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CHAPTER 45

THE VALUATION OF ASSETS: CAPITALIZATION PROBLEMS

1. THE NATURE OF THE PROBLEM

IN ALL of the analysis of earnings rates contained in this volume we have used as our base either the capitalization or total capital figures shown by the balance sheets of the corporations in the various samples. But the problems of accounting are complex, and the technique of keeping corporate books and preparing corporate statements is flexible, if not frequently capricious. To be sure, the data of nearly all of our samples comprise Government figures; and we may properly assume that most industrial data reported to the Government are in the main subject to fewer vagaries of accounting procedure than is the case with many figures compiled merely for the information of stockholders or the general public. Nevertheless, considerable variation of practice between individual corporations is possible; and it becomes necessary for us to ascertain the extent to which caprices of accounting procedure may influence our figures.

In all of this discussion, however, *let it be clearly understood that our interest is in the individual corporation only in so far as its figures contribute to, or exercise any significant influence upon, the value of a general group average or the structure of a frequency distribution in which the cor-*

poration is included. We fully recognize that in any individual case, no correspondence whatever between actual investment in terms of the capital contributed by security holders (both originally and through the reinvestment of earnings) and the reported balance sheet figures may obtain. But we are interested in such individual cases of gross understatement or overstatement of capital only for the light which estimates of their extent and prevalence may throw upon the probable defectiveness of our data for each industrial division, major group, and minor group, these several groups each being considered both in absolute terms and relative to one another.

Variations of accounting practice affect both our balance sheet and income account figures. Those affecting balance sheet items are of greater importance in our present problem than those which influence the income account; the operation of the income tax law has brought about a greater degree of standardization (although it is still far from exact) in general corporate accounting for income than for balance sheet items. We shall be concerned with both matters in this chapter, but shall approach the several problems involved from the point of view of the balance sheet and comment upon related charges to income as it becomes necessary to do so.

For our purposes, there are two principal sources of possible error (or if not of error, at least of the possession by our samples of heterogeneous accounting data blended in unknown proportions). Arbitrary policies of valuation make it possible for any company to carry either intangible items, such as patents and goodwill, or tangible capital assets, such as plant and equipment, upon either an ultra-conservative or an extravagant basis. And, in the case of any individual corporation, it may be repeated that the

widest variations of policy are possible in this respect. As George O. May has strikingly expressed it:

> "Capital assets may be stated on the basis of cost or on the basis of a valuation. It may be a pre-war or a post-war basis. The cost may be a cost in cash or a cost in securities. If the latter, it may be a legal cost measured by a par value of a grossly inflated stock issue if the corporation was formed early in the century, or it may be greatly understated if the assets were acquired by a recent issue of stock without common [par] value." [1]

We may examine in turn these questions of patents and goodwill and plant and equipment valuations, as they affect our data.

2. VALUATION AND ABSOLUTE EARNINGS RATES: PATENTS AND GOODWILL

One simple and well-known way to inflate or water the stock issue of a corporation, happily somewhat less frequently practiced by large companies today than in the past, is to offset a capital liability by a substantial and often largely fictitious patent or goodwill account. These two items are not of exactly the same character from either an economic or an accounting point of view. Many economists would not admit goodwill as an item of capital, although they would grant that it constitutes an item of 'individual capital' to the owner of the business if it results in an accretion of income. Most accountants doubtless would recognize either item if it had been purchased, although, if not purchased, goodwill might be looked upon with a somewhat more suspicious eye by the conservative accountant than would patents developed at substantial and specifically

[1] *American Statistical Association Journal* (December 1929), p. 444.

ascertainable cost by the corporation itself. Frequently, of course, the development of new patented devices results in a decidedly higher rate of physical productiveness on the part of the enterprises that either perfect or eventually utilize them. A patent account in such cases is, of course, justified upon economic grounds whether the patent has been developed by the corporation in question or purchased by it from another company or persons. The *extent* to which patents may thus legitimately be capitalized is, of course, a moot question: no rule of valuation exists and, as the history of donated treasury stock witnesses, the courts will approve almost any value placed upon such an asset by vote of a board of directors, unless fraud can be established. Nevertheless, the presence of large patent and goodwill accounts—that is, large relative to the total of other assets —in industries in which the production process is not peculiarly one that makes large use of patented machinery, or of copyright materials, may be viewed with suspicion. No absolute proportion can be stated as being proper for patents and goodwill to bear to the capitalization or to total capital of an industry or enterprise; but there would perhaps be agreement that if, for an industrial group in which the conditions which have just been indicated do *not* generally prevail, the proportion of such intangibles to capital were more than 20 or 25 per cent this would constitute presumptive evidence of overcapitalization.[2]

