

TABLE 17

Components of Income Inequality
 Identical Samples: Owner-occupant; Division at \$2,000 in 1929

	COEFFICIENT OF CONCENTRATION				REL. DIFF. INCOMES OF l & u GROUPS				SHARE OF TOTAL INEQUALITY				% IN l GROUP		
	l group		u group		1929		1933		l group		u group			l & u groups	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		(13)	
Atlanta	.299	.303	.297	.300	1.159	1.204	5.9	5.5	28.7	28.6	65.4	65.9	47.5		
Birmingham	.322	.322	.268	.250	1.219	1.397	10.1	9.2	20.6	19.6	69.3	72.2	55.0		
Boise	.296	.339	.198	.202	1.179	1.370	18.7	16.8	11.4	11.1	69.9	72.1	64.6		
Buick	.256	.409	.297	.324	1.166	1.567	12.0	10.2	19.5	18.9	68.5	70.9	60.0		
Cleveland	.310	.381	.316	.338	1.290	1.471	8.8	7.8	23.0	23.0	68.2	69.1	55.7		
Dallas	.284	.310	.288	.272	1.112	1.169	7.1	6.8	27.0	25.3	65.9	67.8	49.4		
Des Moines	.280	.339	.282	.291	1.253	1.410	12.1	11.8	18.0	17.5	69.9	70.7	60.7		
Erie	.318	.417	.245	.280	1.293	1.631	15.9	13.0	13.8	14.6	70.3	72.4	63.5		
Indianapolis	.309	.380	.326	.305	1.197	1.436	5.1	5.1	81.0	28.6	63.8	66.3	46.7		
Lansing	.269	.358	.237	.267	1.033	1.252	12.1	11.0	19.6	19.9	68.4	69.1	55.6		
Lincoln	.307	.331	.333	.269	1.390	1.447	10.7	10.9	19.9	16.4	69.5	72.6	60.6		
Little Rock	.362	.389	.321	.274	1.304	1.305	7.4	7.2	25.7	23.5	66.9	70.3	51.7		
Minneapolis	.235	.289	.264	.264	1.078	1.229	9.8	9.3	21.6	20.4	68.6	70.4	55.4		
Oklahoma City	.311	.341	.304	.300	1.212	1.314	7.5	6.9	25.4	24.6	67.0	68.5	51.7		
Peoria	.292	.335	.294	.275	1.283	1.393	12.0	11.8	18.4	16.9	69.5	71.3	60.4		
Portland, Me.	.275	.309	.340	.299	1.234	1.363	6.4	6.9	27.8	24.9	65.8	68.2	51.7		
Portland, Ore.	.298	.377	.244	.230	1.217	1.439	15.4	14.3	14.7	13.3	69.9	72.4	62.3		
Racine	.277	.318	.308	.318	1.239	1.378	10.0	9.3	31.4	31.0	68.6	69.7	57.8		
Richmond	.281	.263	.304	.245	1.164	1.568	16.7	12.7	14.2	13.3	69.1	74.0	62.5		
Sacramento	.256	.327	.270	.255	1.182	1.275	6.0	4.9	28.0	23.4	66.0	68.0	48.8		
St. Joseph	.283	.327	.296	.261	1.044	1.174	7.9	7.9	25.9	23.5	66.2	68.5	50.1		
St. Paul	.235	.302	.266	.237	1.312	1.430	13.3	13.4	16.7	14.6	70.0	72.0	63.3		
Salt Lake City	.306	.339	.286	.233	1.144	1.292	14.4	15.2	16.2	13.7	69.5	71.1	63.3		
San Diego	.296	.328	.262	.218	1.242	1.410	10.9	10.3	20.2	16.2	68.9	73.5	57.5		
Seattle	.286	.340	.245	.242	1.231	1.269	14.1	15.2	16.3	13.5	69.5	71.3	61.6		
Springfield, Mo.	.301	.358	.235	.225	1.144	1.333	12.5	11.3	18.0	16.7	69.5	72.0	58.1		
Syracuse	.271	.319	.295	.319	1.375	1.530	21.4	21.2	9.6	9.0	68.9	69.8	70.5		
Topeka	.290	.295	.247	.227	1.126	1.273	8.6	7.6	24.7	26.1	66.7	67.3	52.9		
Trenton	.252	.336	.227	.220	1.251	1.404	15.0	12.9	14.5	13.1	70.5	74.0	63.2		
Wheeler	.367	.393	.217	.231	1.246	1.417	17.6	18.7	11.4	10.5	70.8	71.8	67.4		
Wichita	.260	.334	.276	.261	1.495	1.753	24.3	20.6	8.4	8.3	67.6	71.1	71.8		
Worcester	.307	.326	.333	.324	1.276	1.437	13.5	13.3	16.1	14.6	70.4	72.0	62.9		
					1.225	1.281	6.4	6.2	28.5	27.1	65.1	66.7	50.1		

changes in the share of total inequality are of substantially the same character as in the entire-city and tenant samples. The relative difference in mean income between the lower and upper groups assumes an increasing proportion of total inequality in 32 samples; the shares of inequality within the lower and upper groups decline in 25 and 27 samples, respectively.²⁸

As noted in the preceding section, the 1929 and 1933 Lorenz curves for the entire distribution intersect more frequently among owners than among tenants: while in most owner samples the share of the top incomes in total income declines, in most tenant samples it rises. Our analysis reveals another dissimilarity between the two tenure groups: inequality within the upper group tends to decrease in most owner samples, to increase in most tenant samples.

The convergence of these two conclusions suggests that the change in inequality within the upper group is related to the change in the share of the top incomes in total income; indeed, it must, by virtue of the nature of the two concepts. Inequality in income within the upper group can be understood in terms of the shares of total income received by the various income groups that make up the upper section of the population. Let us distinguish two such groups: the top and the moderately high income recipients. Together, they comprise all the members of the upper group. Declining inequality within it means that the share of the top incomes in the total income of the group declines, while the share of the moderately high incomes increases. Increasing inequality within the upper group means an increase in the share of the top incomes, a decline in the share of the moderately high incomes in the total income of the group.²⁹ What is the relation between changes in the share of the top incomes in the total income of the upper group and changes in the share of the whole upper group in total income?

Let us call the total income of the lower group L , that of the upper group U , and the total of the top incomes T , where T is, of course, a part of U . The share of the top incomes in the total income of the

²⁸ In few cases do the Lorenz curves for 1929 and 1933, representing the distributions of income within the lower group or within the upper group, tend to intersect. In 5 out of 99 samples for lower income recipients (entire-city, tenants, and owners), and in 9 out of 99 samples for upper income recipients, such a tendency is observable; but the evidence is doubtful.

²⁹ This relation is correct when the Lorenz curves for the upper income recipients do not intersect. As said above, such intersection cannot be found in our samples except in a few doubtful instances.

upper group is T/U , in total income $T/(U + L)$. The relation between the two shares is simple:

$$(1) \frac{T}{U+L} = \frac{T}{U} \times \frac{U}{U+L}.$$

The share of the top incomes in total income is the product of their share in the income of the upper group and of the latter's share in total income. Thus there is good reason for the two types of share of the top incomes to vary in the same direction; but evidently this covariation is affected by changes in the share of the upper group in total income.

As remarked, during the depression the share of the lower group declined, and that of the upper group increased, in all the samples studied (see Table 15). In terms of equation (1), $U/(U + L)$ increases. If we take this as a given condition three possibilities for the covariation of the two types of share of the top incomes remain:

a) The share of the top incomes in the total income of the upper group increases. Then their share in total income must increase *a fortiori*.

b) The share of the top incomes in the total income of the upper group decreases, but at a slower rate than $U/(U + L)$ increases. Again their share in total income must increase.

c) The share of the top incomes in the total income of the upper group decreases at a higher rate than $U/(U + L)$ increases. Then their share in total income must decline.

