"Wealth During Wartime: Mobility in Real and Personal Property Ownership in the U.S., 1860-70"

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ABSTRACT

Using a new sample of 8,195 white, native-born American males located in both the 1860 and 1870 U.S. federal census manuscript schedules, I assess wealth mobility over the decade that included the Civil War. The impact of Emancipation on the wealth of those who owned slaves in 1860 (when slaves were a component of personal wealth) is explored with a new sub-sample of 401 Southerners linked to the slave schedules of the census. Previous studies (Steckel, 1990) that have examined mid-19th century real estate wealth mobility have been unable to assess the extent of mobility in *total* wealth (as respondents were asked to report both real wealth and personal wealth only in 1860 and 1870, two census that until now had not been linked on a large scale). I also compare wealth mobility in the 1860s to wealth mobility a century later in the 1960s and 1970s (using the NLS).

INTRODUCTION

The impact of the American Civil War on the nation's postwar economy was being discussed even as the Confederates were stacking their arms at Appomattox Court House.[1] Since the work of Charles Beard (1927) and Louis Hacker (1940), several generations of scholars have tried to identify and quantify that impact.[2] The war's effects in the South in particular – on the labor supply of former slaves

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The 1860-70 linked data set was created with the assistance of Marianne Hinds, Basit Zafir, and Tim Lin. The STATA™ code to perform the mobility decompositions was generously provided by Philippe Van Kerm..

[1]For example, three days before the surrender, a prominent national Methodist periodical, *The Christian Advocate and Journal* (April 6, 1865, "Social Disintegration in the South"), speculated on the fates of the former slave holders, the former slaves, and the South's white middle class. The prospects for the former slave masters were seen as the most dismal among these three groups: "[T]hey must dwindle and die out, and as a class become extinct."

[2]Some of this debate is surveyed in O'Brien (1988).

and on the region's per capita income – were substantial and long-lasting. Its effects at the national level, however, are now no longer seen as the "watershed" claimed by the Beard-Hacker Thesis.[3] Though the costs of the war were enormous – it was still imposing a cost equal to nearly a fifth of per capita consumption as late as 1869 (Goldin and Lewis, 1975, Table 10) – industrialization proceeded in the postwar years along the same trajectory it had traced before the war (Engerman, 1966) and the distribution of the nation's wealth did not change perceptibly between 1860 and 1870.[4]

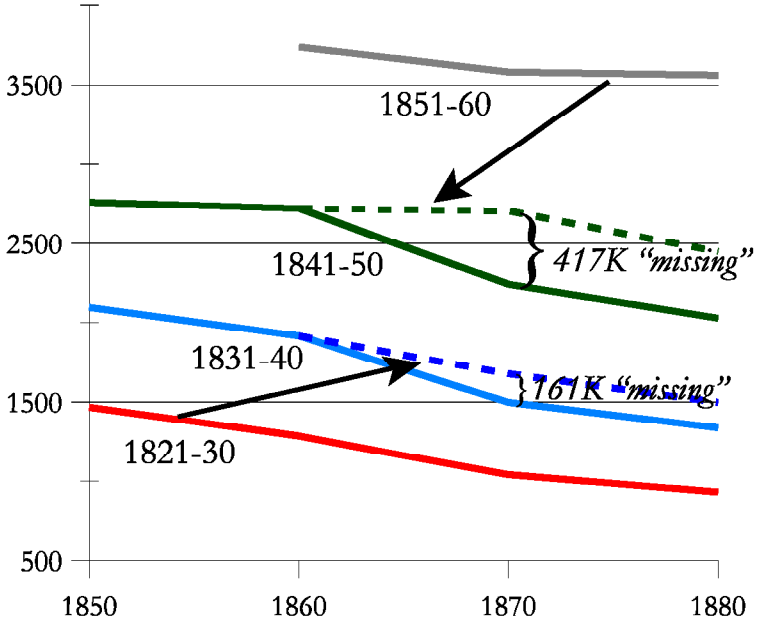


Figure 1. White, Native-Born Males (000s) by Cohort and Year.

The last of these "non-effects" is particularly striking in light of two facts: (1) the war killed more than 600,000 individuals, the vast majority of whom were prime-age males whose deaths substantially reduced the supply of labor across the nation (see Figure 1); (2) emancipation transformed 4 million

[3]The withdrawal of former slaves from the labor force is examined in Ransom and Sutch (2001); the decline in Southern per capita income (for whites, it fell from $120 in 1857 to $80 in 1879) is shown in Ransom and Sutch (1979).

[4]The Gini coefficient for wealth held by free white males in 1860 was 0.832; for wealth held by all adult males in 1870, it was 0.833 (Soltow, 1975, p. 103).

slaves from $4 billion in personal wealth for Southern slave holders into 4 million free individuals who no longer appeared in the portfolios of their former masters and who held very little material wealth themselves.[5] Taken together, these developments should have made the 1860s a decade of perhaps unprecedented rearrangement of the nation's wealth holdings. At the aggregate level, when the decade's wealth reshuffling was done, the level of inequality was just as it had been at the start. But how much movement within a distribution unchanged in its general contours actually occurred in these years?

Though an analysis of wealth mobility in the 1860s is illuminating in its own right, it also bears on a larger literature on the link between economic mobility and redistributive policies today. Both Piketty (1994) and Bénabou and Ok (2001) examine how perceptions of mobility – even perceptions formed at some point in the distant past – can play in establishing and maintaining support for a particular regime of taxes and transfers. Where the expectation, perhaps based on historical experience, is that individual effort is sufficient to assure upward economic mobility, short-run support by the poor for a regime of high taxes on the rich and high transfers to the poor will be tempered by the possibility that the poor will themselves suffer from this arrangement when they succeed at moving up. understanding how mobility have evolved in the U.S. over the last century may help us understand how the U.S. tax and transfer regime has come to differ so strikingly from that of many European countries.

