Chapter Title: The Seven Annual Accounting Periods

CHAPTER 3

The Seven Annual Accounting Periods

A THE CONCEPT OF THE ANNUAL ACCOUNTING PERIOD

NEARLY ALL DISTRIBUTIONS of income by size are on a calendar
year basis, and most other distributions are for some annual pe-
riod.[1] Many of these studies provide data for only one year, and
the data derived from continuing sources, such as income and
social security taxes, are usually tabulated only for each year. The
tabulations of Wisconsin income tax data for the sample of
13,000 families in *Changes in Income of Identical Taxpayers,
1929-1935* are a notable exception. The aggregate tables [2] for the
individuals in the sample of identical taxpayers for the calendar
years 1929-35 in *Characteristics of the Sample of Identical Tax-
payers* were tabulated in the usual manner, i.e., for each year
separately. This Chapter is concerned with the differences be-
tween these seven independent annual distributions. So far as
possible, family data are used throughout.

Income is a flow; and annual income is the volume of that flow
for a year. The income of a community varies from year to year;
so too does the income received by a specific individual. In treat-
ing each year separately, the individual is classified by the size
of his receipts and community income is the sum of the receipts

1 *Studies in Income and Wealth*, Vol. Five, Income Size Distributions in the United
States, pp. 80-1.
2 That is, tables in which all the income and deduction items on income tax returns
are 'aggregated' by one size classification.

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of all its members. However, variations in total community in-come need not involve changes in its relative (size) distribution.

In studying changes in size distributions from one annual pe-riod to another several sets of relations are of considerable in-terest. For the sample of consecutive filers, how are changes in the composition of income, the average receipt, and the distribution of specific receipts associated with changes in both the amount and the size distribution of total income? The group with which we are dealing has peculiarities that severely limit generaliza-tions based on its behavior. But, since the last two chapters are concerned primarily with testing the validity of conclusions based upon annual distributions, we must describe these relations as they exist in the group for which we have data for longer account-ing periods. The relations treated in this chapter are confined largely to the nine income items for which we have data on inter-relations between years.

B   Volume of Income

Both total and net taxable income (i.e., total income minus de-ductions) were highest in 1929, declined each year to their lowest point in 1933, then increased in 1934 and again in 1935 (Table 8). Net statutory losses (i.e., total income minus deductions on returns on which deductions exceeded total income) increased from 1929 to 1932, then declined to their lowest point in 1935.

The behavior of the various income and deduction items varied widely (Table 8 and Chart 3). Only wages and salaries, net rents, partnership profits, all other income and, among the deduction items, donations and other losses followed the same pattern of change as total income. Business profits and capital gains were lowest in 1932. Interest and value of merchandise were highest in 1930 and lowest in 1935. Fiduciary income was lowest in 1934. Capital losses were highest in 1933, lowest in 1935. Dividends, after recovering somewhat in 1934, declined again in 1935.

TABLE 8

Receipts and Deductions by Years
Sample of Identical Taxpayers, 1929-1935
(thousands of dollars)

	1929	1930	1931	1932	1933	1934	1935
Wages & salaries	22,929	21,790	19,173	15,469	14,151	15,843	17,161
Interest	2,606	2,630	2,431	2,014	1,622	1,582	1,534
Dividends	3,110	2,672	1,883	1,208	997	1,375	1,298
Business profits	4,316	3,640	2,783	1,954	2,130	2,580.	2,883
Net rents	1,024	1,030	904	663	575	585	669
Capital gains	1,994	1,197	275	203	345	497	774
Royalties, copyrights							
& patents	15	8	2	53	30	63	3
Partnership profits	1,077	853	597	440	439	514	596
Fiduciary income	223	179	160	108	98	93	96
Value of merchandise	198	204	194	189	181	176	172
All other income	377	410	297	275	267	284	315
Rent Losses	22	39	42	74	90	53	56
Other Negative Income		5		251	*	5	*
Total Income	37,850	34,577	28,660	22,359[a]	20,762	23,539	25,452
Capital losses	1,919	2,039	1,794	2,089	2,201	1,549	1,178
Income taxes paid	634	578	400	492	350	221	392
Interest paid	1,613	1,627	1,550	1,291	1,064	977	943
Donations	477	414	391	306	264	285	343
Dividends deductible	1,978	1,514	939	488	425	535	532
Business losses	208	385	561	634	442	359	401
Partnership losses	60	74	91	113	100	53	27
Other losses	807	792	721	639	544	582	643
Net Taxable Income	30,770	27,986	23,247	17,923	16,919	19,784	21,551
Net Statutory Losses	621	839	1,037	1,722	1,565	812	563

* Less than $500.
[a] Gross of $106,000 negative total income.

