



THE UNIVERSITY OF KANSAS
WORKING PAPERS SERIES IN
THEORETICAL AND APPLIED ECONOMICS

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January 25, 2005

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WORKING PAPER NUMBER 200501

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Last Revised: January 25, 2005

We thank Tom Weiss for his many helpful suggestions on earlier versions of this paper along with participants at the All-UC conference on the history of economic inequality and the NBER-DAE Summer Institute.

Abstract

We use data from the IPUMS sample of the 1870 US Population Census to analyze the distribution of real and personal property wealth. Wealth was relatively more equally distributed near the beginning of U.S. industrialization than it would be 50 years later. Disaggregating the data by demographic groups and spatially we find evidence consistent with Kuznets' conjecture that urbanization and industrialization were associated with rising inequality in the nineteenth century. But we also find that inequality was high in the South, even though it remained in 1870 highly rural and agricultural. Finally we find evidence that increasing literacy may have helped to reduce inequality.

Introduction

The marked rise in income inequality in the United States over the past two decades has prompted a renewed interest in the history of both income and wealth distribution among economists. Several recent studies have sought to construct consistent measures of inequality across most of the twentieth century. Piketty and Saez (2003) have shown that income inequality followed a roughly U-shaped pattern falling sharply during the Great Depression and World War II before beginning to increase gradually. The pace of increase accelerated in the past several decades and has restored levels of inequality to roughly their levels near the beginning of the century. Kopczuk and Saez (2004) find that, like income, the distribution of wealth became dramatically more equal during the 1930s and 1940s, but that there has been no corresponding rise in wealth inequality in the recent past. Thus, wealth inequality has fallen substantially since a peak near the beginning of the twentieth century.

Evidence about either income or wealth distribution before the twentieth century is quite limited, but it is important to be able to place twentieth century trends in a broader context. The federal censuses of 1850, 1860 and 1870 offer a rare glimpse of patterns of property ownership in the United States during the nineteenth century. In 1850 census enumerators gathered

information on the value of real property and in 1860 and 1870 they collected data on the value of both real and personal property holdings of every individual. These mid-century data offer a snapshot of wealth holding prior to the late nineteenth century acceleration of industrialization. In the past a number of studies have made use of these data to explore a variety of issues related to wealth accumulation and inequality in the nineteenth century. These earlier efforts have been based, however, on relatively small samples or focused on particular sub-groups within the population.¹

In this paper we make use of the much larger sample available in the Integrated Public Use Microdata Series (IPUMS) sample of the 1870 census to examine the distribution of wealth at a relatively disaggregated level. The large size of this sample allows us to look both at spatial patterns of variation and at inter-group differences in the level of inequality. Soltow (1975) had noted that wealth was much more unequally distributed in the South than elsewhere. While our results are consistent with this conclusion, they also suggest that there were substantial variations in inequality both within the South and within other parts of the country. Indeed, our calculations show that levels of inequality in Southern New England were as high, or higher, than in most Southern states, and substantially greater than those found in northern New England. Inequality was also high in the Pacific and Mountain regions. On the other hand, we

¹ Soltow (1975) contains a relatively comprehensive discussion of wealth accumulation and distribution based on a national sample of census returns at all three dates. His sample is, however, considerably smaller than that collected in the IPUMS thus limiting his ability to disaggregate the data across different demographic groups or geographic areas. Steckel (1990) used a sample of about 1,500 observations matched from the 1850 to 1860 censuses to examine wealth accumulation in the 1850s, and Ferrie (1999) used samples of immigrants and natives in 1850 and 1860 to trace the impact of changes in occupation and location and wealth accumulation. Atack and Bateman (1981) analyzed wealth accumulation over the life-cycle based on a sample of approximately 21,000 rural northern households in 1860.

show that the distribution of wealth was substantially more equal in the North Central region than elsewhere in the country.

Decomposing wealth inequality by urbanization, race, occupation, nativity and age we find that inequality was higher in urban than rural areas, higher among Blacks than Whites, and varied with occupation and age. Not surprisingly equality was greatest among farmers, but we also find relatively low levels of inequality among professionals, and clerical and kindred workers, while those in sales occupations displayed the highest level of inequality. Breaking the data down by age we show, consistent with Atack and Bateman's (1981) results for rural households, that inequality was highest among the young, and declined for successively older groups. In contrast to these between group differences, however, we find that there was little difference in inequality between the native born and the foreign born in 1870.

Beginning with Kuznets (1955), economic historians have been concerned with the relationship between inequality and economic development. In his seminal article Kuznets conjectured that income inequality was higher in the urban and industrial sectors of the economy than in the rural and agricultural sectors, and demonstrated that under this assumption the movement of population from the agricultural to the industrial sector would (other things equal) be expected to cause inequality to increase during the early stages of industrialization.

Williamson and Lindert (1980) have argued that movements of pay ratios in the nineteenth century United States are consistent with this conjecture. More recently Steckel and Moehling (2001) have compiled wealth data for a single state, Massachusetts, that reveal an upward trend in inequality from 1800 to the early twentieth century.

While our measure of wealth is not entirely consistent with that used by Kopczuk and Saez (2004), comparison of our data for 1870 with their estimates for the twentieth century

provides additional confirmation that inequality increased substantially during the late nineteenth and early twentieth centuries as the U.S. made the transition from an agricultural to an increasingly industrial economy. The cross-sectional patterns of variation that we observe in 1870 suggest that rising industrialization and urbanization were the proximate causes of rising inequality. However, we also find that the legacy of slavery led to relatively high levels of inequality in the distribution of real property wealth.

Characteristics of the Data

The 1870 census IPUMS contains a 1 percent random sample of the population drawn from the original census manuscripts. In total there are data for 383,308 individuals, with a combined aggregate wealth of \$250.7 million. Many of these individuals were part of larger households, whose assets were likely to be reported as belonging to the head of the household. Analyzing wealth distribution across individuals thus may produce misleading results about the concentration of property ownership. Therefore, in the subsequent analysis we focus on wealth holding of household heads.² Household heads accounted for 75,567 observations or about 20 percent of the sample, but held close to 90 percent of the reported wealth in 1870.

