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James J. Feigenbaum
Price V. Fishback
Keoka Grayson

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ABSTRACT

We explored two measures of inequality that described the full income distribution in cities. One measure is an income gini based on family incomes in 1929 for 33 cities and in 1933 for up to 48 cities in 1933 were spread throughout the country. We also estimated gini coefficients that made use of contract rents for renters and implicit rents for home owners for up to 955 cities throughout the country. We were able to expand to all counties when looking at a top-end inequality measure, the number of taxpayers per family. All three measures varied substantially across the country. We show the correlations between the various measures and also estimate the relationship between the measures and various relief programs developed by governments at all levels during the period.

James J. Feigenbaum
Department of Economics
Boston University
270 Bay State Road
Boston, MA 02215
and NBER
jamesf@bu.edu

Price V. Fishback
Department of Economics
University of Arizona
Tucson, AZ 85721
and TIAA-CREF Institute
and also NBER
pfishback@eller.arizona.edu

Keoka Grayson
Economics Department
Hobart and William Smith College
Stern Hall
Geneva, NY 14456
grayson@hws.edu

A large part of the recent literature about American inequality has focused on century long changes in the shares of income going to the top one, five, and ten percent of the income and wealth distribution at the national level. We are interested in changes in inequality during the Great Depression of the 1930s, the worst decade in American economic history. At the national level Piketty and Saez (2003, pp. 8-12) show that the share of income (excluding capital gains) held by the top one percent fell sharply from its 20th 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 the top 10 percent hit its 20th 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 I.

Our focus is on what happened across the entire distribution of income between 1929 and 1940 at the county and city level. Nearly every local economy experienced a decline and recovery, but the sizes of these changes 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 can use the variation in local experiences to provide information about how various New Deal and local programs were related to changes in inequality.

We offer a preliminary look at measures of inequality and the factors that are correlated with them at the city and county level between 1929 and 1940. In the process 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 and discussed by Horst Mendershausen (1947) 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. The inequality rose more in cities in states where per capita income 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 we develop gini coefficients based on the contract rents paid by renters and the implicit rents for home owners using data reported for these rent bins by the U.S. Census in 1930 and 1940, the Civil Works Administration in 1934 and a variety of local housing authorities. This allows us to expand the number of cities examined to around 950 cities. The preliminary results show that the housing ginis and the income ginis are strongly correlated. 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, they seem to be capturing many of the same features. In regressions on changes in the housing ginis between 1930 and 1940, we find that increased access to the Home Owners' Loan Corporation loan refinance and mortgage insurance through the Federal Housing Administration were associated with slight increases in housing inequality.

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 examine inequality in rural and urban areas. We have been surprised to find that the taxpayer per family measure is negatively correlated with both the income ginis and the housing ginis because higher values of all of these measures are associated with greater inequality. Regressions designed to establish the relationship of changes in taxpayers per family with changes in standard correlates, 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.

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

Horst Mendershausen (1947) used information from the Civil Works Administration'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, owners had higher incomes than tenants on average in both 1929 and 1933, and 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. He 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. The results showed no statistically significant relationships.

Mark Schmitz and Price Fishback (1983) used the federal tax information reported by states and followed methods developed by Simon Kuznetz to measure the share of income held by the top one percent and the top five percent in each state in 1929, 1933, and 1939. The shares held by the top one 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 one 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. They could not calculate five percent shares in 1929 for the Southern states, Iowa, Kansas, New Mexico, North Dakota, Oklahoma, and South Dakota because fewer than five 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 five shares reported, every state but Montana and Wyoming experienced a drop in the top five share between 1929 and 1933, while the top five's shares in 1939 in all but Wisconsin, Wyoming, and Nevada were lower in 1939 than in 1929. They found that the change in the top one 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 royalities) in a regression with just those variables, but positive relationships are no longer there when the prior level of the top one 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 1918-1919 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. 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 conflicting effects on the income distribution. 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 were more blacks and illiterates. The distribution of public works grants was more complicated, as more money went to areas where the economy dropped less from 1929-1933 and there was more economic activity in 1929, although more funds went to areas with fewer 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

[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). His also estimated that a 2-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 estimates of the long run relationship between income growth while controlling for education, and the structure of the state economy.