Conversely, it perhaps will be agreed that if in industries of this kind (where peculiar conditions involving the use of patented machinery or copyrights are absent) *less* than 10 or 15 per cent of either capitalization or total capital

[2] If a definition of 'overcapitalization' in this connection is necessary, let the term mean a capitalization figure substantially in excess of either the cost of the assets or, as the courts say, of the 'prudent investment' necessary for their acquisition.

is accounted for by the figures at which patents and goodwill are carried, then no substantial overcapitalization is present, upon the score of these two items. We may thus examine the data of our samples, both by industrial divisions and by major and minor groups, to check the situation in these terms. All data are for 1925, the latest year for which they are available.

The ratio used will be that of combined patents and goodwill to capitalization, the latter term, as defined in earlier chapters, constituting the total of the following balance sheet items: (i) preferred stock, (ii) common stock, (iii) surplus and undivided profits. Since in nearly all of our Manufacturing and Trading groups, capitalization is not very different from total capital (the latter defined as capitalization plus bonded debt), we may regard the one result as being substantially the same as that which would be obtained through the use of the other figure.

For our large corporations series (2,046 corporations in All Manufacture), total patents and goodwill amount to slightly over one billion dollars, while total capitalization is 21 billion dollars. The ratio of patents and goodwill to capitalization is thus 4.9 per cent.

Divided into 11 major groups, ratios of less than 5 per cent are found in Textiles, Leather, Lumber, Chemicals, Clay, Stone and Glass, and Metals. Ratios of from 5 to 10 per cent are found in Paper and Special Manufacturing Industries. The Food and Rubber groups show ratios of 11.1 and 12.0 per cent, respectively.

The only ratio above 12 per cent is found in the major group Printing, where the proportion of patents and goodwill to capitalization is 20.0 per cent. This figure is accounted for largely by the high ratio of 28.1 per cent which, as will appear when we discuss the several minor groups below, characterizes Newspaper and Magazine Pub-

lishing; and doubtless is to be justified in large part upon the basis of copyrights which give to such assets as plates and electrotypes a value (on the basis of either cost or market) that substantially exceeds the expense of setting up type or casting plates.

In order to ascertain the maximum possible effect that patents and goodwill items carried on the balance sheets of these corporations could have upon our final figures, let us, however, make an extreme assumption which is obviously not justified: namely, that *none* of the patents and goodwill shown by any major group represents an actual investment. If this were so, to what degree would the complete exclusion of patents and goodwill affect our computed earnings rates for each major group?

Obviously, to no very great extent. Take, for example, the Metals group in which the proportion of patents and goodwill to capitalization is 4 per cent. The rate of net income to investment in the Metals group for the year in question was 12.1 per cent. If we subtract the nearly 400 million dollars shown as patents and goodwill for this group from its nine billion of capitalization and then recompute the percentages of net income to this capitalization the new earnings rate is changed only to 12.5 per cent. Similarly, in Food Products where the proportion of patents and goodwill to capitalization is 11 per cent, the new earnings rate computed on the reduced capitalization becomes 11.4 instead of 10.1 per cent. Even in Printing, where the high 20 per cent ratio of patents and goodwill to capitalization obtains, the original earnings rate of 17.2 per cent is changed only to 21.5 per cent.

How different, if at all, is the case with the 73 minor manufacturing groups? Sixteen groups show proportions of patents and goodwill to capitalization of 10 per cent or over. The presence of this amount of patents and goodwill,

however, makes no marked difference in the rates of return. But eight other groups show patents and goodwill items that are 20 per cent or more of capitalization—the highest ratio being 42 per cent. One of these groups, as has been previously remarked, is Newspaper and Magazine Publishing, while three others are Proprietary Preparations, Toilet Preparations and Printing Machinery. In them all, copyrights, secret formulae or patented special devices could readily justify at least a part of the patent and goodwill account carried on the books. But again assuming that none of the amount so carried is justified, and recomputing, we obtain the ratios given below.