[5]The data are from the IPUMS 1850-80 samples (Ruggles et al., 2004). The "missing" members of the 1831-40 birth cohort assume this group had the same mortality rate 1860-70 as the 1821-30 cohort had experienced 1850-60, but its own actual mortality 1870-80; the "missing" members of the 1841-50 birth cohort assume this group had the same mortality rate 1860-70 as the 1851-60 cohort had experienced 1870-80, but its own actual mortality 1870-80. This exercise understates the number of members from the 1831-40 and 1841-50 birth cohorts"missing" by 1880 if mortality rates 1870-80 were higher than they would have been in the absence of the war.

DATA

To assess mobility in total wealth over the Civil War decade, we require information on the wealth possessed by the same set of individuals at the start and end of the decade.[6] The 1860 and 1870 U.S. Federal Censuses were the nation's only enumerations to require that respondents report the entire value of their wealth (both (1) real wealth, which consisted of land, buildings, and the value of improvements; and (2) personal wealth, which consisted of everything else of value). As a result, mobility in total wealth can be assessed only for this pair of censuses. The Civil War decade is then the only time when such calculations can be made until the late twentieth century when modern, longitudinal datasets (such as the National Longitudinal Survey) become available.

The recent collection of a new sample of white, native-born American males linked from the 1870 Federal census to the manuscript schedules of the 1860 Federal census provides the desired information. The sample was created by randomly drawing 20,971 individuals age 25-75 from the 1870 IPUMS (Ruggles et al., 2004) and searching them in the on-line Ancestry.com 1860 Federal census database using their name (with allowance for alternate rendering of given name and surname), age (plus or minus 5 years), state of birth, and the names, ages, and states of birth for family present in 1870 who should have been present in 1860 as well. Of those sought, 8,195 were successfully linked. The linkage

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[6] Lee (2005) examines the wealth accumulation of Union Army veterans over the 1860-70 period, and is closest to the work that follows here. This might seem a natural question for social historians who have examined mobility in the wealth distribution and the hierarchy of occupations across a variety of decades and locations in the nineteenth century since the work of Thernstrom (1964). But social historians have been conspicuous by their absence in discussions of the Civil War decade (Vinovskis, 1989). Two studies of Northern cities are exceptions: Frisch (1972) and Johnson (1999). The latter pays particular attention to the differences between men who served in the war and those who did not. For the South, both Wiener (1976) and Campbell (1982) examine turnover in the plantation elite. All of these studies (with the exception of Lee's work on Union Army veterans) suffer from a shortcoming common to work by social historians on nineteenth century communities: they focus exclusively on individuals who remained in the same city or county for a decade or mor, at a time when 60% of the population observed at some time t was not observed in the same place at time t+10. This would not be a crippling flaw if the "persisters" and "non-persisters" were both randomly drawn from the population at time t. Given the positive cost of migration and the extent to which migration is correlated with age, marital status, and wealth, it is unlikely that the experience between time t and time t+10 of the population of non-migrants adequately represents the experience of the full community population present at time t.

rate of 38.6% can be almost entirely accounted for by the suspected under-enumeration in the 1860 census, by plausible estimates of severe mis-reporting in 1860 or 1870 of the key characteristics (name, age, birthplace), by shortcomings in the on-line database, and by multiple matches (discarded here).[7]

The linked data contain, for each individual, his location in 1860 and 1870 (state, county, and subdivision – ward in cities, township or town in more rural places), his real estate wealth and personal wealth in 1860 and 1870, and his parents' wealth if the individual was still living with them in 1860. For individuals who were located in a state that contained slaves in 1860 and who reported that they (or their parents) possessed any personal wealth in 1860, linkage to the slave schedules of the 1860 Federal census was attempted.[8] Such an individual, "Saml P. Ryland" of King & Queen County, Virginia, is shown in Line 18 of Figure 1 (the population schedule) and the second column of Line 23 of Figure 2 (the slave schedule). The 1860 population schedule reports that he was a farmer and owned $15,000 in real estate and $55,226 in personal property; the 1860 slave schedule reports that he owned 17 slaves (8 females and 9 males, ranging in age from 1 to 91). Of those sought, 401 were identified as slave owners in the slave schedules. The age and sex of each slave they reported owning was recorded.

Linkage to the slave schedule was straightforward, as the schedule was created at the same time, and in the same order, as the population schedule. Within a city ward, town, or township, it was necessary only to compare the two lists household by household to locate matches. The linkage rate achieved was broadly consistent with the known fraction of the Southern population that owned slaves

[7]The sample is available at http://www.faculty.econ.northwestern.edu/faculty/ferrie/data/linked6070.html. This is a preliminary, though nationally-representative, version of a larger sample being collected in cooperation with the Minnesota Population Center. When completed, it will contain more than 30,000 individuals.

[8]Before 1850, the U.S. census recorded both slaves and free individuals on the same schedule. In 1850 and 1860, slaves were recorded on a separate schedule, identified by the name of their owner, age, sex, and complexion.

