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PART III

The Accounting Period and the Distribution of Income

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CHAPTER 1

The Question and a Partial Answer

ALTHOUGH MOST SOURCES of information on the distribution of income among individuals or families yield data on the income received during a single year, distributions of the income received during longer periods would often be more useful for studies that seek to relate economic or political phenomena to income status.[1] If the rate of flow of income to individuals or families were uniform, so that they received the same amounts, even the same relative amounts, year after year, the distribution of annual income would reflect income status adequately. Income receipts, however, fluctuate from year to year. The longer the period of cumulation, the less the effects of the numerous short-lived circumstances determining the flow of income to recipients. In other words, the relative income status of an individual is likely to be less affected by fortuitous circumstances or by the vagaries of institutional arrangements if it is based upon receipts during, say, three years than upon a single year's receipts. Consequently, we may expect the relation of economic behavior, e.g., consumer expenditures, to income status to become more definite as factors that temporarily distort income status wane in importance.

When we are concerned with describing the economy in terms of income distribution, the distribution of annual income may

1 *Studies in Income and Wealth*, Vol. Five, Income Size Distributions in the United States (National Bureau of Economic Research, 1943).

be misleading unless we know something of its relation to the distribution of income during longer periods. An economy in which those among the upper 10 percent of income recipients in one year have life earnings among the highest 10 percent is quite different from an economy in which they are unlikely to maintain their relative position for a considerable period. Yet both economies might have the same distribution of annual incomes. It is the distribution of life earnings rather than of annual or three- or four-year incomes that is needed for a description of an economy in terms of the distribution of opportunity or the distribution of income. Annual income is, of course, a part of life income, and it and its distribution are useful in analyzing and understanding how a distribution of life income is built up.

The manner in which an individual's or a family's income changes from year to year may have an important bearing upon its economic behavior. Will a family that has enjoyed an annual income of $20,000-25,000 for several years react to an annual income of $3,500 in the same way as a family that has never before received so much? And will both react in the same way as a family whose annual income has for some years fluctuated within narrow limits around the $3,500 level? For example, the expenditure patterns of three families in the $3,500-3,600 income group may differ markedly according to whether they had received more, less, or approximately the same amount the preceding year. And, perhaps, they will vary also with what the families expect to receive in the following years.

Although Wisconsin income tax returns are filed annually and cover the income of only one calendar year, the annual returns filed by a family over a period of years can be collated. This was done for some 13,000 families that filed each year 1929-35—approximately 5 percent of all families filing returns consecutively during the seven years. Two series of tabulations were prepared from the returns filed by these 13,000 families which were selected at random from all consecutive filers. One consists of annual tables classifying individual returns by both net taxable income and economic income and shows each income and deduction item separately.[2] In the other series individual returns were

[2] *Wisconsin Individual Income Tax Statistics: Characteristics of the Sample of Identical Taxpayers* (Wisconsin Tax Commission, 1939).

grouped into 'family units' by combining the incomes of husband and wife where each filed a separate return, and tables were prepared cross-classifying the incomes of 1930-35 by the size of the 1929 income; cross-classifying the incomes of 1929-34 by the size of the 1935 income; and cross-classifying the incomes of 1931-34 by the size of the income in the preceding year. Net taxable income, economic income, wages and salaries, business profits, net rents from property, dividends, interest, capital gains, and capital losses were each handled in this manner.[3]

In this Part these data are analyzed for the light they throw on the relation between the distribution of income for annual periods and its distribution for longer accounting periods. Although the tabulations were designed for these specific analyses, and provide a great deal of information, they have many limitations. To determine the net effect of lengthening the accounting period on the shape and position of the Lorenz curve additional tabulations proved necessary. The character of the changes in individual income from year to year can be ascertained, but not whether these changes are responsible for the wide differences in the economic behavior of persons in a narrow income group during a given year. Such conclusions as can be reached are further restricted by the peculiarities of the income characteristics of those included in the sample.