Under (a) and (c), income dispersion within the upper group and the share of the top incomes in total income vary in the same direction; under (b), in opposite directions. In our material (b) is realized very infrequently (Table 18).

In the entire-city and owner samples (c) is realized most frequently; in the tenant samples, (a). In each of the three classes of samples (b) seldom occurs.⁸⁰ When, during the Great Depression, the share of the top incomes in the total income of the upper group

⁸⁰ Although there is no fourth possibility, one entire-city sample (Portland, Oregon) shows increasing income inequality within the upper group and a decline in the share of the top incomes in total income; the coefficients of concentration for the upper group, 1929 and 1933, are identical in the first three digits. Only when they are computed to more digits does an increase appear. However, the two Lorenz curves of the upper group tend to intersect, which indicates a decline in the share of the top incomes in the total income of the upper group. Therefore, the increase in R_u does not reflect an increase in the share of the top incomes, as it does when there is no intersection of the Lorenz curves pertaining to the upper group. The 'fourth' possibility is therefore fictitious; its appearance is attributable to a slight inexactitude of measurement.

TABLE 18

Changes in the Share of the Top Incomes in Total Income *
and in Inequality within the Upper Income Group

	DECLINING SHARE OF TOP INCOMES	INCREASING SHARE OF TOP INCOMES	TOTAL SAMPLES
		<i>Entire-city</i>	
Decreasing inequality within upper income group	20	4	24
Increasing inequality within upper income group	1	8	9
Total samples	21	12	33
		<i>Tenant</i>	
Decreasing inequality within upper income group	10	3	13
Increasing inequality within upper income group	0	20	20
Total samples	10	23	33
		<i>Owner-occupant</i>	
Decreasing inequality within upper income group	20	2	22
Increasing inequality within upper income group	0	11	11
Total samples	20	13	33

* The share of the top incomes in total income has increased when the Lorenz curve for 1933 lies above the curve for 1929 in the upper right-hand corner of the Lorenz chart for all incomes. It has declined when the 1933 curve lies below the 1929 curve in that corner.

For the purpose of this table the top incomes are defined as the group of the highest incomes distinguished in the material. The lower limit of this group is given by the income at the point of intersection, which is indicated in Table 11 for all entire-city samples that show intersection of Lorenz curves.

declined, it tended to fall at such a rate that the share of the group in total income declined too, despite the growing importance of the income of the upper group as a whole. Exceptions to this tendency appear in 4 out of 24 entire-city, 3 out of 10 tenant, and 2 out of 22 owner, samples;

It becomes clear that the two types of share of the top incomes tend to vary in the same direction because of (1) the commonly observed rise in the share of the income of the upper group in total income, and (2) the few cases in which (b) is realized. This tendency appears in the entire-city samples as well as in the separate samples of both tenure groups.

The scarcity of cases in which (b) is realized must be ascribed to a positive correlation between the relative changes in (1) inequality among the upper income recipients and (2) the share of the upper

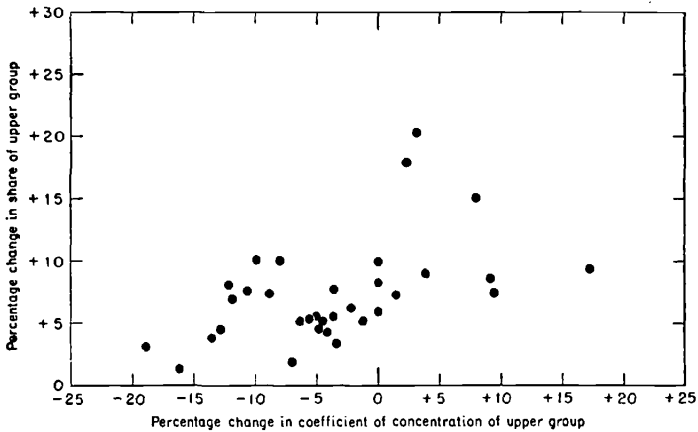
group in total income. Where income inequality within the upper group decreases most, the share of the group in total income tends to increase least (Table 19 and Chart 13). The coefficient of correlation, based on the 33 entire-city samples in Table 19, is .482 (see Chart 13).

TABLE 19
Percentage Changes in Inequality within the Upper Group
and in the Share of Total Income Held by It
Identical Samples: Entire-city

	PERCENTAGE CHANGES IN*	
	Coefficient of concentration for u group	Share of total income held by u group
Atlanta	-1.2	+5.2
Birmingham	-9.9	+10.1
Boise	+9.4	+7.3
Butte	+3.1	+20.2
Cleveland	-3.6	+7.7
Dallas	-3.4	+3.3
Des Moines	0	+5.9
Erie	+7.9	+15.0
Indianapolis	-6.4	+5.1
Lansing	+17.2	+9.4
Lincoln	-13.5	+3.8
Little Rock	-12.8	+4.5
Minneapolis	-5.1	+5.5
Oklahoma City	-5.6	+5.3
Peoria	-4.6	+5.1
Portland, Me.	-18.9	+3.1
Portland, Ore.	0	+9.9
Providence	-2.2	+6.2
Racine	+2.3	+17.9
Richmond	-10.6	+7.6
Sacramento	-3.7	+5.5
St. Joseph	-7.0	+1.9
St. Paul	-12.2	+8.1
Salt Lake City	-11.8	+6.9
San Diego	-16.2	+1.3
Seattle	-8.9	+7.4
Springfield, Mo.	0	+8.3
Syracuse	+3.9	+9.0
Topeka	-4.8	+4.6
Trenton	-8.0	+10.0
Wheeling	+9.1	+8.0
Wichita	+1.4	+7.3
Worcester	-4.2	+4.3

* The percentage change in the coefficient of concentration, 1929-33, is from Table 13, col. 3 and 4. The percentage change in the share of total income is the percentage change in the complements (to 100) of the percentages in Table 15, col. 1 and 2.

CHART 13
 Percentage Changes in the
 Share of Total Income Held by, and in the
 Coefficient of Concentration for the Upper Group



b OTHER DATA

The Old-Age and Survivors Insurance data, which are confined to the lower strata, confirm our results concerning income inequality within the lower group: it increases during the business recession of 1937-38 and decreases during the subsequent recovery (Table 20 and Charts 14 and 15).³¹ However, in 1940 the degree of inequality stays above its 1937 level, although the mean income exceeds that of 1937.

The Wisconsin distributions were split at the \$2,000 point in 1929 net incomes, the Delaware distributions at \$2,000 of total income in 1936, so that the lower group accounts for 68.4 and 81.1 per cent respectively. In the case of Germany, the split was made at RM3,000 in 1928, the percentage of the lower group being 89.6.³²

The Wisconsin data fit rather well into the general picture. From 1929 to 1936 income inequality within the lower group tends to

³¹ Since the distributions of taxable wages yielded by the Old-Age and Survivors Insurance for 1937, 1938, 1939, and 1940 cover wages and salaries from zero up to about \$3,000, they can be associated with the other distributions for low income groups. Experimentally, the 1937 and 1938 distributions were split at \$2,000 for 1937. The two sectional distributions show the same tendency toward increasing inequality during the recession.

³² Only two broad income classes, comprising about 60 and 30 per cent of total income recipients, are distinguished below RM3,000. Since an interpolation within these classes would not greatly affect the outcome of the analysis, and since it would have to be rather arbitrary, we did not lower the dividing point.