Minor group	*Original earnings rate (including intangibles)*	*New earnings rate (excluding intangibles)*
Confectionery	18.4	22.9
Tobacco	15.0	20.3
Men's Clothing	12.0	15.7
Stationery	6.1	8.8
Newspaper Publishing	18.2	25.3
Proprietary Preparations	21.0	28.0
Toilet Preparations	32.4	54.0*
Printing Machinery	9.1	12.1

It is clear that only in Toilet Preparations is this difference really significant. And even in this group it is to be remarked that the extreme assumption which we have made as to the utter worthlessness of patents and goodwill as a valid investment item is not in the least justified, and that were one-half to two-thirds of their stated values allowed and retained in the capitalization base, the resulting earnings rate would then not differ so very significantly from that originally computed. Our conclusion, therefore, in the case of our manufacturing corporations samples, is that patents and goodwill items in the balance sheet do not in any significant way invalidate our results.

With respect to the large series of trading corporations

the results are so similar that they need not here be reviewed in detail. For All Trade the proportion of patents and goodwill to capitalization is 8 per cent; for Retail Trade it is 10.2 per cent; for Wholesale Trade, 2.7 per cent; for Wholesale and Retail Trade, 7.1 per cent. Most minor groups show very small ratios indeed, and in only two do they run as high as 15 per cent.

The small Manufacturing corporations series samples show much the same results as the large corporations. The aggregate patents and goodwill figure for all manufacturing groups combined, however, is slightly higher: 6.1 against 4.9 per cent.

For the small corporations series in Trade, aggregate figures are not available, but of 18 Trading groups, only three showed proportions of patents and goodwill to capitalization that exceeded 10 per cent, the highest of these three being 20 per cent. Clearly, our general conclusion for Manufacturing likewise applies here.

3. VALUATION AND ABSOLUTE EARNINGS RATES: CAPITAL ASSETS

The second possible major source of invalidity in our balance sheet figures is the plant and property account. If assets are in some cases stated upon a cost (or cost less normal physical depreciation) basis, and in other cases on the basis of appraisals, then to this extent our data are of a hybrid character; and if those appraisals which are conservative do not exactly offset those which are extravagant, we have no assurance that our computed earnings rates reflect the actual returns upon the investment that really accrue to the security holders. We are unable to check this point in quantitative terms as definitely as we could check the items of goodwill and patents; but certain general

observations may enable us to form an opinion with respect to the broad limits of such probable discrepancies.

Again, if we take only one company, we find that the amount at which the plant account is carried may bear no relation to the investment made. We do not undertake to say that it may bear no relation to the 'value' of the plant. What the value of any industrial plant is as of any given date (unless value is defined simply as cost and adequate records are available to disclose it) is something which cannot be determined with precision by anyone. The market value of a plant obviously depends upon its earnings but what these earnings will be for the future years of the plant's life and, even assuming a fair stability and permanence of earnings, what should be the 'number of years purchase' used in calculating the valuation are controversial economic, accounting and legal matters on which we do not here propose to enter. For present purposes, in appraising the effect of variations in accounting policy upon our data, it will be sufficient to regard original cost less depreciation as a norm, and to inquire concerning the possible discrepancy between the sum of the positive deviations above this norm and the sum of those below it, in the data for any industrial group.

Some very large companies are conservative with respect to depreciation charges and their plant accounts. One of the best-known instances is the General Electric Company, which as of the end of 1928 carried plants that cost $205 million at $47.5 million.[3] This company not only makes an adequate annual charge for physical depreciation, but in addition charges a further generous portion of the value of its plant to an account called 'general plant reserve'. The two accounts, 'general plant reserve' and 'depreciation', are

[3] *Annual Report for 1928,* p. 6.

not separated in the published balance sheet; nor are charges to them shown separately in the published income statement. From various published figures that are given, however, it may be seen that the charge to this general plant reserve account can scarcely constitute any very great proportion of either net income or the amount that annual net income would be were this charge not made. The combined charge to the two accounts, in 1928 for example, was but $7.5 million, whereas the net profit figure in 1928 was $57 million.[4]

Our immediate interest is in seeing what influence such charges to 'plant reserves' have upon the stated earnings and asset figures of such corporations as the General Electric Company, in terms of specific problems of profits and profit rates discussed in this volume.