The information on the value of real and personal property collected by Census enumerators was self reported, and the instructions to enumerators recognized that “exact accuracy may not be arrived at, but all persons should be encouraged to give a near and prompt

² In 1870 family interrelationships were not recorded by enumerators, but their instructions specified that the household head’s name should be entered first in the record for each family recorded, with other members following. Using this fact the compilers of the IPUMS have constructed the family relationship variable from record locations for each individual in the family along with other demographic data.

estimate for your information” (quoted in Soltow 1975, p. 1). In 1870 enumerators were also instructed to record information on personal property only if its aggregate value was \$100 or greater. In 1860, when no such instruction was included, approximately one-third of household heads with personal property valued at less than \$100 had non-zero amounts of personal property. Given the small amounts involved, however, the impact of this truncation in personal wealth is likely to be small.³

Because the data on the value of real and personal property were self-reported the resulting figures are unlikely to be entirely accurate, but previous researchers have concluded that the discrepancies do not create large systematic biases. Analysis of the distribution of reported values clearly reveals a tendency toward heaping on round numbers. Matching census manuscripts with tax lists, Steckel (1994) found that census wealth figures often exceeded taxable wealth levels, but that there was no systematic association between such discrepancies and socioeconomic variables such as age or occupation. He also reported that differences in Gini coefficients computed from the two sources were small and not statistically significantly different from each other.

The first column of Table 1 summarizes a number of the personal characteristics of the full IPUMS population sample, while the next three provide comparable information for all household heads, and for male and female household heads separately. Compared to the general population household heads were considerably older, more likely to be foreign born and to be employed in manufacturing. As previously noted, their average wealth level was substantially

³ To assess the impact of truncation on the data we constructed a hypothetical personal property variable in which we used the 1860 distribution of wealth holding for those with less than \$100 of wealth to assign non-zero values to a portion of those recorded as having no personal property in 1870. We then compared measures of aggregate wealth and the distribution of wealth in each state for the actual and hypothetical data and found that they were quite similar.

higher than the population as a whole, and they were much more likely to own any property. On the other hand, regional and urban-rural distributions were quite similar for the population as a whole and the household heads. The racial breakdown of the two groups was also quite similar.

Reflecting typical gender roles of the time there were relatively few female headed households. Only about 11 percent of household heads were female in 1870, and it is likely that in most cases these women were recorded as heads because they had been widowed. The average female head was nearly five years older than her male counterpart, and almost twice as likely to be Black. She was also more likely to be native-born and to reside on a farm. Given the adverse events which were likely to have preceded their ascendance to the role of household head and their limited economic prospects it is not surprising that female household heads reported owning substantially less property on average and were more likely to report owning no real or personal property.

Geographic Variation in Wealth Holding and Inequality

In 1870 there were pronounced differences across states and regions in both average wealth levels and in the distribution of wealth. The large size of the IPUMS sample makes it possible to characterize these differences much more clearly than has heretofore been possible.

Table 2 reports average levels of real, personal and total property holding, along with two measures of the distribution of wealth—the share of total wealth held by the top 1 percent of wealth holders, and the proportion recorded as having no wealth—in each state and census division. For comparison the national figures are also reported. Regional differences in average wealth were quite substantial, ranging from a high of \$4935 in the Pacific to just \$957 in the

Mountain states. Excluding these two recently settled areas there was a clear North-South divide with northern wealth levels two to three times those in the southern regions. Within the South, wealth levels were generally higher in border states—Maryland, West Virginia, and Kentucky, than in the deep South. There is also a striking level of variation within the New England states, where wealth levels in the three southern states—Connecticut, Rhode Island and Massachusetts—greatly exceeded those in the three northern states—Vermont, New Hampshire and Maine.

The same regional patterns are also apparent in real and personal property holding. But it is interesting to note that in New England real property accounted for an unusually small share of total wealth, while personal property holding was correspondingly more important. In New England personal property accounted for almost 43 percent of total wealth while it amounted to just 30 to 35 percent of wealth in most other regions.

Differences in the level of average wealth to some degree parallel differences in the distribution of wealth as well. Across most northern states property ownership was relatively widespread. In the North Central states more than 80 percent of household heads were recorded as having some property, while over 70 percent of household heads in the Northeast had positive property holdings. In contrast, in many of the southern states close to half of all household heads were recorded as reporting no property ownership.

Another measure of inequality is provided by the share of wealth owned by the top 1 percent of wealth holders. Kopczuk and Saez (2004) have traced the evolution of this statistic over the 20th century, noting that in 1916 the top 1 percent held close to 40 percent of total wealth. The share held by this wealthiest group fell sharply between 1930 and 1932, and continued to decline until by 1949 they held just 22.5 percent of the nation's wealth. Despite

some subsequent fluctuations, they do not find any long-run trend in the share held by the top 1 percent since 1950.

As the figures in table 2 make clear, wealth was substantially more equally distributed in 1870 than it was a half century later. For the nation as a whole in 1870, the top 1 percent of wealth holders owned just 27.9 percent of total property, closer to contemporary levels of wealth inequality than to the high levels recorded near the beginning of the 20th century. Real property holding was even more dispersed, with less than 27 percent owned by the top 1 percent, while personal property tended to be substantially more concentrated, with more than 38 percent owned by the top 1 percent.⁴

The extent of wealth concentration varied considerably across states and regions, however. In South Carolina and Louisiana, the top 1 percent of wealth holders owned more than 50 percent of all property. Wealth was also highly concentrated in several of the New England states. In Rhode Island the top 1 percent owned 47 percent of all property, while in Connecticut and Massachusetts they held 41 and 35 percent, respectively. At the other extreme, there were twelve states in which the top 1 percent owned less than 20 percent of all property. These relatively equitable states included several recently settled western states—Utah, Oregon, and Montana—and a number of relatively agricultural northern states. Interestingly, wealth remained relatively unconcentrated in Pennsylvania and New York, where the wealthiest 1 percent accounted for less than 30 percent of total wealth. Summarizing regional patterns, inequality was lowest in the North Central states, and highest in the South and in New England. High levels of inequality in California also raised regional inequality in the Pacific region.

⁴ Kopczuk and Saez (2004) do not report separate figures for real and personal property, so we are unable to compare these figures with more recent data.

Determinants of Individual Wealth Accumulation

The state, regional and national data discussed so far reflect the aggregation of the experiences of thousands of individuals. Differences in wealth accumulation across these individuals reflect both systematic differences associated with observable characteristics and the influence of random shocks and unobservable differences. Because the IPUMS combines individual level data on wealth holding with a range of other individual characteristics, such as occupation, literacy, age, nativity and race, we can examine in more detail how these observable characteristics affected individual wealth accumulation.

