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EFFECTS OF TAXES ON CONCENTRATION

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Two of the important characteristics of the American economy in recent years have been high "concentration" and high taxes.[1] High concentration is well established, whether concentration is measured in terms of employment, total assets, net capital assets, profits, sales, or even research expenditures; whether one looks to the economy as a whole or to many of the more important areas in the economy; and whatever the definition or index used to measure concentration.[2] Similarly, there can be no doubt that by any historical standards both corporate and personal income taxes have been very heavy during the past ten to fifteen years.

It is obvious that this second condition—high taxes—cannot account for the first—high concentration. The economy was already highly concentrated by the turn of the century, well before either the corporate or personal income tax was introduced. Nor can the generally rising trend of tax rates since 1909 explain the trend in concentration over the last two generations. Even though imperfections and gaps in the data counsel caution, the best available evidence establishes a rather strong presumption that there has been no increase in over-all concentration over the last fifty-year period and indicates that there probably has been some decrease in concentration over this period, at least so far as manufacturing is concerned.[3] Such broad stability (i.e. zero or negative trend) cannot be readily explained by secularly rising taxes. Neither can the known fluctuations in the degree of concentration within this half-century be readily or consistently explained by concomitant changes in tax rates within the period.[4]

[1] In this paper we make no attempt to examine all potentially significant features of the tax structure. In particular we do not examine the effects of such presumably transitory features of the tax law as the current excess profits tax and accelerated amortization of emergency facilities.

[2] See M. A. Adelman, "The Measurement of Industrial Concentration," *Review of Economics and Statistics*, November 1951, pp. 269-296, and the references there cited, as well as the discussion of Adelman's study in the May 1952 issue of the *Review*. See also "Measures of Concentration" by Gideon Rosenbluth in this volume.

[3] Adelman, *op. cit.*

[4] After their introduction in 1909 and 1913, taxes quickly reached high levels during World War I and remained far above previous peacetime levels in the

The historical record points to the general conclusion that the prevailing levels and the broad changes in concentration have been primarily determined by nontax considerations. It suggests that taxes were only one factor—and perhaps not a very important one—in the whole complex of forces affecting the level of concentration and shifts in this level. Nevertheless, there is real point in examining whether taxes have tended, and are tending, to increase or diminish the level of concentration from what it otherwise would have been, i.e. whether the *thrust* of taxes on balance has been, and is, positive or negative. Taxation is recognized and accepted as a major instrument of public policy, and its impact on the competitive structure should be given due consideration along with its other effects in framing policy. Moreover, taxes are currently at very high levels, and unless the international situation improves substantially, they are likely to continue high; if they are sustained indefinitely at current levels, their effects may well be substantially more severe than they appear to have been in the past. In this connection it should be recalled that, barring the 1917-1921 period, high effective and marginal tax rates on income are a development of the last ten to fifteen years.

Ideally, in attempting to analyze the net effect of taxes on concentration, we should know all the basic factors and conditions controlling changes in the level of concentration and be able to measure the relative importance of each (with due allowance for their interactions). Then, if we could determine the net effect of taxes on each of these controlling considerations, we should be in a position to push the analysis through to specific conclusions regarding the changes in concentration attributable to the tax structure. Unfortunately, this background analysis of the forces primarily and directly determining concentration simply does not exist in the complete and precise form necessary for an analysis in these ambitious terms.

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early 1920's; concentration seems to have increased between 1909 and 1924, but imperfections of data again make it impossible to know definitely how much. The broad positive association between general trends in tax rates and levels of concentration, however, did not continue. Concentration definitely increased between 1924 and 1929 during a period of substantially unchanged corporate tax rates and declining personal income tax rates. Taxes were successively raised throughout the 1930's and have been at very high levels during the early 1940's to date, but there is evidence that concentration was actually less in the late 1940's than in the early 1930's, and numerous studies suggest that over-all concentration in manufacturing was reduced during the high tax period of the 1940's.

The scope of the present paper, therefore, is limited to an examination of the effect of taxes on a few of the more important determinants of concentration. Successive sections appraise in general terms the effects of taxes on (1) the formation and early growth of new firms and enterprises, (2) management incentives to growth and expansion, (3) relative rates of growth of different sizes of firms through retained earnings, (4) the availability of outside funds to finance expansion for larger and smaller concerns, and (5) the effects of taxes on mergers.

In large part, this report represents a summary and synthesis of the various studies bearing on the present subject that the present authors have undertaken over the last seven or eight years. New material, however, is introduced in the section dealing with the effects of taxes on the relative rates of growth of larger and smaller firms through retained earnings, and the authors also hope that the recasting of the earlier analysis, designed to bring it to bear directly on the problem of corporate concentration, will prove helpful.

The effects of taxes on three different types or measures of concentration will be considered. The first is the usual "concentration ratio," which will be taken as a measure of "absolute concentration" because it measures the proportion of assets (or sales or some other base factor) accounted for by some *absolute* number of the largest firms in an industry or industry group.[5]

The second measure of concentration used is a measure of *relative* concentration or "inequality." In contrast with usual measures of absolute concentration, relative concentration measures the different percentages of all assets held by various proportions of all companies. It is a more general measure than the concentration ratio because it summarizes changes in concentration occurring throughout all asset-size classes rather than solely within the top size classes.[6] It is also a very flexible measure that can be applied to various sections of the distribution.

[5] When applied to individual industries, the ratio of the assets or sales of the largest four firms to the total assets or sales of all firms in the industry is what is usually measured, though the ratio of the largest eight or some other number to the relevant total for all firms is sometimes used. In dealing with large groups such as all manufacturing, we measure changes in absolute concentration in terms of the change in the proportion of assets held by the number of firms which happen to have individual assets in excess of $50 million or $100 million in the benchmark year.

[6] We have used the Gini Concentration Ratio to measure relative concentration in our statistical work; in geometrical terms this measures the inequality shown in the Lorenz diagram.

Finally, in the section on mergers we are also concerned with a much broader and looser concept of concentration—one which simply reflects the fact that previously existing assets become "concentrated" into the hands of a smaller remaining total number of firms whenever mergers occur, inasmuch as they necessarily involve the disappearance of the acquired companies and reduce the total number of firms.

1. *Formation and Early Growth of New Firms*

THE first segment of our analysis deals with the effect of taxes on the formation and early growth of new firms—roughly up to the point at which they become capable of profitable operations. The importance of this phase of business development hardly needs to be stressed. The continued formation of successful new firms is needed to replace existing business units that fall behind or drop out of the competitive race. Even more important, new firms are needed to develop new ideas, techniques, and products that can potentially offer effective competition to established firms. A high birth rate of new firms is required to prevent an increase in concentration, because mortality rates are higher for small firms than for larger enterprises and because the mortality of new firms is high. In particular, any reduction in the rate of formation of new firms would tend to increase the share of total output accounted for by a fixed number of large firms (absolute concentration) and to "concentrate" the total of all activity among a more limited number of firms.

Taxes may affect the formation and early growth of new firms in two ways. First, they may dull the *incentives* needed to induce people to undertake to establish new business concerns. Secondly, taxes may impair their *ability* to do so by restricting the supply of capital required to finance the formation and early growth of new firms. We shall consider these two types of effects separately.

So far as incentive effects are concerned, our conclusion is that tax considerations generally do not play a critical role at this stage of development of a business organization. At least until the enactment of the present excess profits tax,[7] the effect of taxes on profit prospects appears typically to have been given little conscious consideration by the individuals actually responsible for the organization of new enterprises. We recognize, of course, that new firms will seldom be started at all if their founders do not expect them to be

[7] We have done no empirical work on this topic since Korea.

profitable, and with rare exceptions their survival as well as their subsequent growth will depend upon their ability to earn a profit; but the precise amount of this expected profit does not usually have an important bearing upon the decision to undertake the business. When a new business is organized, only the crudest estimates of its profit potentialities can be made, even when the growth potential seems to be great. The impossibility of estimating profits prospects with any degree of precision at this stage of a corporation's development tends to preclude a careful evaluation of the effect of taxes on these indefinite profits prospects—unless tax rates approach confiscatory levels and are expected to remain there.

Another factor diminishing the importance of the incentive effects of taxes in the formative stages of a new business is that the kind of individuals who are interested in organizing new businesses are often motivated to a marked degree by nonpecuniary considerations. They tend to be aggressive, confident of their ability to succeed, anxious to be their own boss, and desirous of developing a new "idea" in which they are intensely interested. If the organizer's primary interest is in the satisfaction of creating something new and in the power that goes with a successful business development, as it often is, tax considerations tend to be viewed as of only secondary importance.

While taxes do not generally appear to have an important effect on the *desire* of individuals to start new enterprises, they may have a pronounced effect on their *ability*, i.e. on their financial capacity, to do so. Practically speaking, a minimum amount of ownership capital is essential to the formation of every new business, however small. In the very early stages of a new business, this capital must usually be supplied from the personal resources of the individuals directly interested in the business, or by their immediate relatives and friends; outsiders typically have little interest in new ventures until they have developed to the point where they give real indications of being potentially profitable. Consequently, unless the individuals immediately concerned can accumulate the minimum amount of capital needed to start the enterprise, the chances are that it will never be organized. By making such accumulations more difficult, the tax structure has a significant, though limited, effect on the formation and early development of new enterprises.

After the initial developmental phases of a new enterprise have been completed and the promoters have demonstrated that they have a potentially salable product or service, the feasibility of rais-

ing outside capital from disinterested sources is often greatly increased. Generally, also, the stage of "getting into production" is one at which substantial new financing is required; in most industries, it is a rare new venture that can pull itself up by its own bootstraps and become a stable, revenue-producing enterprise of significant size without having to draw on outside capital in the transition from a developmental to a producing organization. A critical test for many enterprises is their ability to raise additional equity capital at this stage of their growth.

At this stage, as well as in the early formative and developmental stages, the only possible sources of equity capital are those supplied from outside the enterprise. Until the business develops an independent earning power of its own—and frequently for a long period thereafter—it will absorb rather than "throw off" capital. For an operation of significant size, moreover, the task of getting into production is likely to require larger amounts of financing than can be raised from the immediate resources of the promoter and his associates. At this point in their development, therefore, numerous (perhaps most) expanding companies have to turn to disinterested private investors, acting individually or through an investment organization, for outside capital. To the extent that taxes affect the capacity and willingness of investors to put money in small, growing enterprises at this phase of their growth, therefore, they are likely to have an important effect on the continued existence and rapidity of expansion of such companies. If the needed capital is not forthcoming, the alternatives are likely to be to sell out—often to a larger competitor—or to strive to continue the development with inadequate resources and the almost inevitable consequence of ultimate failure.