TABLE 9

Number of Families Reporting Selected Receipts by Year
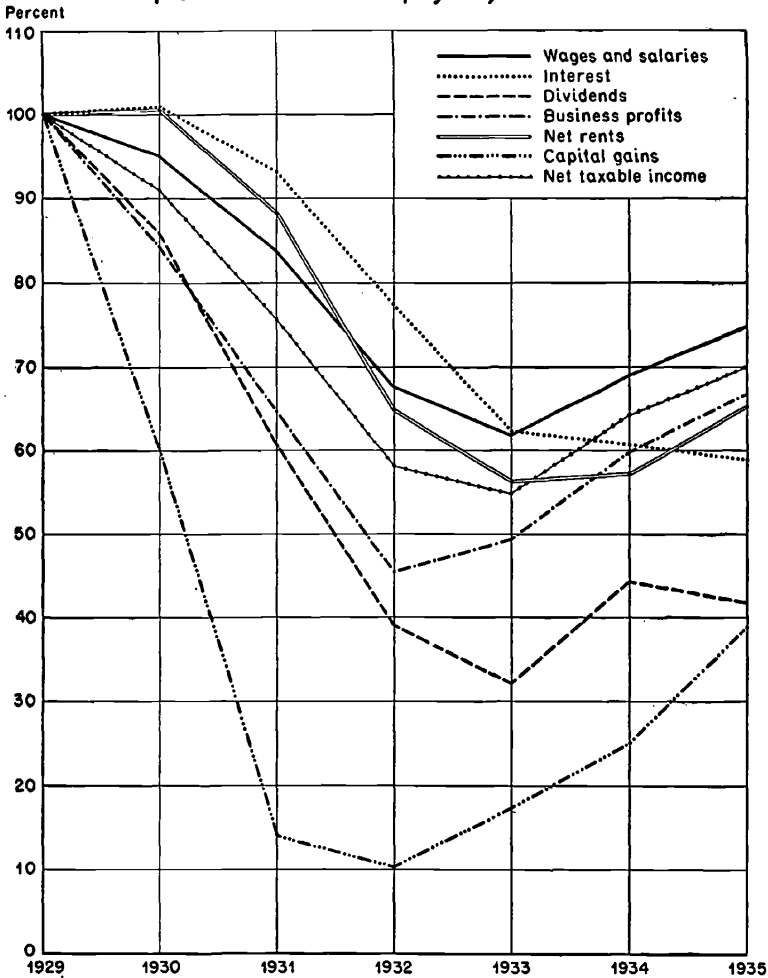### Sample of Identical Taxpayers, 1929-1935

	1929	1930	1931	1932	1933	1934	1935
Wages & salaries	10,868	10,814	10,687	10,531	10,459	10,488	10,430
Interest	3,389	3,461	3,442	3,070	2,805	2,823	2,816
Dividends	2,727	2,917	2,950	2,728	2,267	2,462	2,538
Business profits	1,970	1,870	1,787	1,650	1,904	2,011	2,051
Net rents	1,920	1,980	1,928	1,842	1,770	1,883	1,994
Capital gains	624	418	318	172	282	302	450
Capital losses	435	487	538	531	517	563	576

C   AVERAGE RECEIPTS

Although the same number of families are included each year, changes in specific receipts do not reflect changes in the number of families reporting the receipt each year (Table 9). Fewer families reported wages and salaries, and more reported income from business and rents at the end than at the beginning of the

CHART 3

Selected Receipts, by Type, as Percentage of 1929 Receipts
Sample of Identical Taxpayers, 1929 – 1935

Percent

Legend:
——— Wages and salaries
············· Interest
— — — Dividends
—·—·—·· Business profits
═════⟩ Net rents
—··—··—·· Capital gains
▬▬▬▬ Net taxable income

period. Business profits and capital gains were reported by the fewest families in 1932; interest, dividends, and net rents, by the fewest in 1933. As noted above, the average number of receipts per return decreased from 1.79 in 1929 to 1.63 in 1934 and 1.65 in 1935.[3] The average size of a receipt is determined by both the aggregate of the receipt and the number of recipients. The pattern of changes in average receipts, shown for selected items in

[3] Table 6 is based on returns rather than on families.

