

Cotton without Slavery?

The International Competitiveness of the Southern Export Sector, 1800–1900

Joseph Francis

April 28, 2025

(v1.0)

Abstract

Slavery provided cheap labor for the Southern export sector in the antebellum period, especially due to the exploitation of enslaved children and women. Furthermore, the plantation system produced economies of scale in marketing and innovation, encouraging technological change. Had it not been for slavery, then, it is likely that other countries, such as India, would have been able to meet more of the world's demand for cotton. Even the postbellum recovery of the Southern export sector was, moreover, indebted to racism, which trapped black Southerners in the cotton belt, leading to a falling land-labor ratio. The result was greater specialization in cotton, including by white farmers. Slavery and its legacies thus played important roles in making the Southern export sector internationally competitive in the nineteenth century.

Keywords: cotton, economic history, nineteenth century, slavery, United States

JEL codes: C13, N11, N31, J47, O51

The Southern export sector has been used to illustrate how slavery impeded the growth of American capitalism in the nineteenth century. Without slavery, it is argued, there would have been a larger labor force to grow cotton in the South. Hence, Alan L. Olmstead and Paul W. Rhode (2018, 6) claim that the "demise of slavery vastly expanded the potential cotton

Joseph Francis is an economic historian from Wales. He is an honorary research fellow at the University of Birmingham and can be contacted at joe Francis505@gmail.com. This paper has benefited from Klas Rönnbäck's feedback. Supplementary materials are available at https://github.com/joe Francis505/Francis_Cotton_without_Slavery.

labor supply because many poor whites moved into the South's postwar cotton fields." For this reason, they argue, cotton production recovered rapidly in the postbellum period. "Just five years after the War's end, cotton production approached the peak antebellum levels, and in 1891 U.S. output was twice the highest level ever achieved before the War." The implication is clear: as Gavin Wright (2020, 372) puts it, the "best evidence that slavery was not essential for cotton supply is what happened after slavery's demise," when "merchants and railroads flooded into the southeast, enticing previously isolated farm areas into the cotton economy." Based on this evidence, cotton production would have grown even more rapidly without slavery. More transportation infrastructure would have complemented a larger supply of labor, leading to an even greater cotton boom. The Southern export sector thereby reinforced economists' consensus view that slavery impeded growth (Olmstead and Rhode 2018; Hilt 2020; Wright 2020; 2022).

Yet this argument is weak. As this paper shows, slavery facilitated the antebellum cotton boom both by providing cheap labor and making possible economies of scale in marketing and innovation. Furthermore, in the postbellum period, slavery's principal institutional legacy—racism—facilitated recovery by trapping black Southerners in the cotton belt, leading to a falling land-labor ratio that encouraged greater specialization in cotton. Throughout the nineteenth century, then, slavery and its legacies helped to make the Southern export sector internationally competitive. Without them, it is possible that King Cotton would not have reigned in the South.

I

Klas Rönnbäck (2021) has demonstrated that the enslaved were relatively cheap by comparing their rental prices with the wages of free laborers. "A master in the South," Rönnbäck (2021, 735) concludes, "on average might have had to pay twice as much for hiring a free laborer than what they had to pay in total for hiring a slave laborer, including both the subsistence and extra surveillance costs for the slaves." From this perspective, slavery gave a significant boost to the Southern export sector by reducing labor costs. It meant that American cotton could be internationally competitive with cotton from low-wage, poorer countries, such as India.¹

¹ Olmstead and Rhode (2018, 5) estimate that the annual cost of an enslaved person was "roughly ten times the cost of labor in India" in 1860. Nonetheless, Rönnbäck and Theodoridis (2022) note that this fails to take into account productivity differences

Another methodology can also be used to supplement Rönnbäck's finding. It is based on the average value of the captive labor force, which is then turned into an annualized capital cost, with the value of their consumption and the cost of guarding them added:

$$y = (v \cdot (i - p) + c) \cdot \lambda + g \quad (1)$$

where the annual cost of the average captive laborer (y) is their value (v), multiplied by the interest rate (i) minus the enslaved population's growth rate (p), with the average annual consumption of the enslaved (c) added. The resulting subtotal is multiplied by the enslaved's population-to-labor force ratio (λ) to reflect how the maintenance of young children and the very old was part of the cost of keeping the captive labor force as a whole. Finally, the average cost of guarding each captive laborer (g) is added.