Perhaps the easiest way to indicate the particular problems we were able to treat is to summarize the findings. We try to indicate the major qualifications of our conclusions, but postpone, as far as possible to subsequent chapters, discussion of the technical limitations of both the data and the statistical techniques.

A Characteristics of the Sample

Although great care was taken to select the sample at random from all families filing returns consecutively for the seven years 1929-35, such a sample could not be representative of all taxpayers.[4] Among those who did not file consecutively are (1) per-

[3] *Ibid: Changes in the Incomes of Identical Taxpayers, 1929-1935.*

[4] Throughout this Part anyone filing a return is considered a taxpayer, whether he paid a tax or not.

sons attaining the age of 18 or receiving taxable income for the first time between 1930 and 1935; (2) persons moving into the state after 1929 or out of the state before 1935; (3) persons dying between 1929 and 1935; and (4) persons the assessors thought were unlikely to have taxable income in the future and whom, consequently, they released from the requirement of filing a return. Conversely, those most likely to file consecutive returns were persons with steady, well paid jobs, or with considerable amounts of property. Also, consecutive filers were likely to have attained their more productive years, and many persons were required to continue filing returns, even though they were meeting current expenses partly from their savings.

The mean total incomes of those in the sample of consecutive filers range from 11 to 20 percent above the mean incomes of all taxpayers for 1929, 1934, and 1935, the three years for which comparison is possible (Ch. 2). Much the same situation obtains for each income and deduction item and for net taxable income. An examination of these means in terms of the distribution of income shows that the distribution pattern is much the same for both consecutive and all filers, the higher average being attributable to all parts of the distribution rather than to a concentration of consecutive filers in two or three upper income brackets. Those filing consecutive returns, however, reported a greater percentage of income from property, and a smaller percentage from labor and business, than all taxpayers—as was to be expected from the upward bias in the mean incomes of consecutive filers, since property tends to be a more predominant source of large than of small incomes. Also, those included in the sample of consecutive filers tend to file a greater percentage of double and multiple source returns than all taxpayers (inferred from the higher average number of items reported by consecutive filers, as we do not have data on the income patterns of those included in the sample). However, these facts alone do not explain the differences since they tend to persist throughout the distribution.

Such evidence as we have on the nonincome characteristics of consecutive and nonconsecutive filers fails to reveal any marked differences between the geographic distribution of those included in the sample and all taxpayers. In the sample there are more married persons and fewer single persons than among all tax-

payers; and a larger percentage of the married couples in the sample filed separate returns. Since the ratio of married couples to single persons is associated with income level, the larger percentage of married persons in the sample might have been expected from the higher average incomes. The disproportionate number of married couples in the sample shows some tendency to persist throughout the distribution; however, it is slight, and is more marked in 1935 than in 1929, the only two years for which data are available.

Not only do the income characteristics of families in the sample of identical taxpayers differ from those of other taxpayers, but also from the income characteristics of nonfilers. Although many persons included in the sample have low incomes, property is the source for a greater proportion of them than for all taxpayers. Consequently, generalizations from conclusions drawn in this study, based as it is upon data for a high income group, selected from persons who file returns, itself a high income group, must take into account its special, narrow coverage.

B Annual Variations in the Distributions of Each Receipt

Every type of receipt decreased rapidly after 1929, but the rates at which the various types decreased and the years in which they reached their lowest point vary markedly (Ch. 3). Capital gains decreased most; wages and salaries least. Interest held up through 1930, then decreased each year to its lowest point in 1935. The other items reached their lowest points in either 1932 or 1933. In general, income increased after 1933. Since the population of the sample is constant, changes in per capita income are the same as in the volume of income.