CHART 4
Average Selected Receipts
Sample of Identical Taxpayers, 1929 – 1935
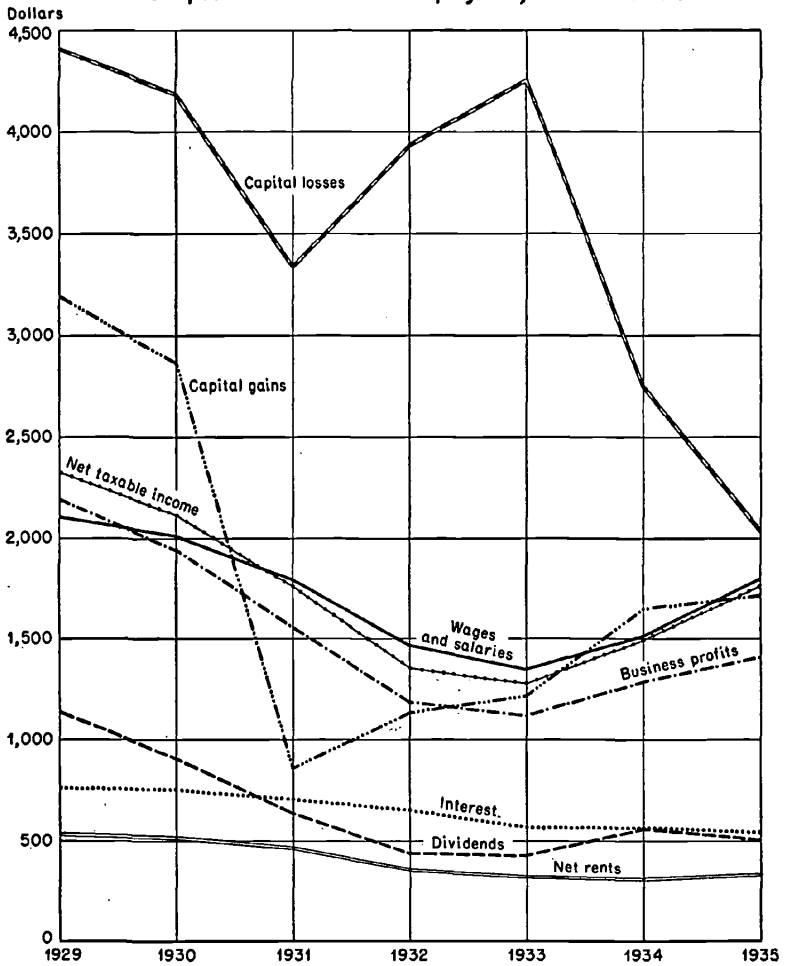
Chart 4, differs substantially from the pattern of changes in their totals.

Since net taxable income is reported on 95.3-99.1 percent of all returns, differences between changes in the total and the average size are smallest for it.[4] And since wage recipients were fewer to-

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[4] Net statutory losses are reported by persons not reporting net taxable income. Since these percentages are based on individual data, they are low to the extent that income of, e.g., a husband, offsets a loss by his wife. The averages in Chart 4 are based on family data.

ward the end of the period, the average wage rose more after 1933 than total wages. On the other hand, the increase in the number of recipients of business profits and net rents 1933-35 means that the averages for these receipts did not increase as much after 1933 as their totals. Capital gains and business profits were lowest in 1932, although the former was lowest on the average in 1931 and the latter in 1933. The patterns for dividends, interest, and net rents show the same series of changes in both Charts 3 and 4, but the changes in average receipts are smaller, indicating that variations in their totals were paralleled by variations in the number of recipients.

D   COMPOSITION OF INCOME

Wages and salaries and interest increased as percentages of total income from 1929 to 1932, but declined relatively from 1932 to 1935 (Chart 5). Capital gains and business profits behaved in exactly the opposite manner. Dividends, as a percentage of total income, varied directly with total dividends, that is, it declined from 1929 to 1933, was somewhat higher in 1934, but declined again in 1935.

E   DISTRIBUTION OF NET TAXABLE INCOME

In comparing the distributions of net taxable income for each of the seven years the Lorenz curve is used. While it is merely one of many measures of equality and 'does not cover all aspects of the income distribution it is believed to be sufficiently comprehensive for the present comparison. Its ease of manipulation far outweighs its shortcomings.[5] Use of the Lorenz curve made the use of

[5] M. O. Lorenz, Methods of Measuring the Concentration of Wealth, *Publications of the American Statistical Association*, New Series, No. 70 (June 1905), pp. 209-19, formulates the measure. Its greatest advantage is the convenience with which diverse series can be compared graphically. Providing a measure of equality in terms of deviations from the mean, it makes manipulation easy (see National Resources Committee, *Consumer Expenditures in the United States*, Appendix C, Sec. 3, pp. 171-80). D. B. Yntema discusses the mathematics of the Lorenz curve and its relations to several other measures of equality in The Measurement of Inequality in the Personal Distribution of Wealth or Income (unpublished Ph. D. thesis on file in the University of Michigan Library). These detailed discussions are summarized in Measures of Inequality, *Journal of the American Statistical Association*, Vol. 28 (1933), pp. 423-33.