Since a large number of household heads in 1870 were recorded as possessing no property we proceed in two stages. In the first stage we examine factors that influenced whether a person reported owning any property using a probit regression. Here the dependent variable is equal to 1 if the individual was recorded as having any property (for personal property it is equal to 1 if they had \$100 or more), and zero otherwise. In the second stage we limit our analysis to individuals reporting positive amounts of property (\$100 or more for personal property), and regress the log of the level of wealth on personal characteristics. Table 3 reports the results of the probit regressions converted to marginal probabilities, so that each coefficient shows how changes in the independent variable affected the probability of reporting any wealth.⁵ Table 4 reports the results of Ordinary Least Squares regressions of the log of wealth on individual characteristics for those household heads reporting positive (greater than \$100 for personal property) levels of property ownership.

⁵ For continuous variables the transformed coefficient is the slope of the probability function calculated at the means of the independent variables. For zero-one dummy variables we report the change in probability resulting from changing the value of the particular dummy variable from zero to one.

Almost all of the regressors are statistically significant, and their effects are generally consistent with our expectations. Reflecting the severe disadvantages of the newly emancipated slaves, Blacks were about 30 percent less likely to report owning any sort of property than were non-blacks, and the value of property owned by those who did own property was about 60 percent of that owned by otherwise comparable white household heads.⁶ There was no difference in real property ownership between the foreign born and the native born, but immigrants were less likely to report owning personal property, and this disadvantage in personal property translated into smaller numbers reporting having any wealth. Among foreigners with some property the amounts they owned were 15 to 20 percent less than among the native born. Women were also less likely to own property and those who had property had less of it than men.

Literacy increased the odds of owning property and increased the amounts that people owned, while disabilities reduced property ownership. Finally, the coefficients on age indicate that the likelihood of property ownership and the amount owned were increasing with age, but at a decreasing rate. Both the likelihood of property ownership and the amount owned peaked in the late 50s or early 60s.

City dwellers were less likely to own any kind of property, and the odds of owning property fell with city size. But those city dwellers who owned property were wealthier than property owners in smaller places. Those in cities with populations of 25,000 to 99,999 were about 8 percent less likely to report any property or any personal property and 13 percent less likely to own real property. In cities with populations of 100,000 or more the odds of not owning

⁶ To calculate the comparison of property values it is necessary to exponentiate the regression coefficients. The results in Table 4 imply that Black's real property was valued at 62 percent that of whites, their personal property was valued at 63 percent that of whites, and their total wealth was valued at 57 percent that of whites.

property approximately doubled. For property owners both real and personal property wealth were increasing with city size, although the gradient was much steeper for real property than for personal property. The value of real property owned by those in cities with populations of between 25,000 and 100,000 was nearly double that of residents of places with less than 25,000 population, and it was more than 2.7 times as great for those in cities with populations of 100,000 or more. Interestingly, however, the relationship between city size and wealth breaks down for total wealth. Although the wealth of property owners in cities larger than 25,000 was greater than those in smaller places, it was residents of medium sized cities that had the greatest wealth.⁷

Occupation was another important correlate of wealth accumulation. Here we employ the IPUMS recoding of the original occupational responses based on the 1950 census occupational classification scheme. The excluded category in all of the regressions is laborers, so the coefficients reflect differences in wealth accumulation relative to common labor. Laborers were the occupational group least likely to have accumulated any property, and the wealth of those who had property was lower than for any other group. Of all occupation groups, farmers were the most likely to own property of any kind. Professional and managerial occupations were also more than usually likely to own property in 1870. Turning to the value of property owned, the wealthiest occupational groups were professionals and managers, but the value of property owned by farmers was also quite high. Those in non-occupational categories were also among the wealthier property owners. While there was little difference in the probability of owning property between sales and clerical occupations, on the one hand, and craft and operative

⁷ This reversal reflects the effects differences in sample composition across groups.

occupations, on the other, there was a pronounced difference in the value of property owned, with the former group being substantially wealthier.

We noted earlier that there were significant variations in the prevalence of property ownership and average wealth levels across states and regions. The regional effects reported in Tables 3 and 4 indicate that these variations are reduced but not eliminated once we control for differences in personal characteristics. The effect is especially pronounced for the southern regions, where removing the effect of Black-White differences in property ownership substantially reduces regional differences in the proportion of household heads owning any property. The range of geographic variation of average wealth levels is also reduced somewhat after controlling for personal characteristics, but the impact is not as large as for the probability of property ownership. While the relatively high level of wealth in the Pacific region appears due largely to differences in personal characteristics, the North-South difference in average wealth levels noted in Table 2 persists largely unchanged.

The Sources of Inequality

Despite the evident correlation of property ownership with a variety of personal characteristics, these observable factors can account for at best a small fraction of total inequality. No matter how the population is divided the vast majority of variation in wealth levels occurred within groups rather than between them. This observation is already suggested by the relatively small fraction of wealth variation that is statistically explained by the regressions in Tables 3 and 4. In this section we formalize this observation making use of the Theil inequality index.

Like the Gini index, the Theil index reduces the degree of wealth dispersion across the entire wealth distribution to a single parameter. But unlike the Gini index, the Theil index can be linearly decomposed to express the relative contributions of inequality within and between different subgroups of the population being studied.

For a selected population the Theil index is calculated as:

$$T = \frac{1}{n} \sum_{i=1}^n \frac{w_i}{\mu} \ln\left(\frac{w_i}{\mu}\right) \quad (1)$$

where n represents the number of observations, w_i represents the wealth of individual i , μ represents mean wealth, and $0\ln(0)$ is defined to be equal to zero. In the case of perfect equality the index is equal to zero. When wealth is perfectly unequally distributed—which is the case if one individual owns all the wealth—the index equals $\ln(n)$.

The Theil index can be decomposed for any exhaustive set of population subgroups into the contributions attributable to inequality within each subgroup and between subgroups. If there are G population subgroups and T_j denotes the Theil index calculated using equation (1) for individuals within subgroup j . Then aggregate inequality can be rewritten as:

$$T = \sum_{j=1}^G \frac{n_j \mu_j}{n \mu} T_j + \sum_{j=1}^G \frac{n_j \mu_j}{n \mu} \ln\left[\frac{\mu_j}{\mu}\right] \quad (2)$$

where n_j is the number of observations in subgroup j , and μ_j is the mean wealth of subgroup j . Notice that the first term in each summation is the same and is equal to subgroup j 's share of total wealth. Thus the first term in the decomposition is a weighted sum of the within subgroup inequalities where the weights are subgroup shares of total wealth. This is the measure of *within* group inequality. The second term is a weighted sum of the log of the ratios of subgroup average wealth to the mean wealth of the entire population. This is the measure of *between* group inequality.