Charges to plant and equipment beyond what are regarded as normal depreciation rates proper may, of course, often be quite justified from both the economic and accounting points of view; certainly from the standpoint of business policy an excellent case can be made for the practice.[5] But

[4] Before interest payments on funded debt. The net income figure after such charges was 54 million. The two terms 'profit' and 'income' are used in this chapter as in the other parts of the volume (i.e., not as used in the General Electric or any other particular corporation's statement), but both concepts are frequently had in mind in connection with the valuation problems under discussion.

[5] In its 1926 report (from which paragraphs later published in the 1928 report are taken) the General Electric Company argues with cogency:

"Normal depreciation on buildings and equipment is based upon the estimated average effective life of each unit. It does not take into consideration the rapid obsolescence of plants and machinery in a rapidly developing industry like ours. The value of a plant, therefore, cannot safely be determined by first cost or by appraisal on the basis of reproduction cost less normal depreciation.

"It is for these reasons that your Company has followed the policy of providing a general plant reserve in excess of normal depreciation rates, so as to enable it to take promptly out of service buildings or equipment which, although not worn out physically, are inefficient and uneconomical. Failure to provide such a reserve would make the management much slower to abandon inefficient buildings and machinery, and would make the

fairly or otherwise, the General Electric Company is regarded not only by the electrical machinery industry but also by the business and accounting world generally as constituting an extreme case of conservatism in accounting procedure. If, therefore, we are able to estimate within rather close limits what the maximum possible effect of the General Electric Company's exceptional practice—from the point of view of business policy, let it be repeated, perhaps the sound one—can have upon the consistency of its figures with the data for other corporations in the Electrical Machinery minor group of our sample, we may be able to form some

Company less able to meet new conditions and, therefore, less effective in economical production and in competition.

"An illustration of this necessity is provided by the experience of your Company during the past four years, during which time fifteen factory properties have been sold, having a first cost of $3,727,749 against which normal depreciation reserves of $1,005,930 had been set aside, leaving a book value of $2,721,819. These properties were finally sold for $2,410,028, or a loss from first cost of $1,317,721, and a book loss of $311,791 which was charged against the general plant reserve. This illustration does not include machinery and equipment, on which further loss was sustained."

Such reserve strength with which to meet unforeseen losses of this character might, of course, be built up without specific charges to a general plant reserve before the calculation of net income, if a larger proportion of net income were simply retained in the business as a part of general surplus account. This would, however, imply that they were a part of profits rather than expense. But were such charges to expense not specifically made, and the net income figure thus appeared as a larger amount, stockholders would regard the business as being more prosperous and might demand larger dividends. The General Electric Company feels that such larger dividends are not justified, and even if not paid, the 'income' in question should not even appear on the balance sheet as a profit surplus—the accounting philosophy involved being that the final determination of what actually has been earned as net income in any one year cannot be made with precision until the experience of other years shows what has really been the rate of plant and equipment obsolescence in the earlier year. This is quite consistent, of course, with the statement that the value of the plant cannot be determined either by first cost or by appraisal less normal (physical) depreciation.

I am indebted to Mr. J. W. Lewis of the General Electric Company for information concerning the company's accounting policy in several respects.

general conclusion concerning the significance of our figures in that, as well as other, minor groups.

As regards the possible effect on net profit figures, it is first to be observed that theoretically a very liberal policy of provision for depreciation and obsolescence *might* have no great effect upon the income statement. This would be true only if new plant construction each year approximately equalled in cost the value of the old plant and equipment retired from service during that year; and if the rate at which new construction were written off were kept the same from year to year. This situation seldom, if ever, prevails, although in an old established enterprise in which the demand for the product has become entirely stabilized, an approach to it might result. This, however, is by no means the case with most companies, and it is not true of General Electric. Nor does the General Electric Company, as is sometimes alleged, in any sense ever charge off all, one-half or one-third of the entire cost of a new plant's construction —or anything approaching these amounts—against the earnings of the particular year in which the plant is built.[6]

Taking the 1928 figure as an example, we find that the charge to 'general plant reserve *and* depreciation' as before stated was seven and one-half million dollars, while the net profit for that year, reckoned after this charge, was 57 million. Let us assume that half of this charge had not been made. Net profit would then have been shown as about 61 million dollars instead of 57 million. Running similar calculations back to 1923, the results, in round numbers, are:

[6] The fact that in a particular year it may sometimes be observed that the Company's charge against general plant reserve and depreciation has amounted to either approximately the cost of new plant construction or to almost exactly half the cost is only a coincidence.