The average size of each receipt, since it is obtained by dividing the aggregate receipt by the number reporting it, has a slightly different time pattern from that of the aggregate receipt, particularly for the receipts from property. The number of recipients of business profits, net rents, interest, and dividends varies directly with the volume of these receipts. The number of families receiving wages and salaries decreased each year except 1934 so that by

1935 4 percent fewer families were receiving wages than in 1929. Wages and salaries and interest became larger components of total income in the lean years.

The Lorenz curves for the distribution of net taxable income for four of the six pairs of consecutive years cross, indicating that year to year changes in the position of the curve are not uniform throughout the distribution. The lower end of the curve tends to be further from and the upper end nearer the line of equal distribution when the income is small than when it is large. The curves for 1932 and 1933 are of special interest since the 1929-32 trend of the lower end of the distribution away from the line of equal distribution was reversed, and the entire 1933 curve was nearer the line of equal distribution than the 1932 curve, although income continued to decrease from 1932 to 1933. The other pair of curves for consecutive years that did not cross was for 1934 and 1935.

The positions of the lower ends of these Lorenz curves are greatly influenced by the number of recipients reporting net losses: an increase in the number of net losses reported is associated with a shift of the Lorenz curve away from the line of equal distribution. Though losses alone cannot explain the changes in the curves, they suggest that curves based upon the entire population rather than upon a segment in which small incomes are underrepresented might behave differently.

While Lorenz curves cannot be constructed from the data for economic income, ogives of the annual distributions of economic income, which show the returns as percentages of all returns cumulated from the lowest and income in absolute terms, can be constructed. They display changes consistent with the changes in the Lorenz curves for net taxable income.

The distributions of wages and salaries and of business profits—closer to the line of equal distribution than other items—tend to become less equally distributed when income decreases, while dividends, interest, and capital gains tend to become more equally distributed. Net rents, less equally distributed than wages and salaries and business profits but more equally distributed than any other type of receipt studied, has no well defined tendency. The year to year changes in the Lorenz curves for the various types of receipt except dividends and capital gains, while substan-

tial, are not sufficient to change their order of rank with respect to equality of distribution. In other words, the differences between various receipts for a given year are larger than the year to year changes in the curve for a particular receipt.

The wide interval used for the lowest group in tabulating the distribution of each receipt by its size makes it impossible to estimate satisfactorily the shape and position of the lower ends of the Lorenz curves. Consequently, in comparing both the year to year changes in the annual distributions of a single receipt and the differences in the distributions of two receipts the Rich-Poor intersector had to be used as the single point of measurement.[5] The sketchy data on which these curves are based also made inadvisable a detailed comparison to ascertain differences in various parts of pairs of curves.

C Distribution based on Annual and on Longer Accounting Periods

To compare these annual distributions with distributions based upon accounting periods of more than a year (Ch. 4), the annual income reported by each family for several years had to be added to obtain totals for longer periods and, since the annual distributions differ, to compute an average annual distribution. As the published tables do not include data on individual incomes for accounting periods of more than one year, these totals had to be added and tabulated especially for this study. This process proved so expensive that (a) net taxable income for two- and three-year accounting periods, and (b) capital gains for two- to seven-year accounting periods alone were tabulated. The average distribution of annual incomes for two or more years can be computed from the Lorenz curves for each year.

Only if each family had the same *relative* income status each year would the average annual distribution be identical with the distribution for an accounting period of the same length as the number of years averaged. Any change in the relative income status of the various families included in the distributions will yield a Lorenz curve for the longer accounting period that lies

[5] For a description of the Rich-Poor intersector, see Ch. 2, note 6.

closer to the line of equal distribution. The average annual distributions are thus one limit (the line of equal distribution is the other) of the area within which the Lorenz curve for a longer accounting period will lie.

The more the reranking and the greater the shifts in relative income status, the greater will be the deviation of the Lorenz curve for a longer accounting period from that of the average distribution of the annual incomes included in the longer accounting period. If, for example, the relative changes in income status were numerous but were confined to each decile, the differences between an average annual Lorenz curve and the Lorenz curve for a longer accounting period could not be distinguished on a chart 10 inches square. Nor would wide shifts in the income status of only a few of the 13,000 families be sufficient to yield distinguishable curves, although a few big shifts are apparently more powerful than many small shifts.