Variations in the Theil Index across states closely resemble the pattern of variation in the measure of inequality we considered in Table 1, the share of wealth owned by the top 1 percent of wealth holders. Figure 1 plots the Theil index for each state as a function of the corresponding share of total wealth owned by the top 1 percent. The fact that the two measures are not perfectly correlated reflects the additional information about other points in the wealth distribution that is captured by the Theil index but ignored when we look only at wealth holding of the very rich.

Table 5 reports Theil inequality indexes for subgroups of the population broken down by race, nativity, age, occupation, urban residence, and region. These decompositions reveal a number of interesting features of wealth accumulation patterns. First, while real property ownership became increasingly equitable with age, personal property ownership became increasingly unequally distributed. When these patterns are combined there is relatively little relationship between age and inequality. Second, inequality was substantially greater among Blacks than among whites. Third, on the other hand, there was little difference in inequality between the native and foreign born. Fourth, inequality was increasing with city size. Fifth, there were marked differences in inequality across different occupation groups. As one might expect, farmers had the most equal distribution of property ownership. Interestingly, however, laborers were among the occupations with the most unequal distribution of property. Finally, regional patterns of inequality parallel those noted earlier—with real property inequality highest in the South, and personal property inequality highest in New England and the Mid Atlantic.

Table 6 presents calculations of the decomposition of aggregate wealth inequality into components due to within group inequality and between group inequality. It is apparent that almost all of the inequality occurred with groups rather than between them. In all but one case

90 percent or more of total inequality was attributable to within group variations in wealth holding. The sole exception is the decomposition by occupation groups, where between group inequality accounts for about 20 percent of total inequality.

The Correlates of Geographic Variation in Inequality

One motivation for studying variations in wealth and income inequality has been to try to identify the mechanisms that have contributed to historical variations in the level of equality produced by the American economy. The presence of substantial cross-sectional variation in levels of wealth inequality in 1870 provides an opportunity to examine the relationship between inequality and the structural changes in the economy that were associated with the process of industrialization during the nineteenth century. Over the course of the nineteenth century the process of economic transformation that accompanied American industrialization proceeded at different rates. Industrialization began much earlier in New England and the Mid Atlantic regions, than in North Central and southern regions. Thus, by 1870, close to 35 percent of the population in Massachusetts and New York lived in places with population of 25,000 or more, more than three times the national average of 11 percent; while more than 20 percent of the population of Massachusetts and Rhode island was employed in manufacturing, compared to only a little more than 7 percent nationally. Industrialization and urbanization were also closely linked to high rates of immigration, although many of the foreign born could also be found in more agricultural regions.

Of course, it is inappropriate to equate the results of such cross-section comparisons with genuine time-series observations. On the one hand it is possible that patterns of within group

inequality changed over time. On the other hand, it is possible that there are interactions between states at a point in time—arising from interstate migration and trade—that cause cross-section and time series relationships to differ. Nonetheless, in the absence of time series data on inequality over the course of the century it is illuminating to explore the cross-section relationship.

Using the full IPUMS population sample for 1870 we have constructed measures of a number of demographic characteristics for each state. These include: the share of the population that was Black, foreign born, literate, living in a city with population 25,000 or greater, employed in manufacturing, and the average age of the population. Several of these characteristics are highly correlated with each other, and it does not make sense to include all of them in a regression model.

After some experimentation we found that we could account for a large fraction of the across state variation in inequality with a small number of state characteristics. The top three panels of Table 7 report the results of several OLS regressions estimated across states where the dependent variable is the Theil inequality Index calculated for, respectively, real, personal, and total property. In these regressions we have dropped the four smallest states (those with less than 50 heads of household in the 1870 IPUMS sample) to reduce errors arising from very small sample sizes. The bottom panel of the table reports summary statistics for the dependent and independent variables in the regressions.

State characteristics can account for close to two thirds of the variation across states in real and total property variation, and about half of the variation in personal property inequality. Which specification fits best, and the relationship between inequality and the various explanatory variables differs depending on which type of wealth we are considering. Our first specification

(Specification 1) includes the proportion of the share of Blacks in the population (a proxy for the legacy of slavery), along with the share employed in manufacturing and the share living in large cities (those with populations of 25,000 or more), which can be interpreted as proxies for industrialization and urbanization, respectively.

Urbanization and the fraction Black are consistently positive and statistically and economically significant, but the share employed in manufacturing is significant only in the regression for real property inequality.⁸ The effect of the fraction Black on inequality is not simply capturing North-South differences in inequality. When we replace the share of Blacks with a dummy variable for southern states that dummy variable is indeed positive and significant, but when we include both the dummy variable and the share of Blacks, the dummy variable loses its significance, indicating that the relationship between the share of Blacks and inequality is being identified largely on the basis of variations within the South.

Adding the fraction of the population that is literate (Specification 2) substantially increases the explanatory power of our model, especially for the case of personal property wealth inequality. In addition the size and significance of the fraction Black declines, so that this variable is statistically significant in only one case—for real property inequality. There was a strong negative relationship between literacy and the fraction Black across states—the simple correlation coefficient between these two variables is -0.78—but it is clear that the fraction literate is more closely related to inequality than the fraction Black. Adding literacy also increases the size and significance of the share in manufacturing, which is now positive and statistically significant for all three measures of inequality.

⁸ Our assessment of economic significance is based on calculating the implied effect of a one standard deviation change in each variable. For total wealth, a one standard deviation increase in the share employed in manufacturing would have increased the theil index by 0.18, or a bit more than 10 percent of the unweighted average of the index across states.

Adding the average age of the population (Specification 3) only marginally increases the explanatory power of the model, and this variable is only statistically significant in the regression for personal property inequality. While including age does not greatly affect the magnitude of the estimated effects of the other explanatory variables it does increase the standard errors for several of them.