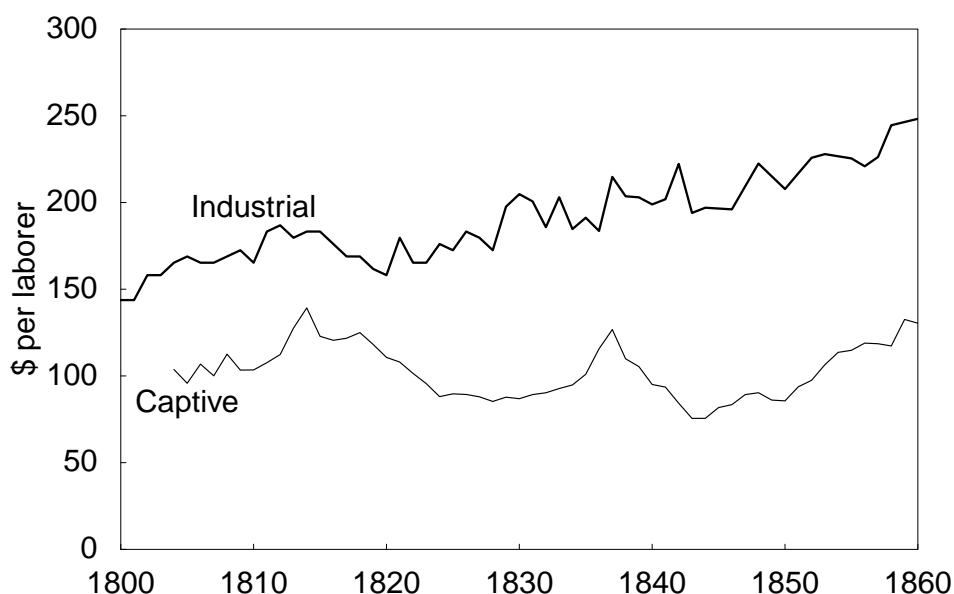
This formula also suggests that the enslaved were cheap labor. In 1860, for example, the average value of an enslaved person was around \$780 (Ransom and Sutch 1988, 155–156, Table A.4), which resulted in an annual cost of \$62, assuming an interest rate of 8 percent.² The enslaved were, however, a special kind of “capital good,” in that they re-produced themselves—the annual growth rate of the enslaved population at the time was about 2.1 percent, which means that around \$16 (that is, 2.1 percent of \$780) can be subtracted from the annual capital cost of \$62. To the resulting \$46 should then be added the value of the consumption of the average enslaved person, which was around \$29 in 1860.³ That subtotal of \$75

between the two places. They estimate that a 500 pound bale cost \$2.20 to \$2.50 to pick in the United States, compared to \$0.70 to \$2.10 in India, which suggests a much narrower gap in terms of unit labor costs. And they may still overestimate this gap. Following Olmstead and Rhode, Rönnbäck and Theodoridis use Evans' (1962) series for rental prices, which are known to be high (Fogel and Engerman 1974, 75; also Rönnbäck 2021). In addition, they use the cost of enslaved men, even though much of the labor of picking cotton was done by children and women. If more representative rentals for child and female labor were used, it is possible that unit labor costs for the enslaved would seem no higher than in India, making Rönnbäck and Theodoridis' (2022) critique of Olmstead and Rhode's (2018) comparisons even stronger.

² This seems to have been the typical interest rate on mortgages secured on captive laborers in Louisiana (Kilbourne 1995, 58, 69, 71, 67, 71–72), although there is some evidence that rates may have been lower in the rest of the South (Bodenhorn and Rockoff 1992, 166–173).

³ Ransom and Sutch's (2001, 211, Table A.5) estimate for 1859 is extrapolated forward following Officer's (2007, 142–144, Table 3) consumer price index. Earlier years are estimated by extrapolating back using the same source.

Figure 1
Labor Force Costs, 1800–1860



Note: As described in the text, to calculate the annual cost of the average captive laborer, Equation 1 is estimated from Saraydar (1964, 328), Ransom and Sutch (1988, 155–156, Table A.4; 2001, 211, Table A.5), Weiss (1992, 32, Table 5), Kilbourne (1995, 58, 69, 71, 67, 71–72), and Officer (2007, 142–143, Table 3; 2009, 166–167, Table 7.1). The annual cost of the average industrial laborer is calculated from Whaples (1990, 33, Table 2.1) and Officer (2009, 166–167, Table 7.1).

then needs to be adjusted to reflect how some members of the enslaved population could not be made to work because they were too young or old. In 1860, perhaps 60 percent were able to work (Ransom and Sutch 1988, 150–151, Table A.1; Weiss 1999, 23, Table 2), and adjusting the average cost to reflect this gives a revised subtotal of \$125 (that is, \$75 multiplied 100/60). Finally, to this figure needs to be added the cost of guarding the captive labor force, which was about \$10 per person (Saraydar 1964, 328).⁴ The result is a rough estimate of the annual cost of the average member of the captive labor force in 1860: about \$135 per year. The average industrial worker, by contrast, cost around \$248 per year—almost twice as much (Whaples 1990, 33, Table 2.1; Officer 2009, 166–167, Table 7.1). Rönnbäck's (2021) finding is thus confirmed. And the extended estimates shown in Figure 1 suggest that slavery provided this cost advantage throughout the antebellum period.

⁴ For earlier years, this can be extrapolated back using the cost of an average hourly production worker earnings from Officer (2009, 166–167, Table 7.1).