The effects of taxes in this respect, however, are mixed and complex, and it is difficult to appraise their net impact. So far as the personal income tax is concerned, the high rates of this tax on individuals with large incomes obviously reduce the capacity of these individuals to accumulate funds for equity investment, and the evidence indicates that the willingness to make such investments is heavily concentrated in the very small fraction of individuals in the economy with large incomes. In this respect, the personal income tax clearly tends to increase the cost of equity capital to growing enterprises by reducing the potential supply of such funds, as compared to a tax structure bearing less heavily on the upper income classes. (It should be noted in passing, however, that

the effects of the income tax structure in this regard are not as severely repressive as is often claimed because of the variety of ways in which individuals can accumulate large amounts of new investable funds without being subject to the full impact of the personal income tax rates.)

At the level of investment *policy* (as contrasted with investment capacity), however, the situation is more complex. To the extent that the tax structure reduces the potential *income* yield from investments in growing enterprises, the effects of the income tax will further compound the previously noted effects on capacity to invest. To the extent, however, that the motive for investing in small, growing enterprises is to make capital gains—and this is probably the dominant motive—the tax structure has a quite different impact. In this case, the large differential between the upper bracket rates on ordinary income and the favorable rates (not exceeding 26 per cent) on long-term capital gains often operates as a positive attraction to investments in growing enterprises.

The strength of this inducement will be particularly strong for venturesome investors who are not averse to taking substantial risks of capital loss, provided that the compensating opportunities for capital appreciation are sufficiently great, and for companies with outstanding growth prospects. The same inducement will be much weaker for more conservative investors who place less of a premium on capital appreciation in relation to the risk of capital loss, and for companies offering more limited prospects for capital appreciation.

It is hard to say where the over-all balance lies, but it is fairly clear that, at the level of investment *policy* effects, taxes tend to reduce the flow of capital to some types of small companies but to increase it for others. The latter companies—those with outstanding growth prospects—though small in number are of strategic economic importance, since they are the organizations that have the potentiality of challenging the established industrial leaders.[8]

So far as the corporate income tax is concerned, its effects at this stage of a company's growth are obviously limited to its repercussions on the willingness of investors to supply outside capital; the

[8] For a detailed discussion of the analysis covered in the preceding paragraphs see J. Keith Butters and John Lintner, *Effect of Federal Taxes on Growing Enterprises* (Harvard Business School, 1945) and J. Keith Butters, Lawrence E. Thompson, and Lynn L. Bollinger, *Effects of Taxation: Investments by Individuals* (Harvard Business School, 1953).

corporate income tax has no effect on internal sources of financing until the company reaches a profitable stage of operations and has exhausted any loss carry-overs accumulated during its formative period. Theoretically, the corporate income tax should have a powerful repressive effect on the willingness of outsiders to furnish equity capital to companies in this stage of development. Practically, however, our belief (based, however, on empirical inquiries conducted before the enactment of the current excess profits tax) is that this repressive effect is much less pronounced than has generally been anticipated on theoretical grounds.

The reasons are essentially the same as those explained in the earlier discussion of management incentives. In the early stages of a company's growth, the range of error in estimating its eventual profit potentialities is so great that adjustments for the impact of corporate taxes on these profit potentialities are difficult to make and often are given little attention. As a company reaches more and more advanced stages of development, however, and as it becomes possible to estimate its profit potentialities more precisely, the role of the corporate tax becomes increasingly significant. It goes without saying that the higher the corporate income tax rate, and the more severe the impact of special corporate taxes (such as the undistributed profits tax in 1936 and 1937 and the current excess profits tax) on growing enterprises, the more repressive will be the effects of the corporate tax structure on such companies.

In summary, the balance of the above tax effects on new and growing enterprises in the preprofits stage of their development is difficult to strike with assurance, but it seems fairly clear that the over-all impact is to penalize this class of company in comparison with the established industrial leaders. (This judgment is hardly subject to question so long as an excess profits tax with high marginal rates is expected to remain in effect.) The tax structure of recent years has tended to reduce the number of new firms organized and carried through the "development of idea" stage, thereby maintaining concentration at a somewhat higher level than it would otherwise have been. Beyond the initial developmental stage, but before the attainment of profitable operations, the tax structure has exerted an influence in the same direction by restricting the capacity of upper bracket individuals to accumulate new investable funds and, to a lesser degree, by the damping effect of the corporate income tax on profit expectations. But against these effects must be set the positively favorable influence of the disparity between the

low capital gains rates and the high marginal rates on ordinary income in increasing the willingness of venturesome individuals to invest in highly promising new ventures.

The one statement that can be made with positive assurance is that no sweeping conclusions apply without exception to all types of firms. The tax factors do not operate all in one direction, nor do they affect all types of firms with equal force. On balance, it would seem that the mixture of stimulating and repressive effects, and the great importance of nontax considerations at early stages in a company's growth, are such that the tax structures of recent years (pre-1950) have not greatly influenced levels of concentration. Insofar as there are tax effects at this stage, however, our judgment is that their net impact has been in the direction of increasing industrial concentration.

2. *Incentives for Expansion*

IN THIS and the following two sections, we shall be concerned with the effects of taxes on concentration by way of their effects on the growth of existing companies that have reached the stage of profitable operations. We can, therefore, treat the total number of firms as being constant. Under these conditions it follows that both absolute concentration (the concentration ratio) and relative concentration (inequality) will be unchanged if the relative rates of growth of all firms are identical, and both measures or aspects of concentration will be increased if the effect of taxes is to favor the relative growth rates of larger as compared with smaller firms.

The effect of taxes on incentives for growth for firms of any size depends critically upon the ratio between (a) the size of the new investment undertaking and (b) the minimum reasonably assured income of the company resulting from its established operations over the period within which losses may be offset against income. In cases where the latter exceeds the former, the mean expectation of profits (as a percentage of the initial investment) is reduced in proportion to the tax rate.[9] Moreover, the profits expected if the undertaking is successful, the probable losses if it is unsuccessful, and the net amount of investment at risk are also simply reduced in propor-

[9] It may also be noted that the dispersion of the outcomes contemplated is reduced by the tax, and this should be counted as some positive inducement to invest in the (probably common) cases where corporate management is subject to some risk aversion.

tion to the tax.[10] We have found that managements often consider each of these magnitudes, as well as the expected return (summarizing both probable profits and losses together) in appraising new investments. The condition stated above is important because the restrictive effects of the tax on investment incentives will be much less severe when it is satisfied than when it is not.

Most of the individual investment projects of large well-established firms meet the conditions specified. A large number of investment projects considered by small firms will doubtless also fall into this category. Flat rate taxes will damp incentives to undertake *these* investments no more seriously for the smaller than for the larger firm.

But such investment projects do no more than maintain the orderly growth of a company. Smaller firms frequently have major investment decisions under consideration, which are large in relation to their current size and to any reasonably assured income arising from their current operations.[11] Such major investments are of the greatest social consequence. They are the investment projects that make possible the extraordinarily rapid growth of smaller firms. They are also the undertakings that "carry them out of their class" and, provided they are successful, enable them to make significant inroads upon the established positions of their larger and stronger competitors. These are consequently the investments that are particularly significant from the point of view of a dynamic competitive structure—i.e. from the standpoint of both industrial concentration and of competitive behavior.

But investment undertakings that are large in relation to the reasonably assured income of the company are precisely the ones for which the incentives are severely impaired by high corporate tax rates. In the first place, where the individual investment project is larger than the reasonably assured income from other operations

[10] The phrase "in proportion to the tax" used in the text implies a standard of reference in which there was no tax. This choice was made largely as a matter of expositional convenience. The conclusions developed in this paper are equally valid with respect to the differential effects of increases in tax rates, although the factor of proportionality involved is a little more complicated, being not merely the tax rate as in the former case, but rather the ratio of (a) the difference in the two rates to (b) one minus the initial rate.

[11] There are doubtless similar cases involving what would be generally considered to be "large firms" (in an absolute sense), but in view of the extent of multiplant and multiproduct operations among such firms, the proportion of investments falling in this category for "large" firms must be small relative to the proportion for smaller firms.

within the loss-offset period, the mean profit expectancy is reduced *more* than in proportion to the tax rate. Any profits that may be made if the major new investment proves successful will be taxed in full, but income available from other operations would be inadequate to cover potential losses if the undertaking is unsuccessful.[12]

Although the expectation of profit is only one of many motives leading a management to make an investment, most investments will probably not be undertaken without the prospect of some minimum rate of profit in compensation for the risk and effort involved. While an outsider cannot set a numerical value to this rate in each given case, the important fact is that in most cases such a minimum rate exists. Once profits have fallen below this level these ventures will not be undertaken, even though they may be attractive from other points of view. If taxes reduce expected profits below this level in a large number of cases, a substantial volume of employment may be lost.

Moreover, the amount of investment at risk will not, in these cases, be reduced in proportion to the tax rate; indeed, where the source of other income is removed because other operations must be suspended in order to undertake the new development, the amount of new investment at risk will be unaffected by the tax rate. But even this statement unduly minimizes the matter. In situations where the decision to embark on the new undertaking involves serious risk of incurring bankruptcy in the event of failure, the possible loss to the company from major new undertakings would be the entire value of the total investment of the company and not simply the amount specifically invested in the particular project itself. Since the loss to the owners of the company could exceed the amount invested in the new development, the rate of loss computed as a percentage of the new investment could exceed

[12] In the event that the new investment involves the commitment of the entire operations of the firm, there will be no income at all available from other sources against which losses could be offset if the new development is not successful, and the entire loss would have to be borne by the company; but the profits, if realized, would still be taxed in full. In this event, highly favorable mean expectations of profit before tax can readily become negative—i.e. turn into mean expectations of *loss*—in the face of high flat-rate corporate taxes.

Even where there is reasonably assured income from the company's existing operations (but this income would not fully cover potential losses on the new investment) expected profits will be reduced much more than in proportion to the increase in the tax rate. In making these estimates, provision must, of course, be made for the effect of the carry-back and carry-over provisions.

100 per cent. On the other hand, if the company itself has a thin equity position and the expansion was financed mostly with borrowed funds, the actual loss of the owners, in the event of bankruptcy, might be less than the dollar amount invested in the new development.

Finally, to make matters still worse, a high tax would not only lower the net return if the venture were successful, but it would also cut down on the probability of a successful outcome. Major new investment undertakings by smaller firms with limited capital resources are such that any serious hitch in the program may spell complete failure. In major experimental undertakings, it is common experience that there will be many blind alleys and unexpected delays before success is achieved. But each dead-end street adds to the capital that must be committed before the project is completed. High taxes bite deeply into the capital supply of small firms. Since one of the major elements of risk for a small firm is the danger of being caught short of capital and thus of having to abandon a project on the verge of success, high taxes may drastically reduce the prospect of success to a small firm. On the other hand, the large company has much greater leeway for experimentation and mistakes.

In summary, high flat-rate corporate income taxes severely discriminate against major investment expansions (and relatively in favor of minor expansions) because they reduce their probability of success and because they reduce the expected returns on these investments much more severely. The higher the tax, the more severe is the discrimination in each of these respects. Given the greater relative frequency of major expansions in the investment plans of smaller firms, it follows further that high flat-rate corporate income taxes discriminate with special severity against the growth of smaller independent firms and relatively, at least, in favor of larger, established companies. Consequently, the effect of high corporate income taxes on concentration by way of their effect on incentives for growth is to preserve prevailing degrees of concentration and over time to result in higher levels of concentration than would otherwise have existed. In this connection the effect of a progressive corporate income tax or of an excess profits tax would be much more pronounced than that of a flat-rate income tax.

One final point, however, needs to be emphasized in appraising the severity and seriousness of this thrust of the corporate income tax toward greater concentration. The desire of an aggressive busi-

ness management to expand may be so intense that expansions will be undertaken in spite of the repressive effect of high taxes. Many such managements may be imbued with the spirit to go through with their plans, "come hell or high water." High taxes may cause such men to fail; they are unlikely to prevent them from trying. But, quite obviously, although this consideration modifies the *extent* of the repressive effect of the tax, it does not compromise the *fact* that the effect of the tax is more severe on smaller firms and that the tax tends to some degree to increase concentration.

The personal tax structure may, in some cases, significantly modify the effects of corporate taxes on management decisions to expand. The *net* effect of personal tax factors will depend on the particulars of a given case. Our analysis of the complex interactions involved may be found elsewhere.[13] In general, we conclude that, except possibly for wealthy individuals with widely diversified investments, it does not seem probable that the possibility of obtaining limited loss offsets against personal income taxes will ease the burden of the corporate tax to any appreciable degree. In cases in which the owners have invested a large percentage of their personal assets in a single business endeavor, the personal tax structure probably accentuates the repressive effect of the corporate tax.

If a business is organized as a proprietorship or partnership, the personal income tax greatly reduces the incentive of its owners to undertake major expansions—perhaps more so than the corporate tax impedes expansions by small corporations. The highly progressive rates of the personal income tax strike with full force at the profits resulting from a partnership expansion. But if the expansion is unsuccessful and results in business failure, the partners' personal assets as well as their business assets and perhaps also their jobs will be in jeopardy. Moreover, because of the progressive nature of the personal income tax, the *more* successful the venture, the *larger* would be the government's share in the profits. But the risk of loss remains, and even in the relatively favorable case where other income is available against which partnership losses could be offset, the deduction of losses from this income would result in tax savings in lower surtax brackets, whereas additional income from the partnership would throw the taxpayer into higher surtax brackets. Moreover, under these circumstances the individual partner to some degree would be risking his entire personal assets for a rela-

[13] Cf. Butters and Lintner, *op. cit.*, pp. 36-39.

tively small potential income from the partnership; this income would be taxable at high surtax rates. All in all, under most circumstances the partnership form of organization does not appear very attractive for small enterprises with a large potential growth, even in comparison with the present high taxation of corporate profits.[14]

3. *Ability to Finance Growth from Retained Earnings*

THE second way in which taxes can affect relative rates of growth of larger and smaller firms is through their effect on the ability to finance expansion by retained earnings. In actual practice, this is likely to be even more important than the effect of taxes on investment incentives. Managements can and often do ignore adverse incentive effects resulting from high taxes, but they cannot safely ignore any substantial impairment of necessary supplies of capital to finance expansion. A company that does not have and cannot get the funds to finance an investment program is effectively stopped, however optimistic its appraisal of profit prospects.

Retained earnings have long been a major source of funds for financing growth of American industrial corporations. This is clearly shown in the history of individual companies and industries, including many of our most rapidly growing smaller firms as well as many of our leading large corporations. Terborgh's data[15] for all nonfinancial corporations show that retained earnings amounted to over 75 per cent of the aggregate net expansion in physical assets (including inventory) during the years 1925-1929 inclusive, and over 60 per cent of such expansion in 1939-1941.[16] Corresponding esti-

[14] In this connection it is pertinent to note that one method of tax relief frequently proposed for small businesses is to allow them to compute their tax liabilities on a partnership basis, although they are organized as corporations. This privilege may be of considerable value to the owners of a corner grocery store or of a local service station. But, unless personal tax rates on incomes of, say, $10,000 and over are reduced much more than now appears feasible, it would ordinarily be of little value to small companies with prospects for large-scale growth.

[15] Data from worksheets for *The Bogey of Economic Maturity* (Machinery and Allied Products Institute, 1945), Chart 14, p. 145, kindly supplied to us by the author and used with permission. Retained earnings have been adjusted upward to allow for profits disclosed by audit less resulting additional taxes. If both depletion and "inventory profits" are included in retained earnings, and outlays are correspondingly adjusted, the ratio is 79.5 per cent; if both are excluded, the ratio is 79.0 per cent; if the inventory valuation adjustment is made but depletion included, the ratio is over 81 per cent.

[16] If both inventory profits and depletion are excluded from both numerator and denominator, the ratio is 61.2 per cent; if both are included, 67.5 per cent.

mates of the Department of Commerce show that the retained earnings of all nonfinancial corporations in the four years 1947-1950 amounted to about 80 per cent of the net increase in plant, equipment, and inventory in these recent years of extraordinary expansion.[17] Similarly, Dobrovolsky's recent tabulations of the National Bureau's samples of large and of small and medium-sized manufacturing corporations shows that, for both size groups of firms, retained earnings substantially exceeded net physical asset expansion not only in the late 1920's but again in the years 1939-1943.[18]

The great and continuing importance of retained earnings in financing business growth strongly suggests that the effects of taxes on concentration may be more important through this channel than through any other. In this connection, it should also be noted that retained earnings have been far larger than all the assets involved in corporate mergers, which frequently have been said to be a major determinant of concentration even in recent years. The total amount of assets involved in *all* mergers in manufacturing and mining during the eight years 1940-1947 was on the order of $5 billion; assuming that mergers have continued at the peak rates of 1945 and 1946,[19] the total would be raised to perhaps $8 billion by the end of 1951—a sum over a twelve-year period just about equal to the earnings retained by manufacturing corporations in the single year 1948, and only a modest fraction of the total retained during the full twelve-year period.

What then is the distribution of retained earnings by size of firm? And what has been the effect of taxes on this distribution? Since our main concern is with the effect of income taxes, and unprofitable firms pay no income taxes, we shall confine our analysis to the retained earnings of *profitable* corporations. Moreover, in order to deal specifically with the sector in which the issue of concentration is most important,[20] our statistical analysis will be confined to manufacturing industries.

[17] Data from *Economic Report of the President*, January 1952, pp. 203, 172. Without inventory valuation adjustments, the ratio is 83.8 per cent; after these adjustments, 79.8 per cent. Depletion is included in both cases.

[18] Sergei P. Dobrovolsky, *Corporate Income Retention, 1915-1943* (National Bureau of Economic Research 1952), pp. 74 and 79.

[19] Our tabulations indicate that assets acquired in mergers were greatest in these two years, averaging about $750 million. For sources, cf. J. K. Butters, J. Lintner and W. L. Cary, *Effects of Taxation on Corporate Mergers* (Harvard Business School, 1951), Chap. IX.

[20] Cf. Adelman, *op. cit.*, pp. 286-287.

Analysis of data in *Statistics of Income* shows the following relationships:

1. As would be expected, the distribution of retained earnings among profitable manufacturing corporations is highly concentrated. In 1947 and 1948, for instance, only 0.4 per cent of all profitable manufacturing corporations had assets of more than $50 million, but these companies had 30.6 per cent and 42.1 per cent of all earnings retained in the two years. At the other end of the scale, the 96.7 per cent of companies with assets under $5 million accounted for only 38.9 per cent and 29.7 per cent of the retained earnings of profitable manufacturers in the two years.

2. Even so, retained earnings were *less* concentrated than were total assets, net worth, profits, or even sales. Illustrative data for 1947 and 1948 are given in Table 1.

TABLE 1

Percentage of Various Totals for All Profitable Manufacturing Corporations Held by Companies with Assets over $50 million and $100 million, 1947 and 1948

	COMPANIES WITH ASSETS OVER $50 MILLION		COMPANIES WITH ASSETS OVER $100 MILLION	
	1947	*1948*	*1947*	*1948*
Retained earnings	30.6	42.1	23.1	34.5
Net worth	50.2	52.5	42.5	44.2
Total assets	49.8	52.7	42.1	44.4
Profits before taxes	38.7	47.8	30.9	39.3
Profits after taxes	39.0	48.1	31.2	39.7
Gross business receipts	40.2	42.6	32.7	35.7
Number of corporations	.4	.4	.2	.2

Source: *Statistics of Income*, Dept. of the Treasury, Part II; data supplied in correspondence.

3. This conclusion is strikingly confirmed by Table 2, which shows that *in every year* from 1931 through 1948 (the last year for which data are available) the average retained earnings of profitable smaller manufacturing companies consistently constituted a much larger percentage of their net worth,[21] than did the retained earnings of larger companies.[22] In twelve of the eighteen individual

[21] Incidentally, they also quite consistently constituted a larger percentage of their total assets.

[22] The purely statistical significance of the relationship may be judged by the rank-X^2 test with 8 degrees of freedom (cf. Milton Friedman, "The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance," *Journal of American Statistical Association*, December 1937, pp. 675 ff.). Fisher's tables show that there is only one chance in 100 that observations drawn at

TABLE 2

Retained Earnings as a Percentage of Net Worth, All Manufacturing Corporations with Net Income, 1931-1948
(*asset size classes in thousands of dollars*)

Years	*Total*	*Under $50*	*$50–$100*	*$100–$250*	*$250–$500*	*$500–$1,000*	*$1,000–$5,000*	*$5,000–$10,000*	*$10,000–$50,000*	*$50,000–$100,000*	*$100,000 and over*	*$50,000 and over*
1931	.2	7.3	4.5	2.9	2.3	1.7	1.6	.7	.1			1.0[a]
1932	.3[a]	4.1	2.9	2.8	2.0	1.7	1.1	.6	.0			1.4[a]
1933	1.7	5.7	5.8	5.7	5.6	5.3	4.0	3.8	1.8			.2[a]
1934	2.0	5.1	5.4	5.7	4.9	3.7	2.1	3.0	.9			1.4
1935	2.9	6.8	6.0	5.6	5.1	4.5	3.6	2.3	1.6			2.5
1936	1.6	5.4	3.6	3.4	3.1	3.5	3.3	2.9	1.9	1.4	.3[a]	.0
1937	1.6	4.7	3.7	3.1	2.9	3.1	2.8	2.4	1.5	.6	.8	.8
1938	1.7	6.9	6.3	5.1	4.1	3.5	2.6	2.0	1.3	.9	.7	.8
1939	3.1	8.7	7.9	6.9	5.9	5.3	4.5	3.9	3.2	2.2	1.5	1.6
1940	4.1	9.6	8.2	7.5	6.6	6.5	5.8	4.7	4.0	4.2	2.5	2.8
1941	5.9	14.4	12.2	11.2	10.1	9.8	8.4	7.3	5.7	5.7	3.5	3.9
1942	5.7	15.3	11.7	10.2	9.2	9.0	8.4	7.8	7.0	5.6	2.8	3.2
1943	5.9	16.8	11.7	9.9	8.8	8.6	8.3	7.7	7.0	6.2	3.8	4.1
1944	4.5	19.5	13.0	10.4	8.5	7.8	7.4	6.4	5.2	4.6	2.0	2.3
1945	2.8	18.3	13.1	9.8	8.0	7.2	5.9	4.3	3.4	2.5	.1[a]	.2
1946	7.5	22.5	20.4	18.4	17.4	17.2	14.5	10.8	8.2	5.9	1.3	2.0
1947	9.5	18.0	16.7	15.5	15.2	15.5	15.1	12.7	10.5	9.2	5.1	5.8
1948	9.2	16.0	14.1	12.7	12.2	12.2	11.9	11.1	10.0	8.4	7.2	7.4

[a] Negative retained earnings resulting from an excess of dividends over net profit after taxes.

Source: Computed from *Statistics of Income*, Dept. of the Treasury; 1947 and 1948 supplied by correspondence.

years the ratios of retained earnings to net worth decline from size class to size class with no exceptions; in the remaining years, the irregularities were minor.[23]

The persistency of the relationships found between ratios for different sized groups in every one of the eighteen years strongly suggests that these relationships represent continuing characteristics of profitable firms.[24] Moreover, firms with ability to grow are likely to be the more consistently profitable firms over a period of years because they are likely to be the ones with the better products and managements. These firms are also likely to be even *more* profitable and retain an even *higher* percentage of those profits than profitable small firms in general, and *a fortiori* higher than profitable larger firms.

Thus there can be little doubt that consistently profitable smaller firms have been able to finance a more rapid rate of growth from retained earnings than larger profitable companies. The importance of this fact with respect to corporate concentration is obvious: retained earnings among profitable manufacturing corporations have been a potent factor tending to deconcentrate the manufacturing sector of the economy.[25] But the degree of its importance can appropriately

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random from a parent universe in which the true mean rate of retained earnings was the same in all size classes would yield an X^2 as great as 20.09. Since the observations in Table 2 give an X^2 based on this null hypothesis of 140.31, the conclusion that retention rates are related to size of firm is clearly indicated.

Corresponding tests of the hypothesis that the observed data were drawn from a universe in which the ratios progressively declined without exception from size group to size group show it to be quite "consistent" with the data.

[23] It may also be noted that the average of the ratios for the prewar years 1931-1940, and also those for 1941-1948, declines from size class to size class without exception.

[24] In our judgment, the persistence of these relationships, together with the considerations brought out in the rest of this paragraph, persuasively establish the broad conclusions reached despite any technical qualifications that might be thought necessary due to the changes in the makeup of the profitable group of firms from year to year. Such shifts would, of course, be due to the fact that the firms in any size group that are profitable in one year may not have been so in others. Other shifts, of lesser potential significance to our conclusions, will occur as some firms move from one size group to another because of profits or losses, changes in outside liabilities, or capital accounts.

It should also be noted that the ambiguity of data for small companies (taken up later) does not affect the validity of the ratios of retained earnings to net worth, since any understatement of "true" profits implies an equal and offsetting understatement of "true" withdrawals via dividends.

[25] It is necessary to emphasize that this conclusion relates simply to the effects of retained earnings of *profitable* firms; specifically, it does *not* extend to the

be emphasized. Such differences in rates of growth are *cumulative*, and the differences in growth over a period of years—and hence the amount of *deconcentration* affected—will be substantially greater than the rates of retained earnings on net worth by themselves would suggest.[26]

Such considerations, along with the extraordinary consistency of the decline in the retained earnings to net worth ratio with increasing size of firm, leave little doubt that here is one of the major factors tending positively to reduce prevailing levels of concentration.

This conclusion is further emphasized by the evidence that retained earnings are a much more important source of funds to finance expansion for smaller than for larger concerns. Not only are retained earnings larger in relation to net worth and assets for profitable small corporations,[27] but smaller companies generally have much less access to outside capital than larger companies. Generally speaking, small companies can expect to be able to float stock only in limited periods of booming markets and even then often only on relatively unfavorable terms. In contrast, large, established concerns, in addition to their ability to float common stock with much greater ease than smaller companies, can often sell preferred stocks or bonds. These alternatives are available to smaller concerns only on a limited scale, on considerably more expensive terms, and at great risk to the common stockholder.

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effects of all retained earnings (positive and negative) of all firms, whether profitable or not, on concentration. Unpublished data show that the negative retained earnings of *unprofitable* firms have consistently been much larger in relation to net worth and total assets for small than for large firms; *their* effect has therefore been to *increase* concentration. But this is not relevant to the present paper since, as emphasized earlier in the text, we are concerned with the effects of (income) *taxes* on concentration; only profitable firms pay taxes; therefore taxes affect concentration through retained earnings only insofar as they affect the retained earnings of *profitable* firms.

[26] As a specific illustration, the retained earnings to net worth ratio in 1947 for companies with assets between $1 and $5 million was 15.1 per cent—or not quite three times the 5.1 per cent ratio for firms over $100 million. But, if these ratios were maintained for as little as ten years, net worth of the smaller firms would have increased 308 per cent—or nearly five times the 64 per cent increase of the largest size group of companies. Similar calculations using the (still higher) retained earnings ratios of smaller size groups of firms would show even greater contrasts. While no particular significance is attached to these specific figures, they do serve to illustrate the important cumulative effects involved.

[27] They are also markedly and regularly larger in relation to *total* internal sources of funds for investment, which include such noncash expenses as depreciation and depletion allowances and other accruals as well as retained earnings, than for larger firms.

Finally, even when available, outside capital is likely to be less *acceptable* to smaller firms than to larger. This reaction is attributable to the generally more onerous terms already mentioned and also to the fact that the owner-managers of small firms are frequently unwilling to weaken their control position and freedom of action by acquiring equity capital. Such control-conscious managements are sometimes unwilling to incur the risks and restrictions involved in issuing senior equity and debt securities or in other forms of borrowing. The importance attached to control considerations depends both on management attitudes and objectives and upon such factors as how widely the company's stock is distributed.

The fact that retained earnings are a more critical source of funds for financing expansion for smaller than for larger companies leads to a further conclusion of major consequence to our analysis: high corporate income taxes will restrict the growth of smaller firms more severely than that of larger companies—and thereby tend to increase concentration—*even if* their relative impact on growth from retained earnings alone were the same for all sizes of firms. Because of the greater importance of retained earnings to smaller firms, an unshifted corporate income tax could have a neutral or favorable effect on concentration only if it were found to restrict the internally financed growth of large firms much more severely than that of smaller companies.

What, then, has been the effect of taxes on the relative ability of larger and smaller firms to grow through retained earnings? Analytically, it can be shown that higher as compared with lower corporate income tax rates will restrict potential internally financed growth more than in proportion to the differences in the rates.[28] Moreover, this restriction is *cumulative* in character and will be more severe (a) the longer the tax is in effect, (b) the higher the initial rate of the tax, (c) the higher the rate of profit earned by the company, and (d) the more conservative the dividend policy of the company in question before the tax increase. Consequently, a high flat-rate corporate income tax—or an increase in the rates of this tax—will restrict the growth of smaller firms more than that of larger firms, and thus serve to increase concentration, if two conditions are fulfilled: (1) the smaller firms are earning a higher

[28] Detailed proofs of these propositions, as well as illustrations of their impact and detailed studies of individual companies having outstanding growth records, have all been given in Butters and Lintner, *op. cit.*, Chap. VI, and John Lintner, *Tax Restrictions on Financing Business Expansion* (Ph.D. dissertation, Harvard, 1946), Chap. III and Appendix B.

rate of profit before tax than the larger firms and (2) the smaller firms are paying out a smaller proportion of their net income as dividends than large concerns.

For companies with assets of over $1 million, the statistical evidence regarding the effect of the tax laws since 1931 on concentration is unequivocal: in every year their effect was consistently and markedly to *increase* concentration within this size range. The significance of this finding is indicated by the fact that this size range in 1948 included about 10,000 manufacturing concerns.[29] Given the size of the economy and the character of most of our more important industries, it is clear that the absolute and relative size of the firms in these size classes are matters of major consequence for all those aspects of concentration most closely related to competitive practices and performance.

The evidence in question may be summarized as follows: (1) Within these size classes smaller profitable firms quite consistently enjoyed markedly higher rates of profit before taxes on net worth than larger sized firms.[30] In 1946-1948, for instance, profitable companies with assets of from $1 million to $5 million averaged virtually 30 per cent on net worth before taxes, while companies over $100 million averaged about 16 per cent, and the decline from size class to size class was quite regular and marked in virtually all of the eighteen years analyzed. (2) Effective tax rates on smaller firms in this size range were quite consistently as high and generally higher than for the larger firms. (3) With even greater regularity throughout this eighteen-year period, smaller firms retained a larger proportion of their disposable income than did larger concerns.

For instance, in the ten years 1931-1940, profitable firms with assets of between $1 million and $5 million retained an average of 27.6 per cent of their profits after taxes while firms with assets over $5 million retained 7.86 per cent. In the postwar years 1946-1948 the smaller firms retained 74.3 per cent, while the larger group retained less than 50 per cent. The share retained declines between every pair of size classes over $1 million in every one of the ten years 1939 through 1948 and, as shown in Table 3, aberrations in

[29] In this year there were 9,228 companies showing net profits and 936 with deficits or 10,164 for the total number of companies submitting balance sheets and having assets over $1 million.

[30] The available evidence indicates that this same pattern is found in the separate major divisions and individual industries within manufacturing as a whole. See W. L. Crum, *Corporate Size and Earning Power* (Harvard University Press, 1939). Spot checking for later years also confirms the relationship.

TABLE 3

Retained Earnings as a Percentage of Net Profits after Taxes, All Manufacturing Corporations with Net Income, 1931-1948
(*asset size classes in thousands of dollars*)

Years	*Total*	*Under $50*	*$50–$100*	*$100–$250*	*$250–$500*	*$500–$1,000*	*$1,000–$5,000*	*$5,000–$10,000*	*$10,000–$50,000*	*$50,000–$100,000*	*$100,000 and Over*	*$50,000 or More*
1931	2.6	63.4	51.4	36.8	29.7	21.2	21.1	7.6	1.7	12.0[a]		12.0[a]
1932	4.8[a]	44.0	40.5	39.4	29.0	24.0	16.9	7.7	.2	26.9[a]		26.9[a]
1933	28.4	65.4	74.7	69.0	67.8	62.3	52.9	45.8	24.2	4.6[a]		4.6[a]
1934	24.9	46.2	57.9	60.7	51.0	38.9	24.3	33.1	11.7	18.1		18.1
1935	29.4	62.0	60.1	54.5	49.1	41.7	35.9	22.9	15.8	27.3		27.3
1936	16.0	42.0	30.6	28.4	26.1	29.4	29.0	25.7	19.0	13.4	3.7[a]	.1
1937	17.0	35.8	32.1	27.1	25.8	27.4	25.8	23.4	15.6	6.9	9.8	9.3
1938	23.7	58.4	61.3	51.7	45.9	40.0	32.5	26.9	19.1	12.0	12.1	12.1
1939	35.1	68.7	67.1	60.7	52.8	49.4	42.9	39.3	34.9	26.6	21.4	22.5
1940	41.7	72.5	66.9	62.3	56.7	55.3	50.7	44.4	40.8	37.1	30.5	32.1
1941	50.0	80.0	77.5	73.5	68.5	65.6	59.5	55.8	49.0	43.8	36.3	38.0
1942	55.2	84.2	81.3	76.1	70.8	69.4	66.1	62.7	59.7	52.4	37.1	40.2
1943	57.9	83.9	79.0	73.9	70.2	69.4	66.8	63.8	59.5	54.8	47.2	48.6
1944	49.6	86.5	79.6	76.5	71.8	66.8	65.8	59.9	52.7	49.1	28.4	32.2
1945	38.1	87.8	84.0	77.7	72.6	67.6	60.8	49.4	42.4	32.6	2.4[a]	4.7
1946	58.9	86.1	86.5	83.8	80.0	79.4	75.7	66.4	59.1	50.5	19.7	27.0
1947	62.9	85.8	84.0	81.9	79.9	77.3	75.4	68.7	63.7	60.4	46.5	49.2
1948	61.8	85.3	84.3	80.3	76.6	74.6	71.3	66.8	63.2	56.2	53.7	54.1

[a] Negative retained earnings resulting from an excess of dividends over net profit after taxes.

Source: Computed from *Statistics of Income*, Dept. of the Treasury; 1947 and 1948 supplied by correspondence.

earlier years are few and minor.[31] This relationship is also found with similar consistency in a marked degree on a *marginal* as well as an average basis.[32]

The extent to which the tax structure encourages concentration among firms with assets of more than $1 million may be roughly indicated in the following way. During the eight years 1941-1948 the average rate of retained earnings on net worth of companies in the $1-$5 million group was 10.0 per cent; for companies over $100 million, 3.2 per cent. If there had been no tax, and if the companies would have retained the same percentage of the funds that were paid in taxes as they retained from their actual disposable income,[33] these rates of retained earnings would have been raised to 20.6 per cent and 5.9 per cent respectively. By using their average actual retained earnings rates, we may compute that average companies in the $1-$5 million bracket would have grown over a ten-year period by 159.3 per cent of their initial size, if they were to have been continuously profitable. Using the computed rates under an assumption of no taxes, the corresponding ten-year growth would have been 550.9 per cent. The restriction in growth due to taxes for these smaller firms may, therefore, be taken as 390 per cent of their initial size. On the basis of the same set of assumptions,[34] for companies over $100 million, the restriction in growth due to taxes would have been only 40 per cent of their initial size. Under these assumptions, taxes may be estimated to have deprived smaller firms of relatively about ten times as much growth as larger firms.[35] These estimates,

[31] For the 18 years 1931-1948, with firms over $50 million combined in one class, the table yields an Xr^2 of 48.33, in comparison with a value of 11.34 based on the null hypothesis (1 per cent level using 3 degrees of freedom) and a maximum value of 54.00 obtainable from such a table in the event of perfect consistency. Beginning with 1936 it is possible to separate the firms with over $100 million in assets. The thirteen years 1936-1948, with five columns and four degrees of freedom, the maximum value of Xr^2 assuring perfect consistency would be 52.00, the table yields a Xr^2 of 50.648, and the "one-per cent level" is 13.28.

[32] This statement is based upon regressions, for each size group separately, of dividends against profits after taxes for the years 1934-1941 (except 1936-1937) and also for 1942-1948.

[33] These percentages were 67.7 per cent and 33.3 per cent respectively.

[34] In addition to the assumptions already stated, this entire set of illustrated calculations assumes that the corporate income tax is unshifted, that the demand for the companies' products and the percentage rate of net income before taxes would not be affected by the level of the tax, and that new issues and retirements of stock would be made in the same dollar amounts. For discussion of the reasonableness of these assumptions, cf. Butters and Lintner, *op. cit.*, pp. 87-88.

[35] If instead of using average propensity to retain earnings, we use the marginal

of course, need to be adjusted downward to allow for such factors as the greater variability of earnings rates among smaller firms, but even in their present rough form they are sufficient to indicate that this effect of the tax structure probably is of major consequence.

The statistical evidence regarding the effect of taxes on concentration is considerably less clear for firms with assets of less than $1 million. In the first place, while the rate of profit earned before taxes by profitable firms generally declined with increasing size up to $1 million before the war, the wartime pattern was mixed; in the three postwar years for which data are available, average reported rate of profit tended to increase modestly with size of firm within this range. Since, however, reported profits generally tend to be substantially below "true" profits among firms with assets of less than $1 million,[36] the significance of these "reported" relationships is, to say the least, ambiguous.

Second, due to exemption features and to preferential tax rates for small companies, the average effective rate of tax on reported profits generally tended to increase with size of firm up to about the $1 million asset level, with the progression being especially marked after 1940. This apparent progression of effective tax rates with increasing size of firm would be even more marked if tax liabilities were related to "true" profits earned by firms in these size classes. On the other hand, the share of reported profits after taxes paid out in dividends consistently and markedly increased with increasing size of firm throughout the period,[37] but the pattern that would

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propensities based on regressions for the years 1941-1948, then the computed (average) retained earnings ratios in the absence of taxes become 23.5 per cent and 8.4 per cent respectively. Over ten years the smaller companies' growth would have been 725.2 per cent of their initial size and the larger companies' growth would have been 124 per cent. Larger companies on this basis lost a growth of 87 per cent of their beginning size as a result of taxes while smaller companies lost 566 per cent or relatively seven times as much.

[36] See Joseph L. McConnell, "Corporate Earnings by Size of Firm," *Survey of Current Business*, Dept. of Commerce, May 1945, pp. 6-12, and Sidney Alexander, "The Effect of Size of Manufacturing Corporation on the Distribution of the Rate of Return," *Review of Economics and Statistics*, August 1949, pp. 229-235.

Both McConnell and Alexander find on the basis of independent tests that the understatement diminishes progressively with increasing size of firm; McConnell finds it "insignificant" for groups of firms having assets over $1 million (*op. cit.*, p. 8) and Alexander also finds it to be quite small in the $1-$5 million and larger groups.

[37] For what it is worth, we may note that this relationship was as marked and regular in the under $1 million size classes here being considered as it was among firms having assets over $1 million.

be formed by the economically relevant magnitudes is in doubt.

Such considerations would suggest that, because of the favorable tax treatment accorded smaller firms, the tax structure on balance has restricted the growth of small firms somewhat less than that of larger firms *within* the $1 million and under asset size class; its net effect within this size class may have been to facilitate some small deconcentration of the corporate structure. Before this conclusion is accepted as final, however, appropriate allowance must be made for the fact that the more vigorous and progressive companies will have higher rates of profit (and presumably more conservative dividend policies) than the average profitable company in their size group. Such firms probably were subject to effective and marginal tax rates that were as high as those on larger firms, since the tax concessions accorded smaller firms were based upon the dollar amount of profit. The impact of the tax structure on such companies, therefore, has tended to *increase* concentration even in the size groups having assets of less than $1 million.[88]

In the absence of further data and much more exhaustive analysis, it is not possible to strike a definite and firm balance between these considerations. But insofar as our concern with concentration is focused upon those aspects of competitive structure most closely related to probable market behavior, the subgroups of small firms noted are disproportionately important because these companies have the best chance of offering an effective challenge to large, well-established concerns. There is consequently a real possibility that the tax structure has been no more than neutral and may even have tended to increase effective concentration among firms having assets of less than $1 million. This probability is of course much increased when the impact of the existing excess profits tax is taken into account.

When our conclusions regarding the effects of taxes on concentration among firms having more than $1 million in assets and among those of smaller size are combined, it seems clear that the tax structure on balance tended to increase concentration insofar as its impact upon opportunities for internally financed growth are concerned. This conclusion seems clear whether one looks to the decade of the 1930's, to the war years, or even to the early postwar years. In view of the effect of relative rates of growth of profitable

[88] As previously explained, the same rate of tax will penalize the growth of such very profitable firms more severely than that of larger, less profitable companies.

firms on concentration and the critical importance of retained earnings in financing such growth, this conclusion is of major significance to our analysis.

Restrictions placed by high corporate taxes on expansion from retained earnings may be offset in part by increased reliance on outside financing. To the extent that this occurs, the restrictions due to the tax on the *total* amount of investment and growth in the economy are reduced, but the effects on concentration are worsened. As previously noted and as discussed in detail below, outside capital is generally available on less restrictive terms to large firms than to small. Moreover, managements of large companies typically are less reluctant to resort to outside financing than are managements of small companies. In terms of the effects of taxes on concentration, therefore, we may conclude not only that the internally financed growth of larger corporations is restricted relatively much less than that of smaller companies by income taxes, but also that for the larger companies relatively more of this restriction is "made up" through outside financing than is the case for smaller companies. For both reasons, corporate income taxes have markedly tended to increase concentration.

4. *Availability of Outside Capital*

IN ADDITION to their differential effects on incentives to expand and upon ability to finance expansion from internal sources, taxes can affect relative rates of growth of larger and smaller firms—and thereby concentration—by altering the availability of outside capital needed to finance growth. The effects of taxes on the availability of outside capital arise largely from considerations developed in previous sections.

Our consideration of the effects of corporate taxes on the availability of outside capital can best be focused on the more promising smaller concerns. The problem is of less practical importance for other smaller concerns because of their limited access to outside capital in any event, and the effect will be similar, though less marked.

It has been shown that a high corporate tax would sharply lower the profit expectancy of a risky expansion undertaken by a small company, and, in addition, would greatly reduce the potential expansion from retained earnings of a growing company over a period of years. But the principal attraction offered by the stock of small

companies undertaking venturesome developments is the prospect of high profits and rapid growth. A high corporate tax, by limiting these prospects, would almost inevitably hold down the value of the stock of such companies.[39]

The practical effect of lower stock prices would be to make expansions financed by outside capital much less attractive to existing stockholders. These stockholders would be required to surrender an increased percentage of their ownership interest in their company as a price for a given amount of new capital. If the existing management or stockholders insisted on maintaining a specified percentage ownership in order to protect their control position, the deterioration in the *terms* on which outside capital could be obtained would reduce, often substantially, the *amount* of new capital which could be raised. This reduction in the available outside capital would increase the chances of failure in the whole investment undertaking.[40]

In this respect a high corporate tax would seriously worsen the position of a growing firm in competition with its more stable established competitors. The point may be illustrated by considering the relative effects of, say, a 25 per cent and a 50 per cent corporate tax rate on a vigorous, small, growing enterprise (Company S), and on a well-established, large competitor (Company L), which, it is assumed, has reached its full growth and is expected to operate at a relatively constant volume and level of profitability for some years to come. Since the larger competitor's net income is not needed to finance expansion, it is paid out in dividends to stockholders. For purposes of discussion, assume also that the full burden of the tax is borne by stockholders and that the stock of Company L would sell at the same multiple of its annual earnings after taxes, irrespective of the level of the tax rate. Under these circumstances a higher tax rate would reduce the price of the stock of

[39] Stock prices *in general* will not necessarily decline in proportion to the decline in (expected) net income resulting from an increased tax. Conceivably, the capital seeking the higher return available on equity investments may be sufficiently large and determined to cause the stock market to find its equilibrium at a higher price-earnings ratio with a high corporate tax than with a lower corporate tax. Even admitting this possibility, however, it is highly probable that a high corporate tax would result in a lower level of stock prices *in general* than would a lower tax. If this probability holds for stock prices in general, it may be regarded as a virtual certainty for highly speculative stocks in which the risk of complete loss is great.

[40] See above, p. 256 *et seq.*

Company L approximately in proportion to the decline in its income resulting from the higher tax. A 50 per cent tax rate, for instance, would result in a 33⅓ per cent lower price on the stock of Company L than would a 25 per cent tax rate.[41]

Under the same circumstances, however, a 50 per cent tax, as compared with a 25 per cent tax, would cause a much greater relative deterioration in the price of Company S's stock. The market valuation of its stock is presumably determined by offsetting the discounted value of the potential earning power of the company against the risks faced by the company—risks which are obviously much greater for Company S than for its established competitors. As already noted, the cumulative effect of a higher tax on such a growing company would reduce its future earning power much more than in proportion to the decline in income resulting from the tax in any given year. In addition, the higher tax would increase the risks of such a venture. For instance, the very survival of a growing company in a competitive industry, let alone its expansion, depends in large measure on its ability constantly to improve its products and to increase the efficiency of its operations. To the extent that taxes cut into the company's limited capital supply, the necessary improvements will be more difficult to introduce.

It should be noted in passing that, in addition to cutting down the retained earnings of Company S and making outside capital less accessible, a high corporate tax would indirectly decrease the borrowing power of the company. The ability of a company to borrow depends largely on the strength of its net worth and working capital positions. Increased tax payments would obviously weaken both of these positions. The resulting reduction in borrowing power would constitute a much more serious limitation on a small, growing company than on a large, established company.

To summarize, in addition to curtailing drastically the potential earnings power of Company S in future years, a high corporate tax would increase the risks confronting the company. Such a tax, on the other hand, might even make the future of Company L more

[41] Suppose that Company L earns $4 million a year before taxes, that it has 4 million shares of capital stock outstanding, and that its stock sells at 10 times its annual earnings. With a corporate tax rate of 25 per cent, net income after taxes would be $3 million and the price of the stock would be $7.50 a share. With a corporate tax rate of 50 per cent, net income after taxes would be $2 million and the price of the capital stock would be $5 a share, 33 1/3 less than with a 25 per cent tax.

secure. It would lessen the intensity of the competition that established companies would face from small but rapidly growing competitors. The combined effect of all these considerations makes it appear almost certain that a high tax rate would depress the price of Company S's stock and its ability to borrow much more than that of its well-established competitors.[42]

The importance of this fact is still further accentuated when the relative need of the two companies for outside capital is compared. Even with a very high tax rate, an older, established company often would have large amounts of funds available from its noncash expenses. Indeed, the level of corporate taxes might have little effect on the actual operations of a company that had reached its full growth; higher taxes might simply mean lower dividends for stockholders.

Vigorously growing small companies, on the other hand, typically cannot rely to an equivalent degree on funds becoming available in the form of depreciation and other reserves. They must depend primarily on retained earnings and outside capital for funds with which to purchase new assets and to finance the introduction of new processes and techniques.

The general conclusion indicated by all these considerations is that after a new business has reached the stage of profitable operations, high corporate taxes exert a strongly repressive effect on expansion financed either by retained earnings or by the acquisition of outside capital, and thereby serve to increase concentration.

The effects of the personal tax structure upon the availability of outside capital to business enterprises is analytically similar to the discussion already presented in Section 1 and need not be repeated in full at this point. It should, however, be noted that investor motivations for the purchase of the stock of large, established companies may differ substantially from those for investments in small, growing companies. In particular, the desire to obtain a good *income* yield is likely to be a much more important consideration in the purchase of the stock of a large, established company than that of a small, growing company. On the other hand, the capital gains

[42] This comparison, for purposes of simplicity of presentation, has assumed that a corporate tax is not shifted to consumers or wage earners and that the price-earnings ratio of the stock of Company L would be unaffected by the level of the corporate tax rate. Neither of these rigid assumptions, however, is essential to the logic of the argument. So long as Company S and Company L are equally affected, the conclusions of the text hold.

motivation is relatively more important as a reason for the purchase of unseasoned stocks issued by small, growing companies.

Generally speaking, as we have already noted, the high marginal income tax rates tend to discourage investors from purchasing relatively risky assets such as common stocks, provided that the motivation for the purchase is to obtain an adequate income yield. On the other hand, the large differential between the income tax rates and the capital gains rates tends to stimulate the purchase of securities believed to offer good prospects of capital appreciation. On the assumption that opportunities for capital appreciation are regarded by investors as being relatively greater for investments in promising small companies than for investments in the stock of large, established companies, it could be argued with considerable force that the existing personal income tax structure tends to narrow the relative advantages of the established company in obtaining outside equity capital over that of its small but more rapidly growing competitors. If this reasoning is accepted, it follows that this aspect of the personal income tax structure tends to offset somewhat the overall impact of the tax structure that seems definitely to be in the direction of promoting greater industrial concentration.

5. *Effect on Concentration via Mergers*

THE tax structure exerts two important pressures on the owners of many closely held businesses to sell out or merge[48] with other (usually larger) companies. The first of these tax incentives is to sell out a closely held business to lessen the impact of the estate tax. The sales in this case may be caused by the liquidity problems that would be encountered in meeting estate tax liabilities if the business were still in the estate at death or by uncertainties regarding the valuation of the business for estate tax purposes. The second tax incentive is for the owners to sell out a closely held successful business in order to lessen the impact of income taxes. The motivation for such sales typically is to get profits out of the firm by the capital gains route. This is often an attractive alternative to having the profits distributed as dividends subject to the full individual income tax rates or to leaving the profits in the company and having them possibly subject to penalty taxes under Section 102.

[48] Throughout this paper, the term "merger" is used in a very broad sense to refer to all combinations of formerly independent companies and not in a restricted legal or technical sense. In other words, we use the word "merger" interchangeably with the phrase, "sale or purchase of business enterprises."

The liquidity problem is how to raise the cash with which to pay the estate tax. Unless the owner has sufficient funds outside his closely held business to cover his estate tax and to meet his other liquidity needs, he is likely to feel compelled to dispose of part or all of his closely held stock during his lifetime. If he dies without doing so, his executors may be forced to make the sale after his death.

While most owners of closely held businesses of any size have to give this matter serious thought, the circumstances under which liquidity needs create strong pressures to sell are much more specialized than is often realized.[44] The great bulk of small companies—most of those with assets of less than $1 million and many considerably larger—are eliminated because no single stockholder will be subject to such large estate taxes that he will be forced to make sales that would not otherwise have occurred for the purpose of putting his estate in order. At the other extreme, most very large companies have sold stock to the public at some stage of their growth and thereby created a market for their securities. It is in between these ranges—say, especially in the $5 million to $25 million asset class—that the greatest density of sales for liquidity reasons is found.

In addition to liquidity problems, uncertainty as to the valuation which the Treasury will place on the stock of closely held companies in determining estate tax liabilities is frequently mentioned as a factor tending to force owners of closely held enterprises to sell out in anticipation of estate tax problems. An unreasonably high valuation will, of course, increase the size of the estate taxes and aggravate the severity of liquidity problems arising in connection with the tax.

The main reason for this uncertainty is simply that there is no objective test that can be applied to determine the value of the stock of closely held companies in the absence of trading of the securities of the company in question. Impartial experts often differ by wide margins in their estimates of the fair market value of such securities.

The evidence we have seen does not justify the conclusion that the Treasury is deliberately or consistently unfair in the valuation it places on the securities of closely held companies.[45] Numerous

[44] See Butters, Lintner, and Cary, *op. cit.*, Chap. II, esp. pp. 60-71.

[45] As many instances have been cited to us in which Treasury valuations were on the low side of the range of reasonable doubt as on the high side. The most frequently expressed opinion of informed individuals has been that Treasury

businessmen, nevertheless, *believe* that an unreasonably high valuation is ordinarily placed on the securities of closely held companies by Treasury agents, and isolated instances of such valuations undoubtedly do occur. Regardless of the dubious factual foundation for this belief as to *general* Treasury policy, the fact that it is widely held and the risk of encountering a high valuation in any individual instance adversely influence the willingness of businessmen and investors to hold the securities of closely held companies—especially as the owners grow older and become more conscious of impending estate tax problems. In general, however, valuation problems do not appear to have been a major reason for the sale of closely held enterprises.[46] They seem more frequently than not to be of secondary importance in relation to other tax motivations for sale, especially liquidity considerations, and to nontax motivations.

The impact of the estate tax on the owners of closely held companies is reinforced by the combined effects of high income taxes and of low capital gains tax rates. As already noted, if owners of closely held companies are to pass their holdings on to their heirs, they must accumulate large amounts of liquid assets in order to provide for the payment of their estate taxes and for their other liquidity needs. The personal income tax along with the double taxation of dividends often makes the accumulation of such funds in adequate amounts prohibitively costly if not impossible. This difficulty has been substantially mitigated for many though not all owners of closely held companies by the Revenue Act of 1950.[47]

In addition to making it unattractive for the owners of closely held companies to retain their holdings, the tax structure further abets the decision to sell by providing very favorable tax treatment in the event that the owners decide to sell out. The gains from

agents ordinarily will agree to a reasonable valuation provided the taxpayer's case is carefully and effectively presented.

[46] The greatest concern over Treasury valuation policies is found among owners of so-called "one-man" companies, i.e., companies which would lose much of their value when their owners ceased to direct their affairs. In view of the extraordinarily difficult problem of measuring the contribution of the owner's personal services to the value of such enterprises, unreasonably high valuations are not improbable when these contributions are large. Occasionally, the fear of unreasonably high valuations under these circumstances appears to have constituted a major reason for sale; even in these instances, however, it is not altogether clear how much of the owner's worry really had to do with death taxes as such and how much with the effects of *death* itself.

[47] Cf. Butters, Lintner, and Cary, *op. cit.*, pp. 28-34. The relief provision introduced by the Revenue Act of 1950 was further modified by the Revenue Act of 1951.

such sales are capital gains and hence are taxed at a maximum rate of 26 per cent. If the sale takes the form of a tax-free exchange of securities, the owner may be able to transfer his holdings to readily marketable securities of high investment quality without incurring any taxes at all on the transaction. Thus, while funds taken out of the business as dividends may be taxed at rates as high as 92 per cent under the 1951 act, owners may convert the stock of their companies into cash or marketable securities at a tax cost ranging from zero to a maximum of 26 per cent of the gain on the sale.

Even when no attention is paid to the estate tax, perhaps because the owners are still young, the income tax structure itself may be a major factor in inducing the owners of closely held companies to sell out. This inducement will be especially strong for owners of rapidly growing companies that have developed a substantial capital value but still represent highly risky investments. Entirely apart from tax considerations, the temptation is great for the owners of such companies to cash in their gains and to invest them in less risky form while the opportunity is still available.

To the degree that the opportunity for further gains through retaining holdings is curtailed by heavy taxation—including the corporate income tax, possibly Section 102, and the personal income tax on amounts distributed as dividends—the incentive for the owners of rapidly growing companies to play safe and cash in the gains already attained at capital gains rates will be correspondingly strengthened. The rate increases of the Revenue Acts of 1950 and 1951 have substantially augmented this incentive to sell out as has, under many circumstances, the excess profits tax imposed in 1950.

Another factor that makes a sale to a large company more likely, especially if Section 102 taxes are involved, is that the tax penalties and risks confronting the purchasing company often are much less severe than those confronting the potential seller. Such a purchaser ordinarily need not be concerned about Section 102 taxes. The greater financial resources of large companies tend to reduce many of the risks encountered by a smaller, less well-established company; and, if losses should be incurred, a large purchaser would be more likely to be able to offset them against other sources of taxable income than would the existing owners. For all these reasons, a closely held company often has a substantially greater value to a potential purchaser than to its existing owners. A large purchaser, therefore, is likely to be able to offer a price so favorable that the existing

owners will feel that it would be foolhardy to decline the opportunity to consolidate their position by cashing in their gains.

These two combined tax effects—the estate tax and the income tax, sometimes complicated by Section 102—have undoubtedly been a major factor motivating the merger or sale of many independent enterprises. But it would be incorrect to stress the importance of this fact too strongly. For the conditions under which these tax effects exert their full force are highly specialized and apply to only a small proportion of all small and medium-sized companies. And even when tax incentives are important, they are not necessarily controlling. The problem of whether or not to sell out a closely owned business is very complex and embraces the whole range of human motivations and interests. Frequently such matters as the desire to retire; to avoid the ever-increasing red tape involved in managing an independent enterprise; to provide for management succession; to become associated sometimes as an officer or director with a nationally known company; to achieve competitive advantages; to consolidate risky investments; and a host of similar reasons may far overshadow tax considerations—even when the conditions needed to make tax considerations important are met. Moreover, in some cases where the tax pressures are strong, they can be substantially relieved or bypassed by various courses of action other than sale of the business to another company.[48]

In our recent study of these problems, we were able to divide eighty-nine of the mergers covered in our field interviews into two categories: (1) those in which taxes were of major importance, and (2) those in which they were of lesser or negligible importance, if any attention at all was given to them. In general, mergers have been included in the former category only when the owner with good reason was consciously and seriously concerned about his tax problems and when other motivations for sale did not dwarf the tax worries of the owner.

This classification indicated that for the period since 1940 taxes have been a major reason for sale for about two-fifths, or a little more, of the transactions in which the selling company had assets of between $15 million and $50 million as of the date of sale, for between one-fourth and one-third of the companies sold in the $5-$15 million asset size class, for a little over one-fifth of the companies in the $1-$5 million class, and only rarely for the sale of companies

[48] These alternatives are discussed in Butters, Lintner, and Cary, *op. cit.*, Chaps.

with assets of under $1 million. These fractions obviously represent only approximations of the percentage of tax-motivated sales as we have defined this concept, but within reasonable limits they provide a basis for appraising the relative role of taxes as a motivating force for recent merger activity.

By combining these conclusions with our aggregate data on reported mergers for 1940-1947, we have been able to make estimates of the over-all role of taxes in recent merger activity involving manufacturing and mining companies. Subject to a fairly wide margin of error, our estimate is that taxes were of major importance for something less than one-tenth of the total number of mergers of manufacturing and mining companies reported in the financial manuals for the years 1940 through 1947. About one-fourth of the mergers involving selling companies with total assets of over $1 million fall in this category. In terms of total assets rather than of numbers of companies, taxes appear to have been a major reason for sale in the mergers involving a little over one-fourth of the total assets of *all* companies sold in such transactions and about one-third of the assets of all companies sold with assets of over $1 million. The larger fraction for total assets transferred reflects the greater relative importance of taxes as a motive for the sale of large companies than of small companies.

To say that taxes were a major reason for sale, however, is *not* to say that the sale was caused by the tax motivation in the sense that the merger would not have occurred in its absence. Often there were several reasons for sale of approximately equal importance in the minds of the owners, and it was impossible to say that any one of them was in itself decisive. Thus the figures presented in the preceding paragraphs, subject to the margin of error inherent in our data and procedures, represent maximum estimates of the role of taxes as a cause of merger activity. They overstate to an unknown but probably large degree the sales in which tax motivations were clearly the decisive factor.

In some cases in which taxes were decisive in the *immediate* decision to sell, other nontax causes, such as the lack of adequate management succession, might have forced the owners to sell out at a later date. From the *long-run* viewpoint the effect of taxes in such cases might more properly be described as accelerating the sale rather than as causing a sale that would not otherwise have been made. For this reason, also, our figures on tax-motivated sales un-

doubtedly overstate the *long-run* effect of taxes as a cause for the sale of independently owned companies.

Nonetheless, if mergers in recent years had markedly increased over-all concentration, tax-motivated mergers were numerous enough to justify a conclusion that these tax factors gave a significant thrust toward higher levels of general concentration. This would be true both because tax-motivated mergers were more frequent among larger firms being sold, and also because large companies were disproportionately active buyers of other firms.

But the evidence is clear that the effects of merger activity in recent years on prevailing over-all levels of concentration were relatively minor. Since there now seems to be general agreement on this point, the evidence need not be reviewed here.[49] It, therefore, follows that tax-motivated mergers have not contributed significantly to increases in over-all levels of concentration, though they may have been of considerable importance in a few limited industrial areas of which the distilling industry is perhaps the outstanding example.

6. *Conclusions*

OUR general conclusion is that the tax structure of recent years has tended to increase levels of concentration within the corporate sector of the economy and among all business firms, but that these tax effects have been of relatively moderate proportions. This is not to say that the level of concentration itself has increased. As we have repeatedly stressed, taxes are only one factor among many that have affected the level of industrial concentration, and it appears highly probable that the nontax factors at work have been considerably more powerful than the tax factors. We leave it to other participants in this conference, however, to appraise the direction and scale of over-all changes in the level of industrial concentration. Our conclusion is simply that the net effect of the tax structure has been to produce higher levels of concentration than would otherwise have obtained.