TABLE 20

Components of Income Inequality
 Nonidentical Samples: Delaware, Wisconsin, Old-Age and
 Survivors Insurance, and Germany

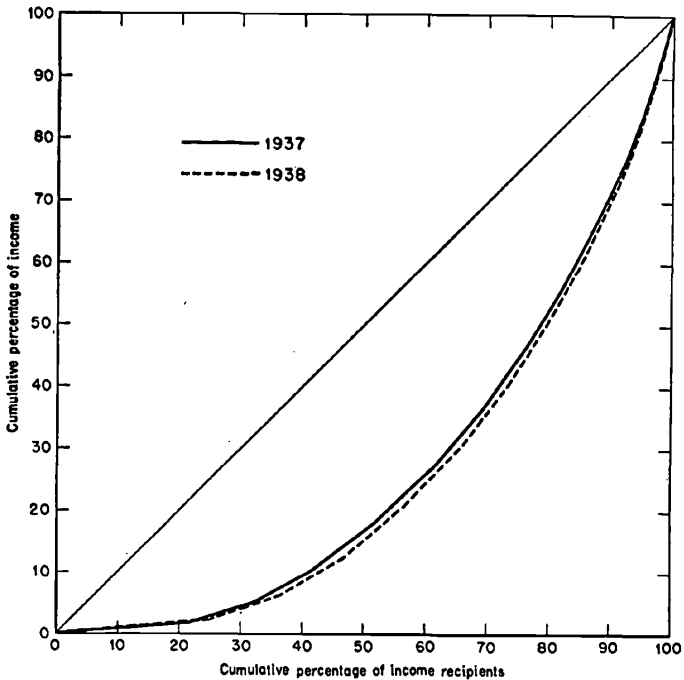
	MEAN INCOME (1)	COEFFICIENT OF CONCENTRATION		REL. DIFF. BETWEEN INCOMES OF <i>l</i> & <i>u</i> GROUPS (4)	SHARE OF TOTAL INEQUALITY			% IN <i>l</i> GROUP (8)
		<i>l</i> group (2)	<i>u</i> group (3)	<i>l</i> group (5)	<i>u</i> group (6)	<i>l</i> & <i>u</i> groups (7)		
<i>Delaware, state income tax data</i>								
1936	1,832	.436	.621	3.225	16.3	11.6	72.1	81.1
1937	1,906	.419	.589	2.973	18.3	11.2	70.5	81.1
1938	1,699	.405	.519	2.799	20.3	9.9	69.8	81.1
<i>Wisconsin, state income tax data</i>								
1929	2,024	.201	.317	1.191	15.8	15.3	68.9	68.4
1934	1,286	.248	.254	1.208	19.0	12.2	68.8	68.4
1935	1,417	.234	.252	1.147	19.0	12.4	68.6	68.4
1936	1,584	.235	.283	1.177	18.4	13.6	68.0	68.4
<i>U. S. Old-Age and Survivors Insurance data</i>								
1937	900	.466	...	...	...	...	...	100.0
1938	844	.485	...	...	...	...	...	100.0
1939	877	.479	...	...	...	...	...	100.0
1940	908	.473	...	...	...	...	...	100.0
<i>Germany, income and wage tax data</i>								
1926	1,486	.154	.330	3.046	22.3	3.4	74.3	89.6
1928	1,723	.173	.333	2.997	24.7	3.4	71.9	89.6
1932	1,168	.235	.256	3.306	28.0	2.5	69.5	89.6
1934	1,321	.268	.276	3.061	33.3	2.5	64.3	89.6
1936	1,735	.239	.334	2.816	31.9	3.4	64.7	89.6

increase as average income declines, and *vice versa*; while changes in inequality within the upper group seem *positively* correlated with changes in average income. Minor exceptions are observed for 1935-36 (R_l') and 1934-35 (R_u').³³ The relative difference in mean income between the lower and upper groups, however, does not conform well to our previous observations: its lower values for the relatively depressed years 1935 and 1936 do not agree with the thesis that it varies inversely with changes in income level.

The German tax data also support and supplement our finding

³³ The Lorenz curves for the 1935 and 1936 distributions of the lower group intersect, as do those for the 1934 and 1935 distributions of the upper group. Not much importance can be attributed to these intersections since the curves practically coincide over the entire range of a 10 square-inch Lorenz chart.

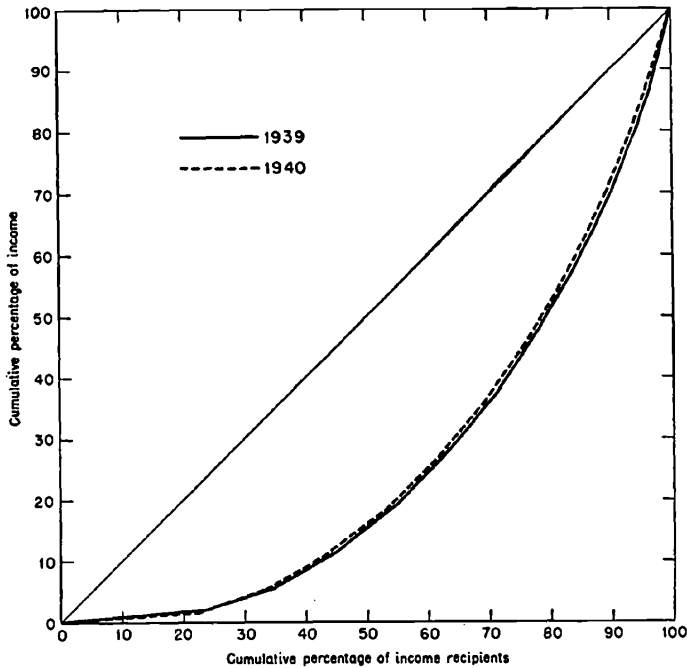
CHART 14
 Lorenz Curves, 1937 and 1938
 Old-age and Survivors Insurance



that income inequality within the upper group varies positively with the cycle of income level, and that the relative difference in mean income between the lower and upper groups varies inversely. It is true that income inequality within the lower group does not show any clear-cut correlation with income level; but wage distributions from German invalidity insurance records seem to show the same type of change in inequality for the cycle as we find characteristic of the lower income groups. In measuring inequality in these distributions for each quarter of the seven years 1928-34, Hans Staehle remarked that the variations "are by no means similar to those of other series characterizing the business cycle".³⁴ This dissimilarity should not, however, be interpreted to mean absence of correlation. To be sure, there is no positive correlation between the degree of inequality and income level, measured by the median income of the included workers; but there is evidence of a negative

³⁴ 'Short-period Variations in the Distribution of Incomes', *Review of Economic Statistics*, Aug. 1937, pp. 137, 142.

CHART 15
 Lorenz Curves, 1939 and 1940
 Old-age and Survivors Insurance



correlation. The coefficient of rank correlation between the two variables is $-.79$, significantly different from zero. Considering the signs of differences between consecutive items in the two series, we find that changes in the degree of inequality and those in the median have opposite signs in 19 out of 27 cases, the same sign in only 8 cases. Thus, Staehle's data support our thesis that income inequality among the lower groups tends to increase in depression and to drop in prosperity.

The Delaware data behave in an entirely different fashion, 1936-38, but we do not know why. All elements of income inequality decline in all its aspects: within and between the lower and upper groups, irrespective of the cyclical changes in income level that can be observed.

Except for the two cases mentioned in footnote 34, the Lorenz curves constructed separately for the lower and the upper groups in different years do not intersect. Whenever one curve lies to the right (below) of the other, it does so over the entire income range.

Consequently, the corresponding coefficients of concentration give an unequivocal picture of the change in inequality over time. Thus, when the data indicate declining income inequality within the total upper group, the share of the top incomes in its total income declines, whatever the lower limit of that group of top incomes is assumed to be. A corresponding situation is found for the lower group.