Year	*One-half plant reserve and depreciation charge*	*Net profit*	*Net profit plus one-half plant reserve and depreciation charge*
1928	4	57	61
1927	5	52	57
1926	6	50	56
1925	5	43	48
1924	5	45	50
1923	4	37	41

Next we may see what effect such charges have upon a company's invested capital figures as shown by the balance sheet. Net figures shown for capital assets are, of course, lower because of these accumulated charges than would otherwise be the case. The capitalization figures that appear on the liability side of the balance sheet (or, alternatively, a net worth figure computed by the subtraction of liabilities to other than stockholders from the total assets figure) may or may not be materially reduced because of the lower valuation at which fixed plant and equipment are carried. If a company were habitually to pay out *all* of its reported earnings in dividends, then an exceptionally large charge against plant account would merely result in the retention in the business of revenues (we do not undertake to call them net) that would otherwise have appeared as profits and would have been disbursed to shareholders. Total assets would be larger, by the amount of the excess depreciation charge, than if the charge had not been made and the sum had been paid out as dividends. To be sure, the figure representing the amount thus retained in the business is not earmarked and has no separate entity as a specific asset. It may be that the cash or United States Government securities account is larger in consequence, or it may be that inventories or other assets are greater—but in any event the figure is there. Unless a large truly secret reserve is created by charging new construction against the operations

of the year and not showing the asset upon the books at all, or unless the value of existing assets is written down more rapidly than they are being exhausted and an outstanding no-par stock issue is devaluated or capital surplus written down in consequence, no concealment of total assets —or of stockholders' equity or invested capital—would take place. This is, of course, true whether the method of recording depreciation on a balance sheet is by showing the original cost of the plant account, with the accumulated reserves against it entered as a subtraction and the net valuation extended, all on the asset side of the statement, or by showing the gross fixed investment figure as an asset and the reserve against it as a liability.[7]

The case is different, however, when, as is customary, a company regularly carries a part of its earnings to surplus. Here an excess charge against the plant account may result in appreciably smaller capitalization figures on the balance sheet and may fail to reflect assets retained in the business as reserves. In the General Electric Company, for example, we recall that the charge to plant reserve and depreciation in 1928 was $7.5 million. If only, say, $3.5 million had been charged and if out of the net profit figure (thus increased from $57 to $61 million) the same dividends were paid, then instead of approximately $8 million being carried to surplus, about $12 million would have been added.

[7] Under the second procedure, the depreciation reserve is shown as a liability item (as in published statements of the General Motors Corporation, for example), but presumably not in the 'Capital' or 'Net Worth' section of the liabilities side of the balance sheet (*cf.* R. B. Kester, *Accounting Theory and Practice* (1928), II, 188). If the valuations are at all sound from the point of view of the fairly correct appraisal of future earnings and the necessity for replacing depreciated and obsolete equipment, the reserve against plant has, of course, no proper place as a 'surplus' or 'profit' reserve and constitutes no part of capitalization. It does, however, increase the amount of total assets shown by the balance sheet. (To this extent, total assets would be a less reliable investment base than the capitalization or total capital figures employed in the present volume.)

But the total capital or capitalization figure would be far higher than that actually shown because the same procedure would have been followed in preceding years—in other words, these annual charges to plant reserve which for purposes of the present argument we regard as 'excess' charges would have accumulated over a period. As of the end of 1928, the General Electric accumulated general plant and depreciation reserve was 158 million dollars. What proportion of this represents a normal or customary depreciation reserve and what part conservative excess cannot be told from the published figures, but the annual 'excess' charge, in recent years at least, has been something less than the depreciation rate proper.[8] Let us, however, again make an assumption more extreme than the known figures warrant, and arbitrarily say that half of this accumulated depreciation reserve belongs to the surplus account—that is, should be put there in order to construct a capitalization figure that reflects a more conventional (albeit quite possibly less correct) valuation figure for plant and equipment. Upon this basis, the total capital of the company as of 1928 becomes 437 million instead of 358 million—the hypothetical figure thus being 22 per cent larger than that shown by the published statement. This is a substantial difference. Let us, in the same way, run the calculations back to 1923.