The regression results in Table 7 suggest several conclusions. First, consistent with Kuznets (1955) hypothesis, inequality was generally increasing with urbanization and industrialization. The effect of urbanization was consistently strong for all measures of inequality across all three specifications. The impact of industrialization is not as consistently significant, but after controlling for literacy we find that the share in manufacturing had a positive and statistically significant relationship with all three measures of inequality. Second, there is some evidence to suggest that the legacy of slavery was still quite evident in the 1870 wealth distribution. This is clearly true for real property ownership, where after controlling for urbanization and industrialization the states with large numbers of Blacks had high rates of inequality. It is less evident in the distribution of personal property. That the relationship between inequality and the share of Blacks weakens with the inclusion of the literacy measure suggests that this is one important mechanism through which slavery may have affected wealth accumulation.

Conclusions

Information on real and personal property ownership collected in the federal population censuses of 1850 through 1870 offer one of the few opportunities to study patterns of wealth

accumulation and inequality in the nineteenth century United States. While a number of earlier studies have made use of relatively small or selective samples of these data, the availability of the IPUMS one percent sample offers the opportunity to explore these data in much greater detail than has heretofore been possible. In particular, the larger sample size makes it possible to disaggregate the data in a variety of ways.

Compared to estimates for the early twentieth century, wealth was relatively equally distributed. In 1870 the top 1 percent of wealth holders owned 27.9 percent of all property, about one-third less than was the case in 1916. Thus, wealth inequality increased substantially during the period of rapid American industrialization in the late nineteenth and early twentieth centuries.

The rise in inequality associated with increasing industrialization was prefigured in the pattern of cross-sectional variation in inequality in 1870. Inequality varied considerably across states, and much of this variation reflected differences in urbanization and manufacturing employment across states. For the most part more rural and agricultural states enjoyed a higher level of equality. The exception to this rule was, of course, the South, which remained in 1870 highly rural and agricultural. This exception is explained, however, by the legacy of slavery, which apparently permitted the emergence during the antebellum period of a much more unequal distribution of property than occurred in the North. This inequality managed to survive after the Civil War despite the strong negative effect of emancipation on overall levels of wealth holding in the South.

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Table 1: Summary Statistics, 1870 IPUMS and Selected Sub-Samples

		Household Heads		
		All	Male	Female
Number of Observations	383,308	75,567	66,825	8,742
<i>Personal Characteristics</i>				
age	23.5	42.3	41.8	46.7
female	0.496	0.116	0.000	1.000
black	0.126	0.126	0.117	0.193
employed in manufacturing	0.073	0.199	0.219	0.047
living on farm	0.586	0.620	0.584	0.889
in city with population $\geq 100,000$	0.105	0.106	0.102	0.136
in city with 25,000 \leq population $< 100,000$	0.044	0.044	0.043	0.054
foreign born	0.144	0.254	0.261	0.199
has disability	0.001	0.001	0.001	0.001
is literate	0.578	0.791	0.810	0.648
<i>Property Ownership</i>				
value of real property	\$444	\$2,038	\$2,141	\$1,251
value of personal property	\$210	\$920	\$966	\$565
value of total property	\$654	\$2,958	\$3,107	\$1,816
has any property	0.156	0.689	0.714	0.505
<i>Geography</i>				
New England	0.089	0.096	0.095	0.100
Mid Atlantic	0.225	0.230	0.231	0.223
East North Central	0.239	0.234	0.242	0.173
West North Central	0.100	0.096	0.101	0.057
South Atlantic	0.152	0.150	0.142	0.209
East South Central	0.116	0.111	0.105	0.153
West South Central	0.053	0.054	0.053	0.064
Mountain	0.008	0.010	0.010	0.009
Pacific	0.017	0.020	0.021	0.012

Source: Ruggles and Sobek et al. (2003).

Table 2:
Average Value of Property Owned, Share of Property Owned by Top 1% of Wealth Holders, and Share
Owning Any Wealth, by State and Region, 1870

	N. obs.	Real Property			Personal Property			Total Property		
		Average	Share of top 1%	Any Property	Average	Share of top 1%	Any Property	Average	Share of top 1%	Any Property
<i>USA</i>	75,567	\$2,038	0.268	0.483	\$920	0.383	0.628	\$2,958	0.279	0.690
<i>New England</i>	7,225	\$2,207	0.268	0.539	\$1,651	0.497	0.614	\$3,858	0.327	0.696
Connecticut	1,092	\$3,138	0.267	0.536	\$3,068	0.581	0.616	\$6,205	0.406	0.701
Maine	1,242	\$1,341	0.132	0.747	\$753	0.270	0.746	\$2,093	0.155	0.831
Massachusetts	3,017	\$2,161	0.337	0.418	\$1,694	0.457	0.508	\$3,855	0.346	0.599
New Hampshire	734	\$1,963	0.156	0.659	\$1,283	0.308	0.726	\$3,246	0.200	0.779
Rhode Island	435	\$2,688	0.517	0.400	\$1,701	0.478	0.563	\$4,389	0.474	0.667
Vermont	705	\$2,440	0.134	0.657	\$1,207	0.169	0.745	\$3,647	0.128	0.803
<i>Mid Atlantic</i>	17,351	\$2,740	0.271	0.467	\$1,230	0.402	0.643	\$3,970	0.263	0.705
New Jersey	1,829	\$2,876	0.220	0.439	\$1,045	0.294	0.648	\$3,921	0.223	0.700
New York	8,847	\$2,857	0.294	0.458	\$1,298	0.418	0.583	\$4,156	0.288	0.663
Pennsylvania	6,675	\$2,547	0.241	0.487	\$1,191	0.371	0.720	\$3,738	0.242	0.764
<i>East North Central</i>	17,702	\$2,693	0.220	0.622	\$918	0.339	0.743	\$3,610	0.217	0.815
Illinois	4,923	\$2,990	0.280	0.574	\$1,079	0.420	0.740	\$4,068	0.291	0.802
Indiana	3,233	\$2,408	0.163	0.609	\$815	0.288	0.760	\$3,223	0.178	0.825
Michigan	2,360	\$2,497	0.177	0.699	\$866	0.278	0.736	\$3,363	0.188	0.824
Ohio	5,198	\$2,931	0.197	0.595	\$919	0.293	0.734	\$3,850	0.204	0.805
Wisconsin	1,988	\$2,031	0.133	0.745	\$743	0.252	0.751	\$2,774	0.144	0.849
<i>West North Central</i>	7,226	\$2,123	0.248	0.610	\$872	0.255	0.792	\$2,995	0.229	0.840
Iowa	2,211	\$2,476	0.145	0.686	\$993	0.184	0.826	\$3,469	0.139	0.879
Kansas	752	\$1,484	0.117	0.585	\$647	0.168	0.771	\$2,131	0.113	0.828
Minnesota	858	\$1,791	0.210	0.717	\$710	0.260	0.780	\$2,501	0.206	0.840
Missouri	3,122	\$2,157	0.344	0.526	\$906	0.332	0.781	\$3,063	0.317	0.815
Nebraska	234	\$1,926	0.273	0.697	\$721	0.244	0.799	\$2,646	0.253	0.880
South Dakota	47	\$638	0.267	0.596	\$266	0.200	0.511	\$905	0.106	0.702
<i>South Atlantic</i>	11,351	\$972	0.364	0.325	\$417	0.455	0.442	\$1,388	0.354	0.497
District of Columbia	269	\$2,161	0.370	0.242	\$749	0.476	0.461	\$2,910	0.397	0.487
Florida	388	\$335	0.258	0.271	\$342	0.460	0.376	\$677	0.295	0.443
Georgia	2,334	\$536	0.338	0.293	\$295	0.271	0.452	\$831	0.284	0.490
Maryland	1,387	\$1,760	0.258	0.334	\$771	0.368	0.500	\$2,531	0.256	0.553
North Carolina	2,050	\$455	0.292	0.384	\$229	0.259	0.429	\$684	0.235	0.512
South Carolina	1,547	\$583	0.551	0.223	\$321	0.628	0.301	\$903	0.562	0.346
Virginia	2,347	\$1,066	0.323	0.310	\$298	0.324	0.399	\$1,364	0.300	0.448
West Virginia	789	\$1,654	0.277	0.504	\$790	0.497	0.705	\$2,444	0.324	0.782
Delaware	240	\$4,098	0.341	0.458	\$1,460	0.362	0.654	\$5,559	0.349	0.733