programs targeted homeowners, who were generally higher up in the income distribution than renters and may well have increased inequality. The distribution of the Home Owner's Loan Corporation's (HOLC) purchase and refinance program went largely to areas with higher tax returns per capita and higher economic activity in 1929. The Federal Housing Administration (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 increased inequality. One sign of this is that the value of home mortgages insured by the Federal Housing Administration 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 also have been found to have effects on various outcomes that would lead to 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 semi-skilled 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 likely 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 and 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 and Schaller (2020 in progress) have been analyzing 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 features 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 the counties actually provided better access to work relief for black males than for white males, while the remaining 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 on private employment. On the other hand black women had much lower access to work relief than white women throughout the country. Preliminary results 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, they had better access to the vote, and there were more government resources available to provide support.

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 Civil Works Administration in 1934. The director of the survey, David Wickens (1937, p. xv), stated that the survey 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 was restricted to 22 cities in Wickens (1937) and 33 cities in Horst Mendershausen's (1947) analysis of the income data in 1947. Price Fishback later found hand-written tables describing the distributions of income for an additional 15 cities in 1934 in an entry in Bureau of Foreign and Domestic Commerce Records containing results from a survey of drugstores in St. Louis in 1926-1927 at the St. Louis branch of the National Archives.

The survey was conducted with different schedules for renters and home owners 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, p. 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 one percent refused to participate (Wickens 1937, p. xv).

Horst Mendershausen (1947, 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

[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 KA, Trenton NJ, Wheeling WV, Wichita KA, and Worcester MA. Fishback found 14 additional cities in the Archives with information usable for 1934, including 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.

information from other countries. We build on his analysis by adding data for an additional 15 cities in 1933, by performing econometric analysis of correlates, including city relief spending, and with comparisons to alternative measures of inequality.

As one alternative measure of inequality, we use reports on the distribution of contract rents among renters and the distribution of implicit rents based on housing values for home owners 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 and reported in Wickens (1937) and Stapp (1938). 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 1930, 1934, and 1939. The data on taxpayers come from Rand McNally's *Commercial Atlas* (1943), the U.S. Bureau of Foreign and Domestic Commerce (1932), and mimeos from the U.S. 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.

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 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. In Figure 1 all but two of the cities are in the upper left of the graph, which implies an increase in inequality. The gini declined only in Butte, Montana by -0.02 and stayed the same in Richmond, Virginia. The mean Gini change was a rise of 0.044, which was an 11 percent increase from the 1929 Gini, while the largest rise was 0.12 in Racine, Wisconsin. Figure 2 shows a negative relationship between the percentage drops in real per capita incomes in the states and the changes in the Gini coefficients.

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 some 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 1. In the discussion we will emphasize the results for the change in ln(ginis), while showing the results when regressions are estimated separately for the levels in 1929 and 1933 in Table 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 substracting 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 would therefore have caused the change in log gini to rise by 0.024, which is about 22 percent of the 0.113 mean rise in the log gini that occurred between 1929 and 1933. The average change in the log income was -.341. After multiplying by the coefficient of -.239, it would be associated with a rise in the log gini of .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 in June 1933 and the Civil Works Administration 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 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 .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. To capture the impact of state governments, 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 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 4 bins from $4500-7499 down to $1500-$1999, the percentage of families that

[3]Because the FERA and CWA funds came late in 1933, we thought that the effect of the rise between 1932 and 1933 might not have come to late to influence incomes much. 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 1 and 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 1929-1933 relief measure become statistically significant when the 1929-1932 relief measure is used.

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.

A 24.5 percent deflation complicates the comparisons, because it raised the purchasing power of a dollar by that amount for the families between 1929 and 1933. 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 2 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 were a substantial share of families that 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 deflationary values when we look at the drops in average income in each 1929 starting income bin.

State Per Capita Incomes and Transitions Between Income Bins from 1929 to 1933

The drops in real state per capita personal incomes from 1929-1933 for the 33 cities in the sample varied from -13.1 percent to -42 percent. To get a sense of how these differences in the depth of the Depression influenced the transitions between income bins, we divided the cities into three 11-city groups from lowest to largest drops in real per capita income in Table 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 one 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. The oddest result is 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]

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 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

[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.