The Lorenz curve for net taxable income 1929-30, treated as a single accounting period, is somewhat closer to the line of equal distribution than the average of the 1929 and 1930 annual curves. And the three-year accounting period 1929-31 yields a curve for net taxable income that is closer to the line of equal distribution than either the average of the 1929, 1930, and 1931 annual distributions or the distribution for the two-year accounting period 1929-30. These results suggest that we may expect to find greater equality as the accounting period is lengthened, although such a finding is not inevitable. Since at the same time we may expect the differences to become successively smaller as the accounting period is lengthened by another year, eventually a point may be reached where no appreciable effect on the Lorenz curve is produced by further increases in the length of the accounting period.

Net taxable income was reported on every return; capital gains were reported during the seven years by only 11 percent of those in the sample and by not more than 5 percent in any one year. In studying the effect of lengthening the accounting period on the distribution of capital gains, only persons who received capital gains in at least one of the seven years are included in the distributions; and they are included in the distributions for both annual and longer accounting periods. As more than half of the gains reported during the seven years were reported in 1929 and

1930, there is not much change in the average annual curves for 1929-35 from the average of the annual curves for the two years 1929-30. The Lorenz curves for the longer accounting periods, however, move closer to the line of equal distribution as each successive year is added to the accounting period. This means that, as the accounting period is lengthened, there is a wider and wider gap between the curve for the long accounting period and the average curve based on the same years. The constancy of the rate with which the curve moves toward the line of equal distribution as the accounting period is lengthened leads to the conclusion that seven years are insufficient to overcome the influence of the length of the accounting period on the distribution of capital gains. Since capital gains tend to be nonrecurring, this conclusion might have been expected.

The differences between the curves for capital gains for various accounting periods are greatly influenced by the successive increases in the number of persons reporting gains. The seven-year accounting period includes no persons who did not report at least one gain. But of the 1,482 persons who reported gains during the seven years, only 851 had a gain in the two years 1929-30.

D Relation Between Annual Accounting Periods

There are several technical difficulties in utilizing correlation coefficients to measure the reranking of families from one annual period to another (Ch. 5) and it is frequently doubtful whether the results reflect properties of the data or mathematical properties of the measure. To avoid misleading coefficients, we often had to omit extreme incomes from the computations, and the criteria for selecting incomes to omit were largely subjective. Yet when these coefficients are carefully handled they are a useful tool, and, in the absence of data for longer accounting periods, the only tool for measuring changes in the relative income status of families from one period to another.

The amount of reranking among the recipients of each type of receipt is approximately the same for each pair of consecutive years, but there are wide differences among receipts. Net tax-

able income and business profits show the least, net rents, the most, reranking. As the interval between the years correlated is lengthened the amount of reranking rises notably. For example, for a given type of receipt there is more reranking between 1929 and 1933 than between 1929 and 1930.

The shape of the regression lines indicates that a decrease in the volume of income does not affect all groups equally. There is a strong tendency, for example, for members of the 1929 net taxable income groups between $2,000-8,000 and $10,000-20,000 to fare better than the average member of the sample each year 1930-35. Although differences in behavior at various income levels are observable, the population of the groups changes so much that the income characteristics of the groups that fare better or worse than average cannot be isolated.

Coefficients of variation for some two- and three-year accounting periods can be computed and can be related to the Lorenz curve. They indicate that longer accounting periods somewhat increase the equality of the distribution of each receipt, probably enough to be noticeable on Lorenz curves drawn on a 10 inch square. However, it is doubtful that any item except rents and capital gains would show differences greater than those observed for net taxable income. The array of items according to their equality is the same for longer accounting periods as for annual accounting periods.