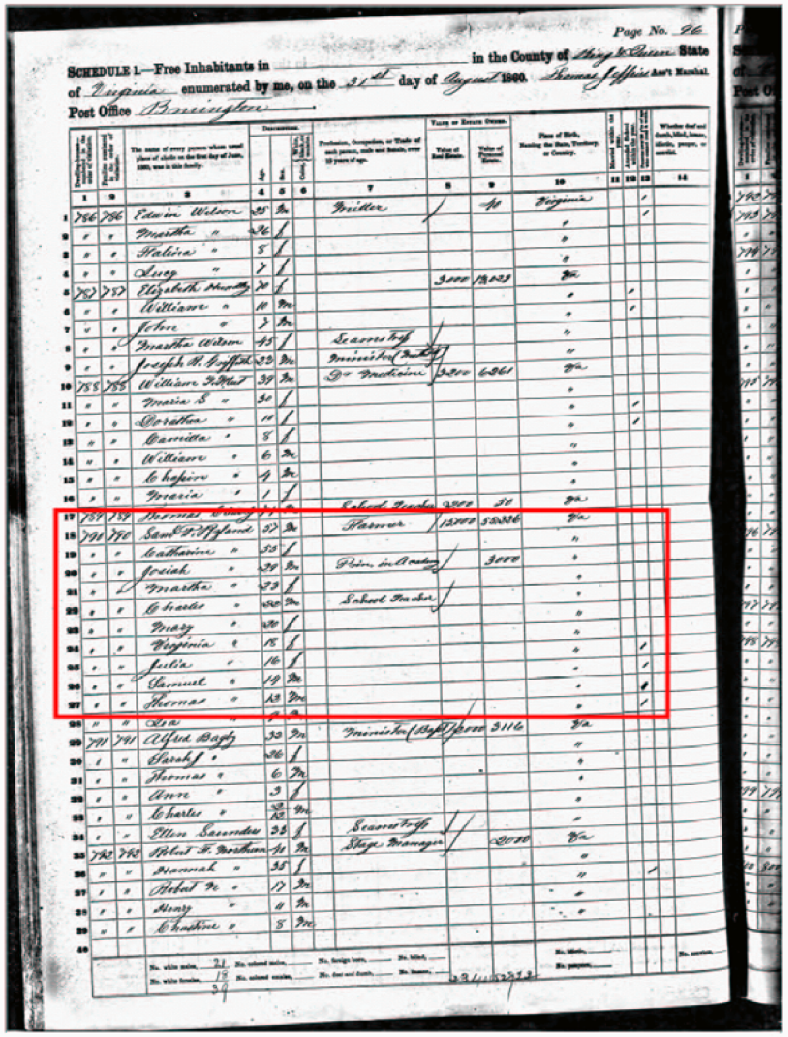


Figure 2. 1860 Population Schedule

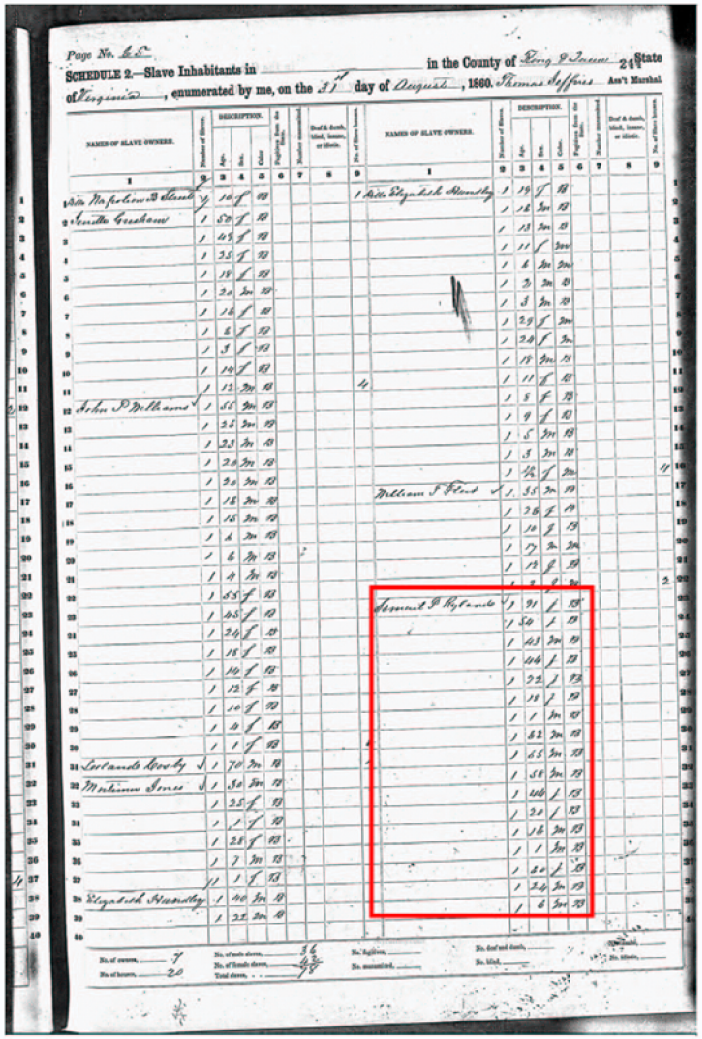


Figure 3. 1860 Slave Schedule.

in 1860. Of the 1,865 individuals sought, 401 were located, together with 3,889 slaves. In the 1860 Census, in the states with any slaves, the total white male population age 15-65 was roughly 2.25 million. In these states, there were 394,000 slave owners reported in the slave schedules, so the slave owning fraction was 17.5 percent.[9] In the linked 1860-70 sample, there were 2,064 males age 15-65 in 1860 in the slave holding states, so the slave owning fraction was 19.4 percent, somewhat higher than in the general population. Part of this discrepancy can be accounted for by the absence of immigrants from the linked sample: immigrants were somewhat less likely to own slaves than the native-born.[10] The average number of slaves owned among those who owned any slaves in the linked sample was 9.7, compared to 10.0 slaves per slave owner in the Southern population (with the latter slightly understated by slave owners appearing more than once in the slave schedules).

Table 1 compares the 1870 characteristics of the linked sample (Column 2) to those of the entire group sought in the 1860 manuscripts (Column 1). The marginal effects from a binary probit regression in which the linked individuals (dependent variable=1) are compared to the entire population sought (dependent variable=0). Note that each individual who was linked enters the regression twice: once as a linked observation (1) and once as part of the original population (0); this is because the objective is to see how the linked observations differ from the general population, rather than simply how they differ from the unlinked population.

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[9]These calculations were based on published tabulations by state from the 1860 census reproduced in Haines et al. (2004). The slave owning fraction in the total Southern male population age 15-65 shown here (17.4%) is a slight overestimate, as the number of slave owners reported in the published census volumes includes both women and some individuals who appeared more than once (if they owned slaves in more than one county, or if the slaves they owned even within a single county were hired out to several farmers in the county).

[10]This follows from an examination of those males still living with their parents in 1860: those with an immigrant parent were less likely to own slaves than those with native-born parents. Because the linked sample includes only native-born individuals at this time (though they would have still entered the sample if either parent was foreign-born), this was the only way to evaluate the difference in the propensity to own slaves by nativity. The published census population total do not make it possible to separate native-born and foreign-born slave owners.

