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War and Wealth: Economic Opportunity Before and After the Civil War, 1850-1870

Taylor Jaworski

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Department of Economic History
London School of Economics
Houghton Street
London, WC2A 2AE

Tel: +44 (0) 20 7955 7860
Fax: +44 (0) 20 7955 7730

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Abstract
This study uses two samples of linked adult males to examine wealth accumulation by region and occupation between 1850 and 1870. Consistent with past research, the findings here show that wealth accumulation was substantial in the South in the 1850s and stagnant in the 1860s. The findings also suggest improvement in the wealth position of white-collar professionals and blue-collar workers across the entire period, including the Civil War decade, while farmers suffered in the immediate postbellum period. Finally, the value of slaves in 1860 was positively correlated with wealth in 1870, with implications for the legacy of slavery.

1.   Introduction

The decline of the South and the divergence in regional income per person are among the most salient and well-documented facts of U.S. economic history immediately following the Civil War decade. Between 1840 and 1860 the South improved its position relative to the North and the national average in terms of income per person.[2] From 1860 to 1880, the South's relative position deteriorated substantially and by 1900 it had still not recovered to its pre-Civil War position.[3] The rise and decline of the South has been most frequently documented using aggregate variables. For example, Gavin Wright noted the decline in world demand for southern cotton, Roger Ransom and Richard Sutch showed the impact of the withdraw of former slaves from the labour force after abolition, and Claudia D. Goldin and Frank

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[2] Robert W. Fogel and Stanley L. Engerman, *Time on the Cross: The Economics of American Negro Slavery* (New York: W.W. Norton & Company, 1974), p. 248.
[3] Fogel, *Without Consent of Contract: The Rise and Fall of American Slavery* (New York: W.W. Norton & Company, 1989), p. 89.

D. Lewis calculated the total cost wrought and implied by wartime destruction.[4] This study assesses the economic impact of the Civil War decade using disaggregated observations of wealth linked with individual characteristics. I document the differential effect on wealth accumulation in the North and South and the changes in the returns to occupation in order to test whether the Civil War decade was a turning point in the U.S. economy in terms of both where and how wealth was accumulated.

Wealth recorded in any form was a unique aspect of the three decennial censuses between 1850 and 1870. Real estate wealth was recorded in each census year from 1850 to 1870 while personal wealth was recorded only in 1860 and 1870.[5] Reported values of wealth combined with standard geographic and demographic features of the censuses provide an important link between economic outcome and individual characteristics that has allowed economic historians to describe the experience of people in the mid-nineteenth century United States and their prospects for economic advancement. Moreover, the precision of a continuous variable measuring economic outcome, as opposed to a binary occupational variable used to represent economic standing, allows for an assessment of not only regional but also occupational differences in wealth accumulation. The coverage from 1850 to 1870 allows for the comparison of two decades, with only one interrupted by war.

In *Men and Wealth in the United States, 1850-70*, the most comprehensive study to date, Lee Soltow used the unique aspects of the three censuses to describe the pattern of wealth accumulation for a diverse population over the course of twenty years. He focused on inequality, nativity,

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[4] Gavin Wright, "Cotton Competition and the Post-Bellum Recovery of the American South," *The Journal of Economic History*, Vol. 34, No. 3 (September 1974), pp. 610-35; Claudia D. Goldin and Frank D. Lewis, "The Economic Cost of the American Civil War: Estimates and Implications," *The Journal of Economic History*, Vol. 35, No. 2 (June 1975), pp. 299-326; Roger Ransom and Richard Sutch, "The Impact of the Civil War and of Emancipation on the Southern Agriculture," *Explorations in Economic History*, Vol. 12, No. 1 (January 1975), pp. 1-28.

[5] Hereafter, I refer to "real estate" wealth as "property" wealth and continue using the term personal wealth.

and economic mobility. Since its publication *Men and Wealth* has formed the basis for further research. This study builds on the conclusions drawn by Soltow to make three contributions to the literature on wealth accumulation. First, I reassess inequality in wealth accumulation from 1850 to 1870, using linked samples that provide a control for individual differences that might distort the comparison of unlinked cross-sections. Second, I compare wealth accumulation over the 1850s and 1860s to infer the impact of the Civil War decade on the economic opportunities of different demographic groups. Third, I use a sample that links slave-owners to the number and value of slaves in 1860 to explore slavery as a vehicle for wealth accumulation and the wealth implications associated with emancipation. All these drive toward one fundamental question: How did wealth accumulation change in the United States after the Civil War? The answer will illuminate the impact of the Civil War (even if only indirectly) and how changes in the U.S. economy were manifested in the opportunities available to various demographic groups.

2.   Two Linked Samples

The data used in this study was provided by Professor Joseph P. Ferrie of the Department of Economics at Northwestern University. The data is composed of two samples of adult males drawn from the three decennial censuses between 1850 and 1870. The first sample originally contained 4,938 males linked between 1850 and 1860. The second sample contained 7,004 males linked between 1860 and 1870. Three steps were followed to reduce the sample size to 3,597 and 6,818, respectively; these steps limited the samples to employed adult males. First, all individuals with a non-occupational response (e.g. housework, student, inmate, etc.) in any year were dropped. Second, individuals who did not report an occupation in any year were dropped. Finally, individuals not older than 15 years in 1850 for the first sample or 1860 for the second sample were dropped to limit each sample

to adult males.[6] The remainder of this section discusses representativeness and the problems that may arise in comparing linked samples spanning two different decades.[7]

Representativeness

Linked samples present unique problems of representativeness since an individual's characteristics, such as age, nativity, occupation, etc, may affect the chance of being included in a linked sample. For this study, one potential problem is if the value of property wealth is significantly correlated with a link. Such a result would imply that the top or bottom of the wealth distribution was overrepresented and limit generalisations from the samples to the population at large. To assess this problem for the first sample, Ferrie estimated a logistic regression in which the dependent variable was 1 for a linked individual and 0 if an individual could not be linked. The results in the first column of Table 1 show the marginal effects of age, nativity, marital status, literacy, location, and geographic persistence are significant, while family size, property wealth, and occupation are largely unimportant.[8]

Unsurprisingly, each independent variable that is positively and significantly correlated with a linked name reflects consistency and stability unlikely to be observed in an unmarried illiterate immigrant labourer who migrated from the South to the Pacific coast. For example, farmers were more likely to be linked since they were also more likely to persist within a geographic area over ten years, while southerners were less likely to be linked since the longer-settled Southeast had declining population as more people

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[6] The classification of those older than 15 years as adults follows from: Joseph P. Ferrie, "The Wealth Accumulation of Antebellum European Immigrants to the U.S., 1840-60," *The Journal of Economic History*, Vol. 54, No. 1 (March 1994), pp. 1-33.

[7] Appendix A also summarizes the strategy for linking individuals between two census years and describes the variables available in each sample.

[8] Ferrie, "A New Sample of Males Linked from the Public Use Micro Sample of the 1850 U.S. Federal Census of Population to the 1860 U.S. Federal Census Manuscript Schedules," *Historical Methods*, Vol. 29, No. 4 (Fall 1996) p. 40, last accessed 16 July 2008, from: http://faculty.wcas.northwestern.edu/~fe2r/papers/histmeth.pdf.

Table 1. Logistic Regression for Linked and Common Name

	(1) Linked (1 = yes, 0 = no)	(2) Common Name (1 = yes, 0 = no)
Age	0.002 *	-0.004 **
Age^2 / 100	-0.005 **	0.005 **
Family Size	0.002	0.005 **
Property Wealth / 100,000	0.051	
Nativity:		
Native-Born		
Foreign-Born	-0.035 **	0.026 **
Marital Status:		
Unmarried		
Married	0.051 **	0.006
Literacy:		
Literate		
Illiterate	-0.023 *	0.020 *
Occupation:		
Labourer		
High White-Collar	-0.018	-0.072 **
Low White-Collar	0.032	-0.019
Craftsman	0.015	-0.010
Farmer	0.035 **	-0.015 **
Location:		
Northeast		
Middle Atlantic	-0.029 **	-0.010
Midwest	-0.084 **	-0.009
Southeast	-0.100 **	-0.012
South Central	-0.166 **	-0.038 **
West	-0.221 **	-0.045
Pacific	-0.226 **	-0.200 **
Rural-Urban:		
Rural		
Urban	-0.037 **	-0.003
Geographic Persistence:		
Non-Migrant		
Migrant	-0.050 **	0.019 **
Constant	-0.155	0.105
Mean Probability	0.177	0.542
Observations	25,586	55,852

Notes: For definitions of the variables see Table 2 in Ferrie, "New Sample," pp. 38-39. * indicates significant at the 95% level; indicates significant at the 99% level. Values for non-constant terms are marginal effects.
Source: Ferrie, "New Sample," p. 40.

moved to the southern frontier.[9] However, although property wealth was found to be insignificant and plausible explanations exist for why certain other characteristics were overrepresented, the problems posed for this study by samples in which farmers and northerners, in particular, are overrepresented still require attention.

The use of linked samples implies a trade-off between representativeness, on the one hand, and the ability to recreate in many snapshots a crude time-series of the nineteenth century American experience, on the other. The appearance of numerous studies in the 1980s and 90s drawing on the decennial censuses to create linked samples and the coinciding increase in computing power is evidence of both the improved confidence in a sample's representativeness and the perceived benefit of such a trade-off. When Ferrie compared his sample with others used in previous prominent studies of wealth accumulation by Soltow, Donald F. Schaefer, and Richard H. Steckel,[10] he concluded that his linked sample looked "more like Soltow's nationally representative sample in terms of average wealth, wealth inequality, age, occupation, and nativity than it does like Steckel's or Schaefer's, the best views we have had until now of the experiences of American males over the 1850s."[11] Table 2 shows the comparison between Ferrie's sample, the first (1850-60) sample used in this study, and the Soltow and Steckel samples, confirming the conclusion cited above. In addition to being more representative, the first linked sample used in this study is also larger than Steckel's sample.

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[9] Ibid, pp. 20-21.

[10] Lee Soltow, *Men and Wealth in the United States, 1850-70* (New Haven: Yale University Press, 1975); Donald F. Schaefer, "A Statistical Profile of Frontier and New South Migration: 1850-1860," *Agricultural History*, Vol. 59, No. 4 (October 1985), pp. 563-578; and Richard H. Steckel, "Census Matching and Migration: A Research Strategy," *Historical Methods*, Vol. 21, No. 2 (Spring 1988), pp. 52-59.

[11] Ferrie, "New Sample," p. 24.

Table 2. Comparison of the 1850-60 Linked Sample With Samples for 1850 and 1860

	Linked Sample		Soltow		Steckel
	1850	1860	1850	1860	1860
Age	29	39	37	38	44
% Farmer	36	45	44	49	63
% Native Born	86	86	82	74	92
Property Wealth	1,016	2,004	1,001	1,492	3,739
Personal Wealth	--	1,382	--	1,088	3,398
Gini (Property Wealth)	0.83	0.81	0.86	0.85	0.77
Observations	4,938	4,938	10,393	13,696	1,581

Source: Ferrie, "New Sample," p. 42.

A final problem for the representativeness is the second step for linking individuals (described in full in Appendix A), which implies dropping individuals with common names, i.e., given-name and surname combinations that produce more than ten matches. This step presents problems since individuals with uncommon names may also possess systematically different characteristics, such as age, location, occupation, or wealth. To assess the potential effect of this problem for the first sample, Ferrie estimated another logistic equation in which the dependent variable was 1 for a common name and 0 for an uncommon name. The second column of Table 1 shows the relationship between individual characteristics and common name. Despite the significance of the marginal effects of some independent variables at the 99% level, Ferrie concluded that "along most dimensions, those with common names appear similar to the general population;" and where the effect of an independent variable was significant it represented only a small proportion of the total predicted probability.[12]

Comparability

Thus far, I have only addressed the representativeness of the first sample: and previous research has generally affirmed its accuracy. Panel (a)

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[12] Ferrie, "New Sample," pp. 15-16.

of Figure 1 shows the distribution of the white adult male population by age group (from the *Historical Statistics of the United States*) and the age distribution in the first year of each sample. The solid and dashed lines labelled only by year refer to the percent of the white adult male population by age group in the respective year. The other two solid and dashed lines, labelled by year *and* sample, refer to the percent of the white adult male population by age group in the first year of each sample. In order for the samples to be representative of the age distribution of the population, each pair of solid and dashed lines should look similar.

By age, the first sample appears representative of the age distribution from aggregate data, with individuals in their 20s making up the greatest proportion of the population and older individuals accounting for a successively smaller proportion. This shape of the age distribution corresponds with a previous finding that despite rapid economic growth, the antebellum period experienced increasing mortality by age past the 20s cohort.[13] The second sample, however, deviates substantially, under-representing younger and over-representing older adult white males.

Panel (b) of Figure 1 shows the distribution of the population by region. The first and third set of columns gives the percent of the male population (including the non-white male population) in each region from the *Historical Statistics of the United States*; the second and fourth set of columns gives the percent of the population in the first year of each sample by region.[14] Panel (b) shows that the North is overrepresented while both the South and West are underrepresented. The discrepancy between the North and the South is unsurprising since a larger percent of the non-white male population lived in the South under slavery. Moreover, as shown in first column of Table 1, northerners were more likely to be successfully linked. The absence of data

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[13] Michael R. Haines, Lee A. Craig, and Thomas Weiss, "The Short and the Dead: Nutrition, Mortality, and the 'Antebellum Puzzle' in the United States," *The Journal of Economic History*, Vol. 63, No. 2 (June 2003), pp. 382-413.

[14] The whole male population was used since no data additional disaggregated data was available. Only the states found in the respective samples were used to construct the first and third columns of Figure 1, panel (b).

Figure 1. Age and Regional Distribution by Sample, 1850 and 1860

a. Age
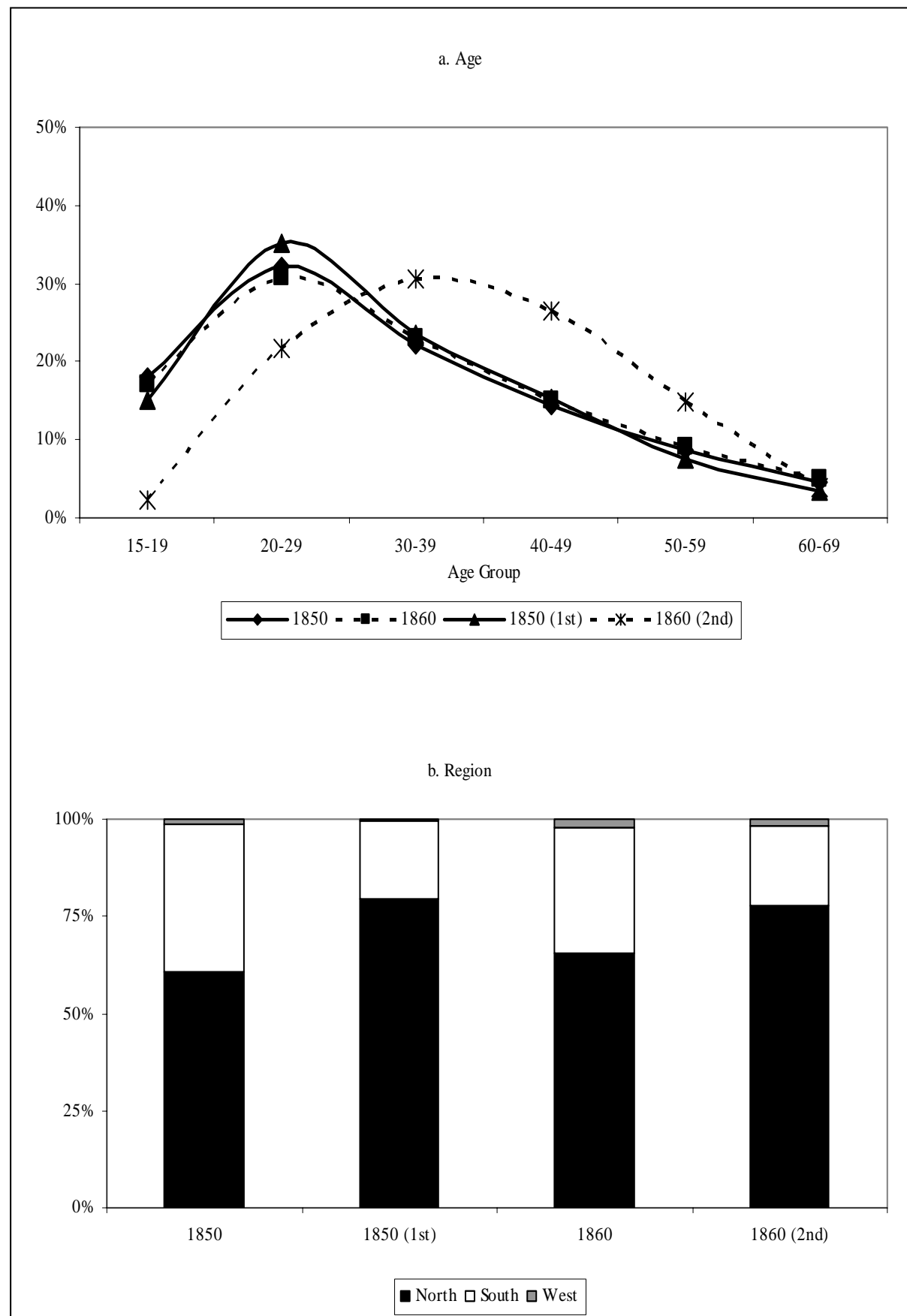
b. Region

Source: Aggregate U.S. population data is from the *Historical Statistics of the United States, Vol. I*: age (pp.51-56) and regional (pp. 181-379) distribution. See text for a description of the two samples used.

on linking in the second sample makes extensive analysis and comparison of the two samples impossible. The data that is available for making a comparison between the samples and the population at large suggests three conclusions: (1) the first sample is representative; (2) the second sample has obvious problems associated with the age distribution; and (3) both samples probably over-represent northerners although by less than appears in panel (b) of Figure 1. A primary concern for this study is why younger males did not appear in the second sample.

As a reminder, the second sample links adult males between 1860 and 1870, spanning the Civil War decade without either year being affected directly by war. The advantage of this linked sample is that it makes possible an assessment of the Civil War decade's impact on wealth accumulation against the baseline of the 1850s, a decade untouched by war. However, the disadvantage is that the representativeness and comparability of a linked sample depends crucially on no or minimal bias associated with particular individual characteristics. From panel (a) of Figure 1, it is clear that the age distribution for the population at large and the second sample do not match. Ideally, a logistic regression similar to the one reported in the first column of Table 1 would be estimated to discover the cause for so many "missing" young white males, however, the current available data does not allow this. Instead, I explore the cause indirectly and look at the Civil War as the potential source of the problem.

In terms of cost in human life, the Civil War was the most destructive war in U.S. history. In total, 13 percent of the population was mobilised during the Civil War and 14 percent of war participants died; the next highest mobilisation rate (12 percent) and death rate (11 percent) were experienced during World War II and the Mexican War (1846-48),

respectively.[15] The explanation proposed here for the missing young white males is that they were exposed to a greater likelihood of dying due to their participation in the Civil War: "Looking at the North and South together, approximately 8 percent of the estimated population of white males aged 13 to 43 in 1860 (the individuals most likely to fight in the war) died in the Civil War."[16]

Another potential problem for linking individuals was the high number of servicemen that survived but were injured or deserted. The consequences of death in the 1860s for linking an individual found in the 1860 census are obvious. Injury could have lowered the probability of a link since wounded individuals, if found in the 1860 census, may have been more likely to reside in a house in which they were not the head and thus more difficult to locate in the 1870 census. Desertion could also have lowered the probability of a link since these individuals likely did not return to their hometowns immediately or at all following the war.[17] Moreover, desertion was common under both Union and Confederate flags, with 200,000 and 104,000 soldiers, respectively, abandoning their wartime posts.[18]

More extensive analysis is required to assess the significance of the Civil War in preventing *representative* linked samples spanning the 1860s. However, for the purposes of this study, it is now more helpful to consider the consequences of the differences between the first and second samples. What effect might these conclusions regarding representativeness have on the analysis below?

Firstly, assuming a positive but diminishing relationship between

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[15] Claudia D. Goldin, "War," in *Encyclopedia of American Economic History*, ed. Glenn Porter, Vol. III (New York: Charles Scribner's Sons, 1980), p. 938.
[16] Maris A. Vinovskis, "Have Social Historians Lost the Civil War? Some Preliminary Demographic Speculations," *The Journal of American History*, Vol. 76, No. 1 (June 1989), p. 38.
[17] Ibid, p. 41.
[18] Ibid, p. 38.

wealth and age, a sample containing more old individuals should show both a weaker positive and diminishing impact of age on wealth.[19] However, after controlling for the effect of age the discrepancy in the effect of other independent variables between the two samples should be diminished. The discrepancy may not disappear entirely since age was also correlated with occupation and younger individuals were more likely to be occupied as blue-collar workers and older individuals as either farmers or white-collar professionals: the latter occupations were generally associated with more wealth than the former.

Secondly, aside from age there may have been other characteristics that were more likely to survive the linking process over the Civil War decade than over the 1850s. I have already noted the severity of the Civil War in terms of loss and injury to human life. However, by disaggregating the impact by region another potential source for differences in linking is revealed. A higher proportion of the population and much higher proportion of servicemen died fighting for the Confederacy than for the Union; and 10 percent of Confederate soldiers deserted while only 6 percent of Union soldiers did.[20] Below I will discuss previous research that has further quantified the cost of the Civil War in monetary terms, for now, it is enough to note the potential differential impact on sub-groups within the second sample.

Thirdly, to assess the characteristics other than location that may have survived the linking process, I turn to the often studied town of Newburyport, Massachusetts. From the Newburyport servicemen identified in the 1860 census and Civil War muster roles, Vinovskis concluded that the youngest and oldest soldiers between the ages of 18 and 49 in 1860, soldiers with recent foreign heritage (first- and second-

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[19] Evidence of the assumption regarding the relationship between wealth and age is given below.
[20] Goldin, "War," p. 938; Vinovskis, "Social Historians," p. 41.

generation immigrants), and soldiers from lower class backgrounds or less wealth were more likely to be killed or wounded than other groups.[21] If the conclusions for Newburyport can be generalized to the whole country, then the implications for this study are that the sample for the Civil War decade may contain fewer individuals in their late 20s and 30s, more natives, and more wealth and higher class occupations. The potential problems of a lower proportion of males in their 30s has already been discussed; nativity is not the focus of this study and thus having more natives is not seen as prohibitive; more wealth and higher class occupations surviving the linking process could be problematic but can be tested empirically within the analysis below. I do this and discuss the implications where relevant.

The general problems associated with the extent to which the samples are not representative of the true population apply to all studies in economic history and should not be viewed as prohibitive, particularly in the light of evidence showing the improvement of these over previous samples. The greatest danger for this study is the differences between the two samples that prevent their comparison. Above, I identified potential problems with the differences in the age, regional, and occupational distributions, as well as the nativity and wealth represented in the two samples. Theoretically, age, region, and occupation can be controlled for and will only have a residual impact insofar as they interact with other characteristics to determine wealth. Moreover, empirically, I am most interested in the positive or negative growth in wealth across the 1850s and 1860s; an answer to one of the questions asked here—how did the rate of wealth accumulation change as a result of the Civil War?— requires only an idea of the magnitude and sign of the rate of wealth accumulation.

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[21] Vinovskis, "Social Historians," p. 48-49.

3. Historiography

The Impact of the Civil War Decade

"American economic historians have assigned a strangely contradictory role to the impact of war. The economy is seen, on the one hand, to flourish in its absence, undisturbed by its waste of resources and its generally disruptive effects on daily life. But the presence of war supposedly causes the economy to shed its old ways, to overthrow archaic institutions and industrial practices, and to begin anew."[22]

This quotation is with reference to U.S. wars generally, but the Civil War is unique among conflicts involving American soldiers in that it was fought on American soil, Americans soldiers fought on both sides, and it came at a turning point in the development of the U.S. economy: because it ended the constitutional enforcement of slavery and coincided with continued industrial development in the North and stagnation and decline in the South. Previous research has aimed at discovering the causal link (if any) between the Civil War and subsequent changes in the economy, particularly in the South, which is my focus below.

Wright attributed the post-war decline of the South to decreased growth in the demand for cotton, not the Civil War directly. According to his calculations, the Civil War decade was the only one that experienced negative growth in the demand for southern cotton, which was shrinking 5.9 percent per annum; however, yearly growth of 1.3 percent between 1870 and 1880 did not compare with 4.5 percent per annum between 1850 and 1860.[23] The rise of the southern economy before 1860 also depended critically on cotton. However, the particular mechanism for cotton to raise per capita income between 1840 and 1860 will effect whether decreased cotton demand should produce an expectation for the status quo or decline between 1860 and 1880. Either improved productivity or sheer mass of labour share devoted to cotton production can explain rapid intensive growth in the antebellum period, but only the latter is consistent with post-war southern decline in context of

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[22] Goldin, "War," pp. 935-36.
[23] Wright, "Cotton Competition," pp. 632-33.

decreased demand for cotton.[24] The trend decline in the U.K. price of cotton despite increased British imports between 1870 and 1884 seems to substantiate the latter mechanism and strengthen the evidence, at least on the demand side, that the Civil War was not the source of southern decline.[25]

On the supply side, Ransom and Sutch proposed the abolition of slavery, a direct consequence of the Civil War, as a cause of southern decline.

> "Emancipation gave the ex-slave the freedom to lighten his burden and, for the first time, reserve a portion of his time for himself. The result was that the amount of labor offered by each freedman and his family was substantially less than when slavery forced every man, woman, and child to work long hours through the year."[26]

In economic terms, emancipation gave former slaves the choice between work and leisure. Measured in man-hours per person, the reduction in the agricultural labour supply due to emancipation was between 28 and 37 percent.[27] This effect on supply is not unrelated to the decrease in the growth of cotton demand; the chief output of southern agriculture was cotton. The conclusion drawn in the previous paragraph is that the rise and fall in the demand for cotton was determinant of the success or failure of the southern economy, most notably, since growth in cotton's share of labour was necessary for sustained growth in income per person. Whether growth in the demand for cotton increased or decreased is partially moot. Regardless of the demand for cotton, the southern economy first required the supply of labour to the market. Without the ability to increase labour supply substantially, much less having to suffer a radical decrease in the labour supply in its key sector, the South could not have equalled its pace of growth in the antebellum period.

Other approaches to assessing the economic impact of the Civil War have employed a cost-benefit framework. In their classic studies, Charles and

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[24] Fogel, *Without Consent*, p. 98.
[25] Wright, "Cotton Competition," p. 611.
[26] Ransom and Sutch, "Emancipation," p. 13.
[27] Ibid, p. 14.

Mary Beard and Louis Hacker emphasised the benefit of the war; in particular, they argue that subsequent long-run gains from industrialisation outweighed the short-run losses from wartime destruction.[28] Cliometric historians have debated the evidence and found that the war did not immediately expand output. Goldin and Lewis contributed to this debate since, in their words, "Although the cost of the American Civil War is referred to in many studies, no systematic computation has been made of it. Even a recent volume of essays on the economic impact of the Civil War does not include an estimate."[29] They used a direct and indirect method to capture the total cost (or benefit) of the war in monetary terms.[30] The result of their calculations shows that it is unlikely that either side benefited from the war.

The evidence presented by Goldin and Lewis suggests problems with the Beard-Hacker thesis. However, there is a distinct difference in how the severity of the cost was divided between the North and the South. As a proportion of the population, I have already reported that the South experienced a greater loss of human life due to the Civil War: 2.8 percent of the population versus 1.5 percent in the North.[31] Expressed in monetary terms, the difference between the North and South was even more substantial. Most interesting is the measure obtained by subtracting the direct from the indirect estimates. "Included in this figure are costs due to the loss of scale economies and the use of slaves in agriculture, capital destruction… and political stabilities during the war and reconstruction periods."[32] Taking

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[28] Charles A. Beard and Mary R. Beard, *The Making of American Civilization* (New York: The MacMillan Company, 1937); Louis M. Hacker, *The Triumph of American Capitalism: The Development of Forces in American History to the End of the Nineteenth Century* (New York: Columbia University Press, 1947).

[29] Goldin and Lewis, "Economic Cost," p. 301; the volume referred to in the quotation is: Ralph Andreano, ed., *The Economic Impact of the American Civil War* (New York: Schenkman Publishing Company, 1967).

[30] "The direct measure is computed adding up the actual war expenditures of both sides [this contains government expenditures and the loss of human capital].… [The] indirect estimate is computed under the assumption that a particular consumption stream would have existed in the absence of conflict. The discounted difference between this consumption stream and that actually achieved constitutes the indirect measure of the cost of the war" (p. 300).

[31] Goldin, "War," p. 938.

[32] Goldin and Lewis, "Economic Cost," p. 322.

this difference, the cost per person for the North was $75 and for the South $451.[33]

The fact that the South suffered greater losses than the North is itself unsurprising. But the manifestation of losses in particular areas suggests the Civil War had a different impact on the South than on the North. The direct costs were similar; but the indirect costs were substantially more in the South. What was different about the South?

Wright has emphasised the institutional differences between the North and the South, integrating his explanation of the South's economic downturn due to reliance on cotton and other cash crops with the institutional rigidities that could not be broken entirely and were more likely exposed and exacerbated by the Civil War. In particular, the legacy of slavery, more altered than destroyed by the Civil War, unsurprisingly, played an important role in shaping the southern economy in the post-war period.

> Property rights in humans shaped the investment strategies, the economic geography, and the political economy of the South. As compared to the American North, the incentives of slave property tended to disperse population across the land, reduce investments in transportation and cities, and limit the exploration of southern natural resources. Above all, slave owners had no incentives to open up labor markets to outside areas....[34]

These previous studies all emphasised the period between 1850 and 1870, and in many cases found the impact of the Civil War to warrant causal connection with events and trends that followed. Quantitative evidence has not supported the view that the impact of the Civil War decade was *positive* on the U.S. economy. This study is concerned primarily with the changes in wealth accumulation over the 1850s and 1860s, in particular, the differences

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[33] The cost estimates were taken from: Goldin and Lewis, "Economic Cost," p. 322. Population figures were taken from: Goldin, "War," p. 938.
[34] Gavin Wright, *Old South*, *New South: Revolutions in the Southern Economy Since the Civil War* (Baton Rouge: Louisiana State Press, 1986), p. 11.

in accumulated wealth between the two decades and whether the differences across groups reflect new or old sources of economic opportunity.

Wealth Accumulation as Economic Opportunity

The link between economic opportunity and the individual characteristics recorded in the decennial censuses after 1850 was first drawn by Stephan Thernstrom in *Poverty and Progress: Social Mobility in a Nineteenth Century City*, his study of the people of Newburyport, Massachusetts. Thernstrom's primary interest was in social mobility in the United States generally, measured in units of "opportunity" not embodied in a single characteristic possessed by individual but in many characteristics taken together. He took Newburyport as representative of the United States as a whole and proceeded to argue against the common perception of the late nineteenth century as a period of upward social mobility. The essential part of his argument was to define economic opportunity as the interaction of any number of characteristics, for example, wealth accumulation and upward occupational mobility, and to suggest the presence of an immeasurable characteristic, "economic opportunity," not embodied in wealth or occupation alone. This link has been adopted as convention by contemporary scholars, although precisely which characteristics they include in their definitions of economic opportunity has become less explicit. In the remainder of this section I discuss how the term "economic opportunity" has been used by economic historians and how it will be used in this study.

In the first few pages of *Poverty and Progress*, Thernstrom referred variously to "social mobility," "openness," and "mobility opportunities."[35] He then turned in eight chapters to exploring the links between these broader concepts and the individual characteristics recorded in the decennial censuses between 1850 and 1880. He concludes that in no great measure were the lower class labourers of Newburyport as mobile as the description,

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[35] Stephan Thernstrom, *Poverty and Progress: Social Mobility in the United States in a Nineteenth Century City* (Cambridge, MA: Harvard University Press, 1964), pp. 1-2.

"the land of opportunity," suggests. However, as Thernstrom writes, "Most of the social gains registered by laborers and their sons during these years were decidedly modest—a move one notch up the occupation scale, the acquisition of a small amount of property. Yet *in their eyes* these accomplishments must have loomed large."[36] The notion, "in their eyes," is sociological or psychological not economic; however, in the conclusion, Thernstrom draws the explicit link between economic outcome and opportunity by referring to property wealth and occupation as vehicles for social mobility within the broader American community.[37] More recently, quantitative economic historians have used the decennial censuses to assess the claims made about Newburyport and the United States, generally.

Geographic mobility was an important aspect of economic and social mobility in the second half of the nineteenth century. Thernstrom admitted an inability to systematically study the residents of Newburyport once they migrated: "Without a magical electronic device capable of sifting through tens of millions of names and locating a few hundred, there is no way of picking out former residents of Newburyport on later national censuses."[38] Since *Poverty and Progress*, systematic study of the economic performance of migrants relative to persisters has been made possible.[39] These authors have generally found a high return to geographic mobility, in terms of occupational upgrading or wealth accumulation, although the extent to which high returns for migrants and low returns for persisters can be generalized to the entire population is approached with scepticism.

Steven Herscovici extended the systematic study of the returns to geographic mobility relative to persistence in the case of Newburyport to test Thernstrom's claim regarding the economic opportunity of residents who left

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[36] Ibid, pp. 164-65.
[37] Ibid, p. 198.
[38] Ibid, p. 86.
[39] Steckel, "Census Matching"; David W. Galenson and Clayne L. Pope, "Economic and Geographic Mobility on the Farming Frontier: Evidence from Appanoose County, Iowa, 1850-1870," *The Journal of Economic History*, Vol. 49, No. 3 (September 1989), pp. 635-55; Joseph P. Ferrie, "Up and out or Down and Out? Immigrant Mobility in the Antebellum United States," *Journal of Interdisciplinary History*, Vol. 26, No. 1 (Summer 1995), pp. 33-55.

the oft-studied town. The focus on geographic mobility as part of economic opportunity adds a more complex informational component since it is not enough to know about potential occupational upgrades; an individual must also be able to accumulate and understand such information arriving from the next county over or hundreds of miles away. Contrary to Thernstrom's claim that migrants were unable to improve their economic position, Herscovici found evidence of ample opportunities available and exploited by migrants.[40] This finding is confirmed for a less geographically concentrated group of antebellum European immigrants whom Ferrie concluded were able to adapt to new information to improve their opportunities from arrival in the 1840s to 1860, partly through internal migration.[41]

The experience of European immigrants, apart from the role of geographic mobility and internal migration, has also been the focus of recent research. Economic opportunity on the urban frontier in 1860 was explored by both David W. Galenson and Thomas R. Walker in their studies of nativity in Chicago and San Francisco, respectively. Galenson defined a relationship between wealth, occupation, and economic opportunity in the absence of any effect of nativity, while Walker used nativity as a characteristic that, despite occupation, was associated with systematically more wealth and thus opportunity.[42] For both authors, location on the frontier was not an accident but the result of distinct choices made by natives and foreign-born alike to capitalise on economic opportunities not available in eastern cities.

In this study, I introduce an additional reason for associating wealth with economic opportunity since I am not primarily concerned with occupational upgrading, geographic mobility, nativity, or life on the frontier specifically. Due

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[40] Herscovici, "Migration and Economic Mobility: Wealth Accumulation and Occupational Change Among Antebellum Migrants and Persisters," *The Journal of Economic History*, Vol. 58, No. 4 (December 1998), pp. 953-54.

[41] Ferrie, "Wealth Accumulation," p. 28.

[42] David W. Galenson, "Economic Opportunity on the Urban Frontier: Nativity, Work, and Wealth in Early Chicago," *The Journal of Economic History*, Vol. 51, No. 3 (September 1991), p. 592; Thomas R. Walker, "Economic Opportunity on the Urban Frontier: Wealth and Nativity in Early San Francisco*," Explorations in Economic History*, Vol. 37, No. 3 (July 2000), pp. 267-68.

to the linked nature of two samples used, property wealth for a single individual is observed in two years and wealth accumulation over a given decade can be measured controlling for initial wealth.[43] This strategy provides a measure of the importance of initial wealth holding as well as the cumulative (net) experience in wealth accumulation associated with other individual characteristics over the previous decade. Although little is known and can be known about the precise path of an individual's wealth between two census years, a crude cumulative measure of wealth can do much to improve our knowledge of how and for which groups the available economic opportunities changed over the two decades between 1850 and 1870. This includes the impact of the Civil War decade.

4.   Methodology

Inequality

Various techniques have been used to assess inequality within a country. Lorenz curves and the Gini coefficient are two measures commonly applied to the data drawn from the decennial censuses used to construct the samples in this study.[44] Lorenz curves are constructed by plotting the proportion of wealth, Y, held by a proportion of the population, X. Thus, if X is 50 percent and Y is 20 percent the interpretation is that half the population holds only a fifth of the wealth. Figure 2 shows a hypothetical Lorenz curve. The solid line represents perfect equality such that X and Y are equal. Perfect inequality occurs when one individual holds 100 percent of wealth.

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[43] Property wealth and wealth are used interchangeably, hereafter, while personal wealth is always referred to explicitly.

[44] For example: Soltow, *Men and Wealth*; Jeremy Atack and Fred Bateman, "Egalitarianism, Inequality, and Age: The Rural North in 1860," *The Journal of Economic History*, Vol. 41. No. 1 (March 1981), pp. 85-93. Inequality as measured by the Gini coefficient alone should be interpreted cautiously as only a measure of the extent to which wealth is more or less dispersed within the defined geographic area. The Gini coefficient of property wealth, for example, should not be interpreted as a measure of inequality in economic opportunity. Only when the Gini coefficient is combined with other evidence can it be given an interpretation beyond mere statistical fact.

Figure 2. Inequality: Hypothetical Lorenz Curve
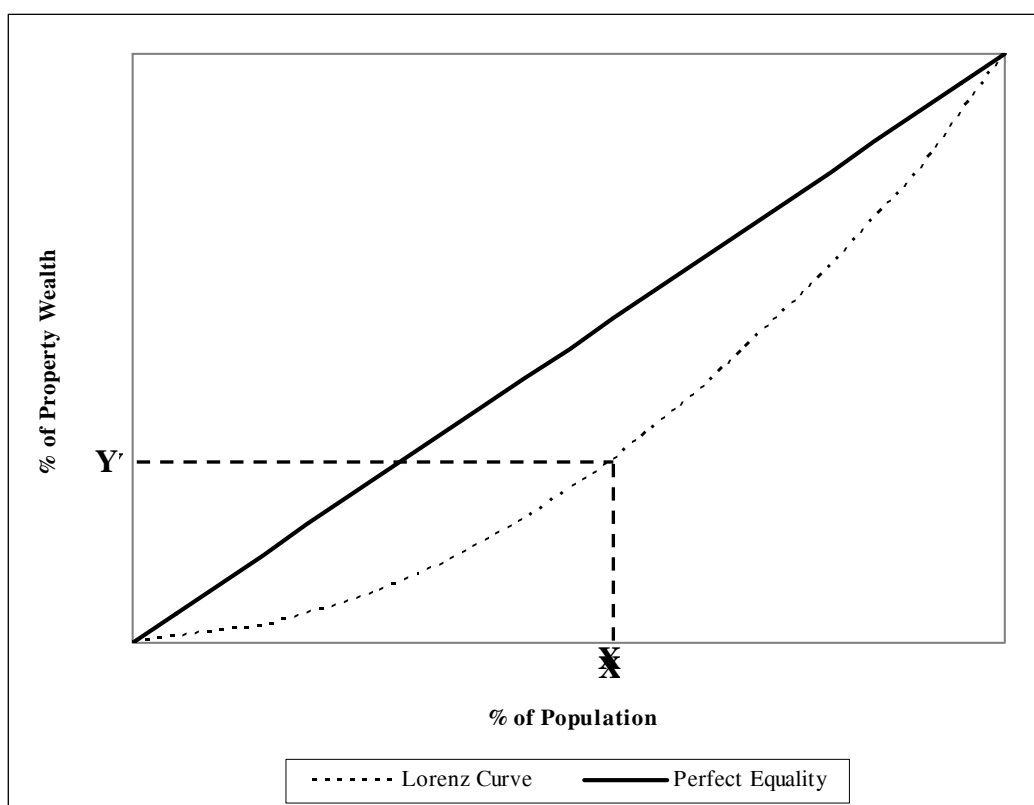
In this figure, the Gini coefficient is the ratio of the area between the line of perfect equality and the Lorenz curve over the total area under the line of perfect equality. The implication is that as the Lorenz curve approaches the line of perfect equality, the Gini coefficient and inequality decrease.

Censored Quantile Regression

Ordinary least squares (OLS) or maximum likelihood estimators (MLE) by Tobit are the most common techniques used for analysing the correlates of wealth in the three decennial censuses from 1850 to 1870. However, as Timothy G. Conley and Galenson have pointed out, uncertainty about the precise method for censoring (i.e., not reporting) low values of property and personal wealth leads to biased and inconsistent estimates.[45] They suggested an alternative method that addresses these problems and allows

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[45] Timothy G. Conley and David W. Galenson, "Quantile Regression Analysis of Censored Wealth Data," *Historical Methods*, Vol. 27, No. 4 (Fall 1994), pp. 149-165.

for a fruitful divergence from estimators based on conditional means. Quantile regression bypasses the censoring problem as long as the quantile of interest lies above the censoring point and, in addition, can provide useful information regarding the differences on the affect of individual characteristics as wealth increases. "Unlike the OLS and standard Tobit estimators, which estimate the effect of an independent variable on the conditional mean of the dependent variable, the quantile regression can estimate the effect of an independent variable at a number of points in the conditional distribution of the dependent variable."[46]

Evidence of censoring can be inferred from the data due to the large number of observations at zero and concentration of values at "$100", "$200", etc. In particular, for personal wealth where enumerators were instructed to record as personal wealth "the value of bonds, mortgages, notes, slaves, live stock, plate, jewels, or furniture,"[47] it was unlikely that all but the most destitute held no personal wealth, yet for 1860 18.4 percent of the first sample reported no personal wealth. Moreover, no evidence exists to suggest that enumerators were instructed to ignore or record as zero small values of wealth nor is it clear that individual enumerators consistently chose the same value under which they would censor.[48] The absence of a clear censoring point along with the presence of significant censoring presents problems when using the most common techniques for analysing wealth data.

There are both theoretical and empirical objections to the use of OLS and MLE for analyzing wealth data from these mid-nineteenth century censuses. Theoretically, OLS estimates are biased, inconsistent, and very sensitive to censoring and the imputation of wealth necessary for the commonly used semi-logarithmic transformation.[49] The number of respondents with zero recorded wealth either due to inaccuracy or censoring within the census requires either restricting the sample to positive values

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[46] Ibid, p. 153.
[47] Soltow, *Men and Wealth*, p. 1.
[48] Conley and Galenson, "Quantile Regression," pp. 151-52.
[49] Timothy G. Conley and David W. Galenson, "Nativity and Wealth in Mid-Nineteenth-Century Cities," *The Journal of Economic History*, Vol. 58, No. 2 (June 1998), p. 474.

above a censoring point or arbitrarily adding a small amount of wealth in order to apply a semi-logarithmic transformation. Conley and Galenson have shown that restricting the sample size and imputing wealth are flawed theoretically for the reasons mentioned above (bias and inconsistency), and empirically, where estimates differ substantially depending on the censoring point chosen and the value of wealth imputed.[50] Problems for MLE also arise due to censoring. Estimates are sensitive to both the amount of censoring and the choice of a censoring point.

To provide more detail, under OLS and MLE, a model is specified for wealth as a function of a number of variables, including age, location, and occupation. A single set of parameters is then estimated based on the conditional mean of wealth. Problems arise when the explanatory variables are correlated with the error term due to censoring. Quantile regression avoids the complications introduced by censoring by estimating a single set of parameters at quantiles above a specified censoring point.[51] Moreover, the use of quantile regression over either OLS or MLE is not simply theoretically more appealing while being empirically irrelevant. For example, quantile regression is not as sensitive to the choice of a censoring point as OLS and MLE.[52] Lower quantiles are more sensitive to censoring since they are more likely to contain censored values. But quantile regression is more appealing precisely because it allows for choice of the censoring point given a theoretical, empirical, or economic rationale. The censoring point used in this study is $100. The choice of $100 is discussed in Appendix B. In brief, above the 85th quantile estimates are not sensitive to the censoring point.

The appeal of quantile regression from economic (or scientific) perspective is the additional information it provides on the effect of explanatory variables at different points in the wealth distribution. For example, Conley and Galenson show the differences by quantile of the age profile associated with property and personal wealth accumulation in Chicago

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[50] Conley and Galenson, "Quantile Regression," pp. 159-61.
[51] Ibid, p. 153.
[52] Ibid, p. 161.

in 1860. Of particular interest for this study are the regional and occupational correlates of wealth accumulation and quantile regression will allow for changes in the returns to region of residence and occupation as wealth increases, which may provide more information on the correlates of wealth accumulation across the 1850s and 1860s.[53]

Finally, to address a different but related topic, in order to obtain a single measure of total wealth it may appear natural to add property and personal wealth. However, Walker has suggested the two forms of wealth be analysed separately. The reason is the difference in the censoring points chosen for property and personal wealth and the shapes of their distributions: "Adding the two forms of wealth would not give the true distribution of total wealth but a hybrid distribution consisting of total wealth (above the censoring point for property wealth) and personal wealth (between the censoring points for property and personal wealth)."[54] To conclude: I have summarized (1) the problems associated with the collection of the censuses, (2) the appeal of quantile regression beyond its theoretical and empirical properties, and (3) the justification for analysing property and personal wealth separately. In this study I focus primarily on property wealth

5. Wealth and Inequality

Of the twelve findings reported by Soltow in *Men and Wealth*, all referred directly or indirectly to the state of inequality in the United States between 1850 and 1870. For example, inequality is referred to both in terms of the decrease in the proportion of the population holding no wealth at all and the stable but high levels of inequality as measured by the Gini coefficient. The data used in this study cover the same period as *Men and Wealth*, but with two linked samples that control for individual differences that might distort

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[53] Ibid, p. 158.
[54] Thomas R. Walker, "Economic Opportunity," p. 266; this quotation was slightly modified with the meaning unchanged: "property" replaced "real" wealth.

the comparison of unlinked cross-sections. This data and the approach used in this study have advantages and disadvantages.

One advantage is that it allows for a cleaner assessment of what happened to inequality within two samples each linked across different decades, including the Civil War decade. Also, Soltow creates single homogenous North and South regions.[55] The emerging convention has been to distinguish between the traditional North and South and their frontiers, in particular in the South which experienced substantial differences in economic growth between sub-regions.[56] I adopt this convention by discussing four distinct regions for this section: Northeast, North Central, South Atlantic, and South Central.[57] However, one disadvantage involves the groups that the data does not include at all because of the focus on adult white males, in particular, the absence of linked records of former slaves. This does not prohibit analysing wealth inequality as a part of this study but does require clarification of what precisely can be learned and about whom. My focus in this section is on the regional differences in inequality between adult white males in order to draw the contrast between wealthy individuals and those with little or no wealth between 1850 and 1870. In the following section, I focus on the specific correlates of wealth above the median wealth holder using censored quantile regressions; however, there I revert to the traditional North-South dichotomy in regions.

Inequality in the United States

The hypothesis adopted by Soltow in his analysis of wealth inequality in the United States in the nineteenth century assumed stability in the level of

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[55] Soltow, *Men and Wealth*, p. 181.
[56] For example: Fogel and Engerman, *Time on the Cross*, p. 248; Wright, *Old South*.
[57] Northeast: Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. North Central: Iowa, Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, Pennsylvania, Wisconsin, Kansas, Nebraska, and South Dakota. South Atlantic: District of Columbia, Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Tennessee, and Virginia. South Central: Alabama, Arkansas, Kentucky, Louisiana, Mississippi, and Texas. Additional a West region is also used later and includes: California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, and Washington.

inequality from year to year; that is, given a level of inequality in 1870 the expected change *ceteris paribus* is little from 1860 or 1850.[58] In reality, of course, *ceteris paribus* did not apply due to the Civil War: Soltow recognized this fact and hypothesized some sort of change in inequality.[59]

Stability is reflected in the Gini coefficients for 1850 and 1860 reported in Table 2 above. Both Ferrie and Soltow reported little change between 1850 and 1860, with both showing a marginal decrease in inequality. However, for the first sample used in this study the decline in inequality was much larger than reported by previous studies: a Gini coefficient of 0.84 in 1850 was 0.77 in 1860. This is explained by the exclusions applied to reduce the sample to include only employed adult males.[60] Those dropped from the sample were all young or unemployed individuals who were unlikely to have accumulated any substantial wealth between 1850 and 1860. The second sample shows that inequality also declined during the Civil War decade, although by much less than in the previous decade: the Gini coefficient fell from 0.74 to 0.72 between 1860 and 1870.

This finding for the Civil War decade mirrors Soltow's finding that inequality decreased slightly between free men in 1860 and white men in 1870.[61] His explanation for this finding "is that inequality remained constant in the North but decreased among whites in the South to the level in the North, primarily because of the destruction of slave values among the rich."[62] Although this quotation is referencing the direct impact of emancipation on the wealth of individuals due to the subtraction of slave wealth, below I assess the argument for associating slave wealth with the accumulation of property and non-slave personal wealth and the mechanism through which a loss of slave wealth may have decreased non-slave wealth.[63]

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[58] Soltow, *Men and Wealth*, p. 95.
[59] Ibid, p. 92.
[60] See p. 6.
[61] Soltow, *Men and Wealth*, p. 104.
[62] Ibid, pp. 103-104.
[63] See p. 48.

To return to the findings on inequality, the Gini coefficients were not constant as hypothesized for the general case and reported in previous research. As mentioned above, the reason for this is likely the choice to exclude unemployed adult males. However, can historical significance be ascribed to the finding that among adult white males inequality decreased between 1850 and 1870? The level of inequality reported for the United States during this period was initially worrying to Soltow. He hypothesized that the high level of inequality combined with little change in inequality between census years indicated the presence of a plutocracy, in which a few had significant economic advantages over many.[64] Ultimately, he concluded that individual wealth-holders were not so stable in their possessions to warrant membership in a plutocracy, citing Tocqueville's characterisation of wealth inequality in the United States: "The wealthy will not be so closely linked to each other as the members of the former aristocratic class of society; their inclinations will be different, and they will scarcely ever enjoy leisure as secure or complete."[65] Additional evidence derived from the Gini coefficients applied to the two samples in this study, in particular the first sample, support this claim.

The decline in inequality in the first sample is evident from Figure 3, which shows the Lorenz curves for property wealth in 1850 (solid) and 1860 (dashed). In total, 63 percent of the sample held no property wealth in 1850; by 1860, this was only true for 38 percent of the sample. This finding suggests that where wealth inequality was reduced and wealth was accumulated among employed adult white males it was due to the transition many individuals made from owning zero to owning positive property wealth. A similar trend is evident for property wealth between 1860 and 1870.

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[64] Soltow, *Men and Wealth*, p. 93.
[65] Cited in Soltow, *Men and Wealth*, p. 95, original source: Alexis de Tocqueville, *Democracy in America* (New York: Barnes and Noble Publishing Co., 2003), p. 442.

Figure 3. Property Wealth Inequality: Lorenz Curves, 1850 and 1860
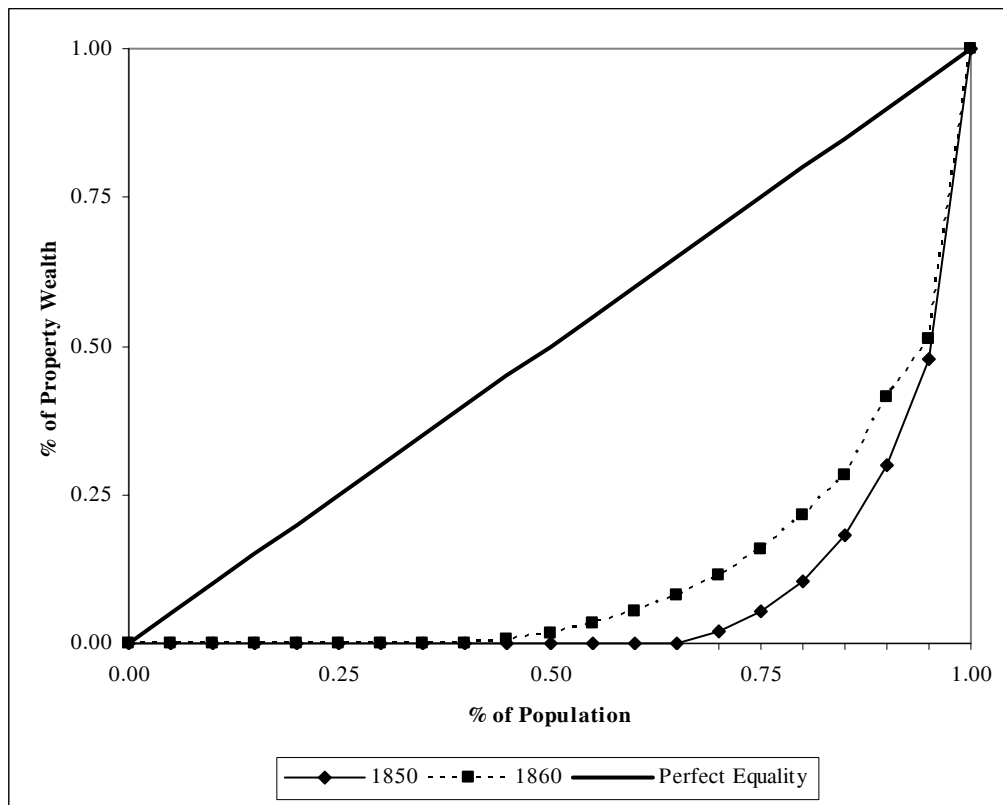
This evidence cannot stand alone in telling the story of wealth inequality between 1850 and 1870. However, buttressed by previous findings from Soltow, the evidence I present shows substantial transition at the bottom of the wealth distribution to owning positive wealth and an overall reduction in inequality among adult white males. How does the reduction of inequality among adult white males in the entire United States disaggregate by region? In *Men and Wealth*, Soltow only distinguishes between the North and the South: How was the effect of inequality reduction observed in these samples distributed within the North and South?

Inequality by Region

Table 3 reports the Gini coefficients for each sample by region. Each region shows a reduction in inequality consistent with the story told above for the United States as whole between 1850 and 1860. However, the decline in

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inequality in the South Atlantic states was less than in any other region. Moreover, between 1860 and 1870, the trends in inequality reduction reversed: the Northeast and North Central showed only modest decreases in inequality, the South Central experienced increased inequality, while the Gini coefficient for the South Atlantic states fell from 0.81 to 0.75.

Table 3. Property Wealth Inequality by Region, 1850-1870

	a. 1850-60 Sample		b. 1860-70 Sample	
	1850	1860	1860	1870
Northeast	0.83	0.77	0.72	0.71
North Central	0.85	0.73	0.72	0.70
South Atlantic	0.87	0.85	0.81	0.75
South Central	0.87	0.81	0.79	0.82

Source: See text.

The reported Gini coefficients for 1850 and 1860 by region are unsurprising. Rapid economic growth in the antebellum period generally combined with a unique characteristic of these linked samples that made it more likely for farmers to be represented contributed to the decrease in inequality observed over the 1850s. The key historical finding is rapid and continuous progress in accumulating wealth by occupational groups other than farmers, in particular, by blue-collar workers and white-collar professionals. My argument is that this explains the decline in inequality between 1850 and 1860, and that this can best be seen on a regional level.

The non-historical aspect of the decline in inequality is the extent to which farmers were more likely to be linked than other occupational groups which thus prevented the sample from mimicking the structural change that is more evident for aggregate data covering this period and is often identified as

source of rising inequality.[66] This problem is specific to the type of sample used in this study. However, it is not prohibitive since it opens the door to answer the question: holding constant the proportion of the population in certain occupational groups, which groups did best in the decade immediately preceding the Civil War? The answer, in addition to farmers, is white- and blue-collar workers: both groups saw property wealth more than double. For inequality, this is particularly important for blue-collar workers. Mean property wealth in 1850 was $210 and by 1860 it had increased to $628 with the effects roughly evenly distributed within the North and South regions. Similarly, white-collar workers experienced rapid accumulation of property wealth.

Between 1860 and 1870, among white-collar professionals, craftsmen, and blue-collar workers, property wealth continued to grow, although less than in the previous decade: between 84 and 115 percent for these groups and only 61 percent for farmers. Moreover, most of these gains for farmers were concentrated in the North. The modest gain for other occupational groups relative to farmers is the cause of the slight decrease in inequality in the North. Within the South, the Atlantic states experienced a substantial decrease in inequality due to the destruction of wealth at the top of the distribution rather than greater wealth accumulation at the bottom; in the central states inequality increased as a result of more rapid wealth accumulation by white-collar workers.

To summarize: all occupational groups accumulated substantial property wealth in the 1850s, with some of the largest gains being made at the bottom of the wealth distribution, in particular among blue-collar workers. The result was decreased inequality. During the 1860s, inequality in the North remained roughly the same. In the South, a slower rate of wealth accumulation at the top relative to the bottom of the wealth distribution decreased inequality slightly in the Atlantic states and rapid wealth

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[66] Simon Kuznets, "Economic Growth and Income Inequality," *The American Economic Review*, Vol. 45, No. 1 (March 1955), pp. 1-28; Richard H. Steckel and Carolyn M. Moehling, "Rising Inequality: Trends in the Distribution of Wealth in Industrializing New England," *The Journal of Economic History*, Vol. 61, No. 1 (March 2001), pp. 160-183.

accumulation among white-collar professionals in the central states increased inequality slightly.

Two conclusions can be drawn from these findings on inequality between 1850 and 1870: (1) among employed white adult males inequality decreased in the antebellum and immediate post-war period and (2) disaggregated by region, wealthier individuals in the South Atlantic states seem to have suffered the most in terms of the differences in wealth accumulation between the 1850s and 1860s, which in turn reduced inequality. Related to both of these conclusions is the sustained increase in property wealth by occupational classes other than farmers, in particular, white-collar professionals and blue-collar workers.

Finally, although previous sections have addressed the comparability of the two samples used in this study, the Gini coefficients reported above appear to reveal a discrepancy in inequality in the year the two samples have in common: 1860. The differences are modest in some cases and more substantial in others. Censored quantile regressions, in addition to the advantages outlined above, help address this issue of comparability since they allow for the choice of a lowest quantile above which estimates are unbiased *and* the samples are comparable. To clarify, when using mean estimators it is necessary to assume that the samples are in fact comparable at their respective means. Using censored quantile regressions allows for the choice of a quantile under which the samples are not comparable but above which they are. For the two samples used in this study similar proportions of property wealth are held above the 70th, 75th, and 85th quantiles.

6.   Rise and Decline in Economic Opportunity

The most recent research on wealth accumulation has adopted the convention of associating greater or lesser wealth with more or less economic opportunity. However, to this point, no systematic studies have used linked samples of nationally representative individuals to examine the correlates of

wealth and opportunity over both the antebellum and immediate post-Civil War period. In studies that have used nationally representative linked samples the focus has been on a specific group (i.e., immigrants) and only covered the antebellum period (i.e., a linked sample between 1850 and 1860).[67] In studies with linked samples covering the entire period between 1850 and 1870, the samples were not nationally representative and typically focused on wealth accumulation on the frontier.[68] Moreover, studies of wealth accumulation and economic opportunity have typically been unable to control for the initial wealth of individuals since the samples were unlinked.[69] An important exception is Herscovici's study of economic opportunity in Newburyport. However, this study dealt only with the antebellum period and focused on the experience of two specific groups from a single geographic locale (i.e., migrants and persisters from Newburyport from 1850 to 1860). This study uses two of the largest linked samples compiled to date to examine the economic opportunity of individuals across the United States, focused on the North and South, from 1850 to 1870.

One potential problem with studies spanning the 1850s and the 1860s is price inflation. In particular, the Civil War decade was a period of high inflation due to the policies adopted by both the Union and Confederacy to pay for war expenditures. Goldin reported price indices constructed by three separate authors but none of them compare prices in the Union and the Confederacy directly.[70] The only relevant price index for this study is one that is disaggregated by region at least between Union and Confederate states. Without a disaggregated price index and without knowledge of the differences in goods consumption by region and occupation the application of price deflators would produce no meaningful difference when comparing groups in a

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[67] Ferrie, "Wealth Accumulation."

[68] J.R. Kearl, Clayne L. Pope, and Larry T. Wimmer, "Household Wealth in a Settlement Economy: Utah, 1850-1870," *The Journal of Economic History*, Vol. 40, No. 3 (September 1980), pp.477-496; David W. Galenson and Clayne L. Pope, "Economic and Geographic Mobility."

[69] Galenson, "Economic Opportunity;" Walker, "Economic Opportunity."

[70] Goldin, "War," pp. 942-43.

particular year, the only difference would be the magnitude of changes between years. This would not be particularly illuminating since it would likely only exaggerate the disparities in wealth reported below. The issue of regional differences in the rate of inflation, particularly during the Civil War decade, is set aside in this study. When I present my findings below they are based on the null hypothesis of no difference between rates of inflation in the Union and Confederate states, which has not yet been rigorously tested.

The Antebellum Period

In the antebellum period, the United States, in particular the South, experienced rapid economic growth. From 1840 to 1860, average annual growth was 1.4 percent for the entire country, 1.3 percent in the North, and 1.7 percent in the South.[71] In 1860, the North was still richer than the South, with income per person at $141 and $103, respectively. However, the richest sub-region of the South, the southern frontier, was comparable to the richest in the North.[72] Rapid growth on the southern frontier is not entirely surprising given the relatively small population of those states, new legislation encouraging westward expansion, and recent advances in the agriculture, transportation, banking, and services sectors, that expanded opportunities available within the South.[73] The story told from the perspective of wealth accumulation should mirror the above description of economic growth: both the North and the South experienced absolute improvements from 1850 to 1860, while the magnitude of the change was greatest for the South.

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[71] Fogel and Engerman, *Time on the Cross*, p. 248.
[72] Ibid.
[73] Jeremy Atack, Fred Bateman, and William N. Parker, "Northern Agriculture and Westward Expansion," in *The Cambridge Economic History of the United States: The Long Nineteenth Century*, eds. Stanley L. Engerman and Robert E. Gallman, Vol. II (Cambridge: Cambridge University Press, 2000), pp. 285-328; Stanly L. Engerman, "Slavery and Its Consequences for the South in the Nineteenth Century," in *The Cambridge Economic History of the United States: The Long Nineteenth Century*, eds. Stanley L. Engerman and Robert E. Gallman, Vol. II (Cambridge: Cambridge University Press, 2000), p. 343.

Table 4 reports the results of censored quantile regressions for the property wealth in the antebellum period.[74] In panel (a), the dependent variable is property wealth in 1850; in panel (b), the dependent variable is property wealth in 1860. Controlling for age, the typical concave relationship between age and wealth emerges: in 1850, an additional year at age 20 increased property wealth by approximately 4 percent at all estimated quantiles, at age 50 an additional year had no economically significant impact, at age 60 the impact was negative. A similar concave relationship between age and wealth also applied in 1860. A variable for family size is included to control for differences in wealth due to presence of additional family members or the characteristics of individuals that caused them to have both a larger family size and a different pattern of wealth holding. In 1850, the correlation between property wealth and family size was positive: an additional family member was associated with approximately 14 percent more wealth between the 85th and 95th quantiles. By 1860, family size was statistically and economically unrelated to property wealth.

The important distinctions between 1850 and 1860 come in comparing the impact of location and occupation. The hypothesis of rapid growth in the North and South is supported by the evidence that in 1850 southerners held

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[74] In panel (a) of tables 4 and 5, which show the results from censored quantile regressions, the equation for each quantile was

$$\ln(property\ wealth)_{it} = \beta_0 + \beta_1 * Age_{it} + \beta_2 * Age_{it}^2 + \beta_3 * Family\ Size_{it} + \beta_4 * South_{it} + \beta_5 * West_{it}$$
$$+ \beta_6 * White\ Collar_{it} + \beta_7 * Craftsman_{it} + \beta_8 * Blue\ Collar_{it}$$

In panel (b) of tables 4 and 5, an independent variable was added to control for property wealth in the previous year of the sample. That is, if the dependent variable in panel (a) was property wealth in 1850 then the dependent variable in panel (b) was property wealth in 1860 and property wealth in 1850 was an additional independent variable. Ferrie, "Wealth Accumulation," p. 10, describes the interpretation of the coefficients of independent variables for which the dependent variable is a natural logarithmic transformation: "For continuous variables, β is a *semi-elasticity*: the percentage change in wealth due to a one-unit change in variable x. For dichotomous variables, the percentage impact of a characteristic is $e^\delta - 1$, where δ is the regression coefficient for the dummy variable for that characteristic." The interpretation of double logarithmic transformations implies that a one percentage point increase in that independent variable produces β percentage increase in the dependent variable. The excluded groups in the censored quantile regressions are northerners and farmers.

roughly 30 percent less property wealth at the 85th and 90th quantiles and in 1860 the levels of property wealth in the North and South, holding other characteristics constant, were statistically indistinguishable across all quantiles. The changes in the returns to occupation were even more dramatic: there was no significant difference between white-collar professionals and farmers in 1850, however, in 1860 white-collar professionals were 50-80 percent wealthier than farmers.

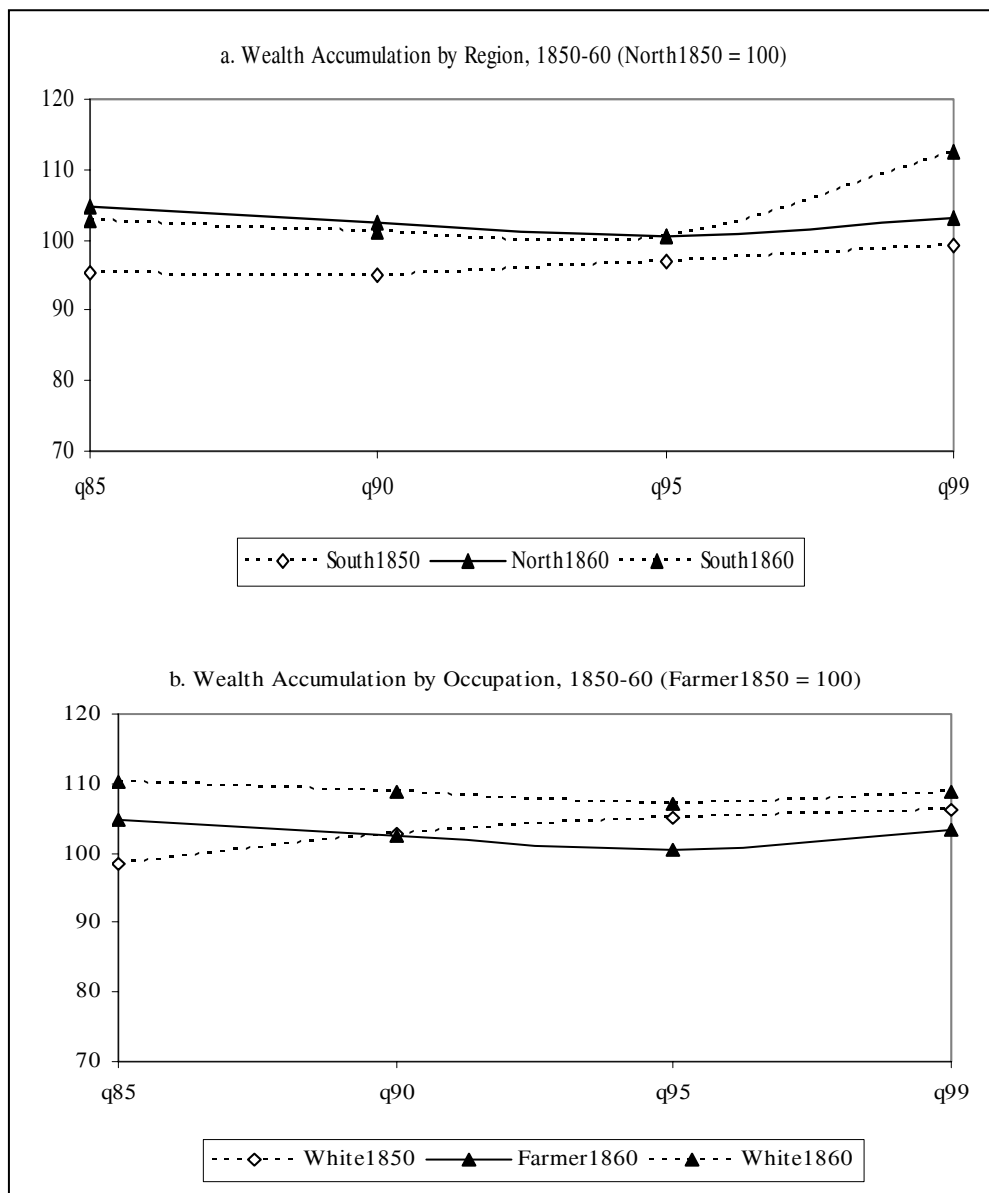Table 4. Censored Quantile Regressions for Property Wealth, 1850-60

	Quantile			
	0.85	0.90	0.95	0.99
a. Dependent Variable: ln(property wealth$_{1850}$)				
Age	0.736 **	0.615 **	0.465 **	0.195 *
Age^2 / 100	-0.729 **	-0.609 **	-0.459 **	-0.178
Family Size	0.146 **	0.143 **	0.132 **	0.117
Region				
North				
South	-0.351 *	-0.414 **	-0.265	-0.062
West	-0.351	0.426	-0.139	-0.610
Occupation				
Farmer				
White-Collar	-0.114	0.236	0.440	0.560
Craftsman	-1.136 **	-0.842 **	-0.573 **	-0.541
Blue-Collar	-2.492 **	-2.142 **	-1.746 **	-1.231 *
Constant	-9.552 **	-6.282 **	-2.343 **	4.151 **
a. Dependent Variable: ln(property wealth$_{1860}$)				
Age	0.094 **	0.076 **	0.070 *	0.040
Age^2 / 100	-0.085 **	-0.065 **	-0.058 *	-0.020
Family Size	-0.003	-0.006	0.008	0.008
Region				
North				
South	-0.162	-0.105	0.002	0.856
West	-0.639 *	-0.442	-0.604	-1.041 **
Occupation				
Farmer				
White-Collar	0.428 **	0.533 **	0.594 **	0.503
Craftsman	-0.660 **	-0.648 **	-0.621 **	-0.415
Blue-Collar	-0.523 **	-0.465 **	-0.351 **	-0.046
ln(property wealth$_{1850}$)	0.122 **	0.116 **	0.105 **	0.101
Constant	5.567 **	6.270 **	6.711 **	8.003 **

Notes: * indicates significant at the 95% level; ** indicates significant at the 99% level. The sample size is 3,597. The censoring point is $100.
Source: See text.

Figure 4 shows the changes in property wealth by region and occupation.[75] In panel (a), the level of property wealth in the North in 1860 and the South in 1850 and 1860 is compared to the North in 1850. Panel (a) shows that where southerners held less property wealth than northerners in 1850, by 1860 the South had improved its position dramatically while the North accumulated

Figure 4. Wealth Accumulation by Occupation and Region, 1850-60

a. Wealth Accumulation by Region, 1850-60 (North1850 = 100)

···◇··· South1850   ▲ North1860   ···▲··· South1860

b. Wealth Accumulation by Occupation, 1850-60 (Farmer1850 = 100)

···◇··· White1850   ▲ Farmer1860   ···▲··· White1860

Source: See text and Table 4.

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[75] Figure 4 was constructed by using the coefficients in Table 4 to predict property wealth at each quantile holding age and family size constant at 35 years old and 3 family members. In addition, in panel (b) property wealth in 1850 was fixed at the mean. The occupation used in panel (a) is farmer; the region used in panel (b) is the North. The same applies to Figure 5 below except that property wealth in 1860 was fixed at the mean.

only marginal additional property wealth. Due to the small number of observations in the West, no useful information can be derived from these coefficients. Similarly, in panel (b), the difference between white-collar professionals and farmers in 1860 is substantial whereas in 1850 little difference between the two groups was apparent.

Another interesting result from Table 4 is the correlation between property wealth in 1850 and property wealth in 1860 in panel (b). Comparing the relationship between property wealth in the first year of each sample (1850 and 1860, respectively) provides one measure of economic opportunity: a larger coefficient on this variable would indicate a greater importance of starting position than other individual characteristics more commonly associated with economic opportunity (i.e., location or occupation). The hypothesis for comparing the strength of the relationship between property wealth in the first year of the samples and the second year is that a stronger relationship will be observed for the Civil War decade, indicating the importance of starting position and less economic opportunity associated with region and occupation characteristics.

The Civil War Decade

The Civil War decade had a dramatic impact on the development of the U.S. economy. Its various effects as manifest in aggregate variables such as cotton demand, labour supply, government expenditure, and the destruction of the physical and human capital were discussed in a previous section. In the remainder of this section I present quantile regressions for property wealth in 1860 and 1870 and compare these with the results across the 1850s in order to assess how and to what extent the Civil War decade resulted in a deviation from the pattern of wealth accumulation observed for the previous decade. I also discuss how the results for property wealth can be interpreted in light of the link commonly drawn between property wealth and economic opportunity.

Table 5 shows the results of censored quantile regressions with property wealth as the dependent variable. The relationship between property

wealth and age in 1860 and 1870 is similar to the previous decade: as age increases wealth increases initially and around age 50 or 60 begins to decline. The effect of family size is entirely insignificant at all estimated quantiles for both sample years.

Table 5. Censored Quantile Regressions for Property Wealth, 1860-70

	Quantile			
	0.85	0.90	0.95	0.99
a. Dependent Variable: ln(property wealth$_{1860}$)				
Age	0.228 **	0.192 **	0.166 **	0.074
Age^2 / 100	-0.002 **	-0.002 **	-0.001 **	0.000
Family Size	0.021	0.017	0.010	-0.013
Region				
North				
South	-0.257 **	-0.076	0.074	0.334
West	-0.616 **	-0.073	0.100	0.155
Occupation				
Farmer				
White-Collar	0.293 **	0.409 **	0.504 **	0.671
Craftsman	-0.837 **	-0.749 **	-0.673 **	-0.201
Blue-Collar	-0.838 **	-0.631 **	-0.474 **	-0.474
Constant	2.615 **	3.656 **	4.685 **	7.402 **
a. Dependent Variable: ln(property wealth$_{1870}$)				
Age	0.045 **	0.052 **	0.044 *	0.053
Age^2 / 100	-0.041 **	-0.046 *	-0.039	-0.047
Family Size	0.006	0.019	0.031 *	0.050
Region				
North				
South	-0.933 **	-0.741 **	-0.581 **	-0.333
West	-0.009	0.108	0.431 *	0.228
Occupation				
Farmer				
White-Collar	0.754 **	0.837 **	0.890 **	0.960 *
Craftsman	-0.507 **	-0.564 **	-0.373 **	-0.144
Blue-Collar	-0.693 **	-0.647 **	-0.385 **	-0.229
ln(property wealth$_{1860}$)	0.151 **	0.136 **	0.122 **	0.117 *
Constant	6.728 **	6.763 **	7.334 **	7.763 **

Notes: * indicates significant at the 95% level; ** indicates significant at the 99% level. The sample size is 6,818. The censoring point is $100.
Source: See text.

The impact of locating in the South in 1860 in panel (a) of Table 5 compared to panel (b) of Table 4 is roughly the same except where the difference at the 85th quantile in Table 5 is statistically significant.[76] By 1870, however, the relative position of the South had deteriorated substantially with southerners holding 40-60 percent less wealth at significant quantiles when compared with northerners. The West remains statistically indistinguishable from the North except at the 85th quantile in 1860 and 95th quantile in 1870; however, no historical significance can be ascribed to these results given the small number of observations for individuals residing in the West. White-collar professionals continued to improve relative to farmers: they held 30-60 percent more property wealth than farmers in 1860 but over 100 percent more in 1870. Similarly, craftsman and blue-collar workers accumulated property wealth more rapidly than farmers, particularly at the lower estimated quantiles.
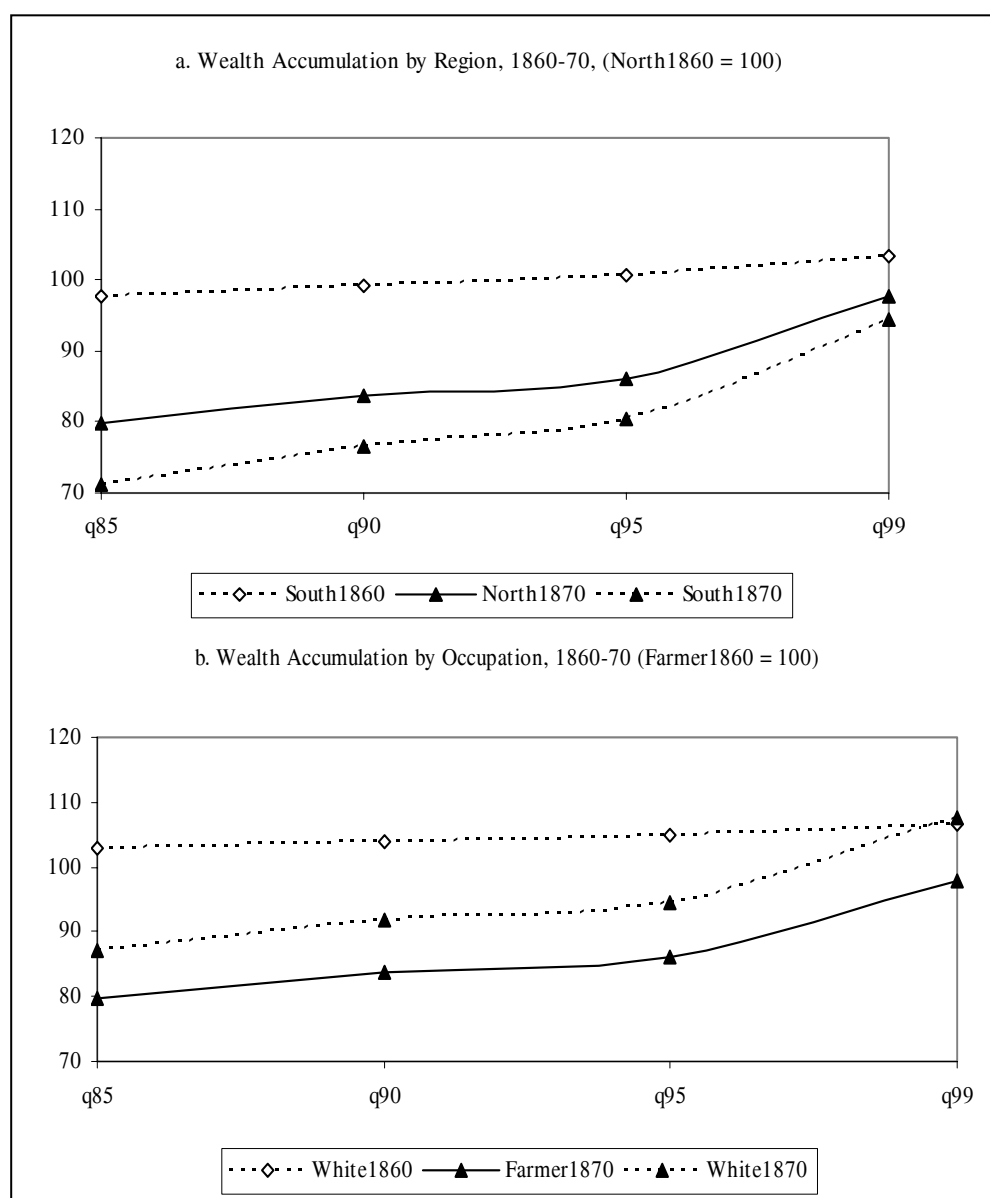
Figure 5 shows the changes in wealth accumulation by region and occupation relative to the appropriate baseline: the North and farmers in 1860 in panels (a) and (b), respectively. The important features of panel (a) are the dramatic deterioration of the property wealth in both the North and South from 1860 to 1870. Whereas the North and South held roughly similar property wealth in 1860, in 1870 each held about 20 and 30 percent less wealth, respectively. The relative decline by occupation was less than by region, but a substantial gap in property wealth between white-collar professionals and farmers did emerge over the 1860s.

Finally, to test the hypothesis regarding the importance of starting position for the antebellum and Civil War decades, I compare the coefficients on property wealth in 1850 and 1860 in panel (b) of tables 4 and 5. Although

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[76] In a previous section, I emphasised the importance of the comparability of the two samples' regional and occupational characteristics after controlling for age and family size. Comparing the 95 percent confidence intervals for the coefficients provides some evidence that there is no significant difference in, for example, the coefficient on South between the two samples. This distinction an also be made when similar quantile regression are compared: that is, when property wealth in 1850 is removed as independent variable in panel (b) of Table 4.

the coefficients for 1860 are larger the difference is marginal and a comparison of the 95 percent confidence intervals at each quantile show that

Figure 5. Wealth Accumulation by Occupation and Region, 1850-60

a. Wealth Accumulation by Region, 1860-70, (North1860 = 100)

· · ◇ · · South1860 ——▲—— North1870 · · · ▲ · · · South1870

b. Wealth Accumulation by Occupation, 1860-70 (Farmer1860 = 100)

· · ◇ · · White1860 ——▲—— Farmer1870 · · · ▲ · · · White1870

Source: See text and Table 5.

they are not statistically different. This indicates that the importance of starting position did not change between the two decades: an additional one percent of wealth in 1850 or 1860 was positively correlated with approximately the same amount of property wealth in 1860 and 1870. This suggests that much

of the change that occurred between the two decades was due to a change in the returns to regional and occupational characteristics.

The first question asked in this study is whether and to what extent the pattern of wealth accumulation changed as a result of the Civil War decade. Second, I was interested in whether the changes that did occur were the result of new or old sources of economic opportunity. Using the relationship between individual demographic characteristics and property wealth, I argued that wealth accumulation over a decade, particularly after controlling for the value of wealth at the beginning of the decade, could be used to assess not just the physical assets accumulated but cumulative economic opportunities. The results reported above can provide some insight into the queries that initiated this study.

Prior to the Civil War wealth accumulation was substantial: mean property wealth for the entire first sample increased nearly threefold between 1850 and 1860, the proportion of the sample holding positive wealth increased, and wealth inequality among employed adult white males decreased. Over the Civil War decade these trends were reversed or stagnated: mean property wealth increased but by less than double (in the case of southern farmers it decreased), the proportion holding zero wealth decreased but not as fast as before, and wealth inequality did not continue to decline except in the South Atlantic amidst a concentration of slave wealth. Thus the effect of the Civil War decade was to decrease the rate of wealth accumulation. Given this fact, however, some demographic groups were able to come closer to their previous rate of wealth accumulation.

The results from the censored quantile regressions show that while the South outstripped the North in terms of wealth accumulation prior to the Civil War, the North was better able to maintain its rate of wealth accumulation across the entire period from 1850 to 1870. Moreover, the difference between the two decades was not due to the starting position in 1850 or 1860. Northern farmers showed a particular resilience, at least relative to southern farmers: the former experienced positive wealth accumulation while the latter saw

property holdings decrease.[77] One explanation that encompasses the trend toward high wealth accumulation in the 1850s for farmers in both regions and continued wealth accumulation for only northern farmers in the 1860s was the advent of sectoral and population shift.

Alexander J. Field documented sectoral shift for the North, particularly antebellum Massachusetts. He proposed that the reason manufacturing emerged in the North as opposed to another region was technological change in transportation and imperfect labour mobility that prevented complete structural adjustment through migration.[78] The ability to move agricultural goods more cheaply from the fields in the Midwest to markets in Chicago, New York, and Boston depressed the agricultural wage in the traditional North. These emerging economic conditions made it profitable for some to move westward in search of greater opportunities, encouraged the development of a manufacturing sector for those who stayed but could not find work in farming, and relieved some of the pressure on northern farmers. This process could have continued in the North into the 1860s due to the Homestead Act in 1862 and the sale of public land.[79]

Robert W. Fogel and Stanley L. Engerman identified a similar trend of population shift in the South in the antebellum period. In fact, they argued that the shift from east to west within the South (and they argued for the North as well) was a key determinant of growth.[80] However, during the 1860s, the pace of internal improvements in the South was disrupted as a result of the Civil War, cotton demand fell, and legacy of slavery prevented the internal institutional adjustments necessary to maintain the high antebellum growth rates. Although rigorous statistical analysis would be illuminating in testing the validity of the hypothesis regarding the importance of sectoral and population shift in the South, evidence for the hypothesis can be found in the wealth

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[77] This is shown by the differences in mean wealth accumulation between northern and southern farmers over the 1860s, which were 80 and negative 10 percent, respectively.
[78] Alexander J. Field, "Sectoral Shift in Antebellum Massachusetts: A Reconsideration," *Explorations in Economic History*, Vol. 15, No. 2 (April 1978), p. 167.
[79] Atack, Bateman, and Parker, "Northern Agriculture," pp. 297-98.
[80] Fogel and Engerman, *Time on the Cross*, p. 252.

returns to individuals residing in a particular region regardless of whether the individual moved their in the time period for which data is available: returns were substantial in the South before the war and fell afterward; returns were high in the North and not hit as hard during the war decade.

Perhaps surprisingly, the Civil War does not seem to have produced a different trend in wealth accumulation by occupation: across both the 1850s and 1860s white-collar professionals and blue-collar workers, in particular, improved their positions substantially relative to farmers. The reason for this could be the emergence of the non-agricultural sectors of the US economy starting in the 1840s and 1850s. However, whether this is the specific cause of the change in this individual-level wealth data would require greater investigation.   A sample to address the precise pattern of wealth accumulation among those in "new" and "old" sectors would have to contain a greater number of observations disaggregated from broad occupational categories to more specific job-types linked to emerging sectors of the economy.

Also surprisingly, the Civil War did not change the relationship between previous wealth and wealth in 1860 or 1870. I hypothesized that individuals with greater resources going into the Civil War decade may have had an advantage in accumulating more wealth by the end of the decade the statistical evidence does not support this hypothesis. Instead, economic opportunity in the 1850s and 1860s was more related to the region and occupation of an individual: with northerners and southerners benefiting in different decades and the opportunities available to farmers decreasing throughout the period of this study.

The final section of this study focuses on slavery, a specific vehicle for accumulating wealth. Given the abolition of slavery, I discuss the impact this could have had both in retrospect, looking back at how slavery contributed to wealth accumulation, and looking forward at the implications of slave ownership for future generations.

7. Wealth and Slave Ownership

The past 40 years of research on the experience of slaves in the United States has engendered debate on topics ranging from the consumption and standard of living under slavery to the efficiency of an institution that held people in eternal bond. The Civil War ended the constitutional enforcement of slavery but it could not prevent its legacy from influencing and shaping the political, social, and economic landscape of the United States, in particular the South, well into the twentieth century. Thus far, this study has addressed the specific experience of white adult males contained in two samples. The larger implications of these findings are based exclusively on the reliability of the samples in allowing an extrapolation to the population at large. In this section, I explore how the second sample, which links slave-owners to the number and value of slaves owned in 1860, can be used in retrospective and forward-looking assessments of the institution of slavery. Finally, I propose further research on the intergenerational transfer of slave wealth.

The analysis in this section extends the methodology applied in the previous section: censored quantile regressions are used to examine the relationship between slave wealth in 1860 and property and personal wealth in 1860 and 1870. First, however, I estimate a logistic regression in which the dependent variable is 1 for slave-owner and 0 for non-slave-owner to ensure that the effects of the characteristics included in the censored quantile regressions are interpreted correctly. Only individuals residing in states that also contain slave-owners are used to estimate the logistic regression. The marginal effects of the independent variables are reported in Table 6.

The results of the logistic regression show simply that older individuals as well as farmers and white-collar professionals were more likely to own slaves. The analysis below, particularly regarding the efficiency of slavery as vehicle for wealth accumulation, focuses on farmers, who accounted for a greater proportion and on average held more slave wealth than did white-collar professionals in the sample.

Table 6. Logistic Regression of Slave Ownership

	Slave Owner (1 = yes, 0 = no)
Age	0.011 [*]
Age^2 / 100	-0.006
Occupation:	
Farmer	
White-Collar	0.122 [*]
Craftsmen	-0.129 [**]
Blue-Collar	-0.092 [**]
Constant	-4.313 [**]
Mean Probability	0.136
Observations	1613

Notes: * indicates significant at the 95% level; indicates significant at the 99% level. Values for non-constant terms are marginal effects.
Source: See text.

The difference between slave and free societies is not the existence of property rights in man but how and to whom those rights are allocated: under slavery the slave-owner rather than the slave reaped the fruits of labour.[81] This point may seem trivial to the extent that slave and free societies can obviously be differentiated in the high level of exploitation enforced by the state in former and the low level in the latter. But viewing slavery first as a specific definition of property rights over the factors of production illuminates how slavery can be understood in economic terms as choosing between different inputs into a production function. When viewed in this light "a slave was a form of capital; specifically, 'fixed' capital (as opposed to 'circulating' capital, such as inventories)."[82] The problem addressed by the metaphor of slaves as "capital" is to allow comparison between the South and the North (and within the South where non-slave labour was used) in terms of efficiency of production, in particular, in agriculture.

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[81] Fogel and Engerman, *Time on the Cross*, pp. 232-33.
[82] Ralph V. Anderson and Robert E. Gallman, "Slaves as Fixed Capital: Slave Labor and Southern Economic Development," *The Journal of Economic History*, Vol. 64, No. 1 (June 1977), p. 25.

Fogel and Engerman used this framework to show the necessity of slave labour for achieving economies of scale in agriculture and the differences in demand elasticity for slave "inputs" in rural and urban work settings.[83] Slaves were also capital in the sense that they embodied "investments" earning rates of interest and accounting for a large portion of the total wealth of their owners. Thus, the effect of emancipation, in addition to the backward shift in labour supply in southern agriculture previously discussed, was to eliminate an entire class of assets held by southern slave-owners. This must have reduced wealth substantially since the censuses recorded slaves as personal wealth *and* a reduction in slave wealth likely weakened the value of assets once augmented by slaves. Table 7 and Table 8 show the results for censored quantile regressions in which the dependent variables are property and personal wealth in 1860 or 1870 and the value of slaves (divided by $1,000) is an independent variable.[84]

The results for property and personal wealth in 1860 are unsurprising. The addition of slave wealth as an independent variable weakens the relative impact of residing in the South and slave wealth is significantly positively correlated with both forms of wealth: $1,000 in slave wealth was associated with 17-27 percent and 20-53 percent more property and personal wealth, respectively. The results for 1870 are not as straightforward. Holding slave wealth in 1860 remained significantly positively correlated with property and personal wealth in 1870, although the magnitude decreased: $1,000 in slave wealth was associated with 7-9 percent and 3-5 percent more property and personal wealth, respectively, in 1870. The question then is whether the relationship between slave wealth in 1860 and post-emancipation property and personal wealth is economically large or small. Two interpretations lead to two different conclusions.

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[83] Fogel and Engerman, *Time on the Cross*, p. 234.
[84] As recorded in the census personal wealth includes the value of slaves. However, the dependent variable in this case excludes the value of slaves so that the censored quantile regression captures personal wealth that is not slave wealth.

Table 7. Property Wealth and Slave Wealth, 1860-70

	Quantile			
	0.85	0.90	0.95	0.99
a. Dependent Variable: $\ln(\text{property wealth}_{1860})$				
Age	0.217 **	0.193 **	0.163 **	0.078
Age^2 / 100	-0.200 **	-0.175 **	-0.146 **	-0.049
Family Size	0.025 *	0.020	0.011	-0.012
Region				
North				
South	-0.634 **	-0.531 **	-0.291 **	0.096
West	-0.623 **	-0.106	0.090	0.143
Occupation				
Farmer				
White-Collar	0.244 **	0.344 **	0.451 **	0.675
Craftsman	-0.789 **	-0.681 **	-0.611 **	-0.202
Blue-Collar	-0.818 **	-0.647 **	-0.424 **	-0.477
$\text{Slave Value}_{1860}$ / $1000	0.269 **	0.245 **	0.172 **	0.055
Constant	2.872 **	3.679 **	4.766 **	7.332 **
a. Dependent Variable: $\ln(\text{property wealth}_{1870})$				
Age	0.046 **	0.065 **	0.043 *	0.058
Age^2 / 100	-0.042 **	-0.060 **	-0.048 *	-0.051
Family Size	0.008	0.018	0.032 *	0.052
Region				
North				
South	-1.023 **	-0.842 **	-0.663 **	-0.289
West	0.197	0.252	0.069	0.230
Occupation				
Farmer				
White-Collar	0.752 **	0.854 **	0.902 **	0.932 *
Craftsman	-0.504 **	-0.565 **	-0.367 **	-0.126
Blue-Collar	-0.696 **	-0.646 **	-0.381 **	-0.216
$\ln(\text{property wealth}_{1860})$	0.151 **	0.134 **	0.121 **	0.118 *
$\text{Slave Value}_{1860}$ / $1000	0.090 **	0.081 **	0.072 **	-0.018
Constant	6.701 **	6.519 **	7.208 **	7.616 **

Notes: * indicates significant at the 95% level; indicates significant at the 99% level. The sample size is 6,818. The censoring point is $100.

Source: See text.

Table 8. Personal Wealth and Slave Wealth, 1860-70

	Quantile			
	0.85	0.90	0.95	0.99
a. Dependent Variable: $\ln(\text{personal wealth}_{1860})$				
Age	0.176 **	0.168 **	0.143 **	0.144
$\text{Age}^2 / 100$	-0.170 **	-0.158 **	-0.129 **	-0.124
Family Size	-0.002	0.011	0.000	0.012
Region				
North				
South	0.276 **	0.375 **	0.568 **	0.945
West	0.668 **	1.046 **	0.796 **	0.482
Occupation				
Farmer				
White-Collar	1.050 **	1.232 **	1.391 **	1.527 *
Craftsman	-0.535 **	-0.505 **	-0.340 **	-0.068
Blue-Collar	-0.520 **	-0.450 **	-0.405 **	-0.291
Slave Value$_{1860}$ / $1000	0.536 **	0.487 **	0.385 **	0.203 **
Constant	2.879 **	3.189 **	4.192 **	4.977 *
a. Dependent Variable: $\ln(\text{personal wealth}_{1870})$				
Age	0.019	0.019	0.006	-0.016
$\text{Age}^2 / 100$	-0.017	-0.014	0.004	0.026
Family Size	0.000	-0.005	-0.009	-0.007
Region				
North				
South	-0.637 **	-0.686 **	-0.764 **	-0.474
West	0.303 *	0.127	0.313	0.028
Occupation				
Farmer				
White-Collar	1.360 **	1.523 **	1.731 **	1.846 **
Craftsman	-0.387 **	-0.249 **	-0.034	0.378
Blue-Collar	-0.421 **	-0.281 **	-0.153	0.007
$\ln(\text{property wealth}_{1860})$	0.156 **	0.158 **	0.161 **	0.173 *
Slave Value$_{1860}$ / $1000	0.037 **	0.031 *	0.051 **	-0.032
Constant	6.163 **	6.359 **	7.038 **	8.326 **

Notes: * indicates significant at the 95% level; indicates significant at the 99% level. The sample size is 6,818. The censoring point is $100.
Source: See text.

Retrospective Implications: the efficiency of slavery

If the relationship between slave wealth and property and personal wealth is interpreted as weak (i.e., the coefficients are not economically significant) then the key implications are retrospective related to the efficiency of slavery as not only a provider of inputs in southern agricultural production, but also as a vehicle for wealth accumulation. Fogel showed that widespread ownership and use of slaves in agriculture was rational because it allowed for the unique organisation of labour in "gangs," which in turn produced economies of scale beyond what was possible in northern agriculture.[85] Interpreting the coefficients on slave wealth to have an economically insignificant relationship with property and personal wealth in 1870, combined with the significant relationship between slave wealth and property and personal wealth in 1860, implies an important avenue for wealth accumulation that was available to slave-owners in 1860 but unavailable in 1870.

This interpretation implies a specific claim that should not be misconstrued. The contrast is between what wealth accumulation actually looked like *after* the Civil War without slavery and what it might have looked with slavery. That is, given the historical presence of slavery how did slave-owners envision using it to their advantage and were they successful? Fogel and Engerman argued for success on the production side; my argument is for success on the wealth side as evidenced by the weakening of the relationship between slave wealth and property and personal wealth from 1860 to 1870: from pre- to post-emancipation. Further evidence is required to establish that the asserted relationship between slave wealth and other wealth in 1860 was plausible and that the absence of slave wealth could have led to a decline in property and personal wealth in 1870.

Two pieces of evidence suggest that slave wealth was essential to accumulating other wealth in 1860 and 1870: (1) the suddenness with which political tensions between the North and South became economically costly and (2) the suddenness with which slave labour evacuated the urban South in

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[85] Fogel, *Without Consent*, p. 74.

response to increased cotton demand in the 1850s. In order to avoid the effects of emancipation, an individual slave-owner would have had to anticipate that political tensions over slavery would result in war and act accordingly to liquidate his wealth in slaves through sale. Widespread attempts to sell slaves would have resulted in significant decline in the price of slaves; the absence of such a decline in price is evidence that slave-owners did not systematically anticipate the wealth consequences of emancipation.[86] Moreover, slave labour was essential to southern agriculture. The stability of slave prices throughout the 1850s was not the result of finding new permanent sources of employment for slave labour.[87] As Goldin argued, urban slavery, which was a prominent feature of the antebellum South, experienced relative decline in the 1850s due to the increase in the world demand for southern (primarily agricultural) output and the subsequent expansion of the rural economy.[88] This means that slaves remained an essential input in southern agriculture throughout the 1850s, were not systematically replaced in anticipation of the emancipation, and could not have been without decreasing agriculture income.

The value of slaves to slave-owners is evident from the substantial gains accruing to slave-owners. Annual net earnings derived from slave ownership were negative at birth but climbed to a maximum of nearly $100 when a slave was 35 years old while the pecuniary gains accruing to slave-owners totalled $10 million (both in 1850).[89] This is not a measure of the net (pecuniary and non-pecuniary) costs and benefits of the whole institution of slavery, which were negative and substantial.[90] Rather, the conclusion that slavery had net income benefits to *slave-owners* late in the antebellum period

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[86] Fogel and Engerman, *Time on the Cross*; the authors showed the relative optimism of 1850s with an index of the sanguinity of slave-owners (pp. 103-105); the authors also showed that the prices of slaves would have been stable or increased from 1860 to 1890, in the absence of the Civil War (p. 97).
[87] Claudia D. Goldin, *Urban Slavery in the American South, 1820-1860: A Quantitative History* (Chicago: The University of Chicago Press, 1976), p. 103.
[88] Goldin, *Urban Slavery*, pp. 122-23.
[89] Fogel and Engerman, *Time on the Cross*: annual net earnings by age (p. 74) and total pecuniary gains (p. 245).
[90] Ibid, p. 245.

is combined with inelastic agricultural demand for slave labour to show that slavery was necessary as an agricultural input to maintain output levels and rates of return: higher agricultural incomes due to slavery could have increased southern wealth in 1860 and slavery's absence could have decreased wealth in 1870. To summarize: the argument is that the impact of slave wealth in 1860 on property and personal wealth in 1870 is relatively weak and this suggests slavery was an efficient vehicle for wealth accumulation. The reason is that the unique characteristics of slavery necessitated southern farmers hold slaves but also allowed for greater productive efficiency, high rates of return, and thus wealth accumulation apart from wealth held in slaves.

Forward Implications: the intergenerational transfer of slave wealth

Another possible interpretation of the slave wealth coefficients in tables 7 and 8 suggest they are economically as well as statistically significant, with implications for the legacy of slavery looking forward from emancipation to the early twentieth century. Eugene Genovese hypothesized that slavery inhibited the growth of southern manufacturing since it limited purchasing power and prevented the emergence of "southern" demand for manufacturing goods produced at "home."[91] Wright stated that slavery reduced investment in public infrastructure and dispersed population over a wider area, thus limiting the growth of urban areas. For example, he argued that "the South moved much more heavily into cotton growing *after* the war than before,"[92] and asserted, "there is no more vivid illustration of the impact of slavery on spatial patterns of economic activity" then the rapid spread of cotton-growing areas between 1859 and 1899.[93] Finally, Lee J. Alston and Ferrie showed the complex evolution of slavery from a master-slave relationship to paternalism and the

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[91] Eugene Genovese, "The Significance of the Slave Plantation for Southern Economic Development," *Journal of Southern History*, Vol. 28, No. 4 (November 1962), p. 434.
[92] Wright, *Old South*, p. 34.
[93] Ibid, pp. 35-37.

impact this had on the development of the welfare state in the United States until the 1950s.[94]

Interpreting the slave wealth coefficients as large implies an additional amount of property and personal wealth due to slave wealth that could then be transferred to the next generation. Thus, where Genovese and Wright (separately) addressed the consequences of slavery for economic structure and Alston and Ferrie described the political economy of slavery's legacy, this framework could bare significant fruit in terms of the intergenerational consequences of slave wealth. Whether the residual property and personal wealth in 1870 due having held slaves in 1860 was inherited by the next generation or not will have significant importance for assessing the distributional effects of the Civil War.

Unfortunately, the data presented and analysed in this study cannot address this question specifically. Ideally, a new data set would contain adult males linked between 1860 and 1870, the number and value of slaves held in 1860, *and* the wealth of sons in some future year. This new data set would allow for comparisons of groups within and across regions to determine (1) if slave wealth was inherited and (2) if the patterns of inheritance followed regional lines or were determined by slave ownership.

Ultimately, the interpretations proposed in this section are not contradictory. It is possible to conclude both that the impact of the coefficients for slave wealth in 1860 on property and personal wealth in 1870 was large and small. The coefficients are small since after emancipation owning slaves could no longer be a direct source of wealth nor could the productive gains from slavery be used to accumulate other wealth. However, whether an individual slave-owner lost an avenue to accumulate wealth after emancipation has little bearing on the wealth accumulated as a result of slavery that could then be transferred to sons and be the source of their greater achievements in later decades. Thus, emancipation, a direct

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[94] Lee J. Alston and Joseph P. Ferrie, "Paternalism in Agricultural Labor Contracts in the U.S. South: Implications of the Growth of the Welfare State," *The American Economic Review*, Vol. 83, No. 4 (September 1993), pp. 852-876.

consequence of the Civil War, eliminated a vehicle for wealth accumulation and may have changed the intergenerational distribution of wealth caused by slavery—although further research is required.

8.   Conclusion

This study has examined the impact of the Civil War decade on wealth accumulation in the United States. Previous studies found that the impact of this decade was substantially negative. The findings presented here support this conclusion, in particular rapid economic growth in the South in the 1850s and decline in the 1860s mirrored the pattern of wealth accumulation over the same period. However, despite the overall negative impact of the Civil War decade on wealth accumulation some regions and occupations were better able to respond than others, which resulted in new sources of wealth accumulation overshadowing old ones. Aside from the historical findings related to the accumulation of property wealth, I also discussed the problems encountered with the representativeness of the sample linked across the Civil War decade. Finally, using a unique feature of the second sample that linked slave-owners to the number and value of slaves, I proposed two different interpretations regarding the impact of the abolition of slavery; the first examined the retrospective implications of slavery as an effective vehicle for wealth accumulation and the second discussed the possible intergenerational transfer of wealth derived from slave ownership, which could have opened another avenue for the legacy of slavery to extend into the twentieth century.

The problem of representativeness for the linked sample covering the Civil War decade was discussed above; however, a rigorous test would ultimately require the full list of linked and unlinked individuals in order to discover why some were more likely to be linked than others. There is a methodological issue: when are linked samples inappropriate given the extent to which they may introduce bias in terms of the individuals they represent? Moreover, would another procedure for linking be better able to represent the

population? But there is also a historical query: why was the Civil War so disruptive in allowing an individual to appear in the two censuses on either side of the war decade? The ability, for example, to find unlinked individuals in the muster roles on the Union or Confederate side of the conflict may shed light on precisely who was not represented in the sample and what about their experience during the 1860s made this likely. Which wartime effect—death, desertion, or injury—was most likely to prevent a link? Was it specifically soldiers who were not linked or did the disruption caused by the Civil War have a more general effect? An answer to these questions generated by this study would constitute a substantial addition to our knowledge of the direct impact of Civil War and for whom the effect was strongest.

The historical findings of this study focus on the wealth accumulation by region and occupation. The results of censored quantile regressions suggest that the economic opportunities open to northerners in the 1850s remained open in the 1860s, although were less due to the impact of the war. This finding is supported by additional historical evidence describing the changes that were occurring in the North prior to the Civil War and continued despite it. In particular, the continued push westward, which was encouraged by legislation enacted during the 1850s and 1860s. For southerners the Civil War had a different effect. Aside from substantial direct reduction in wealth due to the abolition of slavery, the South also lost the supply of slave labour to agriculture, as former slaves elected to use their freedom to consume leisure over constant participation in the labour force. This constituted an improvement in the standard of living of slaves as their consumption increased, but was also a loss of labour supplied to the South's most productive and highest income sector: cotton.

Similar to the contrast between the North and South, white-collar professionals and farmers also diverged substantially although the reason does not appear to be the Civil War: already between 1850 and 1860 white-collar professionals were eroding the relative position of farmers in terms of

property wealth. In addition, blue-collar workers improved their position substantially in both the 1850s and 1860s.

Finally, the abolition of slavery and the effect on property and non-slave personal wealth was given two interpretations. Under the first, slavery was an efficient vehicle for wealth accumulation and its abolition constituted a substantial limitation on the ability of some to accumulate wealth. The second interpretation explored the possibility of slavery's legacy extending into the twentieth century as a result of the intergenerational transfer of wealth that was accumulated due to slavery. The latter, in particular, is a promising avenue for future research.

This study does not constitute a substantial revision of the economic history of the United States. Rather it traces the patterns of wealth accumulation across the period including the Civil War and, using the most comprehensive pair of linked samples, shows the relative impact of the war on key demographic groups. Consistent with past research, the wealth accumulation of the South dipped dramatically, reflecting the decline in economic opportunities. Substantial opportunities appear to have been available to white-collar professionals, who continued to improve their position in the immediate antebellum and post-war periods.

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APPENDIX A: Linking

The strategy for linking individuals between two years is described by Ferrie.[95] The sample of males linked between 1850 and 1860 described by Ferrie is identical to the first (1850-60) sample of linked males used in this study. In his article, Ferrie outlines the steps for linking individuals.[96] First, the sample is restricted to names that can be sought in the next decennial census. This implied dropping all females and any male younger than ten years old. Second, each name is coded to allow for variation in spelling and pronunciation, matched to individuals in the next census year, and a name is dropped if it is matched to more than ten individuals. Finally, for those individuals with more than one and fewer than ten matches between the two years, their demographic characteristics (age, nativity, birthplace, etc.) are compared to obtain a unique match.

The key variables available in each year of the first sample are property wealth, age, family size, state, and occupation. The value of personal wealth was reported in 1860 but not 1850. Property and personal wealth were reported for each year of second (1860-70) sample along with the state of residence in 1860 and 1870. Age and occupation were given for 1860 only. In addition, the second sample contains the number and value of slaves owned for a subset of individuals. Table A.1 summarises the variables available in each year of both samples.

Table A.1. Key Variables by Sample

	a. 1850-60 sample		b. 1860-70 sample	
	1850	1860	1860	1870
Property Wealth	X	X	X	X
Personal Wealth		X	X	X
Age	X	X	X	
Family Size	X	X	X	
State	X	X	X	X
Occupation	X	X	X	
Number and Value of Slaves			X	

Source: see text.

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[95] Ferrie, "New Sample."
[96] Ferrie, "New Sample," pp. 7-10.

APPENDIX B: Censoring Point

The choice of a censoring point is based on the sensitivity of the regression estimates at different quantiles. Ultimately, the goal is to choose a quantile above which the choice of the censoring does not impact the interpretation of the coefficients.   That is, the choice of the censoring point is not based on the extent to which coefficients are identical at various censoring points but the extent to which different interpretations and levels of economic significance result from choosing one censoring point over another. Typically, this limits the relevance of the analysis to a population above the median (i.e., 50th quantile); however, the benefit is that the bias of the estimates that are obtained is limited. As an illustration of how the censoring point and quantile above which to provide estimates is chosen Table B.1 shows the results of censored quantile regressions for property wealth with different censoring points for the first year of the first sample used in this study.

Property wealth in 1850 is chosen because it was year with the lowest mean wealth by each demographic category and in later years a larger proportion of the samples will hold wealth above the censoring point chosen. This means estimates will be less sensitive to the censoring point: what works in 1850 will work for later years.

Overall the conclusion to draw from Table B.1 is the difference in the choice between a high or low censoring point. At $100 and $150, estimates at the various quantile are similar. Also, at the 85th quantile and above the estimates at the different censoring points seem much more stable. Ultimately, even where the coefficients are more variable due to the censoring point the interpretation does not change: no coefficients go from being significantly positive to significantly negative. The least reliable estimates appear to be those for the West region; however, this is largely due to the small number of westerners in the first sample in 1850. With more westerners in later years these estimates improve.

Table B.1. Censored Quantile Regression for Different Censoring Point

	Property wealth censoring points				
	$100	$150	$200	$250	$300
	Quantile = 0.75				
Age	0.756 **	0.543 **	0.613 **	0.765 **	0.765 **
Age^2 / 100	-0.722 **	-0.508 **	-0.578 **	-0.725 **	-0.725 **
Family Size	0.195 **	0.165 **	0.200 **	0.229 **	0.229 **
Region					
North					
South	-0.445 **	-0.516 *	-0.583 *	-0.737 **	-0.765 **
West	0.301	-0.233	-0.037	0.438	-7.827 **
Occupation					
Farmer					
White-Collar	-0.743 **	-0.329	-0.506	-0.639 **	-0.637 **
Craftsmen	-1.283 **	-1.039 **	-1.138 **	-1.244 **	-1.231 **
Blue-Collar	-3.365 **	-3.195 **	-3.603 **	-3.527 **	-3.448 **
Constant	-11.599 **	-6.556 **	-8.369 **	-12.141 **	-12.139 **
	Quantile = 0.80				
Age	0.761 **	0.780 **	0.775 **	0.659 **	0.755 **
Age^2 / 100	-0.739 **	-0.756 **	-0.751 **	-0.621 **	-0.727 **
Family Size	0.186 **	0.194 **	0.204 **	0.234 **	0.205 **
Region					
North					
South	-0.502 **	-0.637 **	-0.709 **	-0.721 **	-0.734 **
West	-0.271	-0.138	-0.152	-0.346	-0.413
Occupation					
Farmer					
White-Collar	-0.398 *	-0.291	-0.218	-0.394 **	-0.266
Craftsmen	-1.390 **	-1.200 **	-1.285 **	-1.324 **	-1.206 **
Blue-Collar	-2.933 **	-2.913 **	-2.955 **	-2.915 **	-2.533 **
Constant	-10.983 **	-11.561 **	-11.501 **	-9.183 **	-11.193 **
	Quantile = 0.85				
Age	0.736 **	0.633 **	0.787 **	0.620 **	0.795 **
Age^2 / 100	-0.729 **	-0.617 **	-0.780 **	-0.602 **	-0.782 **
Family Size	0.146 **	0.180 **	0.148 **	0.198 **	0.188 **
Region					
North					
South	-0.351 *	-0.405 **	-0.567 **	-0.782 **	-0.824 **
West	-0.351	1.288 **	1.065	0.000	1.425
Occupation					
Farmer					
White-Collar	-0.114	0.107	-0.037	0.134	0.048

Craftsmen	-1.136 **	-1.144 **	-1.081 **	-1.215 **	-1.288 **
Blue-Collar	-2.492 **	-1.990 **	-2.644 **	-2.046 **	-2.712 **
Constant	-9.552 **	-7.582 **	-10.701 **	-7.359 **	-11.191 **

Quantile = 0.90

Age	0.615 **	0.575 **	0.683 **	0.644 **	0.611 **
Age^2 / 100	-0.609 **	-0.568 **	-0.680 **	-0.638 **	-0.604 **
Family Size	0.143 **	0.156 **	0.145 **	0.155 **	0.150 **
Region					
North					
South	-0.414 **	-0.597 **	-0.431 **	-0.421 **	-0.412 **
West	0.426	0.379	0.575	0.880	0.392
Occupation					
Farmer					
White-Collar	0.236	0.174	0.116	0.214	0.281
Craftsmen	-0.842 **	-0.766 **	-0.909 **	-0.842 **	-0.830 **
Blue-Collar	-2.142 **	-2.057 **	-2.518 **	-2.244 **	-2.086 **
Constant	-6.282 **	-5.445 **	-7.713 **	-7.019 **	-6.302 **

Quantile = 0.95

Age	0.465 **	0.465 **	0.465 **	0.468 **	0.468 **
Age^2 / 100	-0.459 **	-0.459 **	-0.459 **	-0.462 **	-0.462 **
Family Size	0.132 **	0.132 **	0.132 **	0.145 **	0.145 **
Region					
North					
South	-0.265	-0.265	-0.265	-0.334	-0.334
West	-0.139	-0.139	-0.139	-0.043	-0.043
Occupation					
Farmer					
White-Collar	0.440	0.440	0.440	0.409	0.409
Craftsmen	-0.573 **	-0.573 **	-0.573 **	-0.552 *	-0.552 *
Blue-Collar	-1.746 **	-1.746 **	-1.746 **	-1.815 **	-1.815 **
Constant	-2.343 **	-2.343 **	-2.343 **	-2.473 **	-2.473 **

Quantile = 0.99

Age	0.195 *	0.195 *	0.195 *	0.195 *	0.195 *
Age^2 / 100	-0.178	-0.178	-0.178	-0.178	-0.178
Family Size	0.117	0.117	0.117	0.117	0.117
Region					
North					
South	-0.062	-0.062	-0.062	-0.062	-0.062
West	-0.610	-0.610	-0.610	-0.610	-0.610
Occupation					
Farmer					

White-Collar	0.560	0.560	0.560	0.560	0.560
Craftsmen	-0.541	-0.541	-0.541	-0.541	-0.541
Blue-Collar	-1.231 *	-1.231 *	-1.231 *	-1.231 *	-1.231 *
Constant	4.151 **	4.151 **	4.151 **	4.151 **	4.151 **

Notes: * indicates significant at the 95% level; indicates significant at the 99% level. The sample size is 3,597.

Source: See text.

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