Water Works	
United Light & Railway	54	—		1950 dissolved by court order
Georgia Railroad and Power	53	2,738	The Southern Company	
Virginia Railroad and Power	53	1,531	Virginia Electric and Power	
Consumers Power	52	1,811		
American Light & Traction	51	1,557	American Natural Gas	
Brooklyn Edison	50	—		1928 acq. by Consolidated Edison
Mississippi River Power	50	—		1925 acq. by North American Co.
(g) *Urban Transit Companies—Firms with Assets in Excess of $50 Million*				
Brooklyn Rapid Transit	223	—		1944 dissolved
Hudson and Manhattan RR	128	53	Hudson Rapid Tubes	
Interborough Consolidated Corporation	126	—		1923 liquidated
Philadelphia Rapid Transit	123	—		1968 liquidated
Chicago Railway Company	114	—		1946 bankrupt
United Railway and Electric (Baltimore)	92	—		1935 liquidated
Third Avenue Railway	79	—		1962 acq. by New York
Boston Elevated	76	—		1947 acq. by Boston
N.Y. Consolidated Railroad	65	—		1942 acq. by New York
United Railway Investment Co.	65	—		1926 dissolved
Detroit United Railway	64	—		1928 liquidated
New York State Railway	62	—		1967 liquidated
Twin City Rapid Transit	58	24	MEI Corp.	
Chicago City Railway	55	—		1946 bankrupt
Chicago Elevated Railroad	51	—		1946 bankrupt

[a] International Nickel, incorporated in New Jersey, was the parent of International Nickel of Canada, Ltd., until 1928.

[b] Period covered is 1917 to 1967.

[c] Figures given are for deposits, not total assets; period covered is 1922 to 1967.

Source: See text.

APPENDIX TABLE VI
PRICES USED IN PRICE CORRECTIONS OF ASSET BASES:
"WHOLESALE PRICES, ALL COMMODITIES"

Early Period		
1900	56.1	
1903	59.6	
1909	67.6	BASE: 1926 = 100
1917	117.5	
1947	152.1	
Later Period		
1917	60.6	
1919	71.4	
1958	94.6	
1960	94.9	BASE: 1967 = 100
1967	100.0	
1969	106.5	

Sources: Early: *Historical Statistics of the U.S.*, Table E13-24, p. 116. Later: *Statistical Abstract of the United States, 1972*, U.S. Department of Commerce (Washington: Government Printing Office, 1973), Table No. 559, p. 342. The prices for 1917 and 1919 were spliced onto this series using data listed in previous source.