1870 Characteristic	White Native Males 25-75 (1)	Linked to 1860 (2)	Probit $\partial P/\partial X$ (3)
Age			
under 35	29.0%	19.4	–
35-49	38.9	40.6	.038***
50+	32.0	40.0	.065***
Region			
North East	36.3	41.0	–
North Central	35.9	36.0	-.011
South	25.0	21.1	-.046***
Mountain & Pacific	2.7	1.9	-.034*
Birth State=Residence State	54.9	57.9	.029***
Size of Location			
under 2,500	82.5	84.5	–
2,500-9,999	5.5	5.8	.002
10,000-49,000	5.2	5.1	-.008
50,000+	6.9	4.7	-.066***
Spouse Absent	7.7	5.7	-.048***
No Child > 10	47.9	35.3	-.069***
Illiterate	9.0	7.8	-.014
Occupation			
White Collar	11.4	10.7	–
Farmer	51.0	55.4	.009
Skilled/Semi-Skilled	22.2	21.6	.012
Unskilled	15.4	12.3	-.014
Real Estate Wealth			
none	39.3	31.0	–
0 < R.E. < $1,000	15.9	15.7	.019**
$1,000+	44.8	53.3	.027***
Personal Estate Wealth			
none	21.6	16.1	–
0 < P.E. < $1,000	52.5	52.9	.025***
$1,000+	25.9	30.7	.030***
Pseudo-R^2			.021
-2 Log-Likelihood			8,481.062
Observations	20,971	8,195	29,166

Note: The probit regression pools Columns (1) and (2). The dependent variable is Column 2=1, so the partial effects measure the impact (relative to the predicted probability of 0.276) of the characteristic on distinguishing a linked observation from the original population. p-value: *** < 0.01 ** < 0.5 * < 0.10

Table **1**. Characteristics of (1) All Native-Born White Males 25-75 and (2) Those Found in 1860, and Probit Regression Marginal Effects (3).

Univariate comparisons reveal that the linked sample is older, more Northeastern and less Southern, more likely to have a child over age 10, and both less likely to have no wealth (real or personal) and more likely to have more than $1,000 in wealth than the overall population of white, native-born males age 25-75 in 1870. The marginal effects in Column (3) show that several of these differences remain even in a multivariate analysis: for example, the marginal effects for "Age 50+" (6.5 percentage points more likely than someone under 35 to be linked compared to the original population), "Size of Location 50,000+" (6.6 percentage points less likely than someone in a place of fewer than 2,500 people to be linked compared to the original population), and "No Child > 10" (6.9 percentage points less likely than someone with a child over age 10 to be linked compared to the original population) are all more than a fifth of the predicted probability of 0.276. Weights were generated for each linked observation to eliminate these discrepancies between the linked and general populations. When these weights are imposed, the frequencies in the linked sample exactly mimic those for the general population in Column (1), and *all* of the marginal effects in Column (3) are reduced to both substantive and statistical insignificance. These weights are used throughout the analysis.

Previous analyses of mobility in the Civil War decade have relied on samples that follow an individual only if he remained in the same city or county for the entire decade. The principal advantage of the sample introduced here is that it tracks individual regardless of their migration experience over the decade. To show what difference this makes for the analysis of wealth mobility, Table 2 presents the real, personal, and total wealth in both 1860 and 1870, and the change for each of these over the decade, for three groups: (1) individuals, like those in previous mobility studies, who were in the same county at the beginning and end of the decade; (2) individuals who changed county but not state; and (3) individuals who moved across a state boundary. The sample is limited to men who were age 25-65 in

	Same County	Different County, Same State	Different State
Real Estate, 1870	$4136.61	$2254.60	$1876.97
Real Estate, 1860	2495.85	2247.24	1619.42
△ Real Estate	1640.75	7.36	257.55
Personal Estate, 1870	1891.32	998.66	932.45
Personal Estate, 1860	1632.70	1640.88	1173.89
△ Personal Estate	258.63	-642.21	-241.44
Total Estate, 1870	6027.93	3253.26	2809.42
Total Estate, 1860	4128.55	3888.12	2793.31
△ Total Estate	1899.38	-634.85	16.11
Observations	4,813	881	909

Table 2. Wealth in 1870 and 1870 By Migration, 1860-70 (White, Native-Born Males Age 25-65 in 1860).

1860. The figures demonstrate the danger of generalizing from the experience of those who did not move to the experience of the entire population. For example, those who remained in the same county had 24% more wealth in 1860 than those who later moved, but non-movers also added substantially to their wealth over the 1860s, while movers either added nothing or lost wealth. As a result, by 1870, the non-movers had 86% more wealth than the movers. It remains to be seen why the performance of movers over the decade was so poor.[11]

WEALTH INEQUALITY OVER THE CIVIL WAR DECADE

Before examining mobility over the 1860s, it will be useful to assess how inequality changed over the decade. Soltow (1975, p. 103) shows that for the total free population, inequality in total wealth ownership measured by the Gini coefficient was unchanged from 1860 (0.832) to 1870 (0.833). By region, wealth inequality rose slightly in the North (from 0.813 to 0.816) and substantially in the South

[11]It is necessary, as in Ferrie(2000), to account for the selectivity of migration: moving out of one's county of residence is not an exogenously-imposed "treatment," but rather the result of individual maximization that reflect the expected net gain from changing locations.

(from 0.845 to 0.866). For the white population, however, inequality fell somewhat overall (from 0.832 to 0.814), with the fall greater in the South (0.845 to 0.818) than in the North (0.813 to 0.810). This is not surprising, as personal wealth in slaves disappeared from the nation's official wealth ledger with Emancipation. This reduced the personal wealth of former slave owners in the South, and increased the number of individuals with little or no wealth, mainly in the South (as the "wealth" transferred to former slaves at their Emancipation – legal title to the discounted stream of their future net earnings – was not counted as a component of personal wealth in the 1870 census).