Year	*Capital*[1] *as per books*	*Capital plus one-half plant and depreciation reserve*[2]
1928	358	437
1927	340	415
1926	330	401
1925	305	370
1924	298	358
1923	304	360

[1] Includes general reserves, but not depreciation and plant reserves.
[2] Accumulated reserve as of end of each year.

[8] This has been stated to the writer by an official of the Company.

We may now employ this set of calculations in connection with the set of income figures previously computed, in which we added to each year's published profit figure one-half of the depreciation and plant reserve charge for that year; and in this way we can ascertain the difference in earnings rates as calculated with the two sets of income and capitalization figures. The results are given below (our computed figures being termed 'hypothetical').

	Earnings rates on basis of	
Year	*Book figures*	*Hypothetical figures*
1928	15.9	14.0
1927	15.3	13.7
1926	15.2	14.0
1925	14.1	13.0
1924	15.1	14.0
1923	12.2	11.4

It thus becomes apparent that a conservative policy of valuation may result in a somewhat *higher* ratio of net earnings to capitalization. The differences, however, are not large.[9] To what extent may we reasonably expect differences of this, or even of twice as serious a nature, to influence our general figures for an entire industry?

Taking as an example the minor group Electrical Machinery, we find that our large corporations series contains

[9] Moreover, in the case of General Electric, we have not mentioned that its furniture and fixtures account (for furniture and appliances other than in its factories) is carried at $1, as is also its patent account. However, these additional evidences of conservatism may not need to be considered in addition to the adjustment we have already made of the plant account, in calculating our hypothetical figures. The office furniture and appliances account would be small in comparison with the general plant account; while the patent account is not susceptible of any estimation. The practice of carrying patents at nominal sums is, however, fairly widespread among large corporations. In any event, we may perhaps be permitted to guess that our extreme procedure in adding as much as one-half of the general plant reserve to the surplus account constitutes a sufficiently generous adjustment of the figures to put the company upon a parity with most other large corporations that are distinguished neither for especial conservatism nor for recklessness in their accounting policies.

54 companies in this group. In 1928 the aggregate capitalization of these 54 companies is shown as 848 million dollars, while the combined net income is 140 million. Let us assume that the General Electric Company is one of these 54 companies.[10] If so, its capitalization and income figures would exercise a considerable influence upon any totals or arithmetic averages derived from the data of the sample, for upon almost any basis of valuation that might be adopted its capitalization would account for from one-third to one-half of the total for the group. Suppose, therefore, that we recast the data of the sample by taking cognizance of an assumed undercapitalization for General Electric—that, in other words, we increase the group's capitalization by an amount equal to one-half of the General Electric Company's accumulated depreciation and plant reserve shown in its published report, and likewise increase the income of the group by one-half of the charge to that account made for 1928. If this is done, the total capital of the group becomes 980 instead of 901 million, and its total profit becomes 146 instead of 142 million. The percentage of profit to capital is decreased from 15.8 to 14.9 as a result of this revision. Had the amount by which the General Electric Company is regarded as being 'undercapitalized' been made twice as great in the calculations, the change in the final earnings rate for the group would still

[10] The *Source-Book* does not identify any of the corporations in the various samples, but the total capitalization—nearly a billion dollars—shown for this sample of large corporations in the electrical industry makes it fairly certain that none of the three or four leading corporations engaged in this field is omitted from the sample—just as the total of capitalization shown by the sample for the group Motor Vehicles (almost two billion dollars in 1928) makes it certain that both the General Motors Corporation and the Ford Motor Company are included in the figures for the Motor Vehicles group. Thus while no identification of corporations is possible, the reader who studies the figures for any minor group, and who is conversant with the general composition of the industry examined, can in most cases tell whether the very largest companies are included.

have been reduced merely from 15.8 to 14.2 per cent; and were the assumed figure made three times as great, the change would be from 15.8 to 13.6 per cent.

It thus appears that no significant change in the results is likely to take place, in consequence of even a substantial measure of undervaluation by any one company in the industry. This, of course, assumes that the dominant or leading company is the *only* company in the industry for which the valuation figures deviate markedly from the customary accounting practice. But assume, however, that several large companies 'undervalue' their assets. Even if the number and size of the companies that do so are sufficient to bring as much as one-half of the industry's capitalization into question, but if the average extent of the deficiency is not much greater than in the General Electric Company, the difference between the two earnings rates involved would still not be appreciable. The effect would be to increase total capitalization by as much as one-seventh or one-sixth and somewhat to increase income, but in a much lower proportion; thus the newly derived earnings rate would in no case be significantly different from the old.