Table 2 continued

	N. obs.	Real Property			Personal Property			Total Property		
		Average	Share of top 1%	Any Property	Average	Share of top 1%	Any Property	Average	Share of top 1%	Any Property
<i>East South Central</i>	8,375	\$976	0.338	0.362	\$531	0.340	0.552	\$1,507	0.312	0.593
Alabama	2,040	\$400	0.370	0.279	\$265	0.315	0.427	\$665	0.304	0.471
Kentucky	2,393	\$1,722	0.295	0.486	\$866	0.382	0.679	\$2,588	0.287	0.730
Mississippi	1,702	\$541	0.404	0.250	\$371	0.361	0.429	\$912	0.331	0.456
Tennessee	2,240	\$1,035	0.296	0.388	\$536	0.303	0.625	\$1,572	0.249	0.663
<i>West South Central</i>	4,076	\$769	0.475	0.318	\$385	0.322	0.504	\$1,154	0.367	0.550
Arkansas	958	\$638	0.406	0.400	\$436	0.411	0.624	\$1,074	0.392	0.664
Louisiana	1,582	\$881	0.635	0.198	\$288	0.397	0.346	\$1,170	0.517	0.399
Texas	1,536	\$734	0.270	0.391	\$453	0.219	0.593	\$1,187	0.199	0.633
<i>Mountain</i>	761	\$462	0.323	0.449	\$496	0.313	0.432	\$957	0.274	0.556
Arizona	23	\$378	0.460	0.435	\$424	0.513	0.522	\$802	0.379	0.522
Colorado	94	\$1,188	0.358	0.404	\$533	0.119	0.479	\$1,721	0.278	0.596
Idaho	39	\$1,047	0.490	0.385	\$1,117	0.321	0.436	\$2,164	0.379	0.513
Montana	66	\$87	0.350	0.121	\$1,040	0.175	0.455	\$1,126	0.169	0.455
New Mexico	199	\$186	0.230	0.492	\$228	0.599	0.241	\$414	0.419	0.508
Utah	186	\$440	0.159	0.683	\$338	0.239	0.629	\$778	0.138	0.720
Nevada	134	\$488	0.459	0.336	\$717	0.375	0.433	\$1,204	0.341	0.507
Wyoming	20	\$13	1.000	0.050	\$35	0.571	0.100	\$48	0.684	0.100
<i>Pacific</i>	1,500	3231.13	0.505	0.459	\$1,705	0.393	0.656	\$4,936	0.385	0.705
California	1,264	\$3,568	0.481	0.426	\$1,813	0.412	0.633	\$5,381	0.400	0.681
Oregon	187	\$1,570	0.131	0.663	\$1,120	0.182	0.813	\$2,690	0.084	0.856
Washington	49	\$886	0.184	0.510	\$1,149	0.213	0.653	\$2,035	0.201	0.735

Source: Ruggles and Sobek et al. (2003).

Note: For personal property the share holding any property reflects the fraction of responses indicating ownership of \$100 or more worth of personal property.