Our findings in this section indicate that we must not expect the degree of inequality in the income distribution as a whole to vary in the same direction as the degree of inequality within the upper income strata. A measure of the second cannot be taken as an indicator of the first. The consequences of such a procedure are observable in a study of factors influencing consumption in the United States.³⁵

Polak investigated the partial correlation between aggregate consumption and income inequality. In the absence of more suitable data, he used measures of inequality within the upper income group and found that the partial regression coefficient "invariably had a wrong sign".³⁶ Economic theory to the contrary, it appeared that greater inequality in incomes was associated with greater consumption, and conversely. This surprising result is probably explained by the negative correlation between the changes in inequality within the entire distribution and within the higher income groups. In aggregate national consumption, it is the former that matters; or perhaps even inequality within the lower 60 or 80 per cent of the income distribution. Our results point toward the expected negative correlation between changes in either of these two and the cyclical changes in national consumption.

C OTHER APPROACHES TO THE ANALYSIS OF SECTIONAL INEQUALITY

We may now test whether our results depend upon the particular techniques followed.

1) With the principle of splitting the income distribution into two sections maintained, will a lowering or raising of the dividing point affect the results?

³⁵ J. J. Polak, 'Fluctuations in United States Consumption', *Review of Economic Statistics*, Feb. 1939. Pareto slopes, used as measures of income inequality, are computed from sections of the federal income tax distribution above \$5,000 net. The rather inadequate index of wage inequality, used in addition, cannot be regarded as a measure of income differences within the lower sections of the income distribution.

³⁶ *Ibid.*, p. 5. Similar 'wrong signs' appear in J. Tinbergen's study: *Business Cycles in the United States of America, 1910-1932* (Geneva, 1939), pp. 35-8, 234.

- ii) What would the results be were the distribution split into more than two sections?
- iii) Would the analysis of income inequality within and between sections yield different results were coefficients of variation used instead of coefficients of concentration?
- iv) Are the results similar for usable and identical samples?

i) *Location of the dividing point*

A lowering or raising of the dividing point is bound to produce the following effects: First, if the dividing point is lowered, the share, in total inequality, of inequality within the lower group will decline, while the share within the upper group will increase; conversely, if the dividing point is raised. Second, a considerable lowering of the dividing point will tend to reverse the results obtained for the change in the degree of inequality within the upper group, since the latter will comprise an ever larger part of the entire distribution and income inequality among its members will tend merely to reflect that in the entire distribution. Third, where the Lorenz curves for the entire distribution intersect in the manner previously discussed, raising the dividing point above the income level at which intersection occurs will affect the change in relative difference in mean income between the lower and upper groups. It is difficult to determine just what the effect of lowering the dividing point would be.

It seems impossible to determine *a priori* the effect of a higher dividing point on changes in inequality within the upper group. Where this form of inequality declines under the previous procedure, it is not likely to increase with a higher dividing point. The results of Goldenthal's study support this assertion. When income inequality within the upper group increases under the previous procedure, the effect of a higher dividing point cannot be predicted.

To ascertain the effect of raising the dividing point, we experimented with 10 owner samples of the Financial Survey. When the dividing point was raised from \$2,000 to \$3,000 of 1929 income the range of percentages of owner families designated as in the lower group rose in the 10 cities from 47.5-67.4 (Table 17, col. 13) to 71.8-87.4 (Table 21, col. 13).

Comparison of the corresponding entries in Tables 17 and 21 reveals that nearly all coefficients of concentration for the lower group are raised, while the great majority of those for the upper

TABLE 21

Components of Income Inequality

Identical Samples: Owner-occupants; Division at \$3,000 in 1929

	COEFFICIENT OF CONCENTRATION				REL. DIFF. BETWEEN INCOMES OF l & u GROUPS				SHARE OF TOTAL INEQUALITY				% IN l GROUP (13)
	l group		u group		l group		u group		l & u groups		l & u groups		
	1929 (1)	1933 (2)	1929 (3)	1933 (4)	1929 (5)	1933 (6)	1929 (7)	1933 (8)	1929 (9)	1933 (10)	1929 (11)	1933 (12)	
Atlanta	.295	.317	.266	.260	1.538	1.588	19.5	19.7	10.0	9.6	70.5	70.6	71.8
Butte	.260	.414	.300	.287	1.896	2.406	30.0	31.7	5.4	4.7	64.6	63.6	83.1
Cleveland	.310	.389	.296	.301	1.891	2.128	24.5	25.2	7.3	7.0	68.2	67.9	78.6
Minneapolis	.250	.312	.249	.235	1.635	1.775	28.9	30.9	5.4	4.9	65.6	64.3	80.7
Providence	.282	.336	.287	.306	1.925	2.077	26.7	27.7	5.9	6.2	67.4	66.0	81.0
St. Paul	.254	.315	.288	.219	1.906	2.050	36.0	39.0	3.9	2.8	60.1	58.2	85.9
San Diego	.299	.338	.261	.180	1.950	1.841	36.4	41.8	3.8	2.4	59.8	55.8	85.0
Seattle	.286	.363	.237	.204	1.723	1.869	34.4	37.5	4.2	3.5	61.3	59.0	82.8
Topeka	.304	.337	.242	.229	1.875	1.974	37.0	37.7	3.6	3.4	59.3	58.9	84.5
Trenton	.282	.359	.214	.161	1.954	2.077	42.2	46.0	2.4	1.6	55.4	52.3	87.4

group are lowered. In all cases the relative difference between the mean incomes of the lower and upper groups is increased. The shares of total inequality ascribable to income inequality within the upper group and to the relative difference in mean income levels between the lower and upper groups are decreased (the second, except Atlanta). In total inequality, the share of inequality within the lower group increases throughout.

Raising the dividing point affects somewhat the outcome of our comparisons of owner distributions in 1929 and 1933. Income inequality within the lower group increases as before; but that within the upper group declines more frequently than when the distribution was split at \$2,000 (1929). Declines occur in 8 of the 10 cities, whereas they previously occurred in 5, and the increase in Cleveland is much smaller. In Providence, however, the increase is more pronounced, and in Topeka the decline is slightly less pronounced. There is some evidence that raising the dividing point brings out more definitely the decline in income inequality within the upper group.

The relative difference in mean income between the two groups tends to increase, as with the former splitting procedure; but at a somewhat lower rate in 9 cities, and in San Diego there seems to be a decline. In short, as one might expect, raising the dividing point reduces somewhat the frequency and degree of the increase in the relative difference in income levels between the two groups during the depression.

In total inequality, the share of inequality within the upper group drops as it did before; but all or most of the decline is now absorbed by the degree within the lower group. The share of the relative difference in income level between the two sections tends to decline, in contrast to the effect when \$2,000 was the dividing point.

ii) *Threefold division of the income distribution*

If we were to divide the income distribution into more than two subsections the number of income groups in the original data would have to be fairly large if inequality within each of the several subsections were to be measured. Since a division of 11 income groups into more than two would yield little information, it was not attempted for any of the 33 cities.

Data for the aggregate of the 33 city samples are presented in *Residential Real Estate* (p. 151 ff.) with a breakdown into 39 income

groups, enough to permit a subdivision of the distribution into three, or even more, sections, each containing a fair number of income groups. We used this material, therefore, for a threefold division of the income distribution.