CHART 5

Selected Items as Percentages of Total Income
Sample of Identical Taxpayers
1929 — 1935
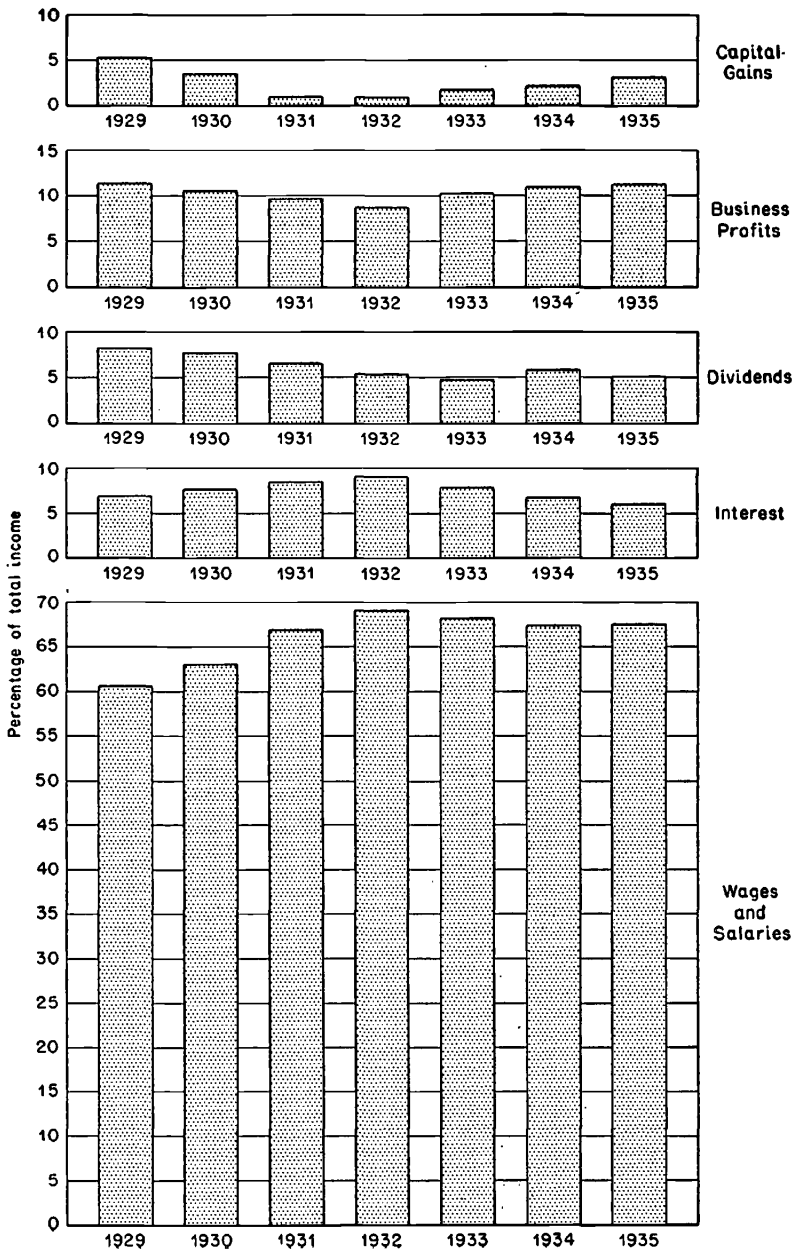
individual rather than family data advisable.[6] Tables based upon individual data provide not only information by much smaller class intervals, but also our only evidence concerning the size of the group reporting net statutory losses, i.e., negative net taxable income.
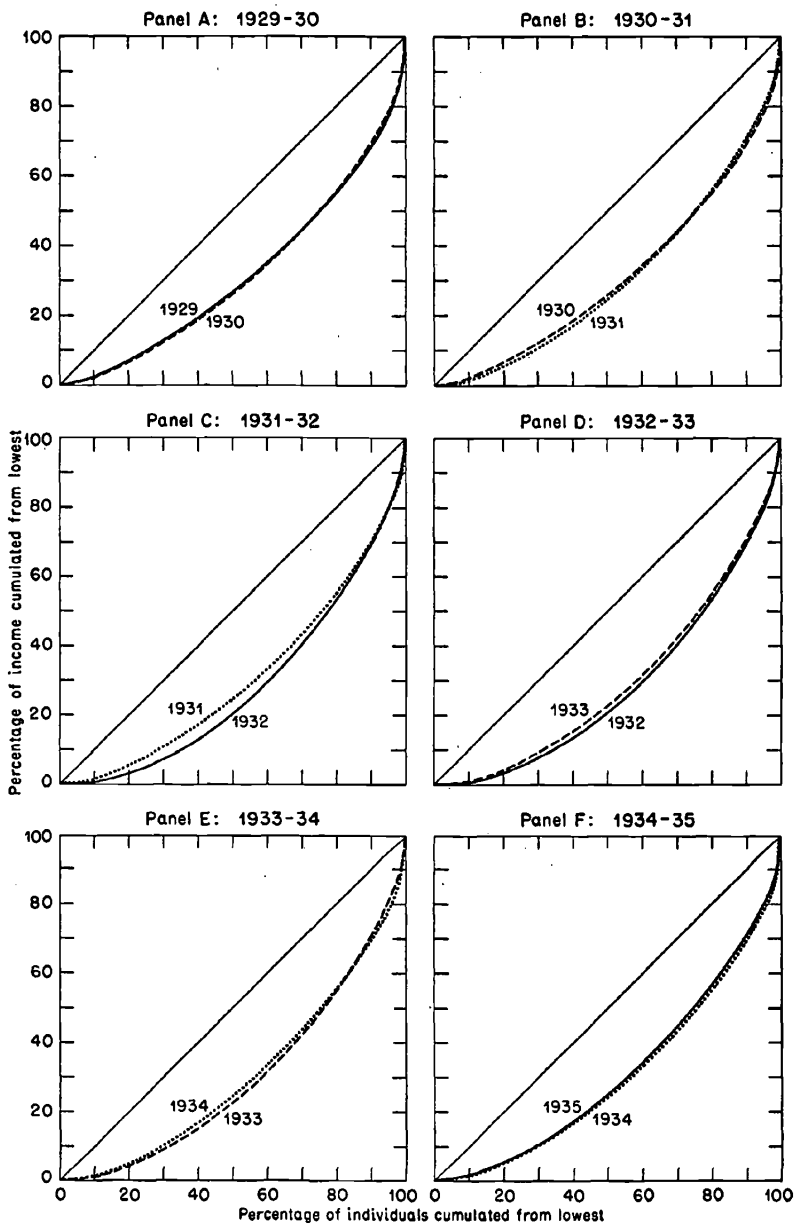
In each of the six panels in Chart 6 the Lorenz curves for a pair of consecutive years are presented. Most of the changes in the positions of the Lorenz curves are small, but except for two pairs of years, 1932-33 and 1934-35, their shapes differ enough so that they cross. This means that while one part of one member of a pair of curves lies nearer the line of equal distribution than the corresponding part of the other member, the reverse relation holds between the other parts of the curves.

