Volume Title: Measuring Distribution and Mobility of Income and Wealth

Volume Authors/Editors: Raj Chetty, John N. Friedman, Janet C. Gornick, Barry Johnson, and Arthur Kennickell, editors

Volume Publisher: University of Chicago Press

Volume ISBNs: 978-0-226-81603-6 (cloth), 978-0-226-81604-3 (electronic)

Volume URL:
https://www.nber.org/books-and-chapters/measuring-distribution-and-mobili ty-income-and-wealth

Conference Date: March 5-6, 2020

Publication Date: November 2022

Chapter Title: Inequality and the Safety Net in American Cities throughout the Income Distribution, 1929–1940

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Chapter URL:
https://www.nber.org/books-and-chapters/measuring-distribution-and-mobility-income-and-wealth/inequality-and-safety-net-american-cities-throughout-income-distribution-1929-1940

Chapter pages in book: p. 529 – 567

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Inequality and the Safety Net in American Cities throughout the Income Distribution, 1929–1940

James Feigenbaum, Price Fishback, and Keoka Grayson

Much of the recent literature on American inequality has focused on century-long national-level changes in the shares of income going to the top 1, 5, and 10 percent of the income and wealth distribution. The time series pattern in inequality appears dramatic, if inconsistent, around the Great Depression of the 1930s, the worst decade in American economic history. At the national level, Piketty and Saez (2003, 8–12) show that the share of income (excluding capital gains) received by the top 1 percent fell sharply from its twentieth-century peak in 1928 of 19.6 percent to 15.27, near its 1921 level, by 1931, bounced back to 17.6 in 1936, and then fell to 15 in 1941. On the other hand, the share of income for the top 10 percent hit its twentieth-century peak at 43.6 percent in 1932, in the heart of the Great Contraction, before slowly declining to 41 percent in 1941. Both series then fell sharply during World War II.

Moving beyond the national time series, our focus is on what happened

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The collection of some of the data used in this project was supported by National Science Foundation grants SES 0617972, SES-1061927, and SBR-9708098. We would like to thank David Johnson for his helpful suggestions for improving the chapter and Raj Chetty, John Friedman, Janet Gornick, Barry Johnson, and Arthur Kennickell for inviting us to be a part of the CRIW-NBER conference and this volume, and for their editorial support. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see https://www.nber.org/books-and-chapters/measuring-distribution-and-mobility-income-and-wealth/inequality-and-safety-net-american-cities-throughout-income-distribution-1929–1940.

across the entire distribution of income between 1929 and 1940 in urban areas at the county and city level. Nearly every local economy experienced a decline and recovery during the Depression, but the magnitude of these gyrations varied a great deal, providing an opportunity to measure the impact of the differences in the size of the income drops and recoveries on equality. Further, the Depression was a challenge to the safety nets being provided by state and local governments alone in the early 1930s, and a combination of all governments during the New Deal. We use the variation in local experiences to gauge how various New Deal and local relief programs were related to changes in inequality.

We examine three different measures of inequality: two that measure inequality throughout the income distribution at the city level and one that measures inequality at the county level. Using data on incomes from 1929 and 1933 collected by the Civil Works Administration (CWA) and discussed by Horst Mendershausen ([1947] 1975) for 33 cities spread throughout the country, we show that income inequality rose during the Great Contraction between 1929 and 1933 in nearly every one of the cities studied. Inequality rose more in cities in states where per capita income had dropped more and was positively associated with increases in city and county spending on relief of the poor and unemployed during the period.

As an alternative measure of inequality, we develop Gini coefficients based on the housing market. Specifically, we draw on housing values for homeowners and home values based on contract rents paid by renters using data reported in the US Census in 1930 and 1940, the CWA in 1934, and a variety of local housing authorities. This allows us to expand the number of cities examined to around 950. The housing Ginis and the income Ginis are strongly correlated at the city level. The correlations between levels of the housing and the income Ginis in 1929/30 and 1933/34 are close to 0.8 and the correlations of the changes between period are around 0.6. Thus, these two alternative measures of inequality seem to be capturing many of the same features. When we analyze changes in the housing Ginis between 1930 and 1940, we find that increased access to the Home Owners' Loan Corporation (HOLC) loan refinance and mortgage insurance through the Federal Housing Administration (FHA) were associated with slight increases in housing inequality.

To learn more about the transitions in housing values between 1930 and 1940, we linked nearly three million urban household heads from the 1930 Census ahead to the 1940 Census. Transition matrices between bins of housing value show that roughly half of the household heads had housing values that rose to a higher category between 1930 and 1940, while another 32 percent remained in the same category. For households within all but the top value bin in 1930, average housing values rose, and part of that rise was associated with increases in county averages in FHA insurance of home mortgages.

The final measure we consider here is a rough measure of top-end inequality, federal taxpayers per family in the counties. This measure is available for nearly every county, so that we can expand our analysis to rural areas, as well as extend our urban analysis with a new measure of inequality. Our results with this measure are surprising: in urban counties, the number of taxpayers per family is *negatively* correlated with both the income Ginis and the housing Ginis, even though higher values of all of these measures should indicate greater inequality. In regressions designed to establish the relationship of changes in taxpayers per family with changes in standard correlates, we show that the taxpayer share rose more between 1930 and 1940 in areas where economic activity rose more, population rose more, and there was increased urbanization.

17.1 Prior Work Related to Inequality in Cities, States, and Counties during the Depression Era

Horst Mendershausen ([1947] 1975) used information from the CWA's Financial Survey of Urban Housing to examine changes in inequality among 33 cities between 1929 and 1933. His goal was to see if changes in the income distribution were associated with economic depression. He showed that there was substantial variation in the decline in average incomes in the cities, that owners had higher incomes than tenants on average in both 1929 and 1933, and that owner incomes tended to decline at a higher rate during the Depression. Gini coefficients rose in nearly every city, as inequality within the lower-income group (50 to 70 percent of families) tended to rise, while inequality within the higher-income group (30 to 50 percent) tended to fall. Mendershausen suggested that increased unemployment caused the increase in inequality within the lower-income group, while fluctuations in property income drove the reduced inequality in the higher-income group. Keoka Grayson (2012) used the Mendershausen data for 33 cities to estimate a multinomial model that examined the impact of changes in per capita state incomes on the transitions of groups who started in 11 income bins in 1929 and then were located again in income bins in 1939. She then used measures of income inequality and housing inequality to examine the relationship between inequality and measures of infant mortality and noninfant mortality, finding no statistically significant relationships.

Mark Schmitz and Price Fishback (1983) used the federal tax information reported by states and followed methods developed by Simon Kuznets to measure the share of income held by the top 1 percent and the top 5 percent in each state in 1929, 1933, and 1939. The shares held by the top 1 percent in 1929 were highest in Delaware (68 percent), New York (29), Massachusetts (21), and Connecticut (21), and lowest in several Plains states at less than 10 percent. The shares held by the top 1 percent fell between 1929 and 1933 in every state except Arkansas, Mississippi, South Dakota, and Wyoming, and

the shares in 1939 were still below the 1929 share in every state except Mississippi, Nevada, and Wyoming. The shares for Delaware, New York, and Massachusetts had been cut in half by 1939. Schmitz and Fishback could not calculate 5 percent shares in 1929 for the Southern states Iowa, Kansas, New Mexico, North Dakota, Oklahoma, and South Dakota because fewer than 5 percent of the families were paying federal income taxes. The shares in the remaining states ranged from 17 percent in Wyoming to 80 percent in Delaware, with most states in the 20–40 range. Among the states with top 5 shares reported, every state but Montana and Wyoming experienced a drop in the top 5 share between 1929 and 1933, while the top 5's shares in 1939 in all but Wisconsin, Wyoming, and Nevada were lower in 1939 than in 1929. They found that the changes in the top 1 percent share of income between 1929 and 1933 were positively related to the growth rate in per capita income across states and the percentage change in property income (interest, dividends, rent, and royalties) in a regression with just those variables, but positive relationships were no longer there when the prior level of the top 1 percent's share in 1929 is included in the equation.[1]

James Feigenbaum (2015, 2016) estimated the effect of the Great Depression on mobility by linking the parents from the Bureau of Labor Statistics cost of living survey in 1918–19 to their children in the 1940 Census and by linking parents from the 1920 Census to their children in 1940. He found that the Great Depression lowered intergenerational mobility for sons growing up in cities hit by large downturns. The effects were driven by differential, selective migration as the sons of richer fathers were able to move to better destinations.

A series of studies of the distribution of New Deal funds and the impact of New Deal programs on various correlates suggest that the New Deal programs likely had countervailing effects on the income distribution, varying by program details. In a study of the distribution of New Deal funds at the county level, Fishback, Kantor, and Wallis (2003) show that more federal relief funds focused on helping the poor and unemployed had the potential to reduce inequality because the funds went to counties where economic activity dropped more between 1929 and 1933, unemployment was higher, tax returns per capita and economic activity in 1929 were lower, and where there was a higher Black population and a lower rate of literacy. The distribution of public works grants was more complicated, as more money went to areas where the economy dropped less from 1929 to 1933 and there was more economic activity in 1929, although more funds went to areas with fewer

1. Mark Frank (2009) built a panel of top-end inequality measures at the state level over the period 1945–2004 and found that most of the individual state trends tended to follow the U-shape described by Piketty and Saez (2003). He also estimated that a two-standard deviation increase in the top 10 percent share of income is related to an increase in the long-run growth rate of real per capita income of 0.072 percent while controlling for education and the structure of the state economy.

tax returns per capita and a higher Black population. Agricultural Adjustment Act (AAA) grants to farmers to take land out of production likely led to greater inequality because the funds were distributed to areas with large farms, less unemployment, and higher per capita economic activity in 1929, although more funds did go to areas where the drop-in economic activity was greater between 1929 and 1933. The housing programs targeted homeowners, who were generally higher up in the income distribution than renters and may well have increased inequality. The distribution of the HOLC purchase and refinance program went largely to areas with higher tax returns per capita and higher economic activity in 1929. The FHA was very careful in its choices of mortgages to insure and had very low loan defaults rates, so it is likely that the program was targeted at families with higher incomes and therefore increased inequality. One sign of this is that the value of home mortgages insured by the FHA also went to counties with less of a drop in economic activity between 1929 and 1933, more activity in 1929, and more tax returns per capita.

The New Deal programs have been found to have had conflicting effects on inequality. Public works and relief grants were associated with a dollar-for-dollar multiplier for per capita incomes across the states, but had slightly negative effects on private employment (Fishback and Kachanovskaya 2015). Relief grants had positive effects in cities by reducing infant mortality and other types of death rates (Fishback, Haines, and Kantor 2007) but they were negatively related to earnings for workers in 1939 (Liu and Fishback 2019). Areas with more public works spending contributed to increases in weekly earnings and hours per week worked, and reduced the probability of ending up on work relief in 1939, while also helping to promote unskilled and semiskilled workers in 1930 to skilled positions in 1939 (Liu and Fishback 2019).

Most information suggests that the AAA payments to farmers to take land out of production increased inequality. Narratives at the time describe various ways that landowners captured the payments that were ostensibly to go to share tenants. Depew, Fishback, and Rhode (2013) found that the cotton AAA program reduced the number of share tenants, share croppers and farm workers sharply. The program was also associated with lower annual earnings, lower probability of private employment, and a higher probability of being on work relief in 1939. Two findings that pushed in the opposite direction were that the AAA was also associated with higher self-employment and some moves into skilled positions (Liu and Fishback 2019).

The Works Progress Administration and other New Deal programs made official statements that they would not discriminate, but many of the decisions about who received work relief were determined by local officials. Fishback, Schaller, and Taylor (2020) analyze Black-white differences in access to work relief and to private employment in each county across the United States in 1940 and find a wide range of effects that would have had

conflicting effects on inequality. Outside the south, Black males with the same socioeconomic characteristics as whites were more likely to receive work relief, but this is partly because they were also less likely to be employed in the private sector. In the South, about one-third of counties actually provided better access to work relief for Black males than for white males, while the remaining two-thirds of counties provided worse access. In the South in general, Blacks were more likely to be employed in private work than whites with the same characteristics. In all regions of the country the Black-white income gaps tended to be much smaller among those on work relief than those working in private employment. On the other hand, Black women had much lower access to work relief than white women throughout the country. County-level regressions suggest that Black male access to work relief was better in areas where there were more higher-income people who saw them as economic complements, where they had better access to the vote, and where there were more government resources available to provide support.