Table 22 shows the effects of dividing the distributions for 1929 and 1933 into two sections, by the procedure followed in the previous analyses. With the dividing point at \$2,000 in 1929, 63 per cent are classed as lower income recipients, 37 per cent as upper. The results for the aggregate of the 33 cities follow the general pattern of the individual city studies. Income inequality within the lower group and the relative difference in income levels between the lower

TABLE 22
Components of Income Inequality
Usable Samples: Aggregate of 33 Cities
*Division into upper and lower income groups
(dividing point at 63 per cent of the 1929
income distribution: at \$2,000 in 1929)*

	1929	1933
Coefficient of concentration		
<i>l</i> group	.301	.369
<i>u</i> group	.282	.270
Relative difference between incomes of <i>l</i> and <i>u</i> groups	1.270	1.464
Share of total inequality		
<i>l</i> group	14.5	14.0
<i>u</i> group	16.2	14.8
<i>l</i> and <i>u</i> groups	69.3	71.2
<i>Division into 3 groups: low, middle, and high (dividing points at 33.3 and 66.7 per cent of the 1929 income distribution)</i>		
Coefficient of concentration		
Low	.327	.380
Middle	.087	.124
High	.280	.266
Relative difference between incomes of		
Middle and low	.492	.545
High and middle	1.092	1.262
High and low	1.584	1.807
Share of total inequality		
Low	2.6	1.9
Middle	1.9	2.3
High	13.8	12.3
Low and middle	12.8	12.7
Middle and high	28.2	29.2
Low and high	40.8	41.7

and upper groups increase during the depression, while inequality within the upper group declines. The relative difference in mean income between the two groups assumes an increasing share of total inequality at the expense of both forms of intragroup inequality.

In splitting the distributions into three sections we chose the two dividing points so as to have three numerically equal groups of income recipients—low, middle, and high. The high is almost identical with the upper group of the two-section breakdown. The additional subdivision affects primarily the group previously designated lower. In 1929 the low group ranges from zero to about \$1,200 (comprising 13 income groups); in 1933, from zero to about \$600 (7 groups). The middle group ranges from about \$1,200 to about \$2,000 (8 groups) in 1929; and from about \$600 to about \$1,400 (9 groups) in 1933. The high group comprises in 1929 all incomes above about \$2,000 grouped in 20 classes; in 1933 all above about \$1,400 grouped in 25 classes.³⁷

Income inequality within the high group follows the same course as those within the upper group in the two-section analysis; that is, it declines from 1929 to 1933. The tendency toward increasing inequality previously observed for the lower group holds true both within the low and middle groups and in the relative difference between the income levels, indicating a certain homogeneity of the lower group in the two-section analysis from the viewpoint of changes in inequality during the depression.

III and IV) *Inequality within sections measured by coefficients of variation, in usable samples*

The third and fourth problems are treated jointly. We analyzed the usable samples for tenants in 10 cities, as in the first problem. Tenant samples were taken because *Residential Real Estate* contains breakdowns into 39 groups only for the 1929 and 1933 tenant income distributions. The use of this fine breakdown seemed advisable for the purpose of comparing the behavior of the two types of inequality measure.

As shown above, both the usable and identical samples reveal increasing coefficients of concentration for the entire distribution 1929-33 (see Ch. 1). Changes in the coefficients of variation for the usable samples parallel those in the identical samples: they increase in 7 cities, and decrease in San Diego, Seattle, and Topeka, where

³⁷ In each year groups number 41, two more than the original number in the material, inasmuch as the divisions split two groups into four subgroups.

decreases were observed in the identical samples as well (Table 23, col. 4).³⁸

Income inequality within the lower section follows the course traced by the identical tenant samples, regardless of the measure used. Both the v' and the R' increase in all cities studied. The relative difference in income level between the lower and upper groups increases throughout.

Changes in the coefficients of concentration for the upper section parallel those in the identical samples, with the sole exception of Cleveland. The coefficients of variation change in the same direction, except for St. Paul and Trenton; however, in the former the two measures are practically constant for the two years.³⁹

In conclusion, we may say that the analysis of inequalities in

³⁸ See Table 6. It can be explained at this point why the increase in aggregate inequality 1929-33 is brought out less clearly by the coefficients of variation than by the coefficients of concentration. While the latter increase in all tenant samples, the former decrease in San Diego, Seattle and Topeka.

The explanation lies in the different weights given inequality within the upper group in the two measures, which in turn is explained by the fact that deviations among incomes are taken as simple differences in the case of R' but as squared differences in the case of v' . The squaring emphasizes the deviations of the more widely scattered high incomes from their mean.

For the 10 tenant samples the share of inequality within the upper group in aggregate inequality is much higher (4 to 8 times) in the coefficient of variation than in the coefficient of concentration. The prevalent decline in inequality within the upper group during the depression is, therefore, more likely to produce declines in the coefficients of variation for the entire distribution than in the coefficients of concentration.

*Percentage Share of Inequality within the Upper Group in Aggregate Inequality
Tenants, Usable Samples*

	COEFFICIENT OF VARIATION		COEFFICIENT OF CONCENTRATION	
	1929	1933	1929	1933
Atlanta	41.0	43.6	6.3	6.6
Butte	58.8	45.2	12.7	10.7
Cleveland	60.7	59.1	13.2	12.8
Minneapolis	61.4	54.0	10.9	9.5
Providence	56.4	50.0	9.2	8.0
St. Paul	28.5	24.5	4.8	4.3
San Diego	59.9	38.2	10.2	8.7
Seattle	65.2	44.8	12.1	10.6
Topeka	52.7	31.9	7.7	6.3
Trenton	31.0	20.7	3.8	3.6

³⁹ The standard deviations in Table 23, col. 3, are consistently larger than those for the identical sample in Table 6, col. 5 and 6, because the finer breakdown into 39 groups leaves less room for the neglected intragroup variation. For the same reason the coefficients of variation (col. 4) and coefficients of concentration (col. 8, 9, and 10) consistently exceed those obtained in the 11-class analysis of the identical sample. Compare with Table 6, col. 7 and 8, Table 7, col. 7 and 8, and Table 16, col. 1-4.

TABLE 2 3

Components of Income Inequality
Usable Samples: Tenant; Data Based on 39 Classes

	TOTAL NO. (1)	MEAN INCOME (2)	STANDARD DEVIATION (3) (dollars)	COEFFICIENT OF VARIATION		REL. DIFF. BETWEEN INCOMES OF l & u GROUPS (7)	COEFFICIENT OF CONCENTRATION		% IN l GROUP (11)	
				All (4)	u group (5)		All (8)	u group (9)		
Atlanta '29 '33	8,327 9,514	1,411 979	1,469 1,188	1.041 1.213*	.547 .711*	1.700 1.992	.461 .517	.345 .399	.219 .231	76.0
Butte '29 '33	1,801 1,999	1,880 991	1,622 1,134	.863 1.144*	.444 .738*	1.069 1.714	.355 .515	.246 .423	.245 .242	67.5
Cleveland '29 '33	22,333 27,350	1,847 1,143	1,880 1,356	1.018 1.186*	.533 .651*	1.338 1.505	.408 .475	.393 .374	.248 .258	65.4
Minneapolis '29 '33	7,826 9,270	1,778 1,222	1,605 1,174	.903 .900*	.412 .541*	1.112 1.316	.322 .410	.224 .314	.224 .214	69.0
Providence '29 '33	5,048 5,884	1,660 1,134	1,531 1,168	.922 1.030*	.445 .573*	1.250 1.504	.367 .436	.251 .327	.246 .230	72.8
St. Paul '20 '33	1,630 1,827	1,490 1,062	1,009 873	.673 .822*	.453 .634*	1.171 1.482	.332 .418	.254 .355	.174 .172	77.9
San Diego '29 '33	3,651 4,800	1,728 1,194	1,592 939	.921 .786*	.458 .510*	1.149 1.204	.363 .380	.255 .296	.219 .187	69.0
Seattle '29 '33	5,051 5,078	1,802 1,100	1,840 1,026	1.021 .925*	.491 .554*	1.165 1.369	.377 .422	.281 .319	.222 .204	65.8
Topeka '29 '33	1,604 2,074	1,564 1,072	1,470 934	.940 .871*	.529 .602*	1.301 1.465	.388 .426	.393 .345	.221 .186	73.6
Trenton '29 '33	1,769 2,081	1,347 902	1,024 827	.760 .917*	.515 .690*	1.327 1.783	.363 .469	.291 .395	.165 .175	79.7

* Statistically significant change in coefficient of variation 1929-'33.

income within and between the two sections of the distribution would lead to substantially the same results were coefficients of variation rather than coefficients of concentration used, or were the usable rather than the identical samples studied.