As net taxable income decreased after 1929, the Lorenz curves for 1930, 1931, and 1932 each moved away from the line of equal distribution at the lower income levels. However, the Lorenz curve for each year crossed the Lorenz curve for the preceding one, the points of intersection ranging from 71 to 95 percent of the recipients. To the left of the intersections, the curve for the earlier of the two years is nearer the line of equal distribution; to the right of the intersections, the later year. Consequently as average income decreased, the lower end of the distribution deviated more, and the upper end deviated less from the average of the entire distribution than in the preceding year. These variations became more pronounced as the depression deepened.

Although net taxable income continued to decrease from 1932 to 1933, the 1933 curve is nearer the line of equal distribution

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[6] Throughout the remainder of this Chapter family data from *Changes in Income of Identical Taxpayers, 1929-1935* were used to adjust the individual returns data in *Characteristics of the Sample of Identical Taxpayers* to a family unit basis. Several tests were made to determine the differences in Lorenz curves constructed from the two sets of data. The differences between the two sets of Lorenz curves are most marked at the upper end of the distribution where wide class intervals make the shape of the curve indeterminable, and at the lower end where families with negative incomes were included in the group 'Under $500'. These differences, almost negligible for 1929 and 1930, tend to be larger for the later years, when the filing of separate returns became compulsory. The relative positions of Lorenz curves for any two years based on family data are, however, much the same as those of the corresponding curves based on individual data; i.e., year to year comparisons are little affected by the transition.

CHART 6

Net Taxable Income
Sample of Identical Taxpayers, 1929-1935

Panel A: 1929-30

Panel B: 1930-31

Panel C: 1931-32

Panel D: 1932-33

Panel E: 1933-34

Panel F: 1934-35

Percentage of income cumulated from lowest

Percentage of individuals cumulated from lowest

than the 1932 curve throughout the range. This shift toward greater equality was continued as net taxable income increased after 1933. Although the 1933 and 1934 Lorenz curves cross, the lower 82 percent of 1934 income recipients are nearer the line of equal distribution, and the 1935 curve is nearer the line of equal distribution than the 1934 curve at all points.

As a result of these year to year changes, the 1935 distribution for the upper 23 percent of returns was closer to the line of equal distribution than either the 1929 or 1930 curve, but the contrary was true of the lower 77 percent. The 1935 and 1931 curves are approximately the same throughout the distribution.

These shifts in the position and shape of the curves were greatly affected by changes in the percentage of persons reporting net statutory losses. In constructing the Lorenz curves, persons reporting net statutory losses were treated as having $0 (and 0 percent) net taxable income. Consequently, the larger the percentage of persons reporting losses the further to the right along the base (0 percent of income) line will the curve originate. The character of the curves in Chart 6 suggests that the point of origin has considerable influence upon the position of the entire lower end of the curve. As the percentage of individuals reporting losses rose from 0.9 in 1929 to 4.7 in 1932, the lower ends of the curves moved away from the line of equal distribution. This trend was reversed after 1932 when the percentage of individuals reporting losses decreased to 3.3 in 1933, to 2.3 in 1934, and to 2.2 in 1935. Although net taxable income continued to decline until 1933, the trend toward more returns reporting net statutory losses was reversed; this coincides with the reversal of the trend toward greater concentration. Although the size of the net statutory loss group strongly affects the position of the lower end of the Lorenz curve, it does not completely determine the relative position of the curves for the two years. Lorenz curves computed on the basis of positive incomes alone show the same pattern of differences as those which include the net statutory loss groups. The effects of including only realized capital gains and losses in net taxable income cannot be determined.

The direction of the shift in the position of the lower parts of

the Lorenz curves continued throughout the curves in only two of the six pairs of years compared. While the lower incomes tended to deviate more from the mean, i.e., tended to shift away from the mean, the incomes of 5-29 percent of the persons at the top of the distribution shifted to positions relatively closer to the mean. In other words, the largest incomes decreased, from 1929 to 1932, more than the volume of income, thereby becoming a smaller percentage. Larger incomes increased even more than the volume of income from 1933 to 1934.[7] For the pairs of curves that do not cross, 1932-33 and 1934-35, segments of the distribution may display characteristics different from those of the curves as wholes. For example, the incomes of persons in the seventh decile (60-70 percent of the individuals cumulated from the lowest) of the 1935 distribution may deviate relatively less from the mean than the incomes of persons in the seventh decile of the 1934 distribution. Such a situation would be reflected by the slopes of the curves for the relevant segments. Except when the slopes were so different that the curves crossed, no effort was made to establish the existence of and locate such areas.

The differences in the behavior of the two ends of the distribution as income changes suggest that the behavior of Lorenz curves based on data for all recipients might differ substantially from those based on a sample of consecutive filers, since the incomes of the latter tend to be greater.

F   DISTRIBUTIONS BY ECONOMIC INCOME

Because the amounts of economic income received are not available, the distributions of families by income level for each year 1929-35 are presented, in Chart 7, as ogives on a semi-logarithmic scale. The curves are not plotted below $500, the lowest point for

[7] The latter interpretation of Lorenz curves is strictly accurate only when each curve covers the same number of returns. Small differences in the present data, while not vitiating this interpretation, make it impossible, from the smoothed curves used in the analysis, to ascertain with precision the exact area covered by 'larger' incomes. Moreover, the larger incomes of one year may be independent of the larger incomes of the next year, i.e., they may not be received by the same families.

which we have reliable data, or above $10,000, where the curves become indistinguishable. Family unit rather than individual data were used.[8]

CHART 7

Cumulative Percentage Distribution of Families by Size of Economic Income

Sample of Identical Taxpayers, 1929 – 1935
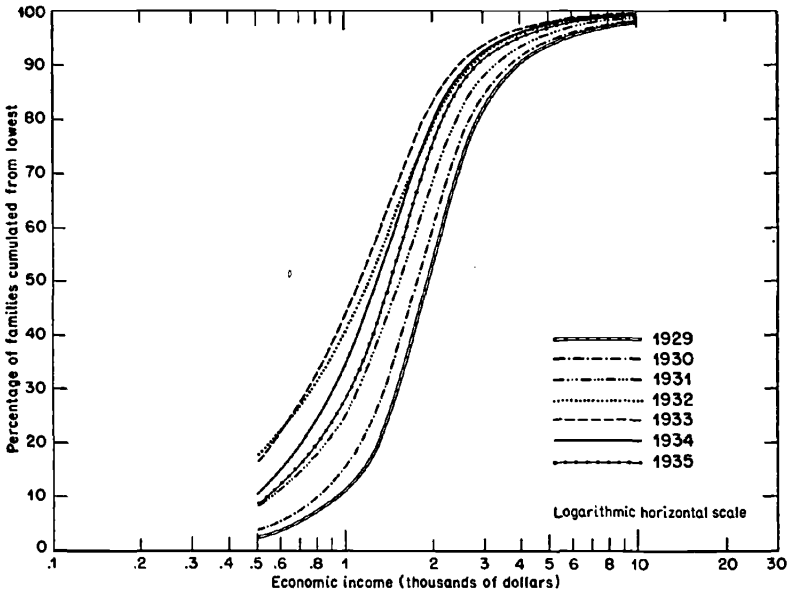
At the medians, i.e., read at the point where the curve intersects the horizontal line representing 50 percent of the families, each curve would have the same rank, by income size, as it would have were the ranking made by average total income. With the exception of the 1932 curve, the medians describe the relative position of the year's income adequately since the curves are distinct throughout the entire range. The 1932 curve, however, crosses

8 Although the distances between curves are altered, the relative position of curves based on individual return data are much the same. When the positions of the seven curves for family units and individual returns are ranked at each income level for which we have comparable data the ranks coincide in 82 of the 84 cases. At the $8,000 level the 1932 and 1935 individual curves are equal, whereas the 1932 family unit curve is definitely above the corresponding 1935 curve at this level. At the $10,000 level the 1932 and 1934 family unit curves are equal, while the 1932 individual returns curve is above the comparable one for 1934.

the 1933 curve at about $575 and the 1934 curve at about $2,000, coinciding with the latter in the $8,000-15,000 range.

Although income decreased markedly after 1929, the 1929-32 curves had much the same shape, indicating that there was an approximately proportional shift to lower economic income levels throughout the entire range of incomes. But the spread between the curves, especially marked at the lower end of the distribution, widened from year to year. Although income continued to decrease in 1933, the 1933 curve ogive for economic income is more nearly the shape of the 1934-35 curves than of the 1929-32. The segments of the 1933-35 curves in the $500-2,000 range are much steeper than the corresponding segments for 1929-32. In absolute terms, fewer persons had incomes below $500 and above $2,000 with the increase in income after 1933 than during a corresponding period of 1929-32 when the volume of income was the same.[9]

Although the distributions by economic income and by net taxable income were computed differently, they behave similarly. Especially striking is the closer association of 1933, the year when income was lowest, with the period of rising income, 1934-35, than with the period of decreasing income, 1929-33.