17.2 Data Sources of Inequality Measures

The most complete data on the distribution of family incomes during this period come from the Financial Survey of Urban Housing, conducted by the CWA in 1934. The director of the survey, David Wickens (1937, xv), stated that it was a coordinated inquiry with a survey of real property designed to be "an intensive survey of economic factors in housing." Information was collected on family income, wage and salary income, home values, rental values, a variety of dimensions of the quality of homes, and financing of the homes. The family income included cash income from all sources, including relief payments, but did not include the value of free rent or other in-kind income. Data were collected for 1929, 1932, and 1933 on income and on the value of properties in 1930, 1933, and 1934. The data were originally collected for 61 cities, at least one from each state, but the published reports with information about the distribution of incomes were restricted to 22 cities in Wickens (1937) and 33 cities in Horst Mendershausen's ([1947] 1975) analysis of the income data in 1947.

The survey was conducted with different schedules for renters and homeowners in two ways. "A house-to-house canvas was made of all occupied residential properties within the boundaries of every tenth block in cities having 50,000 population or more, and of every seventh block for smaller cities. Where necessary to insure sampling of all important areas, additional blocks, chosen by informed local agencies, were also covered by enumerators" (Wickens 1937, xv). A second sample was collected by distributing forms to families in each dwelling unit in four of each group of nine blocks not covered by the house-to-house canvas; they were asked to return the forms by mail. The two methods generated about the same number of filled-out forms and coverage of about 15 percent of the populations in the cities. Only about 1 percent refused to participate (Wickens 1937, xv).

Horst Mendershausen ([1947] 1975, appendix B) was given access to the data for 33 cities. The 33 cities are of different sizes and come from 29 states. Roughly half of the cities were the largest cities in their states.[2] Mendershausen reported information on the transition matrices for families who started in 11 income bins in 1929 and ended up in the same or different income bins in 1933. He also reported information on average incomes in 1929 and 1933 for the groups that made these transitions. Mendershausen did an excellent job of describing the data and comparing it to other sources, as well as information from other countries. We build on his analysis by performing econometric analysis of correlates, including city relief spending, and by adding comparisons to alternative measures of inequality.

As one alternative measure of inequality, we use reports on the distribution of values of houses for homeowners and estimated home values based on contract rents among renters reported in the 1930 Census of Families, the 1940 Census of Housing, and the results of real property inventories conducted by the CWA and other New Deal agencies and local governments in the mid-1930s (Stapp 1938; US Census Bureau 1933, 1943; and Wickens 1937). These data provide a picture of housing inequality for around 950 cities in 1930 and 1940 and for 141 cities sometime between 1934 and 1936.

Our final measure is the number of federal taxpayers per family in all counties in 1930, 1934, and 1939. The data on taxpayers come from Rand McNally's *Commercial Atlas and Marketing Guide* (1943), the US Bureau of Foreign and Domestic Commerce (1932), and mimeographs from the US Bureau of Internal Revenue (1935, 1941). This is a crude measure that counts the number of people who had incomes relative to family size that were large enough that they were required to pay income taxes.

17.3 Income Gini Coefficients across Cities and Their Correlates

Inequality across all income levels varied substantially across cities when the economy peaked in 1929. In figure 17.1 the Gini coefficient was lowest in Lansing, Michigan, at 0.35 and highest in Atlanta, Georgia. The Depression led to increased inequality in nearly every city; as we show in figure 17.1 all but three of the cities are in the upper left of the graph, which implies an increase in inequality. The Gini coefficients declined only in Butte, Montana, by −0.02, and stayed stable in Richmond, Virginia, and San Diego, Cali-

2. The 33 cities are Atlanta, GA; Birmingham, AL; Boise, ID; Butte, MT; Cleveland, OH; Dallas, TX; Des Moines, IA; Erie, PA; Indianapolis, IN; Lansing, MI; Lincoln, NE; Little Rock, AR; Minneapolis, MN; Oklahoma City, OK; Peoria, IL; Portland, ME; Portland, OR; Providence, RI; Racine, WI; Richmond, VA; Sacramento, CA; St. Joseph, MO; St. Paul, MN; Salt Lake City, UT; San Diego, CA; Seattle, WA; Springfield, MO; Syracuse, NY; Topeka, KS; Trenton, NJ; Wheeling, WV; Wichita, KS; and Worcester, MA. Fishback found 16 additional cities in the archives with information usable for 1934: Asheville, NC; Austin, TX; Binghamton, NY; Charleston, SC; Columbia, SC; Fargo, ND; Greensboro, NC; Hagerstown, MD; Jackson, MS; Jacksonville, FL; Kenosha, WI; Paducah, KY; Phoenix, AZ; Pueblo, CO; Sioux Falls, SD; Wichita Falls, TX. We also obtained information from Wickens (1937) on Casper, WY.

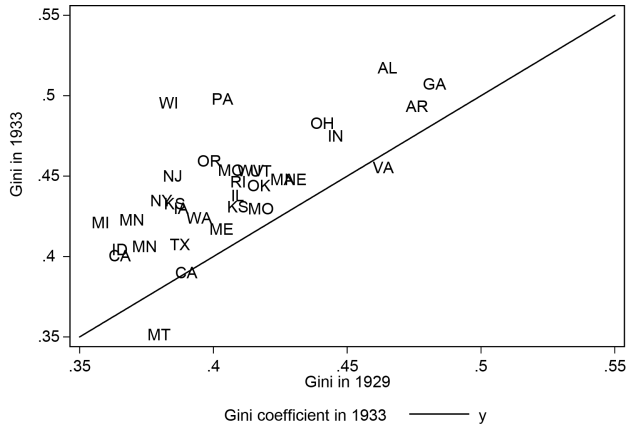

Fig. 17.1 Gini coefficients for family incomes in 33 cities in 1929 and 1933
Source: Calculations based on data in Mendershausen ([1947] 1975, appendix B).

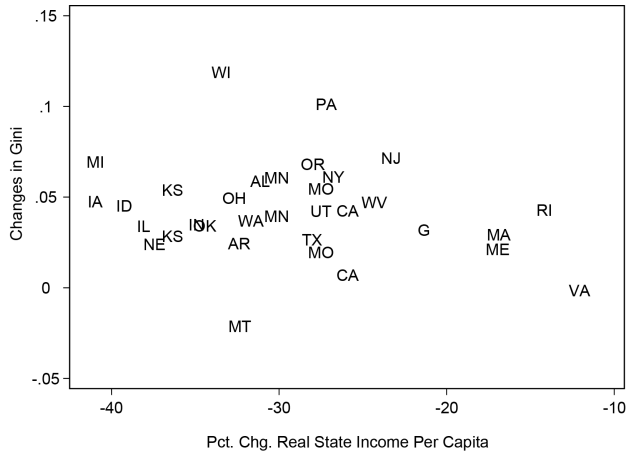

Fig. 17.2 Change in Gini coefficients for family incomes and growth rate in real state per capita income in 33 cities between 1929 and 1933
Source: Calculations based on data in Mendershausen ([1947] 1975, appendix B). Per capita state personal incomes downloaded from www.bea.org in 2009.

fornia. The mean Gini change was a rise of 0.044, which was an 11 percent increase from the 1929 Gini; the largest rise was 0.12 in Racine, Wisconsin. Figure 17.2 shows a negative relationship between the percentage drops in real per capita incomes in the states and the changes in the Gini coefficients.

Ordinary least squares (OLS) regressions were run to determine the relationship between the Gini coefficients, per capita income (after subtracting per capita relief spending), per capita relief spending, and demographic features of the cities. The regression sample has only 23 cities because per capita

relief spending was unavailable for many of the smaller cities. The qualitative results are similar for the 23-city sample to the results for the 33-city sample when we estimate the model without per capita relief spending for all 33 cities. The variables in the analysis are all in natural logs, so the coefficients can be read as elasticities in table 17.1. In the discussion we emphasize the results for the change in ln(Gini), while showing the results when regressions are estimated separately for the levels in 1929 and 1933 in table 17.1.

Increases in the Gini between 1929 and 1933 in each city were associated with drops in real state income per capita during the Great Contraction. The coefficient of the change in log state real per capita income after subtracting city relief per capita was −0.239, which implies that a one percent drop in state per capita income was associated with a 0.239 percent increase in the change in the ln(Gini). A one standard deviation drop of −0.102 in the change in log income was therefore associated with a 0.024 change in the ln(Gini), which is about 22 percent of the 0.113 mean rise in the ln(Gini) that occurred between 1929 and 1933. The average change in the log income was −0.341. After multiplying by the coefficient of −0.239, it would be associated with a rise in the ln(Gini) of 0.081 or roughly 73 percent of the increase that occurred between 1929 and 1933.

Between 1929 and 1933, local governments, and then eventually the federal government, contributed to a rise in relief spending per capita from an average across the 23 cities of $1.87 in 1929 to $17.40 in 1929 dollars in 1932. The average then rose again to $33.18 in 1933 after the Federal Emergency Relief Administration (FERA) in June 1933 and the CWA in late November began providing direct and work relief payments. The goal of the relief spending was to provide funds for the poor and the newly unemployed and thus it might be expected to raise incomes for the bottom groups and reduce inequality and the Gini coefficient. The coefficient of 0.06 in the regression conflicts with these expectations. The coefficient is positive 0.06 and is statistically significant. A one standard deviation change of 0.542 in this variable would have been associated with a rise in ln(Gini) of 0.033, which would account for about 11 percent of the average rise in the ln(Gini) between 1929 and 1933.[3]

One reason for the positive coefficient for the relief spending is that there might have been a feedback mechanism where greater inequality induced more relief spending. We explored instrumenting for the per capita relief spending with a series of political variables, following past work on relief spending in this era. To capture the impact of state governments,

3. Even though the FERA and CWA funds came late in 1933, we thought that the spending was large enough and came soon enough that they would have affected the rise in income between 1932 and 1933. We have also estimated the regressions by replacing the change in relief between 1929 and 1933 with the change in relief between 1929 and 1932 in the regressions in tables 17.1 and 17.4. The coefficients are smaller because the rise in relief was smaller in that period, but the qualitative results are the same, and some coefficients that were not statistically significant for the 1929–33 relief measure become statistically significant when the 1929–32 relief measure is used.

Table 17.1 OLS regressions of natural log of Gini coefficients on the natural logs of correlates for 23 cities, 1929 to 1933

	Coef. (t-stat)	Coef. (t-stat)	Coef. (t-stat)	Mean (std. dev.)	Unlogged mean (std. dev.)
ln(Gini29)	Dependent Variable			−0.918	0.400
				(0.079)	(0.032)
ln(Gini33)		Dependent variable		−0.804	0.449
				(0.078)	(0.035)
ln(Gini33)−ln(Gini29)			Dependent variable	0.113	0.048
				(0.062)	(0.027)
ln(real state per capita income minus city per capita relief, 1929)	−0.095			6.466	678.97
	(−1.71)			(0.332)	(216.96)
ln(real state per capita income minus city per capita relief, 1933)		−0.1376		6.128	487.53
		(−3.25)		(0.361)	(175.24)
ln(real state per capita income minus city per capita relief, 1929) minus ln(real state per capita income minus city per capita relief, 1933)			−0.239	−0.341	−221.75
			(−3.14)	(0.102)	(73.41)
ln(real per capita relief, 1929)	0.04415			0.458	1.87
	(1.89)			(0.632)	(1.09)
ln(real per capita relief, 1933)		0.046		3.416	33.18
		(1.09)		(0.436)	(13.94)
ln(real per capita relief, 1929) minus ln(real per capita relief, 1933)			0.060	2.957	31.31
			(4.24)	(0.542)	(13.42)
ln(county population, 1930)	0.058	0.005	−0.054	12.490	324199
	(3.81)	(0.25)	(−3.86)	(0.643)	(238742)
ln(county percent Black, 1930)	−0.005	−0.002	−0.001	0.838	6.9
	(−0.49)	(−0.11)	(−0.14)	(1.534)	(10.7)
ln(county percent foreign-born, 1930)	−0.046	0.012	0.047	2.170	12.2
	(−1.77)	(0.470)	(3.45)	(0.965)	(7.9)
ln(county percent illiterate, 1930)	0.047	0.069	0.033	0.694	2.54
	(2.84)	(3.21)	(2.55)	(0.715)	(1.77)
Constant	−0.980	−0.261	0.391		
	(−2.68)	(−0.62)	(2.35)		
Number of cities	23	23	23		
R-squared	0.662	0.500	0.715		

Sources: Gini coefficients calculated from information in Mendershausen ([1947] 1975, appendix B). Dollar values are adjusted to 1929 dollars using consumer price index (CPI) for 1935–39 in US Bureau of Labor Statistics 1941, 41). State per capita income is from www.bea.gov in 2009. Relief spending is from dataset used by Fishback, Haines, and Kantor (2007), and originally found in Baird (1942). Demographic variables are from Census in ICPSR dataset 2896 (Haines and ICPSR 2004).

which played a role in financing local relief in the early 1930s, we considered the presence of a Democratic governor in 1928, and the percent Democrat in the upper house of the state legislature. We also considered national political attitudes by incorporating the mean share voting Democrat for President between 1896 and 1928 and the standard deviation of that share to capture the willingness of the voters to swing between parties. The F-statistic for the instruments in the first stage was 4.91, so the instrument was not particularly strong. The coefficient estimate for per capita relief spending was again 0.06, so there is a possibility that the reason for the positive relationship might not be driven by endogeneity.

The information from Menderhausen (1947) offers opportunities to examine the changes in the income distribution between 1929 and 1933 in more depth by examining the transitions of the same individuals between income bins in 1929 and income bins in 1933. The "All" column in table 17.2 shows the unweighted average across 33 cities in the percentage of families that moved from an income bin in 1929 to an income bin in 1933. Mendershausen's information put people in nominal income bins that were the same in 1929 and 1933. In nominal terms a very large share of families fell to lower income bins between 1929 and 1933. For example, 71.7 percent of families in the $7500-up bin in 1929 fell to lower bins in 1933. In the next four bins from $4500–7499 down to $1500–1999, the percentage of families that dropped to a lower bin ranged between 68.2 and 74.8 percent. In the $1000–1499 and $750–999 bins roughly 60 percent of the families dropped into a lower bin. The figures for the three lowest nonzero bins were 50, 36, and 8.3 percent, while 52 percent of families that started at zero in 1929 stayed at zero in 1933.

However, the 24.5 percent deflation between 1929 and 1933 complicates the comparisons significantly, because it raised the purchasing power of a dollar by that amount for the families between the two years. Thus, on the far right we show the inflation-adjusted values for 1933 to reflect the increase in purchasing power relative to 1929. If a family in the $7500-up bin in 1929 fell to the nominal $4500–7499 bin, they still potentially had purchasing power as high as $9,932. For the family to clearly have lost real income, they would had to have fallen to the nominal $3000–4499 bin, which had a real value range of $3974–5959. For most 1929 starting bins, dropping by two or more bins in 1933 signals a loss in real purchasing power. Note that focusing on the share of families dropping by two or more nominal bins will underestimate the true share that lost real income.

At the top of the income distribution there was a substantial share of families who dropped by two or more nominal bins. The share who dropped by two or more for the 1929 7500-up bin was 38.2 percent. The shares with similar drops for the bins between $4500–7499 and $750–999 ranged from 35.9 to 44.3 percent. The shares for the two lowest nonzero bins were 23.1 and 35.1 percent. In the discussion below we can do more work with the

Table 17.2 **Average shares of families transitioning between income bins from 1929 to 1933 in 33 cities in all cities and in three groups of 11 cities determined by drops in real state per capita incomes**

Income bin ($)			Percentage change in real state per capita income, 1929–33					1933 bin
1929	1933	All	−13 to −28.3 (1)	−28.4 to −33.5 (2)	−33.5 to −42 (3)	(1)–(3)	Easier/ harder	1929$
zero	zero	51.9	59.5	50.1	46.1	13.4	easier	zero
zero	1–249	13.9	11.7	16.5	13.6	−1.9	harder	1–330
zero	250–499	8.8	8.5	8.1	9.6	−1.1	harder	331–661
zero	500–749	7.3	6.1	6.9	8.9	−2.8	harder	662–992
zero	750–999	4.6	3.7	4.2	5.9	−2.2	harder	993–1323
zero	1000–1499	6.3	4.8	6.3	7.8	−3.0	harder	1325–1985
zero	1500–1999	3.8	2.9	4.2	4.2	−1.4	harder	1987–2648
zero	2000–2999	2.0	1.4	2.4	2.3	−0.9		2649–3972
zero	3000–4499	0.9	0.7	1.1	0.9	−0.2		3974–5959
zero	4500–7499	0.4	0.5	0.3	0.5	0.0		5960–9932
zero	7500 up	0.2	0.3	0.1	0.2	0.1		9934 up
zero	Total	100.0	100.0	100.0	100.0			Total
1–249	zero	8.3	7.3	8.7	9.0	−1.7	harder	Zero
1–249	1–249	64.7	64.5	67.8	61.9	2.6	easier	1–330
1–249	250–499	14.7	15.4	13.5	15.2	0.2		331–661
1–249	500–749	5.7	5.8	4.6	6.6	−0.9		662–992
1–249	750–999	2.6	2.2	2.0	3.7	−1.4	harder	993–1323
1–249	1000–1499	2.7	3.0	2.2	2.8	0.2		1325–1985
1–249	1500–1999	0.7	0.7	0.8	0.6	0.1		1987–2648
1–249	2000–2999	0.5	0.9	0.3	0.2	0.7		2649–3972
1–249	3000–4499	0.1	0.1	0.1	0.0	0.1		3974–5959
1–249	4500–7499	0.0	0.0	0.0	0.0	0.0		5960–9932
1–249	7500 up	0.0	0.1	0.0	0.0	0.1		9934 up
1–249	Total	100.0	100.0	100.0	100.0			Total
250–499	zero	6.9	6.3	6.7	7.6	−1.3	harder	zero
250–499	1–249	28.2	24.2	31.6	28.9	−4.7	harder	1–330
250–499	250–499	43.3	45.9	43.4	40.6	5.3	easier	331–661
250–499	500–749	13.1	15.2	10.7	13.4	1.8	easier	662–992
250–499	750–999	3.7	4.0	3.0	3.9	0.1		993–1323
250–499	1000–1499	3.1	2.8	2.8	3.8	−1.0		1325–1985
250–499	1500–1999	0.9	0.8	1.1	0.8	0.0		1987–2648
250–499	2000–2999	0.6	0.6	0.5	0.7	−0.1		2649–3972
250–499	3000–4499	0.1	0.1	0.1	0.2	−0.1		3974–5959
250–499	4500–7499	0.1	0.0	0.1	0.1	−0.1		5960–9932
250–499	7500 up	0.0	0.1	0.0	0.0	0.1		9934 up
250–499	Total	100.0	100.0	100.0	100.0			Total
500–749	zero	5.4	5.3	5.3	5.5	−0.2		zero
500–749	1–249	17.7	14.0	20.4	18.8	−4.8	harder	1–330
500–749	250–499	27.2	25.7	27.9	27.9	−2.2	harder	331–661
500–749	500–749	36.9	41.5	34.1	35.2	6.3	easier	662–992
500–749	750–999	6.3	7.2	5.5	6.0	1.2	easier	993–1323
500–749	1000–1499	4.4	4.2	4.5	4.5	−0.3		1325–1985
500–749	1500–1999	1.3	1.4	1.4	1.1	0.3		1987–2648
500–749	2000–2999	0.7	0.6	0.6	0.8	−0.2		2649–3972
500–749	3000–4499	0.2	0.0	0.2	0.2	−0.2		3974–5959
500–749	4500–7499	0.1	0.1	0.1	0.1	0.1		5960–9932
500–749	7500 up	0.0	0.0	0.0	0.0	0.0		9934 up
500–749	Total	100.0	100.0	100.0	100.0			Total

Table 17.2 (cont.)

Income bin ($)			Percentage change in real state per capita income, 1929–33					1933 bin
1929	1933	All	−13 to −28.3 (1)	−28.4 to −33.5 (2)	−33.5 to −42 (3)	(1)–(3)	Easier/ harder	1929$
750–999	zero	5.2	5.8	4.8	5.1	0.8		zero
750–999	1–249	12.2	9.5	14.6	12.4	−2.9	harder	1–330
750–999	250–499	18.5	16.3	18.7	20.6	−4.3	harder	331–661
750–999	500–749	25.0	25.3	24.6	25.1	0.2		662–992
750–999	750–999	24.7	27.6	24.1	22.5	5.2	easier	993–1323
750–999	1000–1499	11.8	13.2	10.7	11.5	1.7	easier	1325–1985
750–999	1500–1999	1.9	1.7	2.1	1.9	−0.2		1987–2648
750–999	2000–2999	0.6	0.5	0.4	0.8	−0.2		2649–3972
750–999	3000–4499	0.1	0.1	0.1	0.2	−0.1		3974–5959
750–999	4500–7499	0.0	0.0	0.0	0.1	−0.1		5960–9932
750–999	7500 up	0.0	0.0	0.0	0.0	0.0		9934 up
750–999	Total	100.0	100.0	100.0	100.0			Total
1000–1499	zero	3.7	4.0	3.4	3.8	0.2		zero
1000–1499	1–249	8.2	6.4	10.0	8.3	−1.8	harder	1–330
1000–1499	250–499	12.1	10.3	12.8	13.1	−2.8	harder	331–661
1000–1499	500–749	18.4	17.5	18.4	19.3	−1.8	harder	662–992
1000–1499	750–999	17.9	17.0	18.2	18.5	−1.5	harder	993–1323
1000–1499	1000–1499	32.7	37.5	30.2	30.4	7.0	easier	1325–1985
1000–1499	1500–1999	5.5	5.7	5.7	5.2	0.5		1987–2648
1000–1499	2000–2999	1.2	1.3	1.1	1.1	0.1		2649–3972
1000–1499	3000–4499	0.2	0.2	0.2	0.2	0.0		3974–5959
1000–1499	4500–7499	0.1	0.1	0.1	0.1	0.0		5960–9932
1000–1499	7500 up	0.1	0.1	0.0	0.1	0.0		9934 up
1000–1499	Total	100.0	100.0	100.0	100.0			Total
1500–1999	zero	2.6	2.5	2.9	2.6	−0.1		zero
1500–1999	1–249	4.8	3.6	6.1	4.8	−1.3	harder	1–330
1500–1999	250–499	7.4	6.3	7.8	8.2	−1.9	harder	331–661
1500–1999	500–749	11.7	10.9	11.7	12.3	−1.4	harder	662–992
1500–1999	750–999	11.4	10.5	10.8	12.8	−2.3	harder	993–1323
1500–1999	1000–1499	30.3	30.5	29.8	30.5	0.0		1325–1985
1500–1999	1500–1999	26.8	30.1	26.0	24.2	5.9	easier	1987–2648
1500–1999	2000–2999	4.6	5.3	4.4	4.1	1.2	easier	2649–3972
1500–1999	3000–4499	0.4	0.3	0.4	0.4	−0.1		3974–5959
1500–1999	4500–7499	0.1	0.0	0.1	0.1	−0.1		5960–9932
1500–1999	7500 up	0.0	0.0	0.0	0.0	0.0		9934 up
1500–1999	Total	100.0	100.0	100.0	100.0			Total
2000–2999	zero	2.0	1.9	2.2	2.1	−0.2		zero
2000–2999	1–249	2.8	2.2	3.3	2.8	−0.6		1–330
2000–2999	250–499	4.4	3.7	4.6	4.9	−1.2	harder	331–661
2000–2999	500–749	6.8	5.9	7.3	7.1	−1.3	harder	662–992
2000–2999	750–999	6.6	5.7	6.8	7.3	−1.6	harder	993–1323
2000–2999	1000–1499	18.5	18.0	18.0	19.6	−1.5	harder	1325–1985
2000–2999	1500–1999	28.0	28.5	28.0	27.4	1.1	easier	1987–2648
2000–2999	2000–2999	27.6	30.6	26.6	25.5	5.1	easier	2649–3972
2000–2999	3000–4499	3.1	3.3	3.0	3.0	0.3		3974–5959
2000–2999	4500–7499	0.2	0.2	0.2	0.3	−0.1		5960–9932
2000–2999	7500 up	0.1	0.1	0.1	0.0	0.1		9934 up
2000–2999	Total	100.0	100.0	100.0	100.0			Total

(*continued*)

Table 17.2 (cont.)