The linked sample introduced here can be used to perform similar calculations, with two differences: (1) because the same individuals are observed in both 1860 and 1870, changes in inequality over the decade are the result of actual changes in patterns of wealth ownership rather than the result of changes in the composition of cross-sectional samples;[12] and (2) for former slave owners, it is possible to add back into their 1870 wealth the value of the slaves they possessed in 1860, and thereby get a rough sense of how the 1870 wealth distribution for Southern whites would have looked if Emancipation had not occurred, and to subtract the value of their 1860 slave holdings from the actual value of their 1860 wealth to see how wealth inequality in the South differed from that in the North if the value of slaves in the South is ignored.[13]

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[12]Using the IPUMS samples for 1860 and 1870 to generate "synthetic cohorts" (with consistency in characteristics such as year of birth and state of birth across the two cross-sections) would produce similar results.

[13]Soltow (1974, pp. 133-140) performs a similar exercise, but uses grouped data on personal wealth and slave ownership, and county-level totals, rather than data on individuals linked to their actual slave holdings. The exercise performed here assumes that the only effect of emancipation was to eliminate the dollar value of the personal wealth embodied in their slaves from the account of slave owners. It abstracts from changes in real estate values that followed from emancipation. For example, if plantation land was less valuable when the gang system could no longer be employed because former slaves could not be hired under such conditions, the calculations shown here will understate the counterfactual 1870 value of real estate wealth that slave owners would have possessed in the absence of Emancipation and thereby understate the impact of Emancipation on total wealth inequality in the South. The exercise also abstracts from changes in the ratio of real to personal wealth that may have followed Emancipation. The values assigned to the slaves of 1860 slave owners were the mid-points from five age ranges in Fogel and Engerman (1974): $75 (under 5), $425 (5-19), $780 (20-34), $500 (35-49), and $200 (50 and over).

	Total Property		Real Property		Personal Property	
	1860	1870	1860	1870	1860	1870
Total U.S.	.764	.741	.782	.761	.814	.780
	(0.008)	(0.009)	(0.008)	(0.006)	(0.008)	(0.013)
North	.748	.731	.775	.745	.782	.787
	(0.011)	(0.010)	(0.010)	(0.006)	(0.016)	(0.012)
South	.794	.725	.806	.783	.824	.688
	(0.011)	(0.014)	(0.011)	(0.010)	(0.010)	(0.022)
South with Slaves in 1870		.737				.763
		(0.012)				(0.014)
South without Slaves in 1860	.780				.804	
	(0.012)				(0.009)	

Note: "South" is the 13 states of the Confederacy (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, Virginia [excluding the counties that formed West Virginia in 1863], Kentucky, Missouri, and Tennessee). Bootstrapped standard errors in parentheses. Observations: Total U.S. 7,044; North 5,544 (1860) and 5,565 (1870); South 1,460 (1860) and 1,439 (1870).

Table **3**. Gini Coefficients for Wealth Distribution, 1860 & 1870.

Like Soltow's calculations on independent cross-sections for 1860 and 1870, observing the same individuals in both 1860 and 1870 reveals an increased equality in total wealth for the white population ($p<0.05$), with the increase greater in the South than in the North (Table 3).[14] In fact, the 1860 to 1870 decline in the Gini coefficient for total wealth in the North is not statistically significant at the 5% level, while the corresponding decline for the South is statistically significant at the 1% level. The fall in the Gini coefficient in the linked data, however, is in each case larger than that in Soltow (1974), which suggests that changes between 1860 and 1870 in the composition of the samples he uses are masking

[14]This and subsequent comparisons of Gini coefficients across groups or over time examine whether there is overlap (1) in the 84 percent confidence intervals of the coefficients, using the bootstrapped standard errors, which corresponds to testing the equality of the coefficients at the 95 percent level; or (1) in the 95 percent confidence intervals of the coefficients, using the bootstrapped standard errors, which corresponds to testing the equality of the coefficients at the 99 percent level (Payton et al., 2003).

additional declines in inequality.[15] The increased equality in personal wealth ownership in the South ($p<0.01$) is not surprising, as the war erased personal wealth in slaves. The slight increase in the inequality of the personal wealth distribution for whites in the North is not significant at the 5% level.

One way to calculate the direct impact of Emancipation on the distribution of wealth among Southern whites can be seen in the first counterfactual exercise: in the South, the elimination of wealth in slaves accounts for only 17% (0.012/0.069) of the decline in the region's total wealth inequality, and 55% (0.075/0.136) of the decline in the region's personal wealth inequality. If wealth in slaves had not been eliminated, the 1870 total and personal wealth distributions for Southern whites would have still been no less equal than those for Northern whites. None of these differences are significant at the 5% level. The fall in the gap between the North and South remains even if slavery persists to 1870.

Another way of addressing the same issues is shown in the second counterfactual exercise performed in the last line of Table 3: measuring inequality in total and personal wealth in the South after subtracting the value of the slaves actually owned in 1860 from the 1860 values of total and personal wealth. In both cases, eliminating slaves from the portfolios of these individuals, assuming everything else regarding their wealth remains unchanged, decreases inequality in total and personal wealth from the actual 1860 values. But even without slave wealth, the 1860 Southern white distributions of total and personal wealth would have remained less egalitarian than the corresponding Northern white distributions – eliminating wealth in slaves erases only 30% (0.14/.046) of the 1860 inequality gap between the North and South in total wealth, and 48% (0.020/0.042) of the gap in personal wealth. The difference between the South in 1860 without slaves and the North in 1860 is statistically significant ($p<0.01$) for total wealth but not for personal wealth.

[15]Other inequality measures (Theil's entropy measure, Atkinson's Index) produced findings similar to those shown here.,

> This popular perception of poverty is closely linked to a popular perception of opportunity – specifically, the opportunity to move out of poverty. *To the degree that poverty is not viewed as a necessarily permanent condition, it will be of less concern.*
>
> Irving Kristol (1980). [italics added]

> In the future everyone will be world-famous for 15 minutes.
>
> Andy Warhol (1968)

Though examining inequality at several points in time provides some insight into how the distribution of the economy's rewards changes over time, of greater interest how specific individuals move within a distribution over time. Neither transitory poverty nor transitory wealth is of as much concern as poverty or wealth that persists for long periods of time. The Civil War decade witnessed two developments that should have had a substantial impact on mobility within the distribution of the nation's wealth: the loss of more than 600,000 prime-age males from the labor force, and the elimination of $4 billion in wealth embodied in slaves from the portfolios of Southern slave owners. If nothing else had changed over the decade, both of these should have reduced inequality and promoted mobility in wealth ownership. But a great deal more did in fact change.