The high rates of the corporate income tax during recent years appear to have been by far the most important feature of the tax

[49] See, for instance, Jesse Markham's paper in this volume, p. 141. It should be noted that these conclusions are based on analysis of data through 1947, originally prepared in connection with studies published in 1950 and 1951. Data on numbers of mergers through 1950 confirm that there was no significant change up to that time. We have made no investigation, however, of the effects of the much greater rates of merger activity since Korea.

structure tending to increase the level of concentration. To the extent that this tax has not been shifted, it has restricted the growth of successful small companies much more severely than that of larger concerns. This conclusion applies to the effects of the tax on the availability of outside capital as well as on internally financed growth, although the latter is of greater importance. This restrictive effect of the tax has been especially marked with respect to the growth and growth potential of the more vigorous and promising concerns with the best chance of effectively challenging the established positions of their dominant competitors.

The personal income tax structure, on balance, appears to have had a much less marked effect on industrial concentration. True, the high rates at which ordinary income is taxed have tended in the various ways noted to increase the level of concentration. The relatively favorable treatment accorded long-term capital gains, however, has tended to offset some of these effects; in particular, it has tended to increase the supply of venture capital available to companies with outstanding growth prospects. When these counteracting effects are offset against each other, it appears unlikely that the personal tax structure as a whole has exerted a powerful effect in either direction on industrial concentration, though on balance it has probably tended to increase rather than to reduce existing levels of concentration.

COMMENT

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FROM their extensive investigations, over a number of years, in the general area of the economic effects of taxation, Lintner and Butters have distilled those findings pertinent to the problem of concentration. We are indebted to them for this valuable and stimulating summary. My comments are largely peripheral, either dealing with qualifications already made by the authors or else factors that for good reason were not included within the scope of their studies.

1. The authors have struck a rich vein in the section on retained earnings although the qualification that they make in their text is important enough to be repeated here. Their analysis deals with the effect of taxation on the growth of profitable firms via retained earnings and not with the net effect of growth via retained earnings on concentration. Their investigation focuses on profitable firms only. But, as the authors tell us in a footnote, it is more important for

the ultimate effect on concentration to know the net relationship between retained earnings and growth for both profitable and unprofitable firms in each asset size class.

In connection with the findings about profitable firms, since the *Statistics of Income* classifications are based on the annual profit or loss experience, and since this is likely to be much more varied over a period of years for small than for large firms, it would be desirable to check their findings with a continuous sample of small and large firms. (This is more easily said than done. Such a sample would be difficult to set up for small firms, since the successful ones would grow into new asset size classes and, hence, out of the sample.)

The estimates of potential growth through reinvested earnings are admittedly rough, but indicative. I would like to suggest a refinement in their computation, albeit one that will not change the results substantially. As I understand it, the ratio of retained earnings to net worth for profitable corporations in the asset size class $1-$5 million was estimated assuming no corporation income taxes and applied over a ten-year period. With no corporation income tax and with the same retention rates as before assumed, there would have been an increase in the size of the average company in this class of 550 per cent. But this rate of growth is rapid enough and the time period long enough for this average size of corporation to become so large before the end of the ten-year period that it would be greater than the average size in the next highest asset class at the start of the period. Logically, therefore, the retention characteristics of this higher group should be attributed to the initially $1-$5 million average corporation at this point, and from here on its annual rate of reinvestment would be lower, so it would not grow as rapidly as the illustrative figures claim.

This same type of consideration—the decline in the rate of retention and hence deceleration in the rate of growth of profitable corporations as they grow larger—should be kept in mind as qualifying the authors' statement about the difference in retention rates for small and large corporations and the illustration which follows. "Such differences in rates of growth are *cumulative*, and the differences in growth over a period of years—and hence the amount of *deconcentration* affected will be substantially greater than the rates of retained earnings on net worth by themselves would suggest." This qualification, of course, does not change the principle established by Lintner and Butters, but it moderates its strength.

2. One of the most important reasons for using the concept of

concentration and measuring it is the presumed relation (which it is one of the tasks of this conference to clarify) between concentration and the extent of monopoly and market control.

For this purpose the relevant industry group for which to measure concentration should be closely related to a product or group of similar products—an industry classification more refined than the broad groups used by Butters and Lintner in their merger studies. With industries broken down into a larger number of groupings, rather large increases in concentration for some could be consistent with relatively slight changes in concentration measured for broader groups. For the aggregate results in the broad industry group could mask divergent movements in the components of the group.

A further point would show up more clearly from the data for specific industry groups. True enough, the general pattern of retention ratios that characterizes manufacturing as a whole—the decline in the ratio of retained earnings to net worth as asset size increases—is still discernible, but, as would be expected, there is much less regularity as among asset size classes, and wide differences among industry groups. Significant differences among industries show up also in the relative size and importance of small and large firms. This means that corporate income tax effects on growth potential will vary significantly with different industries. To assess this range of difference, I have made a few haphazard and crude calculations with the 1946 data. The results are interesting. They do not, in any sense, contradict Lintner's and Butters' findings; they merely point up the desirability of examining specific industry groups.

With the 1946 ratio of retained earnings to net worth (assuming no corporate tax, no change in total earnings, and a division of earnings between retentions and dividends in the same proportion as post-tax earnings were actually divided) compounded over a ten-year period for each of the asset size classes in an industry, concentration, as measured by the percentage of net worth accounted for by the five largest firms, would change to a different degree depending on the industry.[1] In the case of tobacco manufactures, for ex-

[1] The figures which follow are, at best, illustrative. Expiation for the numerous statistical sins committed in their calculation is claimed on this basis. Among the more venial is that no allowance is made for changes in asset size and, hence, retention ratios over time. Among the major sins is the use of the 1946 retention ratio alone rather than an average for a number of years, and the failure to make any allowance for the fact that the number of small firms would increase relative to the number of large firms if the corporation income tax were rescinded.

ample, the concentration ratio would have changed from 72 per cent of net worth accounted for by the five largest firms to 68 per cent. For nonferrous metals and their products there would have been a much greater decline—from 54 per cent to 16 per cent. No precision is claimed for these figures. They are intended to be no more than indicative. While they prove nothing, they do bring out the importance of directing attention to specific industry groups.

3. There is another reason why tax influences on concentration might profitably be studied on a more refined industrial classification basis. Certain provisions of the tax laws have highly differential effects on different industries and special types of taxes, of course, affect particular industries. For example, it is sometimes claimed that the high federal excise taxes on liquor that must be financed by the manufacturer create a need for an amount of working capital large enough to make it difficult for new firms to be started and to survive. (On the other hand high taxes on whisky allegedly encourage to a sizable extent the activities of a particular type of firm—bootleggers—about which we know next to nothing but which is liable to be relatively small, and this probably leads to lower concentration. The data, however, are almost impossible to collect for tax purposes, let alone for analysis.) It has also been claimed that by reducing relative price differentials a flat tax of eight cents per package on ordinary size cigarettes regardless of the price per pack, makes price competition from "economy" brands difficult, if not impossible.[2]

4. What can we conclude about the effects of taxation on concentration as a result of the work of Lintner and Butters? In brief summary, in the authors' own words, we have been told that:

a. "insofar as there are tax effects" at the formation and early growth of new enterprises stage, "their net impact has been in the direction of increasing industrial concentration."

b. ". . . the effect of high corporate income taxes on concentration

[2] These problems have recently been taken out of the area of allegation and into that of analysis in a very interesting thesis by Horace J. DePodwin, "Discharging Business Tax Liabilities" (Ph.D. dissertation, Columbia University, 1953). After a careful review of the problem, DePodwin concludes that heavy excise taxes especially those levied at a flat rate that must be paid before the commodity is sold (as is the case with the present stamp taxes of eight cents per pack on cigarettes and $10.50 per gallon on whisky), exercise a significant force tending to increase concentration. Particularly noticeable, he finds, has been the effect of excise taxation on concentration in the liquor and tobacco industries. (Elimination of the pre-payment feature of liquor and tobacco excise taxes and substitution of payment on a quarterly basis has been provided for in the Internal Revenue Code of 1954.)

by way of their effect on incentives for growth is to preserve prevailing degrees of concentration and over time to result in higher levels of concentration than would otherwise have existed."

c. In connection with the relative rate of growth of firms of different sizes through retained earnings, "corporate income taxes have markedly tended to increase concentration."

d. When analyzed from the point of view of availability of funds . . . "the over-all impact of the tax structure . . . seems definitely to be in the direction of promoting greater industrial concentration," with the capital gains tax provision of the personal income tax pulling in the opposite direction, however.

e. Analytically, both the personal and estate tax structure provide incentive to merger, and tend to increase concentration. But "tax-motivated mergers have not contributed significantly to increases in over-all levels of concentration" though they may have been of greater importance in some specific areas of which "the distilling industry is perhaps the outstanding example."

We know, therefore, that there are a number of powerful arguments for thinking that the effect of the federal tax system is in the direction of increasing concentration. Yet in the one category where it was possible to measure tax effects—in connection with mergers—it was found that concentration was very slightly affected over the period 1940-1947. From 1931-1947 and from the turn of the century to 1947 as well, over-all concentration appears to have changed little (see M. A. Adelman's article in the November 1951 *Review of Economics and Statistics*). Can we conclude, then, that the tax pressures toward increasing concentration may seem powerful in theory but are weak in practice? I do not think so. Nor do I think that we need conclude, as do Butters and Lintner, that "these tax effects have been of relatively moderate proportions." In only one of their analytical categories have they demonstrated this quantitatively. For the rest their argument is qualitative. In the present state of our knowledge of the dynamics of concentration, a tenable alternative proposition could be that in the last ten or fifteen years a significant decline in concentration would have developed had not the tax system pushed strongly in the opposite direction.

5. Analysis of the effects of the existing tax system on concentration is an important task and has been expertly performed by Lintner and Butters. But it is only part of the job. Implicit in it is this comparison: the effects of our present tax structure compared with what would have been likely to happen in the absence of taxes. But,

accepting the government's expenditure level and the need to finance at least a major part of it by tax revenues, we are brought up against a somewhat different comparison, one which involves the differential effects on concentration of the existing tax system compared with alternative tax structures. Here the possibilities are legion, but the point usually boils down to this: What will be the net effect on concentration of expanding receipts from tax A and contracting receipts from tax B by a similar amount? Lintner and Butters did not essay this task. I think it follows from their analysis, however, that were the corporation income tax to play a lesser role in our revenue structure and the personal income tax to raise a commensurately greater amount of revenue, the effect on concentration would be salutary.