Income bin ($)			Percentage change in real state per capita income, 1929–33					1933 bin
1929	1933	All	−13 to −28.3 (1)	−28.4 to −33.5 (2)	−33.5 to −42 (3)	(1)–(3)	Easier/ harder	1929$
3000–4499	zero	1.6	1.0	1.7	2.1	−1.1	harder	zero
3000–4499	1–249	1.4	1.2	1.3	1.6	−0.4		1–330
3000–4499	250–499	2.4	2.5	2.3	2.4	0.0		331–661
3000–4499	500–749	4.0	3.2	4.1	4.7	−1.5	harder	662–992
3000–4499	750–999	3.9	3.4	4.0	4.3	−0.9		993–1323
3000–4499	1000–1499	11.1	10.3	10.5	12.4	−2.1	harder	1325–1985
3000–4499	1500–1999	14.2	13.1	15.2	14.2	−1.2	harder	1987–2648
3000–4499	2000–2999	34.6	34.9	35.1	33.8	1.1	easier	2649–3972
3000–4499	3000–4499	25.6	29.2	24.6	23.0	6.2	easier	3974–5959
3000–4499	4500–7499	1.2	1.1	1.1	1.4	−0.3		5960–9932
3000–4499	7500 up	0.2	0.3	0.1	0.1	0.2		9934 up
3000–4499	Total	100.0	100.0	100.0	100.0			Total
4500–7499	zero	2.1	1.7	2.4	2.1	−0.4		zero
4500–7499	1–249	1.3	1.1	1.6	1.0	0.2		1–330
4500–7499	250–499	1.7	1.2	2.0	2.1	−0.9		331–661
4500–7499	500–749	2.9	2.1	3.0	3.5	−1.5	harder	662–992
4500–7499	750–999	2.2	1.5	2.1	2.8	−1.3	harder	993–1323
4500–7499	1000–1499	7.0	5.7	7.3	7.9	−2.2	harder	1325–1985
4500–7499	1500–1999	8.0	7.0	8.8	8.3	−1.3	harder	1987–2648
4500–7499	2000–2999	19.3	18.1	20.8	18.9	−0.7		2649–3972
4500–7499	3000–4499	30.5	32.2	28.5	30.8	1.4	easier	3974–5959
4500–7499	4500–7499	23.2	25.3	22.4	21.9	3.4	easier	5960–9932
4500–7499	7500 up	2.0	4.2	1.1	0.8	3.4	easier	9934 up
4500–7499	Total	100.0	100.0	100.0	100.0			Total
7500 up	zero	2.5	3.4	2.6	1.6	1.7	easier	zero
7500 up	1–249	0.6	0.6	0.3	0.8	−0.2		1–330
7500 up	250–499	1.2	1.3	1.4	1.0	0.3		331–661
7500 up	500–749	1.9	2.2	2.1	1.5	0.7		662–992
7500 up	750–999	1.1	0.8	1.1	1.4	−0.5		993–1323
7500 up	1000–1499	2.8	2.7	3.3	2.2	0.5		1325–1985
7500 up	1500–1999	3.9	3.8	3.3	4.8	−0.9		1987–2648
7500 up	2000–2999	8.8	6.2	9.2	11.0	−4.9	harder	2649–3972
7500 up	3000–4499	15.4	13.3	18.2	14.8	−1.5	harder	3974–5959
7500 up	4500–7499	33.4	34.9	30.5	34.9	0.0		5960–9932
7500 up	7500 up	28.4	30.8	28.2	26.1	4.7	easier	9934 up
7500 up	Total	100.0	100.0	100.0	100.0			Total

Notes: There was a 24.5 percent deflation measured with the BLS Consumer Price Index in 1935 to 1939 dollars (US Bureau of Labor Statistics 1941, 41). The bin values for the income bins in 1933 in the far–right column are adjusted to reflect that 24.5 percent increase in purchasing power relative to 1929.

Source: Source for income data is Mendershausen ([1947] 1975, appendix B).

deflationary values when we look at the drops in average income in each 1929 starting income bin.

17.4 State per Capita Incomes and Transitions between Income Bins from 1929 to 1933

The drops in real state per capita personal incomes from 1929–33 for the 33 cities in the sample varied from −13.1 percent to −42 percent. To get a

Table 17.3 **Average percentage change and change in mean state real income per capita from 1929 to 1933 for families starting in income bin X in 1929, 33 cities**

	Percentage change		Dollar change	
1929 income bin ($)	Mean	Std. dev.	Mean	Std. dev.
zero	nd	nd	533	193
1–249	131.6	40.9	216	69
250–499	35.3	18.5	140	73
500–749	11.2	11.8	68	73
750–999	−3.3	11.6	−30	104
1000–1499	−8.9	11.4	−112	142
1500–1999	−12.8	10.5	−222	182
2000–2999	−12.9	9.0	−311	215
3000–4499	−17.1	8.3	−603	294
4500–7499	−23.3	10.6	−1,267	578
7500 up	−38.5	9.3	−5,006	1,301

Notes and Sources: Source of average income data for cities by income bin is Mendershausen ([1947] 1975, appendix B). State per capita income is from www.bea.gov downloaded in 2008. The average percentage changes are unweighted and income is in 1929 dollars based on the CPI in 1935–39 dollars in US Bureau of Labor Statistics (1941, 41).

sense of how these differences in the depth of the Depression influenced the transitions between income bins, we divided the cities evenly into three 11-city groups from lowest to largest drops in real per capita income in table 17.3. For each starting-finishing bin combination we then subtracted the average share for the cities with the largest drop from the average share for the cities with the smallest drop in per capita income. A positive number suggests that a city in a state with a lower drop was more likely to have made that transition. For differences in absolute value greater than 1 percentage point, we highlighted the change by describing whether the economy dropping less made it easier or harder to make that transition.

In all but the 1929 zero income starting bin, smaller drops in state per capita income were associated with helping families remain in the same nominal bin in 1933 and associated with making it harder to fall by more than one nominal bin in 1933. However, we find an odd result for the families who started in the zero income bin in 1929. In states where income fell the least, families found it harder to reach a higher nominal income bin in 1933 and they were more likely to stay at zero income. The normal expectations that better economic performance made it harder to fall to lower incomes, however, *were* met in the nonzero income bins. At all other starting bin levels in 1929, families in states where there were lower drops in real state per capita income found it easier to stay in the same nominal bin and harder to drop by two or more nominal income bins. In nearly all of the nonzero bins, lower state per capita income falls also made it more likely that they might fall to

the next lowest nominal bin, which meant a higher real income in 1933 for most of the families.[4]

17.4.1 Changes in Average Income within Each 1929 Income Starting Bin and Their Correlates

Deflation can be taken into account more effectively by examining the changes in real average family incomes in 1929 dollars at the city level in each of the 11 income bins. Table 17.3 shows that the unweighted mean across the 33 cities of the percentage changes in real income varied a great deal for the families who started in the 1929 income bin. Average real family incomes tended to rebound in the three lowest nonzero starting bins with percentage increases ranging from 131.6 percent in the $1–249 bin to 11.2 percent for the $500–749 bin. The growth rates were negative for the higher categories and the growth rate dropped substantially from −3.3 percent for families starting in 1929 in the $750–999 category to −38.5 percent for the $7,500-up category.

The same story can be told by looking at the dollar changes in average family income in 1929 dollars. The rebound effect of $533 was strongest for those who started in 1929 with zero income. The size of the real income change was positive but not as large for the 1929 starting bins up to $500–749. At higher bin levels average income fell, and the size of the drops increased as the income ranges in the bins increased. Families in the $7500-up bin lost an average of $5,006 dollars in real income.

The patterns arising from OLS regressions of the growth rates in average real family income for each 1929 income bin show the mechanism that led to the negative relationship between changes in the city Ginis and state per capita income growth. Table 17.4 shows the results of the regressions of the growth rate in average real family income in the cities between 1929 to 1933 on the same correlates as in the Gini regressions for each 1929 starting income bin. The families in the 1929 zero bin had strong positive average income growth in table 17.3, and the coefficient on state per capita income growth was a very negative −1.227. The 1–249 and 250–499 bins also had positive income growth on average in table 17.4 but the state per capita income growth coefficients were small and statistically insignificant. The per capita income growth coefficients were also small and statistically insignificant at the top of the distribution for the 7500-up starting bin, which had the strongest negative family income growth. Even though average family income growth in the rest of the starting income bins in between had positive and statistically significant coefficients between 0.44 and 0.667, it appears that these were more than offset by relationships with state per capita income at the extremes of the 1929 starting income distribution.

4. Keoka Grayson (2012) used a multinomial procedure to address this issue, and we have also explored using an ordered logit analysis. Nearly all of the marginals were statistically insignificant and close to zero.

Table 17.4 **Results for regressions on correlates of the changes in the natural logs of real average income between 1929 and 1933 in each starting income bin in 1929**

	zero	$1–249	$250–499	$500–749	$750–999	$1000–1499	$1500–1999	$2000–2999	$3000–4499	$4500–7499	7500 up
ln(real state per capita income minus city per capita relief, 1929) minus ln(real state per capita income minus city per capita relief, 1933)	−1.224	−0.10	0.145	0.44	0.461	0.64	0.667	0.51	0.532	0.63	0.193
	−1.78	*−0.40*	*0.44*	*2.19*	*1.69*	*2.53*	*2.80*	*2.24*	*2.23*	*2.13*	*0.34*
ln(county population, 1930)	0.288	0.11	0.080	0.03	0.075	0.08	0.054	0.04	0.045	0.06	0.100
	3.38	*1.85*	*2.33*	*1.45*	*2.24*	*2.52*	*1.78*	*1.37*	*1.24*	*1.40*	*1.72*
ln(county percent Black, 1930)	−0.215	−0.08	−0.023	0.01	0.018	0.02	0.023	0.03	0.018	0.05	−0.023
	−3.21	*−1.92*	*−0.69*	*0.76*	*0.68*	*0.79*	*1.34*	*1.69*	*1.08*	*1.81*	*−0.45*
ln(county percent foreign-born, 1930)	−0.448	−0.05	−0.008	0.03	−0.006	−0.06	−0.043	−0.03	−0.033	0.04	−0.066
	−4.05	*−0.76*	*−0.17*	*1.16*	*−0.15*	*−2.38*	*−1.63*	*−1.11*	*−1.31*	*0.63*	*−0.78*
ln(county percent illiterate, 1930)	0.070	0.06	−0.024	−0.07	−0.102	−0.11	−0.107	−0.07	−0.065	−0.05	−0.004
	0.45	*0.99*	*−0.34*	*−2.43*	*−2.09*	*−3.10*	*−3.11*	*−2.13*	*−1.75*	*−1.14*	*−0.04*
ln(real per capita relief, 1929) minus ln(real per capita relief, 1933)	−0.226	−0.16	−0.120	−0.11	−0.152	−0.15	−0.107	−0.12	−0.112	−0.11	−0.131
	−1.32	*−2.56*	*−1.29*	*−2.84*	*−2.64*	*−2.91*	*−2.22*	*−2.75*	*−2.28*	*−2.23*	*−1.52*
Constant	3.900	0.01	−0.234	0.24	−0.270	−0.15	−0.064	−0.02	−0.102	−0.55	−1.119
	4.02	*0.01*	*−0.65*	*1.01*	*−0.70*	*−0.46*	*−0.21*	*−0.04*	*−0.27*	*−0.99*	*−1.70*
R-squared	0.394	0.46	0.341	0.64	0.558	0.68	0.671	0.64	0.594	0.48	0.194
Number of cities	23	23	23	23	23	23	23	23	23	23	23
Mean change ln(family income)	6.227	0.847	0.297	0.096	−0.040	−0.096	−0.135	−0.137	−0.191	−0.277	−0.506
Std. dev. of change ln(family Income)	0.353	0.174	0.147	0.119	0.140	0.141	0.123	0.114	0.114	0.150	0.177
IV estimates for ln(real per capita relief, 1929)	−0.432	−0.137	−0.070	−0.052	−0.063	−0.091	−0.040	−0.037	−0.013	0.057	0.060
minus ln(real per capita relief, 1933)	*−1.22*	*−1.22*	*−0.37*	*−0.57*	*−0.57*	*−0.88*	*2.79*	*−0.48*	*−0.13*	*0.46*	*0.38*

Note: Coefficients are shown with t-statistics in italics.