Much the same reasoning holds good for instances of overcapitalization. Even if, in a small minor group sample, one-third of the reported capitalization of the group belonged to firms which on an average reported *double* the amount of capital actually invested, a correction based upon this assumption would reduce the capitalization for the group by only one-sixth. If the earnings rate upon the capitalization as originally shown had been 15 per cent, it would become 18 per cent upon the reduced base; if it had been 10 per cent previously, it would become 12 per cent.

We have, however, made extreme assumptions. It is unlikely that, in any industrial group for which we have data, as much as one-third or one-half of the capitalization

is in error by as much as one-half of, or double, itself. Furthermore, it is even more unlikely that the deviations are all on one side—that is to say, it is just as improbable to assume that in a given industry all firms that do not carry their plants at actual investment less depreciation accumulated at the usual rate show them at *more* than this figure, as it is to assume that all corporations in the industry carry their plants at less than this amount. The very diversity of practice in this respect may let us feel sure that in nearly every industrial group some corporations do the one thing, some the other. This is not to assume that the two sets of discrepancies obligingly cancel each other. But it remains true that the influence of undervaluation by certain dominant firms in an industry upon the figures for the group as a whole is partially offset by whatever overvaluation is practiced by other firms in the group. To this extent, our limits of probable error are even narrower than the possible ones which were indicated above when the effects of over- and undervaluation were considered separately.

Undoubtedly, industries differ somewhat in the extent to which arbitrary accounting practices of one sort or another prevail. But there is no reason for assuming that the difference between industries in this respect is as marked as between different companies in any given industry. At least, there is no evidence whatever to show that, with respect to valuation policies, a conservative point of view, or the reverse, is the peculiar attribute of all or most of the executive personnel in one industry as compared with another. If anything, our assumption would be that the reverse is more true, that such conservatism, or its absence, constitutes an intellectual quality that varies with the temperament and personality of the individuals in every industry and that such differences as may chance to prevail generally, in one

industry as compared with another in this respect, can be neither of a broad nor of a well-defined nature.

As between the companies in any one industry, it may be reiterated, we know that variations of practice prevail, although we are unable to measure with any precision their general extent. But in concluding this part of the discussion, certain general observations, to which doubtless many competent observers among students of finance and accounting would agree, may be made.[11]

The tendency towards overcapitalization on the part of large American corporations, so prevalent in the last decade of the nineteenth century and the first decade of the twentieth, has not only abated but in some instances reversed itself. Most of the old 'watered stock' corporations that have remained in business through the period to which our data pertain have 'grown up to' their capitalizations. If anything, the present tendency among large corporations is to undervalue rather than overvalue their capital assets. The General Electric Company, used for illustrative purposes in this chapter, although a conspicuous instance of conservatism in this respect, is only one of many.

Many smaller companies undoubtedly greatly overvalue their assets, especially their fixed property accounts. Partly this is because the smaller corporations in the main are those that make the least use of public accountants and outside

[11] Some keen critics would not. Dr. Oswald W. Knauth, who has read this chapter, holds that the age of an industry probably affects the general level of its plant and equipment valuations. He says: "I confess that I am not convinced by the argument . . . . I simply don't believe that these variations in earnings rates in different industries represent the facts. I suggest that some industries with apparent high rates of return are industries in which the capital has been all written off, and *vice versa*. I can't prove it, but I don't think this proves anything either."

To 'prove' very much here—if proof means to establish beyond any doubt—is, of course, difficult. But the author desires to present Dr. Knauth's statement to the reader, as representing a more skeptical view than the conclusions of this chapter.

auditors. Often the inflation of property account may be undertaken with the deliberate purpose of making a more favorable impression upon the commercial banks which, in appraising a balance sheet as the basis of loan extensions, allow a given margin for excessive valuations before deciding upon the loan. It is perhaps not too hazardous a generalization to affirm that today large firms are apt to undervalue their plant accounts and small firms to overvalue them.[12] But while the validity of comparisons between individual corporations is often seriously affected as the result of the non-comparability of such valuations, our general conclusion is that no significant invalidation of the figures for most *industries* probably takes place as the result of such heterogeneity of accounting data in the Manufacturing and Trading divisions.