Fields, animals, and structures were destroyed and property was plundered by troops from both sides in the locations where combat occurred.[16] Figures 4 and 5 show the change in farm values and in the value of livestock between 1860 and 1870. The declines were concentrated, not surprisingly, in the South.[17] In manufacturing, though wage growth over the decade outpaced growth in capital good prices

[16]Sellers (1927, pp. 183-187) tallies the cost in the South of declines in real estate values, work animals, structures, and implements. These assets did not achieve their 1860 values again until 1900. The value of farm implements in the South in 1870, for example, was only 55% of the pre-war value; only three states (Georgia, North Carolina, and Tennessee) had recovered more than 60% of their pre-war values by 1870 (p. 186).

[17]There was, in at least some cases, a very direct correspondence between the pre-war wealth of a location in the South and the wartime destruction it suffered. For example, in mapping his route from Chattanooga to Atlanta and from Atlanta to Savannah, Gen. Sherman actually relied on maps and tables from the 1860 U.S. federal census: "Sherman had chosen his route after pouring over census reports of farm production county-by-county so that he could lead his troops through the regions richest in provisions." (Davis, 1980, p. 27)

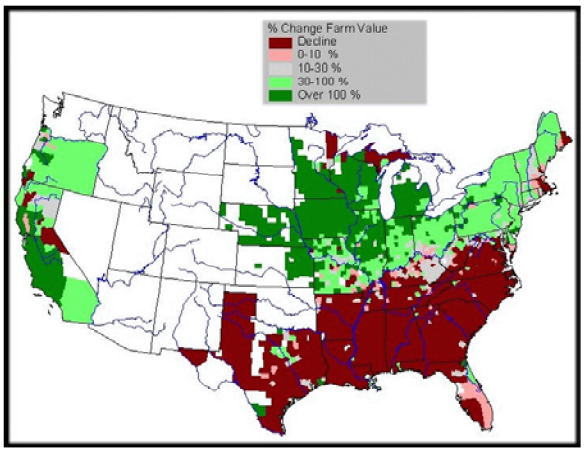


Figure 4. Change in Farm Value, 1860-70.

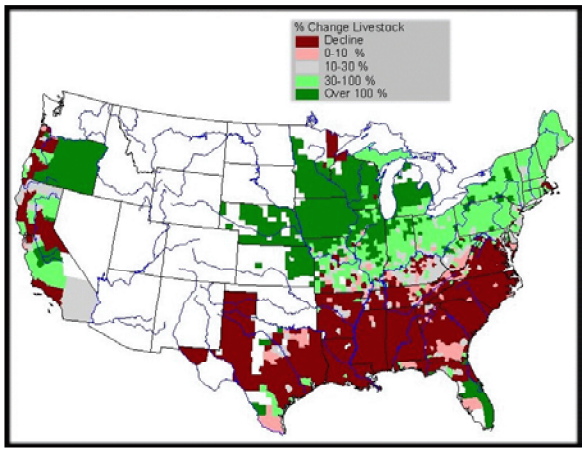


Figure 5. Change in Livestock Value, 1860-70.

(Williamson, 1974, Table 7, p. 660), leaving the relative price of labor 8% higher in 1870 than in 1860, labor's return was below capital's from 1861 through 1867; during these years, income (and wealth) were transferred from workers to owners of capital. Wages increases also lagged behind general price increases over the course of the war, resulting in a transfer from wage earners to sellers of goods and services (DeCanio and Mokyr, 1977). Even within the manufacturing labor force, long-run structural changes over the decade quite apart from those generated by the war, were apparent: substantial wage inequality emerged during the 1860s as establishment size rose and craftsmen were replaced by semi-skilled operatives.[18] The financing of the war also may have induced movement within the wealth distribution: in the South, holders of Confederate war debt saw much of their wealth erased by the South's loss, while in the North, though the Union war debt was honored, it was paid back with the proceeds of regressive taxes and with dollars worth more than the Greenbacks that had often been used to purchase them. Wartime finance thus transferred wealth on net away from Southern holders of the rebel government's debt and toward Northern holders of U.S. debt.

Though it is beyond the scope of the present paper to sort out all of these distinct forces, it is

[18] Atack et al., 2000, Table 1, p. 32. The authors caution, however, that their findings apply only to establishment wages and cannot be used to infer changes in wage inequality at the individuals level (p. 22).

possible to assess how, taken together, they fostered movement within the nation's wealth distribution between 1860 and 1870. The simplest way to see how much wealth mobility occurred over the decade is to compare the relative position of each individual in the wealth distribution for 1860 and 1870, with the distribution divided into quintiles (Table 4).[19]

1860	1870 Quintile				
Qunitile	1	2	3	4	5
1	0.45	0.21	0.17	0.10	0.07
2	0.32	0.33	0.20	0.11	0.04
3	0.16	0.21	0.33	0.22	0.08
4	0.11	0.08	0.20	0.39	0.22
5	0.09	0.04	0.09	0.19	0.58
Obs.	1,300	1,306	1,275	1,291	1,279

Table **4**. Transitions for Total Wealth, 1860-70 (Row Percent).

For each 1860 quintile, the most common outcome is to remain in the same quintile by 1870. The relationship between immobility and wealth is non-linear, however: persistence is more likely in the bottom (45%) wealth category than in the second and third (33%), but persistence rises as wealth increases from the third through the top quintiles. For the top wealth group, less than half fall to a lower wealth group over the 1860s, and only 9% fall as far as the lowest category. At the lower end, more nearly half of those who began the 1860s in the bottom fifth of the wealth distribution were still there at the end of the decade.