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 and 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 and 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 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 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 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 and 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 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.

In the gini regressions in Table 1 cities with higher increases in per capita relief spending between 1929 and 1933 were the ones that experienced larger increases in inequality. This surprises 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 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 pre-tax incomes and are positively related to relief spending.

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 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 effect of estimating with an instrument on the relief coefficients shown on the bottom row in Table 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 even more 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.

Inequality Based on Rents from Rental Properties and Implicit Rents from Owned Homes in Cities

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, $1,000-$1,499, $1,500-$1,999, $2,000-$2,999, $3,000-$4,999, $5,000-$9999, and $10,000 and up. For rental housing they reported seven nominal rents bins with 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 $1,000 to $1,499 range was put into a rent category of $10 to $14.99. The implied discount rate that matches this concordance was 11.54 for a thirty-year home, 10.3 for a twenty-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 5-bins: $0-$1,499, $1,500-$2,999, $3,000-$4,999, $5,000-$9999, and $10,000 and up with the rents at 1/100th of these values.[5]

We rely on these categories in this paper 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 cities in Mendershausen to ??? cities for

[5]For cities over 50k or 100k, we can use housing values with more bins, and we plan to make those comparisons as well.

which housing value distributions were reported in the mid-1930s. For comparisons between 1930 and 1940 we can expand the analysis to over 900 cities. In this section we examine the correlations between the 7-category and 5-category housing and the Mendershausen 11-category income ginis in Table 5, and the correlations between the income 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.

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 5-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 like 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 7-bin housing gini is 0.69, somewhat higher than with the 5-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 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 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 7-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.

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 1929-1931, 1932-1939 due to tax rule changes. The income levels at which families began paying taxes stayed the same at $2,000 for a single individual and $5,000 for a family of four between 1929 and 1939. 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 at $6,000, from 0.9 to 6 at $10,000, and from 23.1 to 57.1 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 (U.S. Bureau of the Census, 1975, pp. 1111-1112). 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 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 5-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 the 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.

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

The levels of the average 5-bin ginis in Table 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 4. The histogram looks relatively similar to a normal distribution centered around 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 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 7, and the coefficients can be read as elasticities because all variables are in natural logs. To maximize the number of observations, Table 7 reports regressions with the 5-bin Housing gini as the dependent variable. The qualitative results are generally the same when using the 7-bin housing gini and 5-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 foreign born. The foreign-born likely contributed to equality in the middle parts of the distribution because the World War 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 U.S. 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.

Prior to World War II the elderly were said to have been 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 work relief jobs for a significant share of the unemployed by filling 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 Home Owners' Loan Corporation (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 Federal Housing

Administration (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, Agricultural Adjustment Act (AAA) grants to farmers to take land out of production in the same county 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 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 stimated 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 common renters for renters. [6] 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.

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. Therefore, we estimate the regression models in Table 8 for all 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 1929-1931 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 percent illiterate and to the population share aged 20-24.

One goal of this 1929-1931 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. Among the New Deal programs areas with an increase in federal taxpayers per family between 1929 and 1931 were counties where the New Deal later spent more on per capita grants for relief and public works

[6]In 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.

and less in areas where the HOLC later bought and refinanced fewer mortgages, and the FHA provided insurance to fewer house rehab loans and to home mortgages.

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.[7]

[7] 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. 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.

Preliminary Conclusions

We explored two measures of inequality that described the full income distribution in cities. One measure is an income gini based on family incomes in 1929 for 33 cities and in 1933 for up to 48 cities in 1933 were spread throughout the country. We also estimated gini coefficients that made use of contract rents for renters and implicit rents for home owners for up to 955 cities throughout the country. We were able to expand to all counties when looking at a top-end inequality measure, the number of taxpayers per family. All three measures varied substantially across the country.

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. Regressions on the change in ginis showed that 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 $7,499.

Predictions for the relationship between relief spending and the gini coefficient are complicated by bi-directional 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; Wallis 1987; Kachanovskaya 2014, and Fleck 1999JEH), 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 contract rents and implicit rents for home owners in the cities were reasonably strongly correlated with the family income ginis. The correlations of levels within a year 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.

