

RESEARCH IN ECONOMIC HISTORY

Edited by Christopher Hanes
and Susan Wolcott

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VOLUME 37

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Series Editors: Christopher Hanes and Susan Wolcott

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EDITOR'S INTRODUCTION

Research in Economic History is a refereed journal, specializing in economic history, in the form of an annual volume. We publish articles that follow the standard formats of economics journals, but we can also accommodate longer pieces, historical narratives and articles that primarily present newly constructed data sets. This year's volume exemplifies the variety of scholarship our peculiar format allows us to present and preserve.

Hoyt Bleakley and Sok Chul Hong's article, "When the Race between Education and Technology Goes Backwards," is typical of much excellent work presented in economic history journals nowadays: it is framed by standard economic theory, motivated by an important hypothesis about American economic history (Goldin and Katz's [2010] explanation of changing wage skill premiums as a "race between education and technology"), and it relies on large data sets. The authors show that school attendance and educational attainment fell steeply in the American South during and after the Civil War. They analyze the causes of this phenomenon and its effects, including an apparently paradoxical decline in wage skill premiums in the South and outmigration of more-educated workers.

Another article based on large data sets is "Early Fertility Decline in the United States," by J. David Hacker, Michael R. Haines and Matthew Jaremski, about the transition from high to low fertility in nineteenth-century America. They test several competing hypotheses about the causes of the decline using cross-sections of decennial census data, as well as data on families linked across adjacent censuses.

Two articles rely on less-quantitative documentary evidence from much earlier historical eras.

In "The Parliamentary Subsidy On Knights' Fees And Incomes Of 1431: A Study On The Fiscal Administration Of An Abortive English Tax Experiment," Alex Brayson analyzes a tax which was requested by the English King Henry VI, agreed to by Parliament, assessed, and then abandoned. This "failed experiment" yields great insight on the evolution of the English government's fiscal potentialities.

The development of banking in medieval Spain is examined by Albert Reixach Sala in "Private Banking and Financial Networks in the Crown of Aragon during the 14th Century." Reixach Sala describes the development, operations, geographic scope, clientele, and social role of private bankers in this very early flowering of financial intermediation.

Finally, our most unusual article is by Peter Theodore Veru, "Pieter Stadnitski Sharpens The Axe: A Revolutionary Research Report On American Sovereign Finance, 1787." Stadnitski was a Dutch financier who had participated in the

placement of debt issued by the American Congress in the Amsterdam market. In 1787 he was attempting to sell Dutch investors on an investment trust speculating on American debt that was already in default. Stadnitski published a substantial pamphlet that described the economic potential of the young country and the steps the American Congress was taking to stabilize its finances and boost its revenues. Veru presents the first complete English translation of this pamphlet and explains its background and significance.

WHEN THE RACE BETWEEN EDUCATION AND TECHNOLOGY GOES BACKWARD: THE POSTBELLUM DECLINE OF WHITE SCHOOL ATTENDANCE IN THE SOUTHERN US

Hoyt Bleakley and Sok Chul Hong

ABSTRACT

This study examines a sharp decline of school attendance among white children in the Southern US after the Civil War. According to Census data, the school-attendance rate among whites in the Confederate states declined by almost half from 1860 to 1870, whereas the rate in Northern states was approximately stable. This shock left the South approximately three decades behind its antebellum trend. We account for little of this drop with household variables plausibly affected by the War. However, a select few county-level variables (notably the drop in wealth) explains around half of the decline, which suggests a systemic explanation. We adopt a model-based approach to decomposing the decline in schooling into demand versus supply factors. On the supply side, the region saw a decline in wealth and public resources, but we observe a stable relationship between time in school and literacy or adult occupation, which is not consistent with a contracting constraint on school quantity or quality. Nevertheless, further research is required to determine how much the contraction in school access affected attendance. On the demand-side, we present suggestive evidence of a decline in the return to school (measured by the relative wage of engineers to laborers). Relatedly, we see a “brain drain”: in longitudinally linked census samples, educated Southerners were more likely to migrate out of the South after the War.

Keywords: School attendance; literacy; return to skill; Civil War; Southern US; human capital

JEL Classification: I2; J2; J6; N3

1. INTRODUCTION

The rise of schooling is one of the more remarkable phenomena of the past two centuries. More education has made the labor force not only more productive but also better able to embrace new technologies. The advance of technology has also increased the demand for educated workers, thus pushing out the demand for skill roughly in parallel with the growth of supply. Most developed countries in the twentieth century experienced a “race between education and technology,” and many developing countries are still experiencing that race today (Goldin & Katz, 2010). In particular, primary school education has evolved toward extending public education on the basis of government investment, introducing compulsory attendance, and expanding the education for women and minority groups.