[19] The quintile ranges are: for 1860, (1) $0-70 (2) $75-450 (3) 460-1,431 (4) $1,435-3,800 (5) $3,820-456,000; for 1870, (1) $0-70 (2) $100-450 (3) $460-1,430 (4) 1,440-3,800 (5) $3,820-380,000. All values are nominal. The sample is limited to those 7,004 males who had moved out of their parents' homes, so mobility does not reflect the setting up of new households, though it could nonetheless reflect *inter vivos* transfers from parents, or inheritances.

1860	North 1870 Quintile					South 1870 Quintile				
Qunitile	1	2	3	4	5	1	2	3	4	5
1	0.43	0.25	0.17	0.09	0.07	0.43	0.26	0.14	0.09	0.07
2	0.30	0.37	0.19	0.09	0.04	0.22	0.41	0.19	0.14	0.03
3	0.15	0.22	0.35	0.22	0.07	0.14	0.25	0.28	0.26	0.07
4	0.09	0.07	0.24	0.41	0.20	0.09	0.15	0.19	0.31	0.26
5	0.08	0.04	0.05	0.19	0.63	0.09	0.07	0.06	0.22	0.56
Obs.										

Table **5**. Transitions for Total Wealth, 1860-70, by 1860 Region (Row Percent).

If transition matrices are calculated separately by each individual's region of residence (Table 5), the similarities between North and South are striking in the lowest quartiles: in both areas, 43% of those who were in the lowest fifth of the total wealth distribution in 1860 were still there 10 years later. Even among those who escaped this lowest group, the percentage moving into each of the other four quartiles differs by no more than three percentage points when comparing North and South. By the third quartile, though, substantial differences emerge. In the third quintile, for example, persistence was less likely in the South (28%) than in the North (35%), while the excess movement out of that quintile in the South (7 percentage points) was almost entirely to the adjacent quintiles (3 percentage points to the second and 4 percentage points to the fourth). In the top quintile, persistence was also 7 percentage points less likely in the South than in the North, while in the fourth quintile, it was 10 percentage points less likely.

A variety of summary measures of mobility have been proposed, each one capturing a slightly different dimension of mobility.[20] Some are no more than standard measures of the association between ordered rows and columns in a contingency table of transition matrix like that shown above (Kendall's tau-b, Goodman and Kruskal's gamma), others also focus on data arrayed in quantiles but measure

[20]See Ramos (1999) for a summary of these measures.

either the mean time before an observation exits its observed state at the beginning of the interval (the Prais index) or the mean number of categories "jumped" between the start and end of the interval (the average jump index), while others instead aggregate information on the individual's position at two or more dates up to a population-wide measure of mobility (the Shorrocks measure, the Fields-Ok measure). Within the last group, the Shorrocks index reveals whether a distribution gets closer or farther from some measure of equality as the time from the first observation to the second increases; the Fields-Ok index can be broken down into the fraction of mobility resulting from (1) growth in across the distribution; (2) change in the shape of the distribution; and (3) the re-ordering of individuals within the distribution. Table 6 presents each of these measures for the entire sample, for those in the South in 1860, and for those in the rest of the U.S. in 1860.

	Total U.S.	North	South
Kendall's tau-b[a]	0.450	0.472	0.435
	[0.437, 0.463]	[0.458, 0.487]	[0.408, 0.462]
Gamma[a]	0.548	0.572	0.531
	[0.533, 0.563]	[0.556, 0.589]	[0.499, 0.563]
Pearson Correlation	0.529	0.551	0.514
	[0.515, 0.544]	[0.535, 0.567]	[0.483, 0.545]
Mean Exit Time[a]	0.726	0.704	0.751
	[0.716, 0.736]	[0.693, 0.716]	[0.729, 0.733]
Average Jump	0.926	0.880	0.950

[a] asymptotic or [b] bootstrapped standard errors used for confidence intervals

Table **6**. Summary Transition Matrix Mobility Measures [84% Confidence Intervals].

For each matrix-based mobility measure except the mean exit time, those who were located in the South in 1860 experienced greater mobility over the 1860s than those who were in the North in 1860, though only the difference in the mean exit time is statistically significant at the 5% level. It also appears that although moves take longer in the South, they occur over a greater distance, as the average jump is 8% greater in the South.

Table 7 presents measures of mobility based on the individual-level data. The first two entries show that as the time between the first and second observation increases, inequality decreases more quickly in the South than in the North, and this difference is statistically significant at the 5% level. This is true whether the Gini or Theil inequality measure is used as the benchmark. The following two entries show that whether or not we take account of the direction of the moves made, mobility in the South was substantially greater than in the North, and that this difference, too, was significant at the 5% level. The negative entry for the South indicates that net movement was downward over the 1860s. Though it seems clear that the 1860s produced more movement within the distribution of wealth in the South than in the North, it is not possible to say more about why Southern mobility was so much greater without looking more closely at the individual-level characteristics associated with wealth mobility.

	Total U.S.	North	South
Shorrocks [a]			
Gini reference	0.054	0.047	0.052
		[0.043, 0.051]	[0.047, 0.058]
Theil reference	0.137	0.112	0.146
		[0.102, 0.122]	[0.135, 0 .157]
Fields-Ok [a]			
Logs, directional	0.506	0.717	-0.178
		[0.641, 0.793]	[-0.300, -0.056]
Logs, non-directional	2.220	2.258	2.096
		[2.204, 2.313]	[1.984, 2.203]
from transfer	1.714	1.541	1.918
from growth (shrinkage)	0.506	0.717	(0.178)

[a] bootstrapped standard errors used for confidence intervals

Table **7**. Summary Individual Level Mobility Measures [84% Confidence Intervals].

Table 8 presents the results of an OLS regression in which the dependent variable is the change in the individual's rank in the wealth distribution between 1860 and 1870 (scaled to moving up by 1870 is positive. The regressors are individual-level characteristics in 1860 and 1870. The age profile for

Coefficient	Total U.S.	North	South
Age in 1860	-101.50***	-94.20***	-124.64***
Age in 1860	.80***	.70***	1.11***
South (1860)	-855.68***		
Laborer (1860)	120.48	127.91	150.22
Laborer (1870)	-592.98***	-782.70***	-73.16
Farmer (1860)	-721.48***	-774.77***	-610.64***
Farmer (1870)	521.05***	610.97***	319.17***
Intercounty Mover	-248.50***	-347.35***	12.47
Interstate Mover	-167.74***	-295.38***	96.66
Slave Value (1860)	-.11***	-.08	-.10***
Constant	2945.44***	2858.02***	2365.00***
Adjuster R^2	0.1567	0.1198 0	.1522
Obs.	7004	5474	1530

*** significant at 0.01 level.

Table 8. OLS Regression on Change in Wealth Rank, 1860-70.

changes in wealth rank is convex: the change in rank decreases as age increases, and achieves a minimum at age 63 for the total U.S. Of greater interest is the coefficient for residence in the South in 1860: holding everything else constant, Southerners lost more than 850 places in the wealth ranking over the 1860s. Those who started the decade as laborers suffered no penalty, unlike those who finished the decade as laborers. An individual who started the decade as a farmer was worse off a decade later than someone in another occupation in 1860, but those who ended the decade as farmers were higher in the wealth distribution than those who were in other jobs by 1870. The coefficient on the value of slaves owned in 1860 (-0.10 in the South) indicates that an individual who owned three slaves in 1860 (valued at $1,000 each) lost 300 places in the Southern wealth distribution.

WEALTH MOBILITY IN THE 1860S AND IN THE LATE 20TH CENTURY

The availability of linked data with information on total wealth at two points in time makes possible a comparison between wealth mobility in the second half of the nineteenth century and wealth mobility in the second half of the twentieth century. For the latter, the "Young Men" and "Mature Men" cohorts of the National Longitudinal Survey (NLS). Assets are reported in both 1971 and 1981 for both cohorts. For both the NLS and the nineteenth century sample, two groups will be compared: (1) age 25-29 in the initial year; and (2) age 50-64 in the initial year. The transition matrices are shown in Tables 9 and 10.

	1860-70					1971-81				
1860/1971	1870 Quintile					1981 Quintile				
Qunitile	1	2	3	4	5	1	2	3	4	5
1	0.29	0.19	0.18	0.16	0.17	0.51	0.25	0.12	0.06	0.06
2	0.32	0.28	0.23	0.14	0.04	0.26	0.27	0.19	0.14	0.13
3	0.18	0.19	0.25	0.23	0.14	0.14	0.25	0.24	0.21	0.16
4	0.13	0.12	0.25	0.30	0.20	0.04	0.20	0.30	0.28	0.18
5	0.16	0.09	0.08	0.21	0.46	0.04	0.05	0.13	0.31	0.46

Table **9**. Transitions for Total Wealth, 1860-70 and 1971-81, White, Native-Born Males 25-29 in Initial Year (Row Percent).

	1860-70					1971-81				
1860/1971	1870 Quintile					1981 Quintile				
Qunitile	1	2	3	4	5	1	2	3	4	5
1	0.54	0.28	0.10	0.05	0.04	0.68	0.25	0.03	0.04	0.00
2	0.22	0.37	0.31	0.09	0.02	0.24	0.42	0.21	0.10	0.02
3	0.11	0.17	0.40	0.29	0.04	0.04	0.25	0.39	0.29	0.03
4	0.11	0.06	0.16	0.36	0.31	0.03	0.05	0.30	0.36	0.26
5	0.10	0.05	0.09	0.16	0.59	0.01	0.02	0.07	0.21	0.69

Table **10**. Transitions for Total Wealth, 1860-70 and 1971-81, White, Native-Born Males 50-64 in Initial Year (Row Percent).

The raw comparison of the transition matrices suggests a substantially greater amount of mobility in nineteenth century than in the twentieth century. Where the modern and historical data differ, it is almost always the historical data that exhibits less persistence in wealth categories. For example, for younger men, less than a third of those in the lowest quintile remained there over a decade in the 1860s, while more than half did so in the modern data. For the younger men, persistence was similar at the third decile and above. For older men, there was less persistence throughout the wealth distribution in the nineteenth century than in the twentieth.

It is also possible to test whether summary measures of mobility differ between the historical and modern data. The "mean exit time" for younger men is 0.856 in 1860-70 and 0.808 in 1971-81, though this difference is not statistically significant at the 95% level. For older men, this measure falls from 0.685 in the nineteenth century to 0.614 in the twentieth, a difference that is statistically significant at the 95% level. These measure suggest, as did the raw transition matrix comparisons, that mobility in wealth ownership has declined since the 1860s. The average jump index also reveals greater nineteenth century mobility, though the Fields-Ok index (measured in logs and taking account of the direction of income changes) yields ambiguous results: for younger men, the magnitude of the index is greater in the modern data than in the historical data, while for older men the reverse is stru, though none of these comparisons is statistically significant.

Conclusions

The Civil War decade transformed the U.S. economy in a number of respects, even if it was not the watershed for long-run growth it was once thought to represent. The wealth distribution was substantially re-shaped within the South, even among the white population, in a manner that reflected more than the elimination of wealth in slaves from the balance sheets of some Southerners. And mobility within the distribution of wealth is apparent and particularly prominent in the South,

mobility that was greater than that seen in the North. It remains to be seen whether changes in the positions occupied by individuals in the wealth distribution can be attributed to specific changes in the larger U.S. economy that occurred over the decade (resulting from the fall in the labor force caused by the war, from the manner in which the war was financed, and from the physical destruction that occurred and was still apparent as late at the 1870s).

In a longer term perspective, the Civil War decade exhibited greater wealth mobility than can be discerned in the 1970s, suggesting that wealth mobility has declined over time within the U.S. just as occupational mobility across generation appears to have declined (Ferrie, 2005). Or perhaps this merely reflects the exceptional nature of mobility in a decade characterized by warfare, a fundamental rearrangements of property rights, rapid inflation, and a reshuffling of a wide array of social and economic relationships the manifestation of which is to some extent seen in changes in where Americans found themselves within the nation's distribution of wealth owners.

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