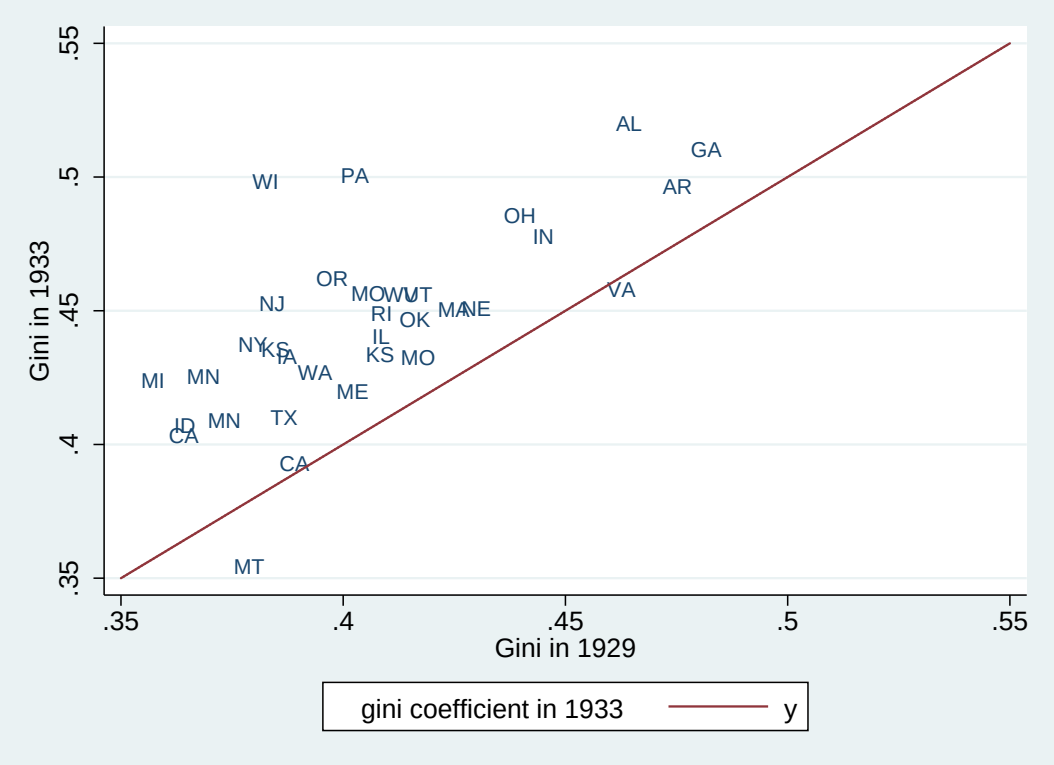
Although the average housing gini changed very little between 1930 and 1940, there was substantial variation in the changes across cities. Areas where the number of blacks rose experienced rising inequality, while areas where the number of foreign-born rose experienced lower inequality. The housing programs 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 home owners, 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.

The final measure we consider 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 5-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.

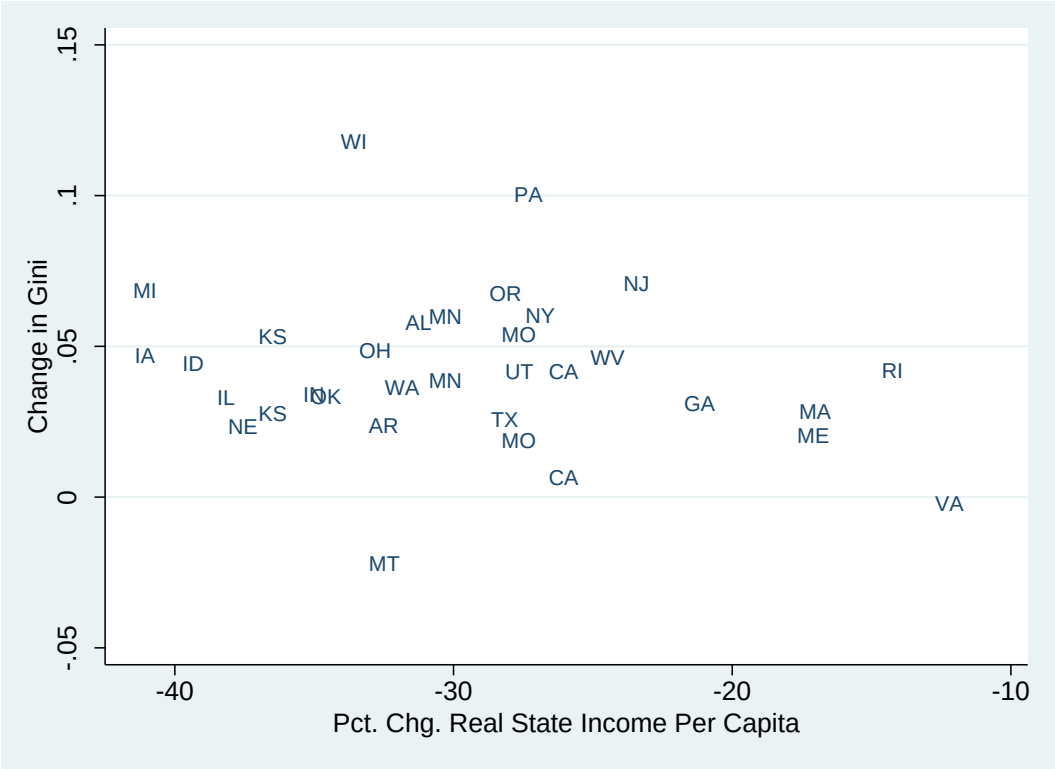
We are still in the preliminary stages of examining various measures of inequality. There are a variety of other sources we are beginning to tap. We plan to redo the housing inequality measures using the universal censuses of 1930 and 1940, which will allow us to see how much the housing ginis change when we alter the concordances between home values and implicit rents chosen by the Census Bureau for the measures we have used. This shift will also allow us to examine the situation in rural areas. From the 1940 Census we can develop measures of wage and salary income inequality and do more to investigate the relative payments for people on emergency work relief and those working in the private sector. We would also like to compare inequality measures based on housing and incomes to measures based on the occupational distributions. If these are reasonably highly correlated, we can do more to move back in time to early censuses where we have the occupational distributions but not earnings measures. We started into a study of top-end inequality at the state level using measures of shares of income held by the top 1, 5, and 10 percent developed by Frank (2009) but thus far we have found no relationship between per capita income growth and changes in top-end shares of income held by the population.

Figure 1
Gini Coefficients for Family Incomes in 33 Cities in 1929 and 1933



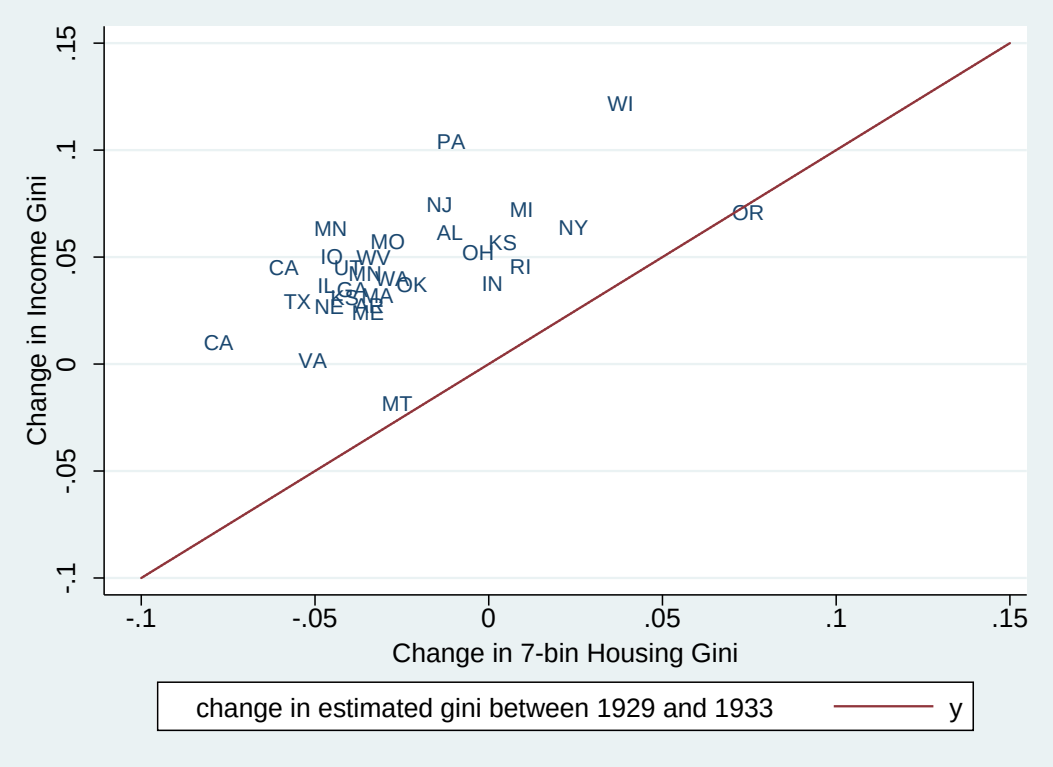
Source: Calculations based on data in Mendhershausen (1947, Appendix B).

Figure 2
Change in Gini Coefficients for Family Incomes and Growth Rate in Real State Per Capita Income in 33 Cities between 1929 and 1933



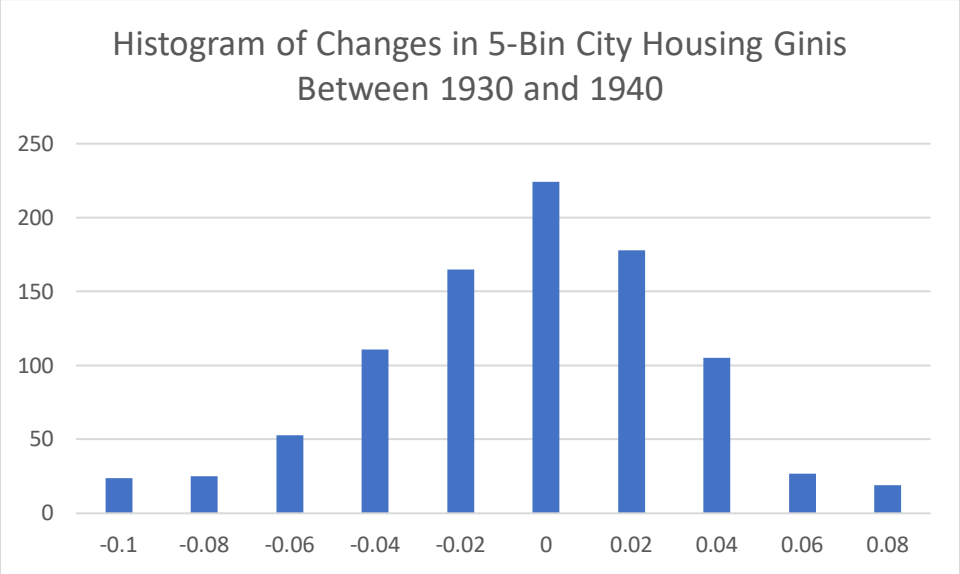
Source: Calculations based on data in Mendhershausen (1947, Appendix B). Per capita state personal incomes downloaded from www.bea.org in 2009.

Figure 3
Change in 11-Bin Income Gini from 1929 to 1933 vs. Change in 7 Bin Housing Gini from 1930 to 1934



Source: Income ginis are from Mendershausen (1947, Appendix B). Housing Ginis are calculated from information in Stapp (1938) and U.S. Bureau of the Census (1933).

Figure 4
Histogram of Changes in City 5-Bin Housing Ginis Between 1930 and 1940



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

Table 1
OLS Regressions of Natural Log of Gini Coefficients on the Natural Logs of Correlates for 33 Cities, 1929 to 1923

	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		

Source: Gini coefficients calculated from information in Appendix B in Mendershausen (1946). Dollar values are adjusted to 1929 dollars using CPI for 1935-1939 in U.S. Bureau of Labor Statistics 1941, p. 41). State per capita income is from www.bea.gov in 2009. Relief spending is from dataset used by Fishback, Haines, and Kantor, and originally found in Baird (1942). Demographic variables are from Census in ICPSR dataset 2896 (Haines 2004).

Table 2
Average Shares of Families Transitioning Between Income Bins from 1929 to 1933 in 33 Cities in All Cities and in Groups of 11 Cities Determined by Drops in Real State Per Capita Incomes

Income Bin			Percent Change in Real State Per Capita Income, 1929-1933					1933 Bin
1929	1933	All	-13 to -28.3	-28.4 to -33.5	-33.5 to -42		Easier/ Harder	1929$
			(1)	(2)	(3)	(1)-(3)		
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
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
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 (U.S. Bureau of Labor Statistics 1941, p. 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 for income data is Mendershausen (1946 Appendix B).

Table 3

Average Percent 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

	Percent 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, Appendix B). State per capita income is from www.BEA.gov downloaded in 2008. The average percent changes are unweighted and income is in 1929 dollars based on the CPI in 1935-1939 dollars in U.S. Bureau of Labor Statistics (1941, p. 41).

Table 4

Results for Regressions of the Changes in the Natural Logs of Real Average Income Between 1929 and 1933 in Each Starting Income Bin in 1929 on Correlates

	Zero	1-249	250-499	500-749	750-999	1000-1499	1500-1999	2000-2999	3000-4499	4500-7499	7500 up
	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*	Coeff. *t-stat*
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)	-1.227	-0.10	0.145	0.44	0.461	0.64	0.667	0.51	0.532	0.63	0.193
	-1.79	*-0.40*	*0.44*	*2.19*	*1.69*	*2.53*	*2.80*	*2.24*	*2.23*	*2.13*	*0.34*
ln(county population, 1930)	0.289	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)	-0.216	-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)	-0.449	-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	3.892	0.01	-0.234	0.24	-0.270	-0.15	-0.064	-0.02	-0.102	-0.55	-1.119
	4.01	*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 Chg. 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 Chg. ln(familiy Income)	0.353	0.174	0.147	0.119	0.140	0.141	0.123	0.114	0.114	0.150	0.177

Sources: See Table 2. The dollar values are adjusted for inflation and reflect values from 1929 using information from U.S. Bureau of Labor Statistics 1941, p. 41). The demographic data are for counties where the cities were located and were downloaded from the 1930 section in Haines (2004, ICPSR 2896). Source of average income data for cities by income bin is Mendershausen (1947, 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).

Table 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 (1946, 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.

Table 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
House7-bn	0.375	Paying Taxes	0.150	1930	-0.506	376
House7-bn	0.363	Paying Taxes	0.135	1934	-0.490	64
House7-bn	0.394	Paying Taxes	0.119	1935	-0.616	36
House7-bn	0.395	Paying Taxes	0.150	1936	-0.555	41
House7-bn	0.373	Paying Taxes	0.234	1940/39	-0.650	950
House5-bn	0.411	Paying Taxes	0.133	1930	-0.628	955
House5-bn	0.393	Paying Taxes	0.135	1934	-0.426	64
House5-bn	0.423	Paying Taxes	0.119	1935	-0.370	36
House5-bn	0.424	Paying Taxes	0.150	1936	-0.300	41
House5-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
House7-bn	-0.033	Paying Taxes	0.001	1934-1930	-0.159	58
House7-bn	0.012	Paying Taxes	0.016	1935-1930	-0.665	21
House7-bn	0.025	Paying Taxes	0.038	1936-1930	-0.396	22
House7-bn	-0.008	Paying Taxes	0.113	1940/39-1930	-0.061	368
House5-bn	-0.037	Paying Taxes	0.000	1934-1930	-0.002	64
House5-bn	0.011	Paying Taxes	0.016	1935-1930	-0.362	33
House5-bn	0.018	Paying Taxes	0.033	1936-1930	-0.294	39
House5-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 U.S. Bureau of Foreign and Domestic Commerce (1932), U.S. Bureau of Internal Revenue (1935), Rand McNally (1941). To get taxpayers per family, we divided by the number of families in 1930 from the Census and Haines (2004, ICPSR 2896).

Table 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 to 1940

Dependent Variable:	Level of Housing Gini				Dependent Variable: Change in Natural Log of Housing Gini		
	1930		1940			1930-1940	
Natural Log of	Coeff.	t-stat.	Coeff.	t-stat.	Change in Natural Log of	Coeff.	t-stat.
Real Avg. Annual Mfg. Earnings	-0.105	-4.18	-0.057	-2.31	Real Avg. Annual Mfg. 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 and up	0.089	1.78	0.032	0.5	Pct. Aged 75 and 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$ based on series E-135 in U.S. Bureau of the Census (1975, pp. 210-11). The demographic data are for counties where the cities were located and were downloaded from the 1930 section in Haines (ICPSR 2896). The New Deal data are from the U.S. Office of Government Reports (1940). Standard errors are robust and clustered at the state level. The housing gini dependent variable is based on 5 bins for contract rents for renters and implicit rents for home owners based on

information from U.S. Bureau of the Census (1933, 1943). Age data are from Gardner and Cohen ICPSR dataset.

Table 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, 1929-1931				Dependent Variable: Change in Natural Log of Federal Income Taxpayers per Family, 1932-1939			
Variable	Period	Coeff.	t-stat.	Variable	Period	Coeff.	t-stat.
Change in Natural Log of Real Retail Sales Per Capita	1929-1933	0.169	3.78	Change in Natural Log of Real Retail Sales Per Capita	1933-1939	0.456	5.82
Natural Log of Population	1930	0.038	1.48	Population	1930-1940	0.729	7.64
Pct. Urban	1930	0.032	3.99	Pct. Urban	1930-1940	0.024	2.76
Pct. Illiterate	1930	-0.044	-1.84	Pct. Illiterate	1930-1940	0.007	0.16
Pct. Black	1930	0.008	0.50	Pct. Black	1930-1940	0.071	1.05
Pct. Foreign Born	1930	-0.005	-0.18	Pct. Foreign Born	1930-1940	0.000	0.00
Pct. Aged 10-14	1930	0.199	0.52	Pct. Aged 10-14	1930-1940	0.251	1.53
Pct. Aged 15-19	1930	0.614	2.93	Pct. Aged 15-19	1930-1940	0.124	1.08
Pct. Aged 20-24	1930	-0.471	-2.06	Pct. Aged 20-24	1930-1940	0.305	2.27
Pct. Aged 25-29	1930	-0.159	-0.64	Pct. Aged 25-29	1930-1940	0.320	2.04
Pct. Aged 30-34	1930	-0.084	-0.45	Pct. Aged 30-34	1930-1940	0.418	2.31
Pct. Aged 35-44	1930	1.088	7.19	Pct. Aged 35-44	1930-1940	-0.175	-0.51
Pct. Aged 45-54	1930	0.148	0.70	Pct. Aged 45-54	1930-1940	0.169	1.40
Pct. aged 55-64	1930	0.000	0.00	Pct. aged 55-64	1930-1940	0.117	0.96
Pct. Aged 65-74	1930	-0.022	-0.11	Pct. Aged 65-74	1930-1940	0.021	0.27
Pct. Aged 75-up	1930	0.013	0.19	Pct. Aged 75-up	1930-1940	0.172	2.53
Public Works Grants Per Cap.	1933/39	0.049	2.91	Public Works Grants Per Cap.	1933/39-1930	0.026	1.59
Relief Grants Per Cap.	1933/39	0.108	2.98	Relief Grants Per Cap.	1933/39-1930	-0.019	-0.75
AAA Grants Per Cap.	1933/37	0.017	0.84	AAA Grants Per Cap.	1933/37-1930	0.020	1.40
HOLC Loans Per Cap.	1933/36	-0.044	-1.62	HOLC Loans Per Cap.	1933/36-1930	0.009	0.57
FHA Home Rehab. Loans Insured Per Cap.	1935/39	-0.133	-3.79	FHA Home Rehab. Loans Insured Per Cap.	1935/39-1930	0.085	3.40
FHA Mortgages Insured Per Cap.	1936/39	-0.038	-1.73	FHA Mortgages Insured Per Cap.	1936/39-1930	0.007	0.38
Constant		-3.369	-1.54	Constant		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$ based on series E-135 in U.S. Bureau of the Census (1975, pp. 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 ICPSR dataset.

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Appendix

Corrections to Mendershausen's Data in His Appendix B.

In working with the data from Appendix B in Mendershausen (1947) 's 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.