Despite this general tendency, on various occasions the transition to widespread school attendance or literacy was marked by protracted slowdowns and even retrenchment. Moreover, the rise of school attendance did not always follow the increase of national income, as observed in England and Wales in the nineteenth century (Lindert, 2009). Furthermore, disparities by region, race, and gender have been frequent. Numerous economic researchers have explored various demand- and supply-side factors that caused these abnormalities, including demand for skilled or well-educated labor, change in skilled workers’ wage premium, demographic forces such as fertility rate and life expectancy, discrimination in labor market, restricting entry, cost of education, and change of tax support for basic education (Collins & Margo, 2006; Lindert, 2009). In contrast, an early episode of sharp increases in schooling is sometimes referred to as a “Lindert moment” (e.g., de Carvalho Filho & Colistete, 2010). (We review the literature further in Section 2.)

The present study analyzes an episode in which Goldin and Katz’ race between education and technology appeared to run in reverse and thus might be deemed an anti-Lindert moment. Specifically, we examine something rarely explored in the existing literature: the decline of school attendance among Southern whites following the Civil War (1861–1865). Comparing 1860–1870, in Section 3 we document a decline in school attendance equaling approximately a third of the 1860 rate. This decline left the former Confederacy¹ with half the school-attendance rate of the Northern states in 1870, a gap that took more than

¹We use the terms “Confederacy,” “former Confederacy,” “Confederate states” and variations below to refer to those states that attempted to secede from the Union during the Civil War. We recognize that the Confederacy did not exist in 1860 and was defunct by 1870, so these terms are inaccurate descriptions for all of the census years. We use them nonetheless to save space.

a generation to cut in half. Further, the shock left the region approximately three decades behind its antebellum trend.

We next employ detailed county- and micro-level data to account for proximate determinants of the postbellum drop in school attendance. The household data contain several variables quite plausibly related to both the aftermath of the War and to schooling attendance: wealth, father's occupation, family size, and father's absence. Yet controlling for these variables explains little of the postwar decline in schooling. In contrast, the drop in wealth at the county level explains just under half of the schooling decline. This suggests a more systemic or ecological cause for the drop in school attendance. The obvious systemic change is the end of the "peculiar institution," yet the drop in school is not well explained by the inclusion of related county-level variables such as fraction of the population enslaved in 1860 or the reduction in large farm operations. This analysis is found in [Section 3](#).

We then adopt a model-based approach to decomposing the decline in schooling into demand versus supply factors. In [Section 4](#), we suggest three hypotheses on the postwar change of demand- and supply-side factors that might affect the marginal benefit and cost of time-in-school provoking students to leave school at an earlier age. The three hypotheses are (1) a decline in the demand for skilled workers in the South after the War due to a decline in labor-market return to skill, (2) a postwar decline of school quality (i.e., instruction received per unit time in school), and (3) a constraint of school supply due to the postwar decline in investment in education in the Confederate states.

In the remaining sections, we quantitatively evaluate each hypothesis. In [Section 5](#), we use an unusual dataset ([Coelho & Shepard's, 1976](#), compilation of the 1886 Weeks report) to proxy the return to skill between Northern and Southern states in the mid-nineteenth century. They find that the relative wage of engineers versus laborers substantially declined in the South after the War. We corroborate this by examining the regional location choices of more versus less educated individuals before versus after the War. We use longitudinally-linked census samples to show that those who attended school in childhood were more likely to leave their home region in the postwar years, if their home region was the South, but not if the North. That is, we find a "brain drain" consistent with a relatively low return to skill in the postwar South.

In [Section 6](#), we compare the literacy rate by years in school, as a measure of school quality, by region in 1860–1880. We do not find evidence that the quality of Southern schools was changed after the War. We confirm this descriptive result by estimating whether the effect of school attendance in early ages on literacy and occupational proxies of income in adult diminished in the Confederate states after the Civil War. These results cast doubt on hypothesis of contracting supply as a constraint, as rationing of school resources would affect these relationships.

Finally, we examine the significance of school-supply contraction in [Section 7](#). Historical statistics and regression analyses show that the number of public schools per child decreased in the Confederate states after the War, and this is closely related to constrained investment on public school. However, we suggest

that further investigation is needed to say about how much the school-supply constraint accounts for the decline in Southern schooling after the War.

2. LITERATURE REVIEW

As [Goldin and Katz \(2010\)](#) point out, the key features of US educational institutions and human capital accumulation had largely taken shape in the nineteenth century. Most of all, the expansion of publicly supported formal schooling, which emerged in the period before American Civil War, determined development of the US educational system in the twentieth century. However, such success was not continuous. Educational evolution in the US was closely tied up with the social, political, demographic, and industrial forces that shaped the nineteenth century ([Cubberley, 1919](#)). Those factors occasionally held back and even reversed the rise of schooling.

Although it has been argued that American public education began with the establishment of the district of school of Colonial New England ([Cubberley, 1919](#)), public school in the period was different from that in the nineteenth century in both theory and practice. Many educational historians have argued that American public school did not come into being until the passage of state public school laws, which were mostly passed after the American Revolution ([Drake, 1955](#)). Following state school laws and the subsequent establishment of state boards of education, some states began to make grants to the local schools, and later created state school funds. Besides public school funds, early public schools were funded from various sources, such as local voluntary supports for town schools, tuitions paid by parents (known as rate bills), and local property taxes. But toward the mid-nineteenth century, local property taxes had been the major source as popular attitudes shifted toward tax-supported schools ([Cubberley, 1919](#)). Accordingly, local autonomy and political voices were key factors that determined the size of tax support and consequently the local status of public education ([Dabney, 1936](#)). Regarding these factors, [Go and Lindert \(2010\)](#) show that counties with higher shares of free men voting for president had significantly higher school attendance rates among white children in 1850 than otherwise, and conclude that the regional disparity in the distribution of political voice and voting power led to an uneven early rise of American public schooling between Northern and Southern regions.

Numerous historical studies have well documented that the uneven distribution of public schooling between Northern and Southern regions persisted into the twentieth century ([Carton, 1965](#); [Cubberley, 1919](#); [Dabney, 1936](#); [Drake, 1955](#); [Knight, 1922](#)). Like Go and Lindert, these authors point out different economic and political interests of property owners as a key factor. Put coarsely, the concentration of wealth and power in the hands of slave-owning planters meant that education received little public support. In contrast, the relatively egalitarian situation of the (rural) North favored public investment in education.

Before the Civil War, a dominant mode of education in the South was the private academy, and schooling received little public subsidy. Accordingly,

education was not widespread, neither across the socioeconomic spectrum of whites nor across areas.² This contrasts with institutional developments in the North, where the movement to mass primary education was already underway. Accordingly, there were large regional gaps in literacy and numeracy (Parman, 2018) and the Confederate states had, on the eve of secession, barely a third as many public schools per child as did the North (Table A1, Panel D).

The Civil War and its aftermath brought both obstacles and catalysts to the development of public schooling in the South. The War, emancipation, and Reconstruction occasioned a large decline in the wealth held by whites and the fiscal capacity of the former slave states. Nor were schools immune to the direct physical destruction in the war. These factors made it difficult to meet adequately the region's educational and other social needs. In addition, the social conservatism of the South, which had grown strong under the influence of slavery, hindered the development of public schooling. Mass education was scorned by the old landed aristocracy in the South (Knight, 1929). Indeed, Reconstruction (and the new state governments partly imposed by the Federal government) brought a mandate of state support for education and a nominal shift to public schools. This was a benefit for poor whites, but many among them would have been put off by the *de jure* integration of the schools during Reconstruction. The development of public schools was also hampered by the empty public coffers. The number of public schools per child (of any race) actually shrank between 1860 and 1870 and state spending on schools did not increase, in inflation-adjusted terms (see Table A1). By contrast, in the North, schools per school-aged child rose by 14% and state spending per child by 80% over a comparable period in the North.

The impact of the Civil War on school attendance or other educational variables has been rarely quantified in existing studies, although narrative evidence is more common. Much of the quantitative literature on historical schooling patterns has focused instead on the gap in educational attainment between whites and blacks. Collins and Margo (2006) examined this trend in IPUMS data. They found that, although the school attendance and literacy rates among black populations were very low in the immediate aftermath of the Civil War, the rates substantially increased and came closer to the levels of white populations over several decades after the War. From an economic perspective, they suggest two factors as the explanations of the convergence. First, the marginal return to schooling should be very high if starting at essentially zero education, as was the legacy of slavery. Second, the marginal return to schooling, measured by wage premium for educated blacks, was indeed substantial in the early postbellum period. Relatedly, Sacerdote (2005) compared outcomes such as literacy, school attendance, and adult occupation between former-slave families and free-black families. He finds that it took roughly two generations for the outcomes of two

²Bleakley and Ferrie (2016) document a pronounced gradient in school attendance with respect to parental wealth in the Antebellum Deep South, with children in the lowest decile of family wealth having a school-attendance rate of 20% as compared to a rate of 2/3 in the top decile.

types of black descendants to converge, and suggests that the convergence was facilitated by intermarriage among these two groups.

But [Collins and Margo \(2006\)](#) show a divergence of the racial gap after Reconstruction ended in 1877. As already noted, politically influential Southern planters had opposed public supports for formal schooling. As landowners, they stood to benefit from an abundant supply of unskilled labor, which could be reduced by an expansion of universal public education. Therefore, as the political clout of Blacks waned with the end of the Reconstruction era, less investment in education for blacks was made by white-dominated local governments. Relatedly, [Pritchett \(1989\)](#) argues that the tax burden of public education expenditure for blacks increased in some Southern states like North Carolina particularly during the first decade of the twentieth century, only as the incidence of school taxes shifted from property and land owners (mostly whites) to renters and workers (disproportionately blacks).

Over time, impediments to public schooling in the South eroded with the “New South” movement, with philanthropic efforts, and later with the Civil Rights movement. [Collins \(2007\)](#) showed that the racial and regional gap strongly converged after the 1940s, as the post-1920 birth cohorts entered the labor market and as inter-regional migration had been more frequent. He suggests that as more educated workers migrated from the North to the South because wages in skilled occupations in the South approached those in the Northeast and Midwest, this was helpful for not only increasing the convergence of educational attainment, but also facilitating technological transfers and capital transfers.

3. THE POST-BELLUM DROP IN SCHOOLING IN THE SOUTH

We first quantify the change in schooling among white populations by region before and after the Civil War. We use the 1850, 1860, 1870, 1880, and 1900 IPUMS (Integrated Public Use Microdata series) data,³ which were drawn from the manuscript census schedules. From each year’s sample, we select white males and females aged between 5 and 20. In each of those Censuses, there was a question about school attendance: household heads were asked whether household members attended school or not during a specified period, which was generally defined as the year preceding the enumeration date. The official enumeration date of all the censuses in 1850–1900 is June 1. Thus, a bias in measuring and comparing school attendance rate across the years by seasonality is unlikely in the analysis below. Note that the variable is, in fact, more similar to a modern concept of “enrollment” because even those who went to school for a single day could be coded as yes. We nevertheless use the term “attendance” to match the historical sources. For the same reason, the attendance data in the census records may not match administrative records. For the present study, we

³The sample for 1890 is not available because a fire destroyed the manuscript schedules.

rely on the census data for both expediency and accuracy. On the former point, the administrative records of attendances are spottily available and scattered across annual and biennial reports of state-level superintendents of education or the like. On the latter, a report by the state governments focused on public schools. This would have obscured the role of private academies, a key institution for education, especially in the Antebellum period.

Fig. 1 presents the 1850–1900 trend of school-attendance rate among white populations by region and state. We examine the trend by region in the upper panel, where trends are separated by region: the North (non-slave as of 1861) and the former Confederate states. The main feature of the figure is that the Confederate states experienced a substantial decline in school attendance between 1860 and 1870. Although the average attendance rate of Northern states also declined in the period, the decline was slight; the rate was relatively stable around 60% over the second half of the nineteenth century. However, the rate of the Confederacy declined from 41% in 1860 to 26% in 1870.⁴

We present two counterfactual paths of school attendance for the former Confederacy, absent the events during and just after the Civil War. We recognize that attempting this with just the time series is fraught with problems, but we offer some simple analyses here as a starting point. These results should be taken with a grain of salt. The first exercise that we conduct, shown with the thin gray line in the graph, is to simply project forward the antebellum trend in school attendance. We can see that the postwar states of the former Confederacy were left approximately three decades behind their antebellum trend. A second attempt to construct a counterfactual assumes that Southern rates of school attendance had grown at the same rate as Northern rates, which is shown in the dashed gray line in the graph. The actual rates around 1870 are still lower than either counterfactual.

The lower panel of Fig. 1 shows a scatter plot of school-attendance rates in 1860 and in 1870, at the state level. Most Southern states (labeled in *italics*) are far below the 45-degree line, whereas most Northern states are located around the line. This also suggests that a substantial decline in school attendance in 1860–1870 occurred among those Southern states. It is worthy to note that the plots of five Border States (i.e., slave states that were not part of the Confederate States of America (CSA): Delaware, Kentucky, Maryland, and Missouri, and later West Virginia) are above or relatively near the line. This implies that the postbellum decline in white school attendance rate was more severe in the Confederate states. As the decline was much more marked in the former Confederacy, it receives most of our attention below.

Fig. 2 provides a closer look at the change of school attendance at the county level. Because the IPUMS data include an insufficient number of observations at the county level, the county-level school attendance rates were calculated from county census tabulations in ICPSR study #2896 (Haines, 2005). Further, the

⁴The decline of the slave states, including Border States, was milder than that of the Confederacy. The rate declined from 42% in 1860 to 34% in 1870.

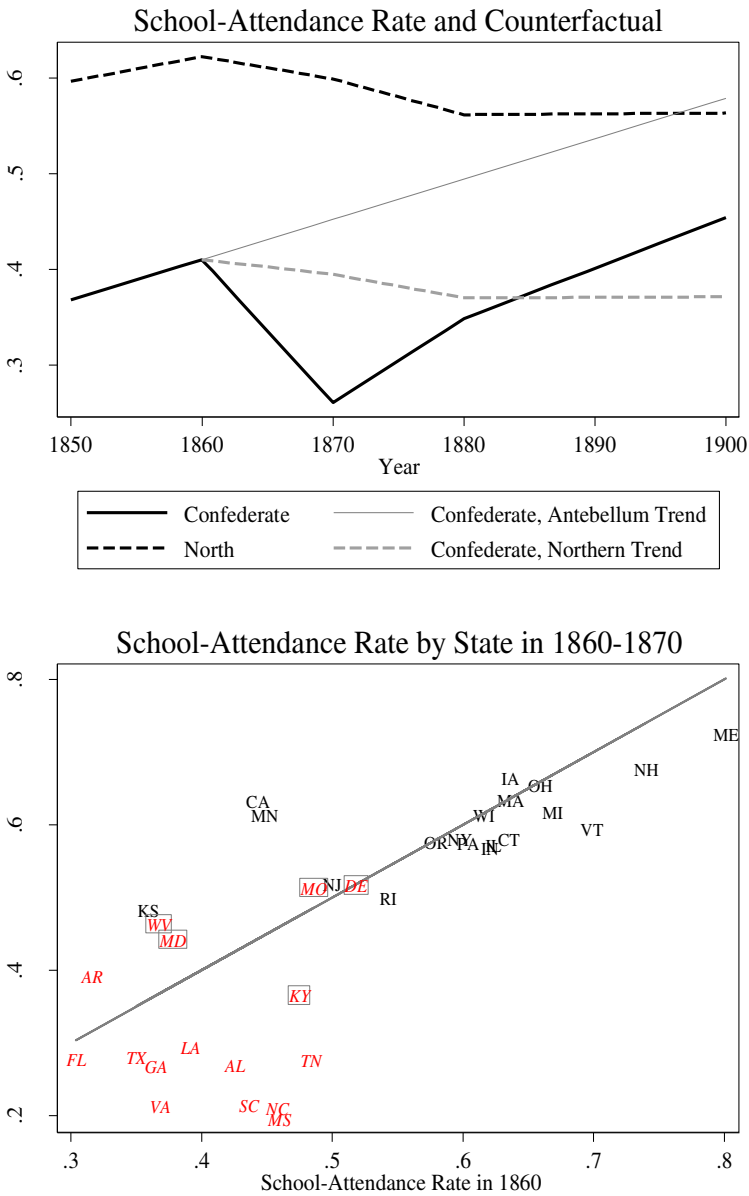


Fig. 1. School-Attendance Rates among White Children, by Region and State. *Note:* With the 1850–1900 IPUMS samples, we use white populations aged between 5 and 20 to calculate school-attendance rate by region (or state) and by census year. Details for counterfactual models are discussed in text. In the lower panel, the line is a 45-degree line; those in italic denote the Southern slave states and those in boxes are the Border States.