Table 3:
Probit Estimates of the Determinants of Property Ownership, 1870

	Probability Real Property>0			Probability Real Property>100			Probability Total Property>0		
	dF/dx	Std. ERR	P> z	dF/dx	Std. ERR	P> z	dF/dx	Std. ERR	P> z
<i>Personal Characteristics</i>									
Black	-0.3455	0.0066	0.000	-0.3423	0.0080	0.000	-0.3261	0.0082	0.000
Female	-0.0638	0.0108	0.000	-0.1262	0.0104	0.000	-0.1080	0.0099	0.000
Foreign born	-0.0033	0.0052	0.522	-0.1189	0.0050	0.000	-0.0833	0.0048	0.000
Literate	0.1297	0.0063	0.000	0.1155	0.0062	0.000	0.0971	0.0058	0.000
Disability	-0.1374	0.0568	0.024	-0.2508	0.0627	0.000	-0.2072	0.0624	0.000
Age	0.0359	0.0009	0.000	0.0226	0.0008	0.000	0.0218	0.0007	0.000
Age squared	-0.0003	0.0000	0.000	-0.0002	0.0000	0.000	-0.0002	0.0000	0.000
<i>Urbanization^a</i>									
City 25-100 thousand	-0.1334	0.0091	0.000	-0.0745	0.0096	0.000	-0.0766	0.0091	0.000
City 100 thousand +	-0.2796	0.0058	0.000	-0.1069	0.0070	0.000	-0.1576	0.0069	0.000
<i>Occupation^b</i>									
Professional	0.2876	0.0113	0.000	0.2289	0.0076	0.000	0.1786	0.0064	0.000
Farmer	0.4606	0.0056	0.000	0.3751	0.0045	0.000	0.3275	0.0040	0.000
Managerial	0.3451	0.0077	0.000	0.2851	0.0046	0.000	0.2296	0.0037	0.000
Clerical	0.1890	0.0219	0.000	0.1536	0.0156	0.000	0.1258	0.0131	0.000
Sales	0.1720	0.0175	0.000	0.1581	0.0121	0.000	0.1260	0.0103	0.000
Craft	0.2131	0.0076	0.000	0.1416	0.0058	0.000	0.1290	0.0048	0.000
Operative	0.1148	0.0089	0.000	0.0900	0.0069	0.000	0.0743	0.0059	0.000
Service	0.1207	0.0183	0.000	0.0806	0.0132	0.000	0.0688	0.0111	0.000
Non-occupational	0.2262	0.0115	0.000	0.1196	0.0092	0.000	0.1025	0.0078	0.000
<i>Region^c</i>									
Mid-Atlantic	-0.0046	0.0078	0.558	0.0762	0.0069	0.000	0.0585	0.0063	0.000
East North Central	0.0512	0.0078	0.000	0.1026	0.0068	0.000	0.0973	0.0061	0.000
West North Central	0.0133	0.0094	0.155	0.1327	0.0077	0.000	0.1061	0.0069	0.000
South Atlantic	-0.0990	0.0087	0.000	-0.0480	0.0086	0.000	-0.0613	0.0081	0.000
East South Central	-0.1108	0.0091	0.000	0.0365	0.0087	0.000	-0.0024	0.0083	0.769
West South Central	-0.1169	0.0111	0.000	0.0080	0.0106	0.452	-0.0213	0.0101	0.032
Mountain	-0.0211	0.0204	0.302	-0.1482	0.0205	0.000	-0.1011	0.0194	0.000
Pacific	-0.0219	0.0154	0.157	0.0789	0.0132	0.000	0.0485	0.0122	0.000
Obs. P	0.4825			0.6282			0.6895		
Pred. P (at x-bar)	0.4498			0.6526			0.7330		
Pseudo R-Squared	2613			0.2378			0.2554		

^a Excluded category is places with population less than 25,000.

^b Excluded category is laborers.

^c Excluded region is New England

Notes and source: Ruggles and Sobek et al. (2003). Coefficients are from transformed probits and show the change in probability of a change in the independent variable.

Table 4: OLS Estimates of the Determinants of the Value of Property Owned, 1870

	Real Property			Personal Property			Total Property		
	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t	Coef.	Std. Err.	P> t
<i>Personal Characteristics</i>									
Black	-0.4779	0.0452	0.000	-0.3142	0.0274	0.000	-0.6976	0.0308	0.000
Female	-0.5366	0.0338	0.000	-0.6433	0.0280	0.000	-0.6188	0.0327	0.000
Foreign born	-0.1660	0.0144	0.000	-0.2597	0.0119	0.000	-0.1271	0.0140	0.000
Literate	0.6809	0.0203	0.000	0.4685	0.0162	0.000	0.7028	0.0188	0.000
Disability	-0.8604	0.1932	0.000	-0.7462	0.1811	0.000	-0.7486	0.2010	0.000
Age	0.0732	0.0026	0.000	0.0597	0.0021	0.000	0.1032	0.0024	0.000
Age squared	-0.0006	0.0000	0.000	-0.0005	0.0000	0.000	-0.0008	0.0000	0.000
<i>Urbanization^a</i>									
City 25-100 thousand	0.6846	0.0337	0.000	0.0925	0.0259	0.000	0.1724	0.0299	0.000
City 100 thousand +	0.9900	0.0288	0.000	0.2389	0.0188	0.000	0.0216	0.0224	0.336
<i>Occupation^b</i>									
Professional	1.2589	0.0409	0.000	1.1851	0.0306	0.000	1.4809	0.0367	0.000
Farmer	1.0457	0.0240	0.000	0.8473	0.0166	0.000	1.3489	0.0191	0.000
Managerial	1.4614	0.0311	0.000	1.6918	0.0227	0.000	1.8840	0.0268	0.000
Clerical	0.9449	0.0793	0.000	0.7325	0.0548	0.000	0.9872	0.0655	0.000
Sales	0.9426	0.0611	0.000	0.7204	0.0426	0.000	0.9233	0.0508	0.000
Craft	0.4422	0.0280	0.000	0.2365	0.0202	0.000	0.5179	0.0232	0.000
Operative	0.3733	0.0325	0.000	0.2395	0.0233	0.000	0.3815	0.0267	0.000
Service	0.6343	0.0713	0.000	0.3710	0.0484	0.000	0.5135	0.0556	0.000
Non-occupational	1.1743	0.0393	0.000	1.0545	0.0311	0.000	1.3901	0.0362	0.000
<i>Region^c</i>									
Mid-Atlantic	0.3254	0.0212	0.000	-0.0435	0.0179	0.015	0.0546	0.0211	0.010
East North Central	0.1403	0.0205	0.000	-0.2268	0.0177	0.000	-0.0441	0.0208	0.034
West North Central	-0.0798	0.0244	0.001	-0.1844	0.0205	0.000	-0.2083	0.0244	0.000
South Atlantic	-0.5663	0.0253	0.000	-0.5588	0.0210	0.000	-0.6843	0.0248	0.000
East South Central	-0.5719	0.0267	0.000	-0.3645	0.0217	0.000	-0.6155	0.0258	0.000
West South Central	-0.7640	0.0350	0.000	-0.4735	0.0273	0.000	-0.7129	0.0325	0.000
Mountain	-1.1262	0.0611	0.000	-0.1541	0.0569	0.007	-0.6418	0.0630	0.000
Pacific	-0.0544	0.0448	0.225	0.1090	0.0354	0.002	-0.0092	0.0424	0.829
Constant	4.0618	0.0690	0.000	3.8832	0.0520	0.000	3.0712	0.0612	0.000
Adj. R-squared	0.2845			0.2621			0.3282		
N obs.	36,462			47,474			52,103		

^a Excluded category is places with population less than 25,000.

^b Excluded category is laborers.

^c Excluded region is New England

Notes and source: Ruggles and Sobek et al. (2003). The dependent variable in each regression is the log of the value of property owned. Regressions estimated for those reporting positive property values (values greater than or equal to \$100 for personal property).

Table 5:
Within Group Inequality, Selected Population Groups, 1870

	N. obs.	Real Property	Personal Property	Within Group Theil Index Total Property
<i>By Age</i>				
0-19	534	3.388	2.777	2.697
20-29	13,854	2.045	1.472	1.563
30-39	20,616	1.701	1.524	1.433
40-49	18,115	1.536	1.988	1.507
50-59	12,699	1.408	1.929	1.400
60-69	9,749	1.502	2.220	1.542
<i>By Race</i>				
White	66,069	1.563	1.890	1.482
Black	9,498	3.697	2.299	2.698
<i>By Occupation</i>				
Misc	8,442	2.174	2.600	2.086
Professionals	1,838	1.499	1.327	1.234
Farmers	27,673	0.980	1.017	0.876
Managers and Clerical	4,375	1.566	1.740	1.446
Clerical and Kindred	573	1.502	1.932	1.352
Salesmen & Clerks	987	2.744	1.831	2.221
Craftsmen	9,216	1.588	1.604	1.370
Operatives	6,311	2.033	1.941	1.741
Service Workers	1,460	2.570	2.277	2.130
Laborers	14,692	2.535	1.827	1.956
<i>By Nativity</i>				
Native	56,405	1.641	1.951	1.560
Foreign	19,162	1.839	2.137	1.724
<i>By Urbanization</i>				
Less than 25,000	64,247	1.436	1.692	1.345
Cities 25,000-100,000	3,330	2.283	2.892	2.271
Cities larger than 100,000	7,990	2.791	2.858	2.567
<i>By Region</i>				
New England	7,225	1.564	2.405	1.732
Middle Atlantic	17,351	1.624	2.035	1.555
East North Central	17,702	1.260	1.568	1.195
West North Central	7,226	1.379	1.200	1.180
South Atlantic	11,351	2.255	2.216	2.069
East South Central	8,375	2.070	1.812	1.797
West South Central	4,076	2.686	1.738	2.101
Mountain	761	1.877	1.852	1.610
Pacific	1,500	2.464	2.014	2.045

Notes and Sources: Ruggles and Sobek et al. (2003). See text for an Theil Index formula.

Table 6:
National Inequality Arising From Within and Between Group Inequality, for Selected Population Subgroups, 1870

	Real Property		Personal Property		Total Property	
	Within group	Between Group inequality	Within group inequality	Between Group inequality	Within group inequality	Between Group inequality
By Age	1.554	0.133	1.896	0.103	1.477	0.123
By Race	1.572	0.115	1.893	0.105	1.488	0.112
By Occupation	1.414	0.273	1.566	0.432	1.289	0.311
By Nativity	1.684	0.003	1.985	0.013	1.594	0.006
By Urbanization	1.678	0.009	1.972	0.027	1.586	0.014
By Region	1.598	0.089	1.903	0.095	1.516	1.516
	As a Percentage of Total Inequality					
By Age	92.1	7.9	94.8	5.2	92.3	7.7
By Race	93.2	6.8	94.7	5.3	93.0	7.0
By Occupation	83.8	16.2	78.4	21.6	80.6	19.4
By Nativity	99.8	0.2	99.3	0.7	99.6	0.4
By Urbanization	99.5	0.5	98.7	1.3	99.1	0.9
By Region	94.7	5.3	95.2	4.8	94.7	5.3

Notes and Sources: Ruggles and Sobek et al. (2003). See text for additional information.

Table 7:
OLS Estimates of Determinants of State Inequality, 1870

	Specification 1		Specification 2		Specification 3	
	Coef.	Std Err.	Coef.	Std. Err.	Coef.	Std. Err.
<i>Real Property Inequality</i>						
Fraction Black	2.805	0.354	1.901	0.506	2.010	0.518
Fraction in City > 25,000	0.916	0.365	1.085	0.351	1.149	0.357
Fraction in Manufacturing	2.856	0.755	3.973	0.853	4.537	1.024
Fraction Literate			-1.544	0.649	-1.201	0.734
Average Age (years)					-0.041	0.041
Constant	0.979	0.114	1.859	0.385	2.557	0.799
Adjusted R-Squared	0.638		0.677		0.677	
<i>Personal Property Inequality</i>						
Fraction Black	1.098	0.461	-0.539	0.610	-0.844	0.585
Fraction in City > 25,000	1.361	0.475	1.668	0.424	1.489	0.404
Fraction in Manufacturing	0.922	0.983	2.944	1.028	1.363	1.157
Fraction Literate			-2.796	0.782	-3.758	0.830
Average Age (years)					0.114	0.046
Constant	1.367	0.148	2.961	0.464	1.005	0.903
Adjusted R-Squared	0.237		0.418		0.488	
<i>Total Property Inequality</i>						
Fraction Black	1.985	0.355	0.744	0.471	0.619	0.479
Fraction in City > 25,000	1.185	0.365	1.418	0.327	1.344	0.330
Fraction in Manufacturing	1.152	0.756	2.685	0.795	2.036	0.947
Fraction Literate			-2.120	0.604	-2.514	0.679
Average Age (years)					0.047	0.038
Constant	1.042	0.114	2.251	0.359	1.449	0.739
Adjusted R-Squared	0.514		0.625		0.631	
<i>Summary Statistics</i>						
Variable	Obs	Mean	Std. Dev.	Min	Max	
Real Property Inequality	42	1.712	0.637	0.757	3.668	
Personal Property Inequality	42	1.747	0.572	0.843	3.104	
Total Property Inequality	42	1.546	0.551	0.721	2.986	
Fraction Black	42	0.139	0.187	0.000	0.590	
Fraction in City > 25,000	42	0.110	0.168	0.000	0.857	
Fraction in Manufacturing	42	0.085	0.089	0.010	0.488	
Fraction Literate	42	0.563	0.174	0.135	0.850	
Average Age (years)	42	23.672	2.619	20.534	29.570	

Notes and Sources: Ruggles and Sobek et al. (2003). Coefficients in bold are statistically significant at the 95% confidence level or greater.

Figure 1:
Relationship Between the Share of Wealth Owned by the Top 1 Percent and
The Theil Index of Inequality