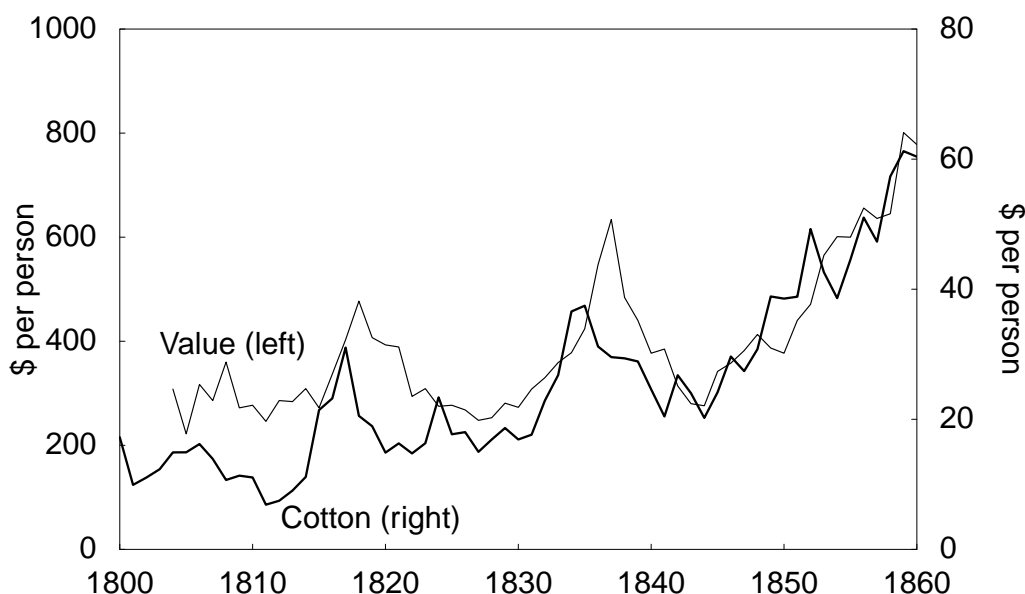
By providing cheap labor, slavery mitigated the effects of land abundance. As Robert C. Allen (2014, 322, 325) has shown, a high land-labor ratio was one of the major reasons why Northern industry remained internationally uncompetitive for so long into the nineteenth century. The “reservation wage”—that is, the wage required to draw labor out of agriculture—was high, which meant that immigrants were required to provide a labor force for manufacturing. As a result, Northern industry could not exploit cheap child and female labor to the same extent as in Europe. Manufacturers instead depended more on adult males, who had to be paid wages high enough to attract them across the Atlantic. Elevated labor costs then made manufacturing internationally uncompetitive and dependent on protection from the tariff. Consequently, American industrialization was not for export—it was distinctly inward oriented. The Southern export sector could, by contrast, use slavery to mitigate the effects of land abundance. As Rönnbäck (2024) has argued, the use of captive labor is often a response to a high land-labor ratio. In the South, it meant that planters could exploit child and female labor that would not otherwise have been available.

Crucially, the South’s captive laborers tended to become cheaper when cotton prices fell. The enslaved were, as Ralph V. Anderson and Robert E. Gallman (1977) observe, a form of “fixed capital” that had to remain employed at all times. For this reason, American cotton had a low elasticity of supply: the enslaved were made to continue growing it regardless of price. Figure 2 shows, however, that their value fell when the cotton they grew was worth less. As a result, they remained a profitable investment even when cotton prices were low—as long as the value of their production was more than the cost of their subsistence. Their consumption could, moreover, be squeezed. Hence, Richard H. Steckel (1986; 2007; also Rathbun and Steckel 2002) has demonstrated how enslaved children, in particular, saw their rations cut when cotton prices were low, resulting in malnutrition that stunted their growth. In this way, the planters sacrificed some of their capital to stay afloat, allowing them to cut costs while keeping the enslaved adults fed and working in the fields. A low price elasticity of supply then made the Southern export sector more internationally competitive.⁵

⁵ To find any positive price elasticity for the American cotton supply, economists have had to include lagged public land sales as covariates (Wright 1971; Friedman and Yang 1992). This allows Wright (1974, 614), for example, to claim that India’s positive price elasticity of supply for 1821 to 1860 is “remarkably similar to estimates of American supply for the same period.” The problem is that Wright’s estimates for India included only a time trend, omitting any proxy for land, even though bringing