G   DISTRIBUTION OF RECEIPTS BY SIZE

With the exception of capital gains and dividends, the relative positions of the Lorenz curves for the various income items, with respect to the line of equal distribution, are the same in each year as in 1929, when the order of receipts, arrayed from the one nearest to the one furthest from the line of equal distribution, was: wages and salaries, net taxable income, business profits, net

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[9] Of the whole series of possible annual distributions for 1929-32, only four, representing the calendar years, are shown. Had an annual period in which the volume of income was the average of the volumes for 1931 and 1932 been selected instead of the calendar years 1931-32, the ogive of its distribution would presumably lie halfway between the 1931 and 1932 ogives. The similar shapes of curves for the calendar years 1929-32 and their direct variation with the volume of income seem to support this assumption. We have no evidence, however, to support the assumption that distributions for fiscal years do not differ markedly from distributions for calendar years.

rents, interest, capital gains, and dividends (Chart 8).[10] The relative positions of capital gains and dividends were reversed in 1930, 1932, 1934, and 1935, when dividends were more equally distributed than capital gains. While these data suggest a definite and stable pattern of Lorenz curves for receipts, the differences between receipts are so large that considerable year to year changes can occur in the distribution of each receipt without disturbing the pattern. In other words, the differences between the distributions of the various receipts in any one year are larger than the year to year differences in the distribution of any one receipt.

TABLE 10

Equality of Distribution of Selected Receipts Ranked by Years
Sample of Identical Taxpayers, 1929-1935

	WAGES & SALARIES	NET TAXABLE INCOME	BUSINESS PROFITS	NET RENTS	INTEREST	CAPITAL GAINS	DIVIDENDS
			Seven Years, 1929-1935				
1929	1	1	1	5	7	4	7
1930	2	2	3.5	7	6	7	6
1931	4	3	6	6	5	1	3.5
1932	7	7	7	2	4	3	1
1933	6	6	5	2	1	2	2
1934	5	5	3.5	4	2.5	6	3.5
1935	3	4	2	2	2.5	5	5
			Four Years, 1929-1932				
1929	1	1	1	2	4	3	4
1930	2	2	2	4	3	4	3
1931	3	3	3	3	2	·1	2
1932	4	4	4	1	1	2	1
			Four Years, 1932-1935				
1932	4	4	4	2	4	2	1
1933	3	3	3	2	1	1	2
1934	2	2	2	4	2.5	4	3
1935	1	1	1	2	2.5	3	4

The lower the rank the nearer to the line of equal distribution is the Lorenz curve along the Rich-Poor intersector, i.e., a line bisecting and perpendicular to the line of equal distribution.

Nevertheless, there are marked year to year shifts in the distribution of each receipt. The top panel of Table 10, covering

10 Equality is here measured at the Rich-Poor intersector (see Ch. 2, note 6), the only practicable measure. The lack of information on the distribution of receipts of less than $500 made it inadvisable to extend the curves for net rents, interest, dividends, and capital gains below the first point plotted. Business losses and losses from rental property are ignored in these distributions.

CHART 8

Lorenz Curves for the Distribution of
Selected Family Receipts by Their Own Size
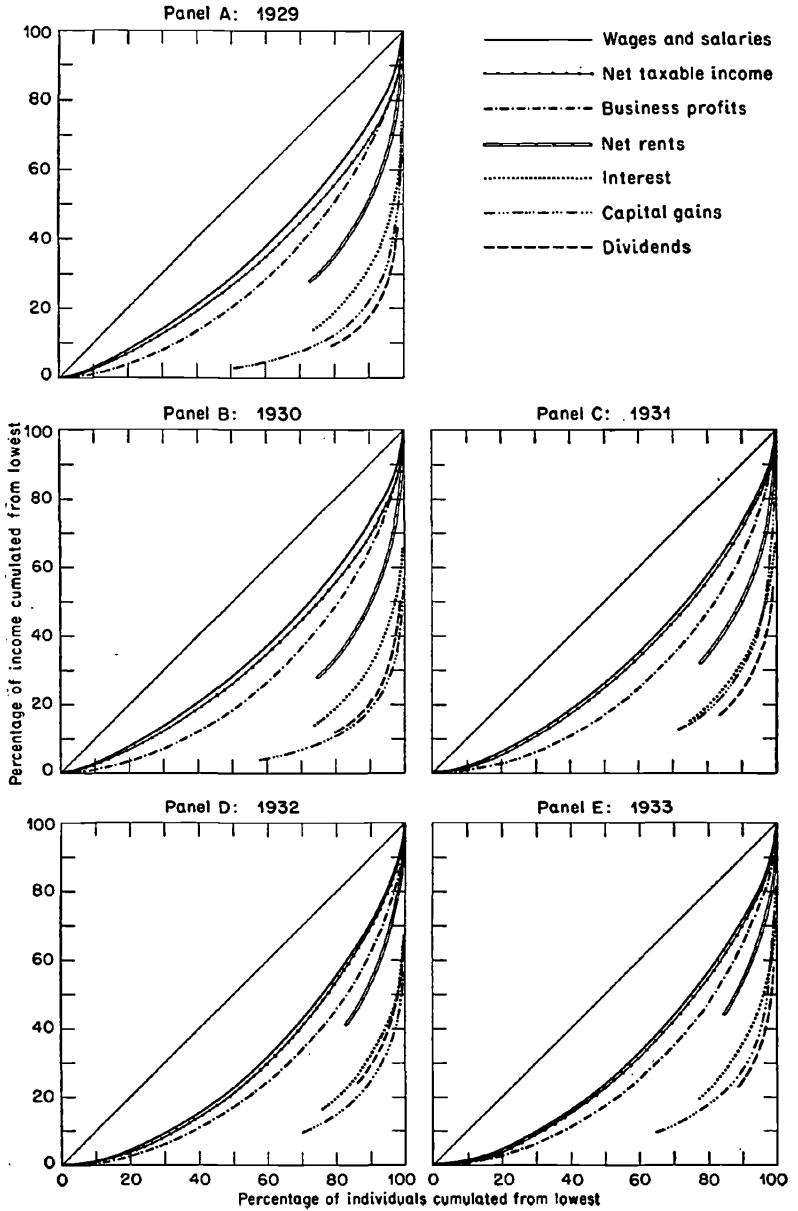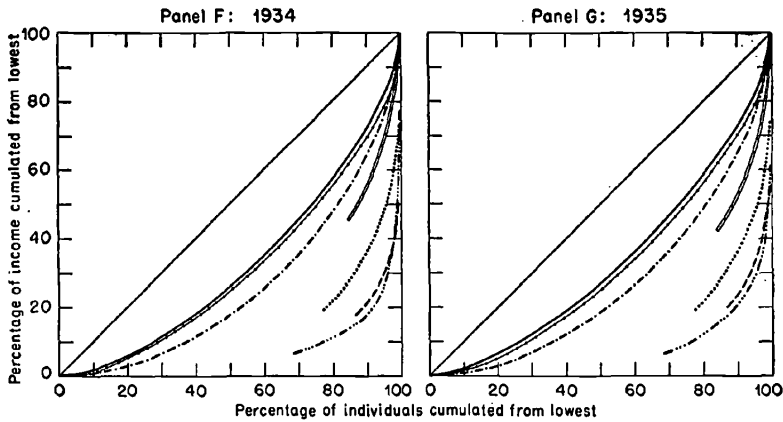### Sample of Identical Taxpayers, 1929–1935

CHART 8 *(concluded)*

Panel F: 1934   Panel G: 1935

Percentage of income cumulated from lowest

Percentage of individuals cumulated from lowest

the seven years 1929-35, does not clearly reveal the relation be-
tween the distribution and the characteristics previously studied,
such as the volume of income or average receipt. Since the seven
years include periods of both decreasing and increasing income,
these divergent trends could easily hide such relations, unless
they were both direct and almost perfect. To reveal them, panels
covering the two four-year periods, 1929-32 and 1932-35, each
including 1932 and selected on the basis of the behavior of the
Lorenz curves for net taxable income, are included in Table 10.

The distribution of wages and salaries and business profits,
like that of net taxable income, became less equally distributed
during 1929-32, then more equally distributed during 1932-35.
Business profits, however, were less equally distributed in 1931
than in 1933. Interest and dividends tended to become more
equally distributed as income decreased, but only dividends
tended to become less equally distributed as income increased,
while interest continued to become more equally distributed
through 1933, and the shift in the opposite direction after 1933
was neither large nor definite. The patterns for capital gains and
net rents are similar to that for dividends and interest, but not so
pronounced. The wide variety of circumstances from which
capital gains, as reported on income tax returns, arise may partly
account for their erratic behavior. Data on net rents became less
and less adequate toward the end of the period, i.e., a larger and
larger portion of receipts were in the 'Under $500' group, giving

no hint of the shape of an increasingly large portion of the curve.

The pattern of changes in distribution with respect to the volume of income seems to be associated with the equality of the distribution. Items that lie closer to the line of equal distribution, wages and salaries and business profits, became less equally distributed as income decreased. Conversely, dividends and interest, which became more equally distributed during a period of decreasing income, have Lorenz curves that depart widely from the line of equal distribution. The fact that net rents follow neither pattern may reflect this relation, since their Lorenz curve is approximately midway between business profits and interest. Capital gains, however, while showing a marked lack of equality year after year, do not follow this pattern.

This divergent behavior of the various component receipts offers one clue to why the Lorenz curves of a measure of composite income, such as net taxable income, for two successive years may cross. At the lower end of the distribution, wages and salaries are a predominant part of net taxable income, while interest and dividends become of increasing importance as we ascend the income scale. When a single distribution is made of the total incomes of the various members of the community, it may be expected that as income decreases the lower end of the distribution, heavily weighted as it is by wages and salaries, will tend to move away from, while the upper end, consisting largely of property incomes, will move closer to the line of equal distribution.