Sources: See table 17.2. The dollar values are adjusted for inflation and reflect values from 1929 using information from US Bureau of Labor Statistics (1941, 41). The demographic data are for counties where the cities were located and were downloaded from the 1930 section in Haines and ICPSR (2004, 2896). Source of average income data for cities by income bin is Mendershausen ([1947] 1975, appendix B). State per capita income is from www.bea.gov downloaded in 2008. Per capita relief spending in the cities is from Baird (1942).

In the Gini regressions in table 17.1 cities with higher increases in per capita relief spending between 1929 and 1933 were the ones that experienced larger increases in inequality. This surprised us, and the coefficients on the growth in per capita relief in the average family income regressions by 1929 starting bin are similarly surprising. Since family income from Mendershausen ([1947] 1975) included relief income, we expected that increases in per capita relief spending would have been positively related to income growth in the lowest starting income bins and to have no relationship for higher-income bins. Instead, the relief coefficients are negative for all starting bins, and the zero and 1–249 starting bins have the most negative coefficients, although the zero-bin coefficient is statistically insignificant. Since much of the rise in relief spending per capita came from increases in local and state taxes between 1929 and 1933, it is possible that the negative effects for the higher bins come from omitted variable bias related to increased taxation. Higher tax rates could reduce pretax incomes and are positively related to relief spending.

Again, we explored instrumenting for the per capita relief spending with a series of political variables that have been used as instruments in the literature on New Deal spending. To capture the impact of state governments, which played a role in financing local relief in the early 1930s, we included the presence of a Democratic governor in 1928 and the percentage of Democrats in the upper house of the state legislature. We also considered national political attitudes by incorporating the mean share voting Democratic for president between 1896 and 1928 and the standard deviation of that share to capture the willingness of the voters to swing between parties. The F-statistic for the instruments in the first stage was 4.91, so the instrument was not particularly strong. The effect of estimating with an instrument on the relief coefficients shown on the bottom row in table 17.4 was substantial and suggest that the direction of the endogeneity bias was to make the OLS relief coefficients more negative than the true coefficients. For the families in the starting income bins above $250 the coefficients are close to zero and statistically insignificant. However, the coefficient for the zero bin is less negative than the OLS coefficient and the coefficient for the 1–249 bin is about the same. Neither coefficient is statistically significant but that could be a function of weakness of the instrument.

17.5 Inequality Based on Housing Values and Shares of Households Paying Federal Income Taxes

The Census Bureau and the various agencies that surveyed housing values and rents between 1930 and 1940 most commonly reported housing values for cities with more than 10,000 people in seven nominal value bins: $0–999, $1000–1499, $1500–1999, $2000–2999, $3000–4999, $5000–9999, and

$10000 and up. For rental housing they reported seven nominal rents bins with monthly values that were 1/100th of the housing value bins: $0–9.99, $10–14.99, $15–19.99, $20–29.99, $30–49.99, $50–99.99, and $100 and up The Census in 1930 and 1940 also converted the housing values to implicit rents of 1/100th of the home value such that home in the $1000–1499 range was put into a rent category of $10–14.99. The implied discount rate that matches this concordance was 11.54 for a 30-year home, 10.3 for a 20-year home, 8.4 percent for 15-year home and 3.4 percent for a 10-year home. The number of cities we can examine is increased to include cities between 2,500 and 10,000 people if we calculate a Gini coefficient based on five bins: $0–1499, $1500–2999, $3000–4999, $5000–9999, and $10,000 and up, with the rents at 1/100th of these values.

We rely on these categories in this chapter because we seek to examine how the Great Contraction from 1929 to 1933 influenced inequality in the housing value distribution, and the studies done during the mid-1930s only report information by these categories. If we focus only on 1930 and 1940, we can try different concordances and also add a factor that gives homeowners an extra boost because they own the home.

Using rents for rental housing and implicit rents for owned housing to measure inequality is somewhat messier than using incomes for several reasons. Rental flows are used as a measure of the resources available to the family to consume better housing; therefore, rents are assumed to reflect the quality of housing and that households with higher incomes will have higher rental values. By mixing in the implicit rents from owned housing with the rents paid by tenants, the Gini calculation incorporates the home ownership aspect of wealth into the flows. If seen as a wealth measure, the housing Gini likely understates inequality because it treats homeowners like renters *without* giving extra value for the holding of housing wealth.

The main advantage of using housing values is that we can expand the range of locations for which we can obtain inequality measures and move earlier in time. For comparisons between 1929 and the mid-1930s we can expand the number of cities from the 33 in Mendershausen ([1947] 1975) to at least 141 for which housing value distributions were reported in 1934, 1935, and 1936. For comparisons between 1930 and 1940 we can expand the analysis to over 900 cities. In this section we examine the correlations between the seven-category and five-category housing Ginis and the Mendershausen 11-category income Ginis in table 17.5, and the correlations between the income Ginis and the housing Ginis and another rough measure of inequality that has been used to capture inequality at the top end in counties during the 1920s and 1930s, the percentage of families paying federal income taxes. We then examine the relationships between the housing Gini measures and various correlates, including changes in income and in New Deal programs.

Table 17.5 **Correlations between Gini coefficients and changes in Gini coefficients based on house values and family income**

Levels		Year	Correlation	Number of cities
House 7-bin	House 5-bin	1930	0.981	378
House 7-bin	House 5-bin	1934	0.973	64
House 7-bin	House 5-bin	1935	0.902	36
House 7-bin	House 5-bin	1936	0.872	41
House 7-bin	House 5-bin	1940	0.906	952
House 7-bin	Income 11-bin	1930	0.692	32
House 5-bin	Income 11-bin	1930	0.634	33
House 7-bin	Income 11-bin	1934	0.790	48
House 5-bin	Income 11-bin	1934	0.767	48
Changes				
House 7-bin	House 5-bin	1934–1930	0.863	58
House 7-bin	House 5-bin	1935–1930	0.874	21
House 7-bin	House 5-bin	1936–1930	0.713	22
House 7-bin	House 5-bin	1940–1930	0.834	369
House 7-bin	Income 11-bin	1934–1930	0.600	31
House 5-bin	Income 11-bin	1934–1930	0.624	32

Sources: Most of the income Gini information was calculated using data from Mendershausen ([1947] 1975, appendix B). Additional income information came from National Archives. Housing Ginis were calculated from Census of Families 1930 and Census of Housing 1940, Stapp (1938), and Wickens (1937), and National Archives.

17.5.1 The Relationship between the Housing Ginis and the Income Gini across Cities in the Early 1930s

The two housing Ginis are strongly correlated with each other, although the levels of the five-bin Gini tend to imply greater inequality by about 0.03 in nearly every case. The correlations of the levels of the Ginis in the years in which the house values and rents are available ranged from 0.87 in 1936 for 41 cities to 0.981 in 1930 for 376 cities. The changes in Ginis between years also tended to be highly correlated, ranging from 0.71 for 22 cities for the change from 1930 to 1936 to 0.86 for 58 cities between 1934 and 1930.

The housing Ginis are also reasonably strongly correlated with the income Ginis based on the Mendershausen data from the CWA. The 1934 housing and 1929 and 1933 income information were collected in the same survey by the CWA in 1934. It is likely that the information on housing values and incomes in the census years in that the housing information is based on the situation in March of 1934 while the income information is retrospective for 1933 the most recent full year. The correlation between the 1929 11-bin income Gini and the 1930 seven-bin housing Gini is 0.69, somewhat higher than with the five-bin housing Gini. When we increase the number of cities from 33 to 48, the correlations between the income and housing Ginis was higher at around 0.77 for this larger group of cities in 1934. As was the case

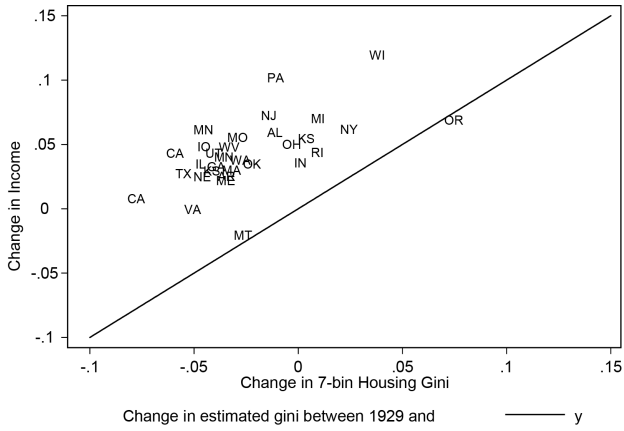

Fig. 17.3 Change in 11-bin income Gini from 1929 to 1933 vs. change in seven-bin housing Gini from 1930 to 1934

Source: Income Ginis are from Mendershausen ([1947] 1975, appendix B). Housing Ginis are calculated from information in Stapp (1938) and US Census Bureau (1933).

the changes between 1930 and 1934 in housing value Ginis and between 1929 and 1933 in the income Ginis remained reasonably high at 0.60 and 0.624.

Although the correlations between changes across time are reasonably high, the mean changes in the housing and income Ginis do not tell the same story in terms of the direction of change. As seen in figure 17.3, nearly every income Gini rose between 1929 and 1933, signifying greater inequality. The mean difference was 0.045, which was roughly a 13 percent rise in the income Ginis. In contrast, most of the changes in the seven-bin housing Gini were *negative*, and the mean was −0.03, signifying lower inequality in 1934 than in 1930. The mean difference between the Gini changes for income and for housing was 0.0745, with a minimum difference of 0.0027 and a maximum of 0.1207. A regression with robust standard errors of the change in the income Gini on the change in the housing Gini yields a constant of 0.06 (t = 9.02) and a coefficient of 0.519 (t = 3.65). As a result, if we are using changes in housing inequality as a measure of changes in income inequality, the raw change is understated by an average of 0.06 and the slope of the change in the change in housing Gini is about half of the slope in the income-change Gini.

17.5.2 Correlations between City Ginis and County Shares of Families Paying Income Taxes

An alternative measure available at the county level that might be used to capture top-end inequality is the share of families paying income taxes. Generally, the measure is better for cross-sectional comparisons within a year or for short panels for 1929–31, 1932–39 due to tax rule changes. The

income levels at which families began paying taxes stayed the same between 1929 and 1939, at $2,000 for a single individual and $5,000 for a family of four. But there was a substantial income tax rate increase in June 1932. The changes in tax rates rose as the income bracket rose. For example, the rate rose from 0.1 to 2 percent for an individual at $2,000, from 0.4 to 4 percent at $6,000, from 0.9 to 6 percent at $10,000, and from 23.1 to 57.1 percent above $1 million. These changes likely influenced tax avoidance to some degree. In 1934 there were small changes that benefited single taxpayers with incomes below $15,000 and slightly harmed the earners above that level, but the changes were small enough that changes in tax avoidance were unlikely to be large. In 1940 individuals with more than $1,000 in income began paying taxes and tax rates were raised again by about 0.6 percentage points at lower income levels, but by 4, 6, 11, and 3 at higher income levels (US Census Bureau 1975, 1111–12). To avoid this tax increase in the analysis, we used the 1939 share of families paying federal taxes for comparisons with the housing Ginis in 1940.

All of the correlations between the levels of the taxpayer share measure and the income and housing Ginis in table 17.6 are negative, as are all but two of correlations for changes in the measures. This is unexpected because higher Ginis and higher taxpayer shares are both signals of higher inequality. The only positive correlation was between the change in the five-bin housing measure between 1930 and 1940 and the change in the taxpayer share between 1930 and 1939. Thus, there is a great deal of action in the changes in the income distributions between 1929 and 1933 that is uncorrelated with the changes in share of families paying federal taxes.

17.5.3 Correlates of the Housing Ginis: 1930, 1940, and the Changes from 1930 to 1940

The levels of the average five-bin Ginis in table 17.6 stayed relatively stable during the 1930s. They started at 0.411 in 1930 and fell only slightly to 0.404 by 1940. The stability of the mean hides the substantial range of changes between 1930 and 1940 shown in the histogram in figure 17.4. The histogram looks relatively similar to a normal distribution centered on the mean change of −0.005.

To determine the factors influencing housing inequality across cities, we ran OLS regressions of the Gini levels on the levels of correlates in 1930 and 1940, and then an OLS regression of the differences in the housing Gini on the differences in correlates across the decade. The correlates are all for the counties where the city was located, so we included a measure of percent urban to control for the presence of populations outside the city. The coefficients and t-statistics are reported in table 17.7, and the coefficients can be read as elasticities because all variables are in natural logs. To maximize the number of observations, table 17.7 reports regressions with the five-bin housing Gini as the dependent variable. The qualitative results are generally

Table 17.6 **Correlations between Ginis in cities based on family income and housing and the percentage of families paying federal income taxes**

Gini level based on	Mean	Share of families	Mean	Year	Correlation	Number of cities
Income 11-bin	0.403	Paying taxes	0.149	1929/30	−0.234	33
Income 11-bin	0.455	Paying taxes	0.139	1933/34	−0.469	48
House 7-bn	0.375	Paying taxes	0.150	1930	−0.506	376
House 7-bn	0.363	Paying taxes	0.135	1934	−0.490	64
House 7-bn	0.394	Paying taxes	0.119	1935	−0.616	36
House 7-bn	0.395	Paying taxes	0.150	1936	−0.555	41
House 7-bn	0.373	Paying taxes	0.234	1940/39	−0.650	950
House 5-bn	0.411	Paying taxes	0.133	1930	−0.628	955
House 5-bn	0.393	Paying taxes	0.135	1934	−0.426	64
House 5-bn	0.423	Paying taxes	0.119	1935	−0.370	36
House 5-bn	0.424	Paying taxes	0.150	1936	−0.300	41
House 5-bn	0.404	Paying taxes	0.234	1940/39	−0.567	950
Gini change based on	Mean	Change in share of families				
Income 11-bin	0.045	Paying taxes	−0.001	1933–1929	−0.193	32
House 7-bn	−0.033	Paying taxes	0.001	1934–1930	−0.159	58
House 7-bn	0.012	Paying taxes	0.016	1935–1930	−0.665	21
House 7-bn	0.025	Paying taxes	0.038	1936–1930	−0.396	22
House 7-bn	−0.008	Paying taxes	0.113	1940/39–1930	−0.061	368
House 5-bn	−0.037	Paying taxes	0.000	1934–1930	−0.002	64
House 5-bn	0.011	Paying taxes	0.016	1935–1930	−0.362	33
House 5-bn	0.018	Paying taxes	0.033	1936–1930	−0.294	39
House 5-bn	−0.005	Paying taxes	0.100	1940/39–1930	0.324	931

Notes: The 1939 shares of families paying federal taxes were compared with the housing Ginis in 1940 to avoid the tax rule changes that occurred in 1940. The 1929 and 1933 income Ginis are compared with the 1930 and 1940 housing Ginis and the 1929 and 1933 shares of families paying federal taxes. Number of taxpayers is from Rand McNally (1943), US Bureau of Foreign and Domestic Commerce (1932), and US Bureau of Internal Revenue (1935). To get taxpayers per family, we divided by the number of families in 1930 from the Census and Haines and ICPSR (2004, 2896).

the same when using the seven-bin housing Gini and five-bin housing Gini for the same sample of cities. The discussion here is focused on elasticities that were statistically significantly different from zero.

In the level regressions for both 1930 and 1940 housing inequality was lower in areas with higher annual manufacturing earnings, larger populations, and a higher share of people born abroad. The foreign-born likely contributed to equality in the middle parts of the distribution because the World War II and early 1920s immigration restrictions limited the number of new immigrants. Thus, most of the immigrants had spent a significant amount of time in the US by 1930 and 1940. As would be expected, higher illiteracy was associated with more inequality in both periods. These elasticities are not large, as all were less than 0.11 in absolute value.

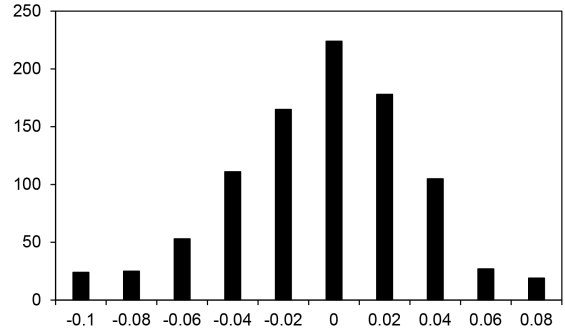

Fig. 17.4 Histogram of changes in city five-bin housing Ginis between 1930 and 1940

Source: Ginis calculated from 1930 family and 1940 housing volumes of US Census Bureau (1933, 1943).

Prior to World War II, the elderly made up a large part of the poor population. They were more likely to be in almshouses and when means-tested old-age assistance programs were introduced first by the states and later with the matching grants under the Social Security Act of 1935, the amount spent on such programs dwarfed the spending on aid to families with dependent children and aid to the blind. In both 1930 and 1940 the share of the population over 75 was associated with more poverty, but only the 1930 elasticity was statistically significant. The largest magnitude for an elasticity was −0.445 in 1930 for the 30–34 age group, which implies that a higher share in the prime working age was associated with less inequality, but the 1940 elasticity was half as large and not statistically significant.

One goal of the regressions is to examine the correlation with New Deal programs. New Deal relief programs provided direct aid to a significant share of the poor who were unable to work and provided relief jobs for a significant share of the unemployed. The goal of the aid was to fill gaps between a family's resources and an emergency budget that varied by area. Public works projects hired workers at roughly market earnings and thus would have done more for the middle portion of the distribution. The HOLC purchased mortgages and refinanced them for homeowners in "trouble through no fault of their own," thus targeting households that typically were more middle class. The FHA tended to focus on households who were good credit risks when it began insuring loans for rehabilitation and rebuilding homes under Title 1 in 1934 and then insuring mortgages for home purchases under Title 2 in 1935. Although the housing Gini is calculated for nonfarm homes in cities, AAA grants to farmers to take land out of production likely influenced labor markets in the cities in the same county because workers, share tenants, and share croppers were pushed off the farms and likely migrated

Table 17.7 **Results of regression of 5-bin housing Ginis on correlates, natural log levels for 1930 and 1940 and the change in the natural logs for 1930–40**

Dependent variable: Level of housing Gini					Dependent variable: Change in natural log of housing Gini		
	1930		1940			1930–40	
Natural log of	Coeff.	t-stat.	Coeff.	t-stat.	Change in natural log of	Coeff.	t-stat.
Real average annual manufacturing earnings	−0.105	−4.18	−0.057	−2.31	Real average annual manufacturing earnings	0.047	1.26
Population	−0.039	−3.92	−0.037	−7.41	Population	−0.112	−1.47
Pct. urban	0.078	3.67	−0.016	−0.68	Pct. urban	−0.072	−1.23
Pct. illiterate	0.047	7.58	0.033	2.68	Pct. illiterate	−0.006	−0.56
Pct. Black	0.006	0.51	0.011	1.41	Pct. Black	0.094	1.66
Pct. foreign born	−0.044	−4.62	−0.022	−3.29	Pct. foreign born	−0.040	−2.19
Pct. aged 10−14	−0.279	−1.84	0.045	0.29	Pct. aged 10−14	−0.038	−0.25
Pct. aged 15−19	0.168	1.13	−0.027	−0.21	Pct. aged 15−19	−0.077	−0.49
Pct. aged 20−24	−0.034	−0.24	0.085	0.58	Pct. aged 20−24	0.096	0.62
Pct. aged 25−29	0.092	0.49	0.545	3.56	Pct. aged 25−29	−0.184	−1.4
Pct. aged 30−34	−0.445	−1.88	−0.220	−1.35	Pct. aged 30−34	0.036	0.46
Pct. aged 35−44	0.070	0.32	0.142	0.85	Pct. aged 35−44	0.093	1.08
Pct. aged 45−54	−0.045	−0.34	0.080	0.8	Pct. aged 45−54	0.058	0.93
Pct. aged 55−64	−0.051	−0.34	−0.310	−2.89	Pct. aged 55−64	0.035	0.46
Pct. aged 65−74	−0.122	−1.42	0.100	0.98	Pct. aged 65−74	−0.274	−4.38
Pct. aged 75 up	0.089	1.78	0.032	0.5	Pct. aged 75 up	0.051	1.1
Public works grants per cap.	0.015	1.72	0.011	1.47	Public works grants per cap.	0.003	0.52
Relief grants per cap.	0.019	1.83	0.007	0.65	Relief grants per cap.	0.002	0.24
AAA grants per cap.	−0.015	−2.31	−0.009	−1.77	AAA grants per cap.	0.003	0.44
HOLC loans per cap.	−0.030	−3.37	−0.002	−0.24	HOLC loans per cap.	0.024	2.51
FHA home rehab. loans insured per cap.	0.023	1.79	0.000	−0.03	FHA home rehab. loans insured per cap.	−0.012	−1.18
FHA mortgages insured per cap.	−0.025	−3.22	−0.006	−0.83	FHA mortgages insured per cap.	0.017	1.71
Constant	1.281	1.8	−0.892	−1.12	Constant	−0.062	−1.8
Number of observations	951		928			909	
R-squared	0.645		0.505			0.181	

Notes and sources: The dollar values for manufacturing earnings and the New Deal are adjusted for inflation and reflect values in 1967 dollars based on series E-135 in US Census Bureau (1975, 210–11). The demographic data are for counties where the cities were located and were downloaded from the 1930 section in Haines and ICSPR (2004, 2896). The New Deal data are from the US Office of Government Reports (1940). Standard errors are robust and clustered at the state level. The housing Gini dependent variable is based on five bins for contract rents for renters and implicit rents for homeowners based on information from US Census Bureau (1933, 1943). Age data are from Gardner and Cohen (1992) ICPSR dataset.

into the cities where the expanded labor supply would have led to lower earnings and more unemployment.

In the 1930 regression, measures of the New Deal programs, which all started after June 1933, are included to see if there might be any selection bias related to housing inequality in the distribution of funds across the counties where the city was located. The coefficients suggest that the areas with higher inequality in 1930 were areas where there was more per capita spending on public works and relief programs and more loans insured under the FHA Title 1 rehabilitation program. Areas with lower inequality in 1930 were places where later there were more AAA grants, HOLC purchases and refinancing of home loans, and more FHA insurance of mortgage loans. In 1940 the only elasticity for a New Deal program that was statistically significant was −0.0087 for the AAA grants. Given the negative AAA coefficient found in the 1930 regression, this might reflect negative selection of AAA grants into those counties.

To control for unmeasured and unchanging aspect of the cities, we estimated the regression using the differences between 1930 and 1940 for all of the variables. Omitted variables bias apparently influenced a number of coefficients. As was the case in the level regressions, areas with increases in the foreign-born share had statistically significantly lower housing inequality with an elasticity of −0.0396 that lies between the foreign-born elasticities in the level regressions for 1930 and 1940. Areas with a larger increase in Black populations were associated with increases in housing inequality. The only age share coefficient that was statistically significant was for the 65–74 age group; increases in that group were associated with a reduction in housing inequality and the elasticity was relatively large at −0.27.

Among the New Deal programs, housing inequality increased in areas where the HOLC purchased and refinanced a higher value of loans per capita and the FHA was insuring a higher value of home mortgages under Title 2. This fits expectations because both programs supported homeowners who had homes with implicit rents that tended to be higher than the typical rents paid by renters.[5] Given the negative selection seen for both the HOLC and the FHA in the 1930 level regression, the signs of these results seem likely to be robust and potentially causal.

17.5.4 Correlates of the Share of Families Filing Federal Tax Returns

One advantage of looking at the share of families filing federal tax returns is the availability of the variable for all counties, not just cities or urban counties. Therefore, we estimate the regression models in table 17.8 for all

5. For 1940 we calculated unweighted averages of the distributions for 952 cities of homeowners in the same implicit rent bin as renters in the same bins. There were 5.8 percent of homeowners and 0.4 percent of renters in the $100-up bin, 22.7 and 6.2 in the $50–99 bin; 29.1 and 14.0 in the $30–49 bin; 26.3 and 50.5 in the $15–29 bin, and 16 and 28.8 in the under-$15 bin.

Table 17.8 **Regression results for changes in the natural log of federal taxpayers per family, 1929–1931 and 1932–1939**

	Dependent variable: Change in natural log of federal income taxpayers per family, 1929−31			Dependent variable: Change in natural log of federal income taxpayers per family, 1932−39		
Variable	Period	Coeff.	t−stat.	Period	Coeff.	t−stat.
Change in natural log of						
Real retail sales per capita	1929−33	0.169	3.78	1933−1939	0.456	5.82
Natural log of						
Population	1930	0.038	1.48	1930−1940	0.729	7.64
Pct. urban	1930	0.032	3.99	1930−1940	0.024	2.76
Pct. illiterate	1930	−0.044	−1.84	1930−1940	0.007	0.16
Pct. Black	1930	0.008	0.50	1930−1940	0.071	1.05
Pct. foreign-born	1930	−0.005	−0.18	1930−1940	0.000	0.00
Pct. aged 10−14	1930	0.199	0.52	1930−1940	0.251	1.53
Pct. aged 15−19	1930	0.614	2.93	1930−1940	0.124	1.08
Pct. aged 20−24	1930	−0.471	−2.06	1930−1940	0.305	2.27
Pct. aged 25−29	1930	−0.159	−0.64	1930−1940	0.320	2.04
Pct. aged 30−34	1930	−0.084	−0.45	1930−1940	0.418	2.31
Pct. aged 35−44	1930	1.088	7.19	1930−1940	−0.175	−0.51
Pct. aged 45−54	1930	0.148	0.70	1930−1940	0.169	1.40
Pct. aged 55−64	1930	0.000	0.00	1930−1940	0.117	0.96
Pct. aged 65−74	1930	−0.022	−0.11	1930−1940	0.021	0.27
Pct. aged 75 up	1930	0.013	0.19	1930−1940	0.172	2.53
Natural log of average annual value						
Public works grants per cap.	1933/39	0.049	2.91	1933/39−1930	0.026	1.59
Relief grants per cap.	1933/39	0.108	2.98	1933/39−1930	−0.019	−0.75
AAA grants per cap.	1933/37	0.017	0.84	1933/37−1930	0.020	1.40
HOLC loans per cap.	1933/36	−0.044	−1.62	1933/36−1930	0.009	0.57
FHA home rehab. loans insured per cap.	1935/39	−0.133	−3.79	1935/39−1930	0.085	3.40
FHA mortgages insured per cap.	1936/39	−0.038	−1.73	1936/39−1930	0.007	0.38
Constant		−3.369	−1.54		0.135	1.10
Number of counties		3025			3052	
R-squared		0.216			0.365	

Notes: Standard errors are robust and clustered at the state level. All dollar values are adjusted for inflation to 1967 dollars based on series E-135 in US Census Bureau (1975, 210–11). To get taxpayers per family, the number of taxpayers in the year was divided by the number of families in 1930. Age data are from Gardner and Cohen (1992) ICPSR dataset.

counties, including rural counties with no cities. This expands the sample to over 3000 observations. All variables are measured at the county level. The regression on the left examines the change in the share of tax-paying families between 1929 and 1931 prior to the 1932 tax rate increases. As a measure of the change in economic activity, the growth rate in retail sales per capita,

which was negative for every county, is included. Since the time period is so short, the only evidence on the demographic correlates used is the level of the correlates from the 1930 Census. In the 1929–31 change regression, the change in taxpayers per family was positively related to the growth in retail sales per capita and to the levels of the urban share, and the shares of the population aged 15–19 and 35–44. It was negatively related to the percentage of those who were illiterate and to the population share aged 20–24.

One goal of this 1929–31 regression is to see if there were correlations between the New Deal variables and the changes in the dependent variable prior to the New Deal and the tax rate change. In areas where there was an increase in federal taxpayers per family between 1929 and 1931, the New Deal from 1933 to 1939 tended to spend more on per capita grants for relief and public works, the HOLC refinanced fewer mortgages, and the FHA provided insurance to fewer housing loans.

The primary regression of interest is for the change between 1932 and 1939 in the natural log of the number of federal taxpayers per family on changes in demographic features and New Deal programs. Since there was no New Deal spending in 1932, the New Deal variables are the annual average levels of funds per capita in the program. We focused on this period because tax rates and rules changed to only a slight degree for a large majority of federal taxpayers per family. The coefficients in the model can be read as elasticities.

Federal taxpayers per family rose in areas where there was faster recovery in retail sales per capita and in population. The elasticities for each are relatively large at 0.456 and 0.729, respectively. The inequality measure also rose in areas that became more urbanized and in areas with higher increases in population shares at ages 20–24, 25–29, 30–34, and ages 75 and up. The urban elasticity is only 0.024, but the age share elasticities are larger, ranging from 0.172 to 0.418.

The elasticities for all but the FHA home rehabilitation loan insurance program were small, less than 0.03 in absolute value, and statistically insignificant. The value of home rehabilitation loans insured by the FHA had a positive elasticity of 0.085, while it was negatively associated with the change in taxpayers per family between 1929 and 1931. The combination makes it more likely that this is a robust finding.[6]

6. We tried instrumenting for the public works, relief, HOLC, and AAA programs using political economy measures from the literature on the distribution of New Deal funds, the average Democratic presidential vote share from 1896 to 1932, the standard deviation of the Democratic vote share over the same period, and representation on the House Agricultural Committee at the start of 1933. We also included an instrument of distance to simulated HOLC offices, used by Fishback et al. (2011) in a study of the impact of the HOLC. Even though the first-stage F-statistics on the instruments were 7.35 for the public works, 13.39 for relief, 34.7 for the AAA, and 9.35 for the HOLC, the t-statistics in the final stage for the New Deal variables and all other variables were very small, suggesting some type of weak instrument problem. This may have arisen because the instruments could not specifically identify the effect of each individual program.

17.6 Transitions in Home Values of Household Heads between 1930 and 1940

In addition to comparing Gini coefficients across time for the housing value information, we used linked census data to examine transitions in nominal home values for the same household head between 1930 and 1940. Starting with all male household heads in any city specifically identified by IPUMS (Ruggles et al. 2020) in the 1930 complete count census, we linked ahead to 1940 using matched data generated by the Census Linking Project (https://censuslinkingproject.org/). The matches are based on the Abramitzky, Boustan, and Eriksson (2012) method, which matches people with a deterministic process based on names, birthplaces, and age. The process first searches for exact matches and then expands the age window to one and two years of age discrepancy if the names and birthplace still match exactly.[7] There are 2,997,850 matches in which a house value or rent was reported in both 1930 and 1940. About 92 percent of the household heads in 1930 remained heads in 1940, and 64 percent stayed in the same city. In the analysis here we include all movers and stayers.[8]

We calculated home values in the same way as in the rest of the paper; owned homes were given their reported value and rents were multiplied by 100. They were aggregated into the seven home value categories used by in the Census Reports of 1930 and 1940. Table 17.9 shows the transition probabilities for household heads starting in seven home value categories in 1930 and finishing in seven home value categories in 1940; 50.6 percent of household heads moved into a higher category in 1940, while 32 percent stayed in the same value category.

The mean values of homes in table 17.10 fell by 6 percent for the entire sample. The losses were driven by a 61 percent drop in the value of the top category of homes. The drop in average value for the $10,000 and up category was not caused by top coding because there is no top coding in the 1930 and 1940 values reported for the IPUMS full count censuses (Ruggles et al. 2020). The mean value of homes rose in every other category. The percentage increase in a category falls as the values in the categories rise from $0–999 to $5000–9999 in part because the 1930 means in the denominator were higher in the higher categories.

Table 17.10 also shows the distribution of home ownership within each value category. The home ownership rate for the sample as a whole of 43.5 percent in 1930 was slightly below the 45.2 percent in the national

7. For more discussion on various automated census linking algorithms, see Abramitzky et al. (2021).

8. When we restrict the sample to heads who stayed in the same city, the patterns are very similar to those described in the text. The one noticeable difference is that the percentage of homeowners among 1930 heads is 49.9 percent in the stayer sample, substantially higher than the 43.6 percent found for the 1930 sample including both movers and stayers.

Table 17.9 **The percentage of household heads with nominal home values in listed categories in 1930 and 1940**

	1940 home value ($)							
1930 home value ($)	0–999	1000–1499	1500–1999	2000– 2999	3000–4999	5000–9999	10000 up	Total
0–999	**0.97**	0.51	0.44	0.81	0.97	0.48	0.11	4.30
1000–1499	0.93	**0.86**	0.59	0.60	0.38	0.19	0.08	3.63
1500–1999	0.86	1.09	**1.24**	1.33	0.72	0.23	0.10	5.57
2000–2999	1.47	1.74	2.71	**5.25**	3.25	0.88	0.27	15.58
3000–4999	1.73	1.60	2.50	8.17	**11.47**	3.50	0.63	29.61
5000–9999	1.11	0.90	1.24	4.17	11.90	**9.66**	1.37	30.35
10000 up	0.36	0.29	0.32	0.97	2.33	4.19	**2.51**	10.97
Total	7.42	7.00	9.04	21.30	31.03	19.14	5.06	**100.00**
% HHs that moved up	87.00	80.43	74.88	62.47	45.86	21.9	0	

Sources: Matched sample of household heads in cities in 1930 and 1940 from IPUMS Full Count Censuses for 1930 and 1940 (Ruggles et al. 2020). Home values are owner's reported value of home if head owned home, rent multiplied by 100 for renter households. There were 2,997,850 household heads with values in both years in this sample.

Table 17.10 **Average nominal home values and home ownership status in 1930 and 1940 by home value category in 1930**

	Average nominal home value			Percentage			
1930 home value	1930	1940	% change	Own in 1930 & own in 1940	Own in 1930 & rent in 1940	Rent in 1930 & own in 1940	Rent in 1930 & rent in 1940
0–999	435	4,454	924	23.5	8.4	22.1	46.0
1000–1499	1,145	3,508	206	18.7	5.8	23.5	52.1
1500–1999	1,628	3,785	132	14.8	4.5	25.2	55.5
2000–2999	2,345	4,536	93	15.9	4.4	25.1	54.6
3000–4999	3,719	5,576	50	25.7	6.7	21.5	46.1
5000–9999	6,465	7,034	9	47.7	12.5	12.3	27.5
10000 up	27,066	10,537	–61	65.0	19.3	4.9	10.8
All	6,549	6,178	–6	34.2	9.4	17.8	38.6

Sources: See notes to table 17.9.

nonfarm home ownership rate from the 1930 Census. However, the matching process led to a sample with a 1940 home ownership rate of 52 percent, which is about 12 percentage points higher than 1940 census nonfarm home ownership rate of 41.1 percent (Fishback, Rose, and Snowden 2013, 24). Thus, the process of matching 1940 households to the 1930 households led to the selection of a higher share of homeowners than of renters. This type of selection in historical linked data is a well-known problem and not unique to our setting.

The sample for the transitions from 1930 to 1940 leads to reasonably similar city Gini coefficients to the aggregate city Ginis reported in the 1930 and 1940 Censuses and used in the rest of this chapter. In calculating the Ginis for 1930 and 1940 for the matched sample, we followed the same procedure as in the rest of this chapter and used the same median values for each category that we used for the aggregate data. The correlations between the two versions of the 1930 Gini was 0.8784 for 375 cities, and for the 1940 versions it was 0.9285 for 921 cities. However, the correlation between the change in Ginis between 1930 and 1940 for the two sets of Gini estimates is not as strong at 0.59.

As we did for the income transitions from 1929 to 1933, we examined the relationship between change in average home values between 1930 and 1940 for different parts of the housing value distribution in 1930. The results of regressions of the change in the natural log of average home values from 1930 to 1940 for households in different value categories in 1930 on county correlates are shown in table 17.11. Since one-third of the sample changed cities during the period, we use the level of the county demographic correlates in 1930 as the correlates. We also include measures of the annual

Table 17.11 **Regression results for households with home Values in seven categories in 1930: dependent variable is change between 1930 and 1940 in natural log of average home value for households**

	Coefficients *with t−statistics* for households in 1930 home value category between values of						
	0 & 999	1000 & 1499	1500 & 1999	2000 & 2999	3000 & 4999	5000 & 9999	10000 & up
Change in natural log of							
Manufacturing average annual earnings, 929−39	0.480	0.205	−0.127	0.106	−0.090	0.128	0.229
	2.48	*1.36*	*−0.98*	*0.96*	*−0.94*	*1.17*	*1.10*
Population, 1930−40	0.144	0.034	0.053	0.045	0.010	0.015	−0.261
	3.77	*0.91*	*1.79*	*1.64*	*0.49*	*0.90*	*−0.38*
Pct. urban, 1930−40	−0.068	−0.013	0.077	0.009	0.015	0.035	0.206
	−0.42	*−0.09*	*0.85*	*0.12*	*0.21*	*0.65*	*0.42*
Pct. illiterate, 1930−40	0.004	0.003	−0.028	−0.065	−0.024	−0.008	−0.087
	0.05	*0.05*	*−0.54*	*−1.54*	*−0.76*	*−0.28*	*−0.93*
Pct. Black, 1930−40	0.047	0.031	0.042	0.053	0.059	0.055	1.075
	0.78	*0.87*	*1.05*	*2.31*	*2.89*	*2.50*	*2.69*
Pct. foreign-born, 1930−40	0.123	0.056	0.044	0.074	0.043	0.034	−0.254
	2.00	*1.23*	*1.30*	*2.41*	*1.78*	*1.10*	*−2.57*
Pct. aged 10−14, 1930−40	0.046	0.056	2.045	0.713	1.376	0.580	−0.163
	0.04	*0.08*	*3.53*	*1.52*	*3.38*	*1.40*	*−0.23*
Pct. aged 15−19, 1930−40	0.444	0.783	−1.427	−1.026	−1.026	−0.291	−2.081
	0.42	*1.18*	*−2.08*	*−1.96*	*−2.13*	*−0.80*	*−2.10*
Pct. aged 20−24, 1930−40	1.737	0.489	1.086	1.011	0.806	0.988	1.643
	1.87	*0.74*	*1.74*	*2.48*	*1.87*	*2.77*	*2.07*
Pct. aged 25−29, 1930−40	−2.079	−0.830	−1.147	−1.113	−0.741	−0.511	−1.027
	−2.08	*−1.05*	*−1.40*	*−2.10*	*−1.39*	*−0.88*	*−1.09*
Pct. aged 30−34, 1930−40	1.136	1.074	1.555	0.151	0.815	0.729	−0.556
	0.97	*1.09*	*1.96*	*0.21*	*1.63*	*1.25*	*−0.64*

Pct. aged 35–44, 1930–40	1.598	−0.223	−0.695	−0.502	−0.589	−0.347	−0.013
	1.33	*−0.26*	*−1.12*	*−0.78*	*−1.19*	*−0.66*	*−0.02*
Pct. aged 45–54, 1930–40	1.152	0.353	0.495	0.697	0.613	0.777	−1.008
	1.52	*0.45*	*0.99*	*1.31*	*1.66*	*1.92*	*−2.21*
Pct. aged 55–64, 1930–40	−2.224	0.170	0.298	0.196	0.571	−0.602	1.741
	−2.64	*0.18*	*0.47*	*0.35*	*1.03*	*−1.07*	*3.01*
Pct. aged 65–74, 1930–40	1.288	0.421	0.222	−0.326	0.155	0.551	−1.294
	2.06	*0.77*	*0.51*	*−0.74*	*0.58*	*1.40*	*−3.23*
Pct. aged 75–up, 1930–40	−0.932	−0.226	−0.041	−0.026	−0.375	−0.428	0.782
	−2.67	*−1.26*	*−0.20*	*−0.12*	*−2.59*	*−2.47*	*2.37*
Natural log of average annual New Deal funds per capita during period							
Public Works Grants, 1933–39	−0.069	−0.008	−0.007	−0.035	−0.011	0.039	−0.087
	−1.70	*−0.16*	*−0.18*	*−1.22*	*−0.84*	*1.42*	*−1.64*
Relief grants, 1933–39	−0.238	−0.080	−0.080	−0.092	−0.038	−0.034	−0.150
	−3.02	*−1.46*	*−1.43*	*−1.97*	*−1.15*	*−1.02*	*−2.01*
AAA grants, 1933–37	−0.006	−0.025	0.009	−0.019	0.023	0.007	−0.141
	−0.15	*−0.76*	*0.28*	*−0.62*	*1.13*	*0.32*	*−3.35*
HOLC loans, 1933–36	0.004	0.017	−0.018	−0.027	−0.055	−0.052	0.096
	0.07	*0.81*	*−0.50*	*−0.88*	*−2.27*	*−2.55*	*1.40*
Value of FHA insured rehab loans, 1934–39	0.074	0.056	0.045	0.013	0.025	−0.003	0.096
	1.16	*1.07*	*1.28*	*0.34*	*0.86*	*−0.10*	*1.44*
Value of FHA insured mortgages, 1934–39	0.075	0.048	0.051	0.061	0.051	0.051	0.066
	1.40	*1.05*	*2.51*	*1.68*	*1.79*	*2.03*	*1.02*
Constant	−8.089	−5.331	−3.871	−0.227	−2.913	−4.397	2.499
	−1.62	*−2.02*	*−1.14*	*−0.07*	*−1.28*	*−2.02*	*6.98*

Sources and Notes: The changes in the housing values by city are aggregated from the matched sample between the 1930 and 1940 full count described in the notes to table 17.9. The correlates are all for county aggregates, and sources can be found in notes to table 17.7.

average grants and loans from several New Deal programs. All variables are in logs, so the coefficients can be read as the elasticity of the change in housing values with respect to the correlate.

The change in housing values had a strong positive relationship with average annual manufacturing earnings, our measure of income, only for households in the lowest 1930 value group with a statistically significant elasticity of 0.48. The relationship with population was similar. Housing values rose more among the top four 1930 value groups in areas with higher Black population shares. The elasticity was large at 1.08 for the top group but much smaller at around 0.05 for the other three groups. The share of foreign-born in contrast was negatively related to the rise in home values for the highest value group, but positively related for the remaining groups. Among the New Deal programs, public works and relief programs had negative relationships with changes in housing values for nearly all of the 1930 housing value categories. We thought that this might have been associated with bigger income drops between 1929 and 1933, but the negative relationships remained in specifications where a measure of the drop was included. AAA payments to farmers were statistically significantly negatively related to housing value changes for the top 1930 value group but not for the remaining categories.

The New Deal housing programs had conflicting relationships with housing value growth for many of the 1930 value categories. The HOLC program of purchasing and refinancing of loans from 1933 through 1936 was negatively related with housing value increases in the categories from $1500–2000 through $5000–9999 with coefficients of statistically significant elasticities of −0.05 for the $3000–4999 and $5000–9999 categories. In contrast, the FHA program for insuring home mortgages that started in 1935 had positive housing value change elasticities ranging from 0.048 through 0.0745 for all of the 1930 home values. The elasticities were statistically significant at the 10 percent level for all of the categories from $1500–1999 through $5000–9999.

17.7 Conclusions

To measure levels and changes in inequality for cities during the Great Depression, we compared multiple measures of inequality: Gini coefficients and transitions in full income for 1929 and 1933; Gini coefficients and transitions in values of housing for 1930, 1934, and 1940; and the share of households paying federal income taxes.

The family income measures for 33 cities showed that the Great Contraction from 1929 to 1933 led to higher Gini coefficients in nearly every city. Inequality was more likely to increase in areas where state per capita personal income fell the most. Further, the transitions between income bins in 1929 and 1933 showed that families were more likely to drop into lower income bins in 1933 in areas where per capita incomes fell the most. Much

of the action that appears to drive the negative relationship between the Gini and per capita income growth seems to be driven by a strong negative relationship between average income increases for families that started with zero income in 1929 and saw their incomes rise. This more than offset positive relationships between per capita state income growth and the changes in average income experienced by families who started in 1929 in income bins between $500 and $7499.

Predictions for the relationship between relief spending and the Gini coefficient are complicated by bidirectional relationships. Normally, we might expect that spending on relief would serve to lower the Gini coefficient, particularly because the family income measures for 1929 and 1933 in the cities included relief transfers. On the other hand, prior studies of the political economy of the distribution of New Deal funds have shown that governments chose to spend more in areas where unemployment rose and the economy fell apart (Fishback, Kantor, and Wallis 2003; Fleck 1999; Kachanovskaya 2016; and Wallis 1987), which would lead a positive relationship with the Gini coefficient. Regression analysis fits the latter story better, as cities where city/county per capita relief spending increased more were also areas where the Gini coefficient rose more. In addition, areas with greater increases in per capita relief were also areas where average incomes for families within each 1929 starting income bin fell more between 1929 and 1939. We explored using instruments to try to control for the positive feedback effect in which cities chose to increase relief spending in response to increases in inequality, but our efforts to date still show a positive relationship.

The housing Ginis based on house values for owners and estimates based on contract rents for renters were reasonably strongly correlated with the family income Ginis. The correlations of levels were close to 0.8 and the correlations for changes between years were around 0.6. However, the income and housing Ginis do not tell the same story about the change in inequality during the Great Contraction. Nearly every income Gini rose between 1929 and 1933, while roughly half of the housing Ginis fell. In a regression of the change in the income Gini on the change in the housing Gini, the intercept is positive, while the slope is also positive.

Although the average housing Gini changed very little between 1930 and 1940, there was substantial variation in the changes across cities. Areas in which the number of Blacks increased experienced rising inequality, while areas where the number of foreign-born increased experienced lower inequality. The housing programs of the New Deal had the strongest relationships with changes in housing inequality. Both the HOLC's purchases and refinancing of home mortgages and the FHA's insurance of home mortgages benefited homeowners, who were more likely to be in the upper tier of the housing distribution. This translated into positive and statistically significant elasticities between the housing programs and the housing Ginis, although the elasticities were small and less than 0.025.

Using the full-count censuses from 1930 and 1940, we linked almost three million household heads in 1930 with their information for 1940. Roughly half of the sample ended up in a higher nominal housing value category in 1940 and another 32 percent stayed in the same category. The mean housing value within all but the highest category rose between 1930 and 1940. Meanwhile, the mean value in the $10,000 and up housing category fell sharply. The New Deal program that was most associated with increased housing values was the FHA insurance of home mortgages.

The final measure we considered is a rough measure of top-end inequality, the number of federal income tax payers per family. The measure captures the number of individuals and families with incomes high enough to reach the federal income tax threshold, which nationwide was fewer than 10 percent of households. It has the advantage that it is available for all counties, but it has a disadvantage because it misses most of the action in the lower 90 percent of the distribution. The biggest surprise related to this measure is that it was nearly always negatively correlated with the income Gini and housing Gini measures. The only situation where the correlation was positive was a comparison across cities of the changes in the five-bin housing Gini between 1930 and 1940 with the change in taxpayers per family between 1930 and 1940. Regressions show that increases in federal taxpayers per family were associated with increases in economic activity, increases in population, increases in the share urban, and with FHA insurance of home rehabilitation loans.

The finding that income inequality and housing value inequality were highly correlated was encouraging because information on the distribution of housing values is more readily available prior to 1940 than on incomes. This opens the door for studies of inequality in rural areas as well as in cities. than on incomes prior to 1940. With the matched sample for 1930 and 1940, we plan further investigation at the individual level on the factors that influenced the transition between renting and home ownership and in the value of houses.

Appendix

Corrections to Mendershausen's Data

In working with the data from appendix B in Mendershausen's ([1947] 1975) data, we fixed several errors that arose when we were checking totals by summing up.

Providence total for 3000–4499 of 549 in 1929 bins is not the sum of the individual comparisons. Correct sum is 539.

Providence total for 500–749 in 1933 bins of 815 should be 816.
Providence total for 5000–7499 in 1933 bins of 156 should be 146.
Providence full total for all observations Is 7988, but actual sum should be 7978
Racine wrong total for the row for no income in 1929. 281 in source 281 is actual total of individual entries in row.
Racine total for 1000–1499 in 1933 categories column is wrong at 180. Should be 780.
Racine total for column of 3000–4499 of 80 should be 79.
Racine overall total is 4778 but the proper total is 4777.

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