4 *Suggested Explanations of the Observed Changes in Income Inequality*

The preceding analysis has revealed characteristic changes in three features of income inequality. Income inequality within the lower group (lower 50-70 per cent) and relative differences in mean income between the lower and upper groups increase from prosperity to depression, while inequality within the upper group (upper 30-50 per cent) tends to decline. The composite effect of these changes is an increase in inequality within the income distribution as a whole: a decreasing proportion of total family income goes to the lower income groups. However, the corresponding increase in the share of the upper group in total income is unevenly distributed among its members. While the share of the group as a whole increases, that of the top 5, 10, up to 20 per cent tends to decline. This is not true of all 33 cities; but with few exceptions it is true wherever income inequality within the upper group declines. Where income inequality within the upper group increases during the depression—as it does in a minority of entire-city and owner samples, and in a majority of tenant samples—the share of the top incomes in total income increases too.

Supplementary data indicate a reversal of these tendencies in the expansion phase of the cycle. However, the evidence is less definitive than for the contraction phase.

Various theories might be advanced to account for these tendencies. The present discussion is confined to the presentation and partial verification of a few simple hypotheses.

a INEQUALITY WITHIN THE LOWER GROUP

The inverse correlation between changes in the income level and the degree of inequality within, roughly, the lower two-thirds of income recipients can be explained by variations in unemployment and, to some extent, in wage rates. There are three contributing factors: (i) changes in the significance of the income gap between the employed and the unemployed, (ii) uneven incidence of unemployment among low- and high-pay employees, and (iii) changes in wage differentials between low- and high-pay workers.

i) *Changes in the significance of the income gap between the employed and the unemployed*

Unemployment during depressions pushes numerous income recipients into the bottom income group. Some of the unemployed are deprived of all income, others receive small amounts from part time work or some form of relief. The unemployed command much smaller incomes than those who stay employed since a loss of employment usually brings about a much greater curtailment of income than a reduction in the rate of pay. Thus the situation of the lower income groups is characterized during depressions by a mass of extremely low incomes earned by the wholly or partly unemployed, and by another class, fairly large, of low incomes earned by workers whose employment is impaired only slightly, if at all. Inequality is thus accentuated by the income gap between the employed and unemployed.⁴⁰

With recovery the unemployed are reabsorbed by industry. Their incomes rise more rapidly than those of persons who have enjoyed stable employment. As unemployment declines, income inequality within the lower income groups becomes in the main a matter of inequality between rates of pay. The closing of the gap between the employed and unemployed brings about a decline in income inequality within the lower income groups.

This theory could be verified by income records of a representative sample of workers, among whom some kept their jobs during the depression while others lost theirs. Such data are not, apparently, available at present. At the end of this section we discuss a tentative verification based on rather unsatisfactory data.

ii) *Incidence of unemployment among low- and high-pay employees*

Unemployment might not cause greater income inequality within the lower group if it fell more heavily on the upper strata of the working class, less on the lower strata. If members of the upper wage groups tended to suffer proportionately greater losses of income through unemployment than members of the lower wage groups, relative income dispersion within the lower group might decline. In reality, however, the incidence of unemployment is likely to vary in the opposite direction, the lower wage groups suffering more

⁴⁰ See Simon Kuznets, 'National Income', *Encyclopaedia of the Social Sciences* (Macmillan, 1933), XI, 223.

than the upper (and all wage earners more than salaried workers and business men, for that matter). The need for supervisory and skilled personnel tends to depend less on output than the need for unskilled labor. In many industries, workers of the first category are 'fixed assets' to their employers, since their presence is necessary even for below-capacity production and they cannot be replaced as easily as unskilled workers. Therefore, skilled and supervisory workers are more firmly attached to their employers and retain their jobs longer than unskilled. It seems probable that the incidence of unemployment varies inversely with the level of skill and income of the working group and its rank in the production hierarchy.

The Census for 1940 confirms this hypothesis in general. The proportion of unemployed among nonfarm laborers was three times higher than among craftsmen, operatives, foremen, and service workers; four times higher than among clerical workers; and fifteen times higher than among proprietors, managers, and officials. Within each group, except male laborers, the percentage of unemployed was higher among negroes than among whites (Table 24).

TABLE 24

Unemployed (incl. workers on public emergency projects)
as a Percentage of the Experienced Labor Force, 1940

Nonfarm occupations, both sexes

Proprietors, managers, and officials	2.5
Professional and semi-professional workers	5.8
Clerical, sales, and kindred workers	9.5
Craftsmen, foremen, operatives, and service workers	12.4
Laborers	36.7
All nonfarm occupations	13.2

Sixteenth Census of the United States, 1940
Population, III, Part 1, 87.

The uneven incidence of unemployment tends to accentuate income inequality within the lower income groups in depressions. Unemployment accentuates the income differential between the very lowest and moderately low incomes. Therefore, inequality within the lower group tends to grow with a rise, and to recede with a fall, in unemployment.

III) *Changes in wage differentials of low- and high-pay workers*

In view of the unequal incidence of unemployment, the rates of remuneration of high- and low-pay workers may be expected to

differ more in depression than in prosperity. Members of the first group are better able to ward off wage cuts, since the unemployed reserve army exerts less pressure on the workers in the higher groups who cannot easily be supplanted. In addition, the upper strata of many occupations tend to be more firmly organized; wage reductions are likely to be relatively small where unions are strong. Thus the bargaining position of low- and high-pay workers may become more unequal in depression, less unequal in a revival of business activity.

A study of hourly earnings in different occupations and industries by J. T. Dunlop indicates that in most occupations the lower quartile of the distribution of earnings fell by a greater percentage than the upper quartile during the depression (1929-32), and rose by a greater percentage during the subsequent recovery (1933-37).⁴¹ In other words, relative differences in hourly earnings of men in the same industry and occupation are inversely correlated with the general level of income: they increase in depression and decline in prosperity.

Dunlop's investigation does not reveal parallel variations in the inequality of hourly earnings between the different occupations of an industry. During the Great Depression, earnings of the best-paid occupations and of common laborers—within an industry—declined relatively little, while those of certain intermediary occupations fell relatively much. The recovery in hourly earnings between 1933 and 1937 was least marked in the occupations at both ends of the scale. Similarly, data collected by the National Industrial Conference Board for 21 industries do not show a definite increase in the differential between the hourly earnings of unskilled workers on the one hand, and skilled and semiskilled workers on the other hand, during the Great Depression. In 1929 hourly earnings of unskilled workers represented 72.8 per cent of hourly earnings of skilled and semiskilled workers combined, for an average of 21 industries. In 1930 this percentage fell to 72.1, indicating a slight increase in the differential; but in 1931 it rose to 72.6. Nineteen hundred and thirty-two brought a new decline, to 71.6, and 1933 another rise, to 72.9.⁴² The rise continued into 1934 (74.5 per cent) and 1935 (74.6 per cent); but its cause must be sought in the wage stipulations

⁴¹ 'Cyclical Variations in Wage Structure', *Review of Economic Statistics*, Feb. 1939, pp. 32, 33. The tendency is observed primarily among male workers.

⁴² Omar Pancoast, Jr: *Occupational Mobility, Democratic Efficiency through the Use of Human Resources* (Columbia University Press, 1941), p. 54.

of the NRA rather than in the improvement of business conditions. At the end of the NRA, the prosperity year 1936 witnessed a sharp decline in the percentage, to 72.7. No clear-cut relation between wage differentials and fluctuations in employment is revealed.

While Dunlop's study indicates that the Great Depression brought increasing differences in hourly earnings between low- and high-pay workers within occupations, an investigation by Carrie Glasser shows simultaneous increases in interindustry wage differentials. The coefficients of variation of hourly entrance rates and of hourly earnings of male unskilled labor, measured for several manufacturing industries, increased greatly from 1929 to 1932 (Table 25). Both coefficients declined from 1932 to 1933 without reaching their 1929 level. From 1933 to 1936 interindustrial differences in hourly entrance rates declined greatly; but those in hourly earnings rose somewhat.

TABLE 25
Changes in Interindustry Wage Differentials
Coefficients of Variation

	1929	1932	1933	1936
Average hourly entrance rates, 13 industries (BLS)	10.5	24.8	19.0	9.0
Average hourly earnings, 21 industries (NICB)	11.2	13.9	11.8	12.1

Carrie Glasser: *Wage Differentials, The Case of the Unskilled Worker* (Columbia University Press, 1940), p. 96.

Thus there is some evidence that differentials in basic wages increased during the Great Depression both between different grades of skill within occupations (Dunlop) and among industries (Glasser), and declined during the subsequent recovery. There is no definite evidence, however, that similar fluctuations in wage differentials occurred among different occupations and broad skill groups within industries.

The unemployed income recipients are almost all in the lower income group, regardless of what group they may have belonged to in an earlier year; and a large proportion of the lower income group, greater in prosperity and smaller in depression, consists of employed income recipients. Hence, the increase from prosperity to depression in the income gap between the employed and the unemployed, suggested under (i) above, would serve to increase inequality within the lower income group, regardless of the fact that the lower in-

come group is not confined to the same families in the two years.

On the other hand, the hypotheses under (ii) and (iii), concerning increasing wage differentials and greater incidence of unemployment in depression among low- than among high-pay workers, can be strictly applied only for lower income groups that are of *identical* composition in the various years of comparison. Our data do show a shift between 1929 and 1933 in the position of families with respect to the dividing point, i.e., from the upper to the lower income group and conversely: the percentage of families shifting position with respect to the dividing point ranges from 11 to 26 (Table 31, Ch. 3). Since the lower income groups in our material are not identical in the various years it is uncertain whether the conditions described would contribute to the observed increase of inequality within the lower group.

For this and other reasons it is impossible here to assess the degree to which the observed correlation between decline in income level and increase in income inequality within the lower group is attributable to income disparities between employed and unemployed, or to variations in wage differentials among the employed, within or between occupations and industries. It is probably due to a combination of these factors. Certainly, it is not confined to particular industries or localities, for it appears in many cities with markedly different industrial structures. An explanation in terms of such universally relevant factors as the level of employment and wage differentials between workers of different skills therefore seems indicated. Variations in these factors may provide a satisfactory basis for an explanation of the observed tendencies in the lower income groups, both within and between localities and industries.

b INEQUALITY WITHIN THE UPPER GROUP

Cyclical changes in the degree of inequality within the upper group must be explained by the cyclical behavior of the types of income receipts most characteristic of the higher income strata: salaries, income from property, and entrepreneurial withdrawals. These types show cyclical variations of unequal amplitude. Several of the income types that spring from property vary concomitantly with the business cycle; in particular, dividends and capital gains—residual payments and windfall profits (losses)—which are bound to be greatly affected by changes in business conditions. Other incomes from property, such as interest, rents, and royalties, tend to fluctuate

less, because they are fixed by contract for certain periods and cannot be adjusted rapidly to changes in business conditions.

Salaries are subject to relatively slight cyclical variations, again, because of stability of contract. Wages and salaries of the upper group varied less during a recent business cycle than all other types of income taken together (Table 26). Apparently, the tendency for certain kinds of property income to fluctuate violently renders this type of income as a whole more variable than salaries.

TABLE 26
Cyclical Variations in the Total Income of the Upper Group
and Share of the Top Incomes, Three Types of Payment

TYPE OF PAYMENT	% SHARE OF TOP INCOMES IN TOTAL INCOME OF UPPER INCOME GROUP FROM VARIOUS SOURCES			RATE OF CHANGE IN TOTAL INCOME OF UPPER INCOME GROUP FROM 1929 TO 1933 1933 TO 1936 as a % of	
	1929	1933	1936	1929	1933
	From work				
Salaries, wages, commissions, etc.	46	24	30	-33	+55
Mixed					
Income (profits minus losses) from business & partnership	63	43	55	-67	+84
From property					
Dividends, rents, royalties, interest, capital gains minus capital losses, & other income	86	44	70	-71	+93

Statistics of Income for 1938, Part I (U. S. Treasury Department, 1941), pp. 68-75. Total income of the upper income group is the total amount shown on all federal income tax returns from individuals, estates, and trusts in the stub. Total of top incomes is the amount shown on returns with net income above \$5,000.

Income from business and partnerships occupies an intermediate position with respect to cyclical flexibility. Part may be considered income from entrepreneurial work (wages of management); another part, income from property (profits or losses). If the two parts could be separated it might be found that wages of management fluctuate less than profits, because independent managers honor tacit contracts—with themselves—to much the same degree as corporate managers honor explicit contracts.

The recipients of top incomes get a larger share of income from property than of income from work. Although there is no rigid limit to salaries, most people have to rely heavily on income from

property in order to achieve a very high income. Differences in individual properties, inherited or accumulated by their owners, is known to be an important source of differences in income.⁴³

If (1) income from property as a whole fluctuates cyclically more than income from work and (2) the very high incomes hold larger shares in income from property than in income from work, the observed variations in inequality within the upper group are explained. During depressions, inequality will decrease because of the larger proportional decline of the top incomes; during prosperity, it will increase because of the larger proportional rise of the top incomes.

Both assumptions can be verified with the help of federal income tax statistics.⁴⁴ The verification undertaken here is confined to three years of a recent business cycle: 1929, 1933, and 1936. We define as the upper group people who filed income tax returns for these years, regardless of whether the returns showed a taxable net income. The recipients of the top incomes are defined as those who reported a net income in excess of \$5,000. Table 26 supports the view that income from property varies more markedly than income from work, and gives mixed income an intermediate position.⁴⁵ The share of the top incomes is highest for the most flexible type of payment, lowest for the least flexible.

To explain why inequality within the upper group failed to decrease, indeed actually increased during the depression in some cities, especially in the tenant samples, the hypothesis might be advanced that income from property forms a different proportion of the total income of the upper group in the various cities and the two tenure groups. Where the upper group derives a larger proportion of its income from property, especially stocks, and a smaller proportion from work, the difference in cyclical flexibility shown

⁴³ See F. R. Macaulay, 'The Personal Distribution of Income in the United States', *Income in the United States* (National Bureau of Economic Research, 1922), II, 376 ff.

⁴⁴ See also Ch. 3, Sec. 3b.

⁴⁵ The analysis is not carried out for a constant proportion of the population, since joint income tax returns and other factors make it difficult to define exactly the population that corresponds to income tax returns. Moreover, such a correction would merely emphasize the tendencies discovered here. If, in order to reduce the number of returns in 1929 and 1936 to the population proportion of 1933, some of the lower incomes were omitted from the material for the two prosperity years, the difference in flexibility between income from property and from work would be even more spectacular; for the omission of these low incomes would subtract proportionately larger amounts from the latter than from the former. Thus the fluctuations in income from work would be reduced in relation to those in income from property.

by the two broad types of income is more likely to cause a decline during depression in income inequality within the upper group. Where income from property is insignificant, inequality within the upper group may not decrease during depressions or even increase.

The Financial Survey contributes little to the testing of this hypothesis. For 21 cities data were tabulated that show for each income group in 1933 the totals of (1) wages and salaries, (2) income from roomers and lodgers, and (3) other income. Unfortunately, similar data are not available for 1929. It is permissible to assume that 'other income' represents pure or mixed income from property, but not that the 1933 proportion of 'other' in total income measures the weight of the highly flexible types of property income in the various cities. For it is likely that, in the depression year, income from property consisted chiefly of the less variable types, i.e., interest, royalties, etc.; dividends and capital gains had, for the most part, disappeared. Thus the fact that the upper income recipients in a certain city received a relatively large proportion of their income from property does not mean that they were exposed to the equalizing effect of declining dividends and capital gains to a greater degree than the upper income recipients in another city with proportionately smaller incomes from property. Indeed, it may mean just the opposite: namely, that the upper group in the first city held a relatively minor share in the *flexible types* of property income and that therefore the sharp decline in these types of income did not reduce income inequality significantly. For all 1933 income groups together, as well as for almost all of the 1933 groups above \$1,500 separately, owners in the 21 cities derived a greater proportion of their income from property ('other income') than did tenants.⁴⁶ If a greater proportion of property income in 1933 meant a greater proportion of cyclically flexible incomes, the hypothesis advanced above would be supported. However, as has been shown, such an interpretation is open to doubt.

To ascertain whether the proportion of 1933 property income in the total income of the upper group is correlated with the change in income inequality within it, 1929-33, in the 21 cities, we defined the upper group as the families in 1933 income classes with incomes above \$1,500, and computed the correlation separately for tenants

⁴⁶ Exceptions: The proportion of other income is greater for tenants than for owners in Birmingham (\$2,000-2,999), Birmingham and Trenton (\$3,000-4,499), Des Moines, Richmond, Trenton, and Worcester (\$4,500-7,499), and Butte, Peoria, Worcester (\$7,500 and over).

and owners. The result is insignificant for both tenure groups: $-.25$ for tenants and $.01$ for owners. (Incidentally, no significant correlation exists between the proportion of property income for the upper group in 1933 and the degree of income dispersion, absolute or relative, in the same year.) Consequently, the hypothesis advanced above is not confirmed.

Even if confirmed, it would serve merely to explain why the downward tendency of inequality within the upper group differs in the various cities and between the two tenure groups. It would not tell us why inequality within the upper group increases in some cases. What is the nature of the factors that counteract the equalizing effects of depression on the income distribution of the upper group? It may well be that the recipients of high salaries—executives, technical and commercial specialists—are more successful in warding off salary cuts during depressions than minor officials and other recipients of moderate salaries.

In a study of executive employment and compensation in 100 industrial companies, 1928-32, J. C. Baker found: "(a) an amazing steadiness in the employment of executives, (b) an equally amazing steadiness in their salary, . . . (d) wide fluctuations in bonus payments; but not sufficiently wide to cause total compensation to decline as sharply as wages or dividends".⁴⁷ Baker's findings may account for the increase in inequality within the upper income group in some cities.

C DIFFERENCE IN INCOME LEVEL BETWEEN THE LOWER AND UPPER GROUPS

As we have seen, the relative difference between the mean incomes of the higher (upper 30-50 per cent) and lower (lower 50-70 per cent) groups of income recipients increases in depression and tends to decrease in prosperity. In other words, differences in income between the two groups are inversely correlated with the general level of income during short periods. A partial explanation may lie in the diverse effects of the rigid and flexible elements in the incomes of the two groups. It seems plausible that the flexible elements in the income of the lower group (employment and hours) is more important than those in the income of the upper group (primarily dividends and capital gains), and that in the former the rigid elements (wages of those who stay employed) are less important than in the income of the latter (salaries, interest). The explanations

⁴⁷ *Executive Salaries and Bonus Plans* (McGraw-Hill, 1938), p. 27.

advanced above for the fluctuations in inequality within the lower group can be brought to bear: part of the relatively stable incomes received by workers in the higher wage and salary groups who are employed fairly continuously comes within the upper section of the income distribution. When unemployment and wage decreases widen the income gap between the very poor and the moderately poor, they also widen it between the very poor and the moderately well-to-do. In addition, the most rigid incomes within the lower group may be flexible in comparison with the most rigid incomes within the upper group: in other words, the entire range of flexibility for low incomes may lie somewhat higher than the range of flexibility for high incomes. But here again we must remember that we are dealing with two groups that are not identical in composition during the two years of comparison. Some of the impact of cyclical flexibility may take the form of shifting a family from the upper to the lower income group, or conversely; rather than of shifting its position *within* the same income group, whether upper or lower.

It is not feasible here to attempt to account more specifically for the observed cyclical variations in relative differences in mean income between the lower and upper groups. The problem is extremely complex, involving simultaneous comparisons between the cyclical behavior of all types of income. The following observations may serve, however, as partial verification of the hypotheses that the more important unemployment is within the lower group and relatively rigid incomes are within the upper group, the more pronounced does intergroup inequality become in depressions.

Whatever the number of the unemployed, practically all will be in the lower income group. While the higher income group, invariably, is made up of employed persons and those receiving income from property, the lower group comprises a mixture of employed and unemployed. In bad times this mixture contains a greater proportion of unemployed, in good times, a smaller. The more unemployed there are in the lower income group, the greater, we may assume, is the relative difference between the income level of this group and that of the group with larger incomes. In the next subsection, we examine data that tend to support this hypothesis.

It will be remembered, on the other hand, that the tendency for inequality between the lower and upper groups⁴⁸ to increase in bad

⁴⁸ As measured by the share of the upper group in total income; see Ch. 2, Sec. 3a, and Table 19.

times has manifested itself more definitely the smaller the decrease, or the greater the increase, in income inequality within the upper group. Using the hypothesis advanced above for the changes in inequality within the upper group, we may say that the increase in intergroup inequality is greater the less important the highly flexible income from property and the more important the more rigid property income and salaries, for the top incomes of a city. Where flexible incomes constitute a relatively small fraction of the top incomes, the upper group as a whole experiences a less severe drop in income level than where they constitute a larger fraction. The income gap between the lower and upper groups is likely to widen more under the first situation.

d TENTATIVE VERIFICATION OF THE RELATION BETWEEN UNEMPLOYMENT AND INCOME INEQUALITY

The questionnaire of the Financial Survey of Urban Housing contained the following query: "About what proportion of his normal full working time was the principal income earner of the family employed in 1933?"⁴⁹ For the 21 cities covered by the Financial Survey we have the average percentage of time during which the principal earner was employed, for all tenant and all owner families that reported 1933 income. Correlations were computed between the average percentage of time lost by unemployment (100 = percentage of time employed) and the relative increases in two components of income inequality: inequality within the lower group and relative difference in mean income between the lower and upper groups (Table 27).

The impact of unemployment tends to be correlated positively with the relative increases in both components of inequality. Though not high, the correlation is statistically significant on the 5 per cent probability level in the three cases that show the larger coefficients of correlation.

These data lend some support to the theses set forth in Sections a and c. It may be assumed that unemployment in 1929 was negligible and that almost all unemployment in 1933 represented an increase over 1929. If this assumption is permissible, then the correlations indicate that inequality within the lower group and the relative

⁴⁹ No such question was asked regarding 1929, nor from tabulations can the 1929 incomes of individual families be related to the 1933 employment record of the principal earner.

TABLE 27

Coefficient of Correlation between the Average Percentage of Time Lost Through Unemployment in 1933 and the Relative Increase in Income Inequality

	INEQUALITY WITHIN THE LOWER GROUP	RELATIVE DIFFERENCE IN INCOME LEVEL BETWEEN THE LOWER AND UPPER GROUPS
Tenants	.429	.597
Owner-occupants	.860	.161

Computed for 21 cities. No published data on employment percentages are available for Boise, Erie, Lansing, Lincoln, Little Rock, Portland (Oregon), Racine, Sacramento, St. Joseph, St. Paul, Springfield, or Topeka.

difference in income level between the lower and upper groups tended to become progressively greater with expanding unemployment.