As to our samples for Finance and Mining, we can be far less certain. In certain fields of finance, where holding company pyramided upon holding company often gives the legerdemain of accounting full play, much is possible. While one minor group in our sample, Savings Banks, is doubtless entirely free from any such influence, two minor groups, Investments and All Other Finance, may reflect such arbitrary bookkeeping figures very greatly. The three other minor groups of the Finance sample, Commercial Banks, National Banks and Trust Companies, stand in an intermediate position in this respect. Most of the corporations in them doubtless carry their assets at reasonable figures (in this case, of course, the assets are mainly securities rather than physical property owned directly); but the affiliated investment companies of many such institutions bring up questions of valuation that cannot well be resolved

[12] This conclusion relates primarily to the types of manufacturing and trading corporations for which data are discussed in this volume—not to holding companies in the financial and public utility fields.

in general terms from data of the sort that are contained in our samples of these groups. In the Mining division, problems of charges to depletion, as well as to depreciation and obsolescence, and in some Mining fields the question of discovery value (see Ch. 25), probably subject our samples to much larger limits of possible error than in the Manufacturing and Trading groups.

4. VALUATION AND RELATIVE EARNINGS RATES: TIME FLUCTUATIONS

We have in the preceding section attempted to indicate the degree to which arbitrary valuations of plant and equipment might affect the data of our samples. Our general conclusion was that neither the absolute earnings rate for any one industry nor the comparison of earnings rates between industries would be so greatly affected by this factor as to invalidate the comparison of different industries. The data of most of our samples, however, are for a ten-year period and while the comparison of earnings rates in different industries at any one time may not be at all significantly affected by discrepancies in valuation policies, there remains the possibility that any general shift in policies that took place over the period would affect the year-to-year comparison of the figures. To investigate this question, supplementary information has been obtained from 67 companies interviewed in the course of a field study.[13]

The companies interviewed are fairly large, but in most instances not dominant, corporations. Data were collected on capital assets for certain years of the period 1919–30;

[13] This study was made for the National Bureau of Economic Research by Henry S. Dennison, with the collaboration of E. R. Burton. The information collected on capital assets and valuation policies was obtained specifically with a view to checking upon the problems presented by the material of our samples as discussed in the present chapter.

and each corporation was asked whether any *change* of policy with respect to the valuation of such assets took place during the period in question. In some instances, changes in policy or plant appraisals made in 1931 were reported, so the answers really relate to the thirteen-year period, 1919–31.

Fifty companies reported that 'no change' in policy took place; while 17 reported reappraisals of plant or changes of policy.

Of these 17 concerns,

a. Three reported reappraisals and the adoption of a valuation policy of cost-less-depreciation, either upon all property owned or upon all subsequent construction;

b. Seven reported reappraisals, but gave no information on the new valuations;

c. Six either wrote off all goodwill and intangibles, or substantially reduced these accounts;

d. One reported a change in depreciation and obsolescence policy that resulted in larger annual current charges, but gave no information on the revaluation of the accumulated reserve and property account.

We have here only 67 companies, but the diversity of industry is rather pronounced. There are included food products, rubber goods, electrical machinery, cotton spinning, men's clothing, machine tools, magazine publishing, writing paper and automobile manufacturing concerns as well as a few chain store companies. There are, of course, only one or a few companies in each group, but all major manufacturing groups, and the retail trade group, are represented. In size, as measured by sales, most of the companies involved do an annual volume of business ranging from approximately 2 to 20 million dollars each, although a few are much larger, having sales of 50 or 100 million.

With 50 of these 67 companies reporting no change

whatever in their valuation policy during the decade 1919–28, it seems not unlikely that this situation is typical of large manufacturing corporations that are not giant concerns and that, so far as this type of enterprise is concerned, the year-to-year comparability of at least our large Manufacturing and Trading corporations samples is not impaired because of any general changes in valuation policy during the period in question. It is interesting to find that of the companies reporting changes, most of those that gave specific information *reduced* their valuations of assets, thus confirming our earlier observation that the present tendency in the policy of large manufacturing concerns is in the direction of conservatism rather than of exaggeration in this respect.