Figure 2

Cotton Production and the Value of the Enslaved, 1800–1860

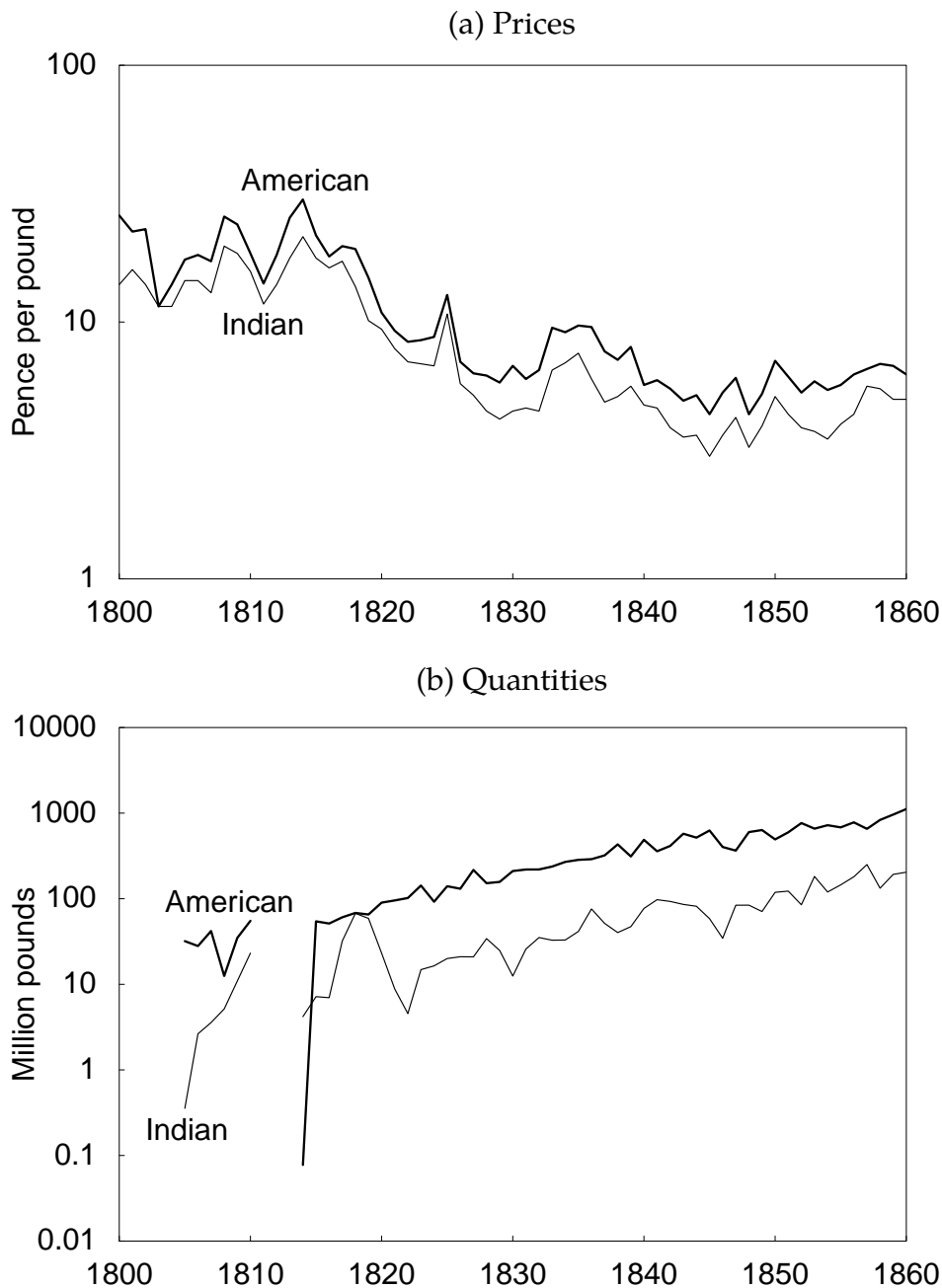


Note: The series show the value of the average enslaved person and the value of the United States' cotton production divided by the enslaved population. Calculated from Bureau of the Census (1908, 21–22, Table 13) and Ransom and Sutch (1988, 155–156, Table A.4).

American domination of the world cotton market would eventually come to seem inevitable. "Indian cotton had always been of extremely short staple," Wright (1974, 618) explains, "yielding less yarn per machine (because it required 50 percent more turns for yarn of comparable strength), breaking more easily and producing cloth which 'washed out,' looking 'poor and thin' after washing." Yet such a view is anachronistic because the United States faced significant competition in the early nineteenth century, when British manufacturers realized that Indian cotton was a viable alternative. As Panel (a) in Figure 3 illustrates, the discount on Indian cotton shrank, even reaching parity with American cotton in 1803.

new land into production was the principal means by which Indian peasants increased supply (Harnetty 1971). A replication of Wright's (1974) illustrates the problem. His autoregressive distributed lag model is specified as: $\log(Q_t) = \beta_0 + \beta_1 \log(Q_{t-1}) + \beta_2 \log(P_{t-1}) + \beta_3 \text{trend}_t + \epsilon_t$, where $\log(Q_t)$ is the natural logarithm of the quantity at time t , $\log(P_t)$ is the natural logarithm of the price at time t , trend_t is a linear time trend, and ϵ_t is the error term. The elasticity is $\eta = \beta_2$. Using the British prices from Todd (1923) and imports of Indian cotton from Carew (1848, 2) and various issues of the *Statistical Abstract for the United Kingdom* results in an η of 0.166 (with a Newey-West standard error of 0.288) for the years from 1821 to 1860. Using the same source for American cotton, by contrast, produces an η of -0.022 (0.147).

Figure 3
British Cotton Imports, 1800–1860



Note: The series in Panel (a) show wholesale prices and those in Panel (b) show the physical quantities imported. The years 1811 to 1813 are not shown due to the destruction of the British trade records in a fire. Compiled from Irving (1811, 185; 1815, 210-211; 1819, 276), Carew (1848, 2), and various issues of the *Statistical Abstract for the United Kingdom*.

For two decades thereafter, the discount on Indian cotton was relatively small: around 20 percent. The quantity of British imports of Indian cotton also grew dramatically, from just 355,000 pounds in 1805 to a peak of

67.5 million pounds in 1818, when imports of American cotton reached 68.2 million pounds, having recovered from their collapse during the War of 1812, as shown in Panel (b). British manufacturers adapted their machines to the shorter Indian staple (Baird 1863, 242–243; Donnell 1872, 68; also Pereira 2018, 17–18), and even the United States itself began to import Indian cotton, with 6 million pounds arriving in 1818 and another 9 million the following year (Ellison 1886, 87n1).

A low price elasticity of supply was vital at this juncture, given how it seemed that King Cotton would be Indian rather than American. Tench Coxe (1817, 14–15), the prominent economist and politician, for example, warned that India was set to displace the United States as the world's principal cotton exporter: "From the port of London, 8,200 bales, weighing about 2,255,000 pounds, of East India cotton wool, were sent to the markets of Germany, Holland, France, &c. in 1816, rivalling our cotton wool in those markets," he explained. Some protectionists even called for a duty to be placed on cotton imports to help the South at least retain the domestic market (Rothbard 1962). Yet when prices fell due to a glut on the world market, India's peasants responded by reducing the growth rate of their cotton production, whereas the South's captive laborers were made to carry on regardless. As a result, British manufacturers were able to adopt the high-quality American cotton as their standard, leading to a greater premium being placed on it from the mid-1820s onward.

Slavery then facilitated productivity increases, which cemented American dominance. Angela Lakwete (2005) shows how wealthy planters could afford to invest in the improved cotton gins made famous by Eli Whitney. In addition, the plantation system made possible economies of scale in marketing and innovation. "In the antebellum South," Olmstead (2017, 16) writes, "cotton was largely produced on large plantations, which sold directly to the exporters with the assistance of brokers who handled the transactions." Olmstead describes how such centralization generated economies of scale in marketing by ensuring that "[t]here were few if any middlemen who took ownership of the cotton." Fraudulent behavior was made more difficult because "the deed could likely be traced back to the perpetrator." Consequently, "a system was in place that gave reasonably accurate information to trading partners at reasonably low cost. Reputations were at stake, and reputations mattered." Technological innovation was the result. As Olmstead (2017, 18) puts it, "plantation owners typically operated their own gins (and perhaps ginned for smaller operators in their neighborhood); they knew enough to separate different cotton

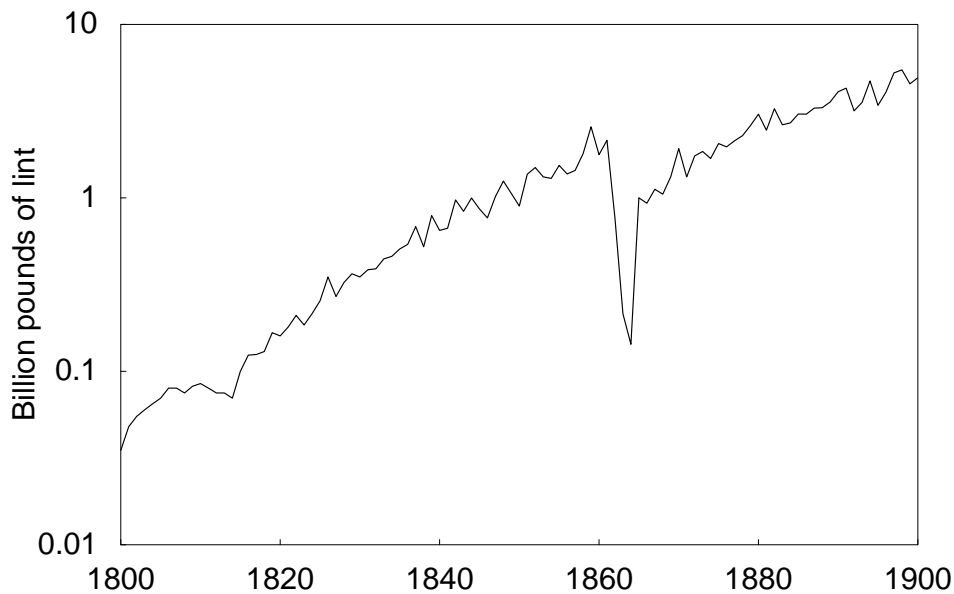
varieties when ginning so as not to mix the seeds.” By centralizing cotton production on large plantations, slavery encouraged the plant breeding that Olmstead and Rhode (2008a; 2008b, Ch. 4; 2011) identify as being key to the cotton boom. “The more progressive planters/breeders took care to separate their crops,” Olmstead (2017, 18) continues, “so that experimental or higher quality cottons did not easily cross-pollinate with older varieties in the fields. These precautions slowed the process of cotton degeneration and helped maintain pure seed supplies.” Planters were thereby able to overcome some of the limitations imposed by minimal intellectual property rights, as Rhode (2021) documents. Northern yeoman farmers, by contrast, were more numerous and dispersed, which resulted in less innovation in their plant breeding compared to the South (Olmstead and Rhode 2008b, Chs. 2–4).

The Southern export sector’s institutional foundations were thus key to making it so internationally competitive in the antebellum period. Rönnbäck’s (2021) finding has been confirmed here: the enslaved were cheap labor. As such, they helped the South to compete with parts of the world where labor costs were far lower due to land scarcity. Furthermore, slavery promoted technological change, not least as a result of the economies of scale in marketing and innovation that Olmstead (2018) and Rhode (2021) have described. To paraphrase Paul A. David and Wright (1997, 204), the Southern export sector’s apparently natural advantages were—at least in part—“socially constructed.” High yields and picking rates, as well as the adoption of improved gins, had themselves been encouraged by slavery. Even though the United States’ dominance of the world cotton market would eventually seem inevitable, it was in fact contingent on the institutions of the Southern export sector.

II

Abolition threatened King Cotton’s reign. As shown in Figure 4, cotton production collapsed during the Civil War and did not return to its previous growth trajectory in the postbellum period. The structural break occurred because enslaved children and women chose to leave the labor force en masse, as Roger Ransom and Richard Sutch (2001, Ch. 3) describe. More expensive labor then led to reduced international competitiveness. John R. Hanson’s (1980) estimates in Table 1 suggest that the American share of the world cotton market by value fell from roughly 84 percent in 1860 to 69 percent in both 1880 and 1900. Wright’s (1974, 611) claim that “it was not until the late 1870s that U.S. cotton had recovered its pre-war market

Figure 4
Cotton Production, 1800–1900



Note: Calculated from Bureau of the Census (1908, 21, Table 13).

share” is therefore contradicted by the available evidence. In reality, the United States never recovered its market share. King Cotton was much diminished without slavery.

Racism nevertheless allowed the Southern export sector to retain some competitiveness by trapping the formerly enslaved in the cotton belt. Immediately after the Civil War, many sought to escape the South but saw little prospect of employment when they looked northward. William Cohen (1991, Ch. 4) describes how few Northern employers would offer black Southerners work, while those that did demanded that they accept considerably lower wages than Northern white workers. Black Southerners soon understood that Northern racism made them unwelcome there, while the Freedmen’s Bureau had to redirect refugees back toward the South (Thomas et al. 2017). In Southern cities, meanwhile, they encountered violence. In Memphis in May 1865, white policemen led riots against the city’s black population, killing and raping many over two days. New Orleans was the next to erupt in late July, with the police again joining the rioters. Thereafter, both the Freedmen’s Bureau and the Union Army occupying the South made it clear that the refugees should return to the countryside (Litwack 1979, Chs. 4–6; Rable 1984, Ch. 4). Racist violence that became worse over time ensured that most black Southerners would remain King Cotton’s subjects (Vandal 2000; Byman 2021; Greenberger 2022).

Table 1

Market Share for Cotton Exports, 1840–1900

	1840	1860	1880	1900
Brazil	0.9	1.4	1.0	0.6
China	0.0	0.5	0.1	2.1
Egypt	1.2	2.4	12.1	18.4
India	12.5	10.1	18.0	9.2
Peru	0.5	1.3	0.2	0.4
United States	84.8	84.3	68.6	69.2

Note: The percentage market shares are based on the total value of the exports of the six countries. Calculated from Hanson (1980, 171, Table D-1).

White Southerners, by contrast, stayed in the region because they tended to benefit from racist discrimination. Philipp Ager, Leah Bousttan, and Katherine Eriksson (2021) find that the wealthy were able to recuperate their fortunes after abolition. Furthermore, Wright's (1982, 175–176) claim that "the majority of white southern workers were earning the unskilled wage" is inaccurate. Few white Southerners were actually unskilled laborers because racism gave them easier access to better paying jobs. Hence, Tables 2 and 3 use census data on occupations in the cotton belt in 1900 to reveal a complex class structure in which white Southerners had a privileged place. Some 37 percent of white household heads were farmers who owned their own land, while around 22 percent skilled occupations in the non-farm sector—the occupations, in other words, that black Southerners were largely excluded from due to racism. Just 11 percent of white household heads were unskilled laborers. Some 34 percent of black household heads, by contrast, were unskilled laborers, while only 11 percent were farmers who owned their land and 5 percent were skilled laborers in the non-farm sector.⁶

⁶ The focus here is on the cotton belt's labor force, but the conclusions remain the same when the South as a whole is analyzed. The only empirical basis for Wright's view seems to come from annual surveys of industrial establishments by Virginia's Bureau of Labor and Industrial Statistics. Wright (1982, 175–176) presents these data before claiming that "the majority of white southern workers were earning the unskilled wage." Furthermore, Wright (1986, 184) describes a chart of the Bureau's data as "a picture worth a thousand words." It is, however, a problematic picture because Wright is generalizing from a survey of a part of the occupational structure of a single state, as if it represented the entire South. His sample is unrepresentative primarily because the Bureau surveyed industrial establishments in which disproportionate numbers of Virginia's unskilled white laborers were found. Nonetheless, even then, Wright (2013, 41, Figure 2.1 and 2.2) still finds that too many white workers were skilled and narrows his sample further by arbitrarily excluding the iron industry and

Table 2
Occupations in the Cotton Belt, 1900

	% of		% of total	
	Black	White	Black	White
Non-farm	36.0	36.9	16.6	19.9
Professional and technical	1.0	3.6	0.4	1.9
Proprietors, managers, and officials	0.4	4.6	0.2	2.5
Clerical and kindred	0.2	1.9	0.1	1.0
Sales workers	0.2	3.2	0.1	1.7
Craftsmen	1.8	6.1	0.8	3.3
Operatives	3.6	7.0	1.7	3.8
Household servants	7.4	1.9	3.4	1.0
Other service workers	5.4	1.7	2.5	0.9
Laborers	16.1	7.0	7.4	3.8
Farm	64.0	63.1	29.5	34.0
Owners	5.2	22.7	2.4	12.2
Tenants	18.7	14.5	8.6	7.8
Laborers (on family farms)	25.8	20.9	11.9	11.3
Laborers (other)	14.3	5.0	6.6	2.7
Total	100.0	100.0	46.1	53.9

Note: Members of the labor force whose race was described as "other" are not shown. Farm managers are included with tenants. Farm laborers on family farms were estimated as those living in a household where they are related to a household head who is a farmer or farm manager. Calculated from the full census counts in Ruggles (2023). The distribution of farmers between owners and tenants was estimated based on the published census data in Manson et al (2022). The non-farm occupations are classified according to the 1950 census categories. Holley and Arnold's (1938, 2, Figure 1) map was used to determine which counties were within the cotton belt.

Even when black Southerners did find skilled positions, moreover, their wages were considerably lower than their white counterparts. At the end of the nineteenth century, a U.S. Department of Agriculture (1901, 24, 29, Tables 13 and 18) study, for example, found that a black farm worker in Mississippi earned \$12.38 a month without board, compared to \$13.41 for a white worker—a not inconsiderable gap of 8 percent. A black overseer, however, earned \$23.82—some 29 percent less than the white overseer's wage of \$33.47. A large "racist skill premium" had similarly opened up for teachers. In the South in 1900, the average black teacher was earning about 40 percent less than the average white teacher (Boykin 1949, 41, Table 1;

building trades. Only by doing so can Wright arrive at a picture of the Southern labor market in which both black and white workers alike were predominantly unskilled.

Table 3

Occupations of Household Heads in the Cotton Belt, 1900

	% of		% of total	
	Black	White	Black	White
Non-farm	34.6	32.8	14.5	19.1
Professional and technical	1.0	3.1	0.4	1.8
Proprietors, managers, and officials	0.6	6.5	0.2	3.8
Clerical and kindred	0.1	1.3	0.1	0.7
Sales workers	0.2	2.2	0.1	1.3
Craftsmen	2.8	7.2	1.2	4.2
Operatives	4.1	4.8	1.7	2.8
Household servants	5.0	0.5	2.1	0.3
Other service workers	4.0	1.6	1.7	0.9
Laborers	16.8	5.6	7.1	3.3
Farm	65.4	67.2	27.4	39.0
Owners	10.7	38.4	4.5	22.3
Tenants	38.9	24.5	16.3	14.2
Laborers (other)	15.7	4.2	6.6	2.4
Total	100.0	100.0	41.9	58.0

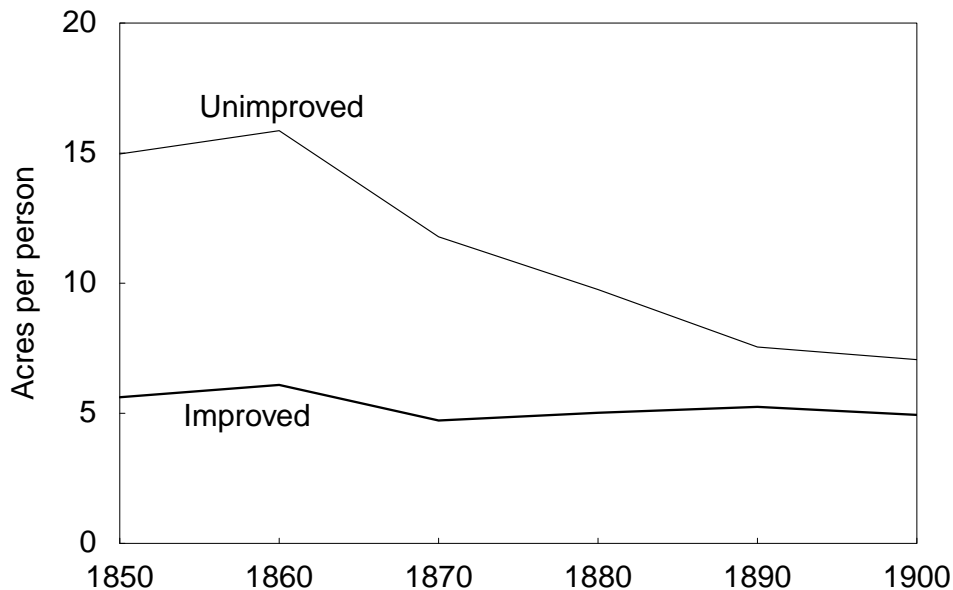
Note: Household heads without occupations are excluded. See Table 2 for further details.

also Rabinowitz 1974). Where black Southerners were able to find skilled employment in urban building trades, the wage gap also seems to have been significant. Even when they were not barred from skilled work, then, black Southerners still had to accept lower pay to do it. Unsurprisingly, William J. Collins and Marianne H. Wanamker (2022) find that their social mobility was severely restricted.

Many had little option but to remain in the cotton belt. The racist ideas that had been propagated to justify the institution of slavery were thus retooled to construct a new black proletariat. Most black Southerners had little option but to return to the cotton belt to work as laborers and sharecroppers. Becoming a tenant farmer rather than a farm laborer was the best that most black Southerners could aspire to. As James R. Irwin and Anthony Patrick O'Brien (2001) argue, it was at least some kind of progress, given the restrictions on their geographical and social mobility. In effect, racism had replaced slavery as the institution that ensured they remained King Cotton's subjects.

Greater specialization in cotton was the result. Figure 5 shows how the amount of land per person fell. And it was also reflected in prices. Farm wages fell and farm values rose, recovering somewhat from the collapse

Figure 5
Land in the Cotton Belt, 1850–1900



Note: The cotton belt counties are based on Holley and Arnold (1938, 2, Figure 1). Their map was superimposed onto the 1900 county map, then other years' census data were projected onto it. Calculated from shapefiles and census data via Manson et al. (2022).

that accompanied abolition. In Alabama, farm values per acre rose from \$4.50 in 1870 to \$6.50 in 1900, while farm wages fell from \$10.80 to \$8.60; in Mississippi, farm values per acre rose from \$6.20 to \$8.30, but farm wages fell from \$13.40 to \$9.30 (Lebergott 1964, 539, Table A-23; Manson et al. 2022). This shift in relative prices then pushed farmers to choose crops that maximized returns to land, even when they gave lower returns to their labor. Livestock farming, in particular, gave way to cotton once the large amounts of unimproved land that animals used to roam on were no longer available. Here, then, was the fundamental cause of greater specialization in cotton in the South after the Civil War.⁷

⁷ Economists have largely missed the significance of greater land scarcity. Hence, Wright (1986, 55) claims that less land per person did not indicate that "the South was grinding deeper and deeper into poverty during this time, as each farmer scratched away at a progressively smaller plot of land." To prove this, he points toward Ransom and Sutch's (2001, 259, Table F.3) estimates of agricultural output per member of the South's rural population. Wright observes how Ransom and Sutch found this metric increased by "about 1 percent per year from the late 1870s to 1908," but he does not mention how it remained 16 percent below its 1860 level at the end of this period. Furthermore, in these years, the United States' annual per capita growth rate was about 1.7 percent (Francis 2025a), which implies that the South's rural population

But racism was only an imperfect substitute for slavery. As already noted, black children and women could not be forced to work as they had before—the South’s labor force participation rate became more normal abolition (Francis 2025a). Furthermore, the decline of the plantation system impeded the kind of technological change that had raised productivity levels in the antebellum period. “In the postwar setting,” Olmstead (2017, 18) notes, “smaller fields led to more crosspollination,” making it more difficult to improve seeds. “It became nearly impossible for small farmers to protect their genetic material, even if they knew enough to want to do so.” Fragmentation also made the marketing system more inefficient. “Grading in small rural depots was imprecise and tended to be biased against the producers relative to grading in larger markets,” Olmstead (2017, 18) continues. “The downward bias was particularly large for better grades of cotton.” What became known as the “hog-round” system was the result. “Farmers who produced better cottons would receive no higher price than the free riders that produced low quality cotton.” The economies of scale that slavery had provided in marketing and innovation disappeared.

Throughout the nineteenth century, then, the South’s apparently natural propensity for cotton in fact reflected institutional choices. King Cotton was, to return to David and Wright’s phrase (1997, 204), in part “socially constructed.” In the antebellum period, the enslaved had provided cheap labor while the plantation system facilitated economies of scale in marketing and innovation. After abolition, racism then became an imperfect substitute, ensuring that many black Southerners remained trapped in the cotton belt. Greater land scarcity then made ever more farmers, including white farmers, specialize in cotton.

III

Economists have largely missed these postbellum dynamics due to a erroneous focus on the Piedmont region. They discuss this southeasterly plateau as if it represented the whole of the cotton belt, then draw broad conclusions based on their interpretation of what happened there. “White farmers were particularly important in driving the cotton expansion in the Piedmont,” Olmstead and Rhode (2018, 6) note, while Wright (2020, 372) goes further by stating that “the biggest source of new cotton came

was becoming poorer than the rest of the country. Despite this, Wright (2006, 79) celebrates how the South became “the highest rural population-density section of the country,” as if it were a sign of progress rather than underdevelopment.

Table 4
Cotton Production by Region, 1840–1900

	Coastal plain	Piedmont	Eastern hills	River bottom	Western hills	Western prairie
1840	42	24	13	16	4	1
1850	38	25	23	9	4	1
1860	38	13	17	16	12	3
1870	36	14	15	15	15	5
1880	30	18	15	13	16	7
1890	30	18	9	13	15	11
1900	27	15	10	11	17	17

Note: The table shows the percentage distribution of the physical quantity of cotton produced, as reported to the census. The totals may not reach 100 because some production occurred outside the six main cotton belt regions. See Figure 5 for details and sources.

from white farmers in the Piedmont.” The economists thereby give the impression that the cotton boom continued because slavery had previously impeded white farmers from specializing in cotton. Yet Panel (a) of Table 4 shows that the shift toward cotton was not confined to the Piedmont, let alone Georgia’s part of it. Indeed, when the longer period of 1860 to 1900 is considered, the Piedmont’s share of cotton barely increased at all. The western hills and prairie regions were instead where the expansion occurred: together, increased their share of production from 15 percent in 1860 to 34 percent in 1900, whereas the Piedmont’s rose from 13 to 15 percent. The great emphasis placed on the latter is therefore misguided.⁸

The same studies they cite indicate, moreover, that even the economists’ interpretation of what happened in the Piedmont is wrong. The origins of their misinterpretation can be found in Peter Temin’s (1983, 661) statement that the “shift to cotton was confined to the Piedmont area of Georgia and South Carolina; it was not a phenomenon of the entire South.” To make this case, Temin (1983, 664, Table 3) presents statistics for changes in corn and cotton production by regions based on soil type in five Deep South states from 1860 to 1880. But he does not include Texas, where much of the expansion in cotton production actually occurred. Temin instead focuses

⁸ There was also no simple correlation between the evolution of cotton production and the share of population who was enslaved up to 1860. The enslaved share of the population was, for example, similar in the western hills, where cotton production boomed after abolition, and in the eastern hills, where it stagnated—a pattern that should not be expected if white people had been emancipated to grow cotton, as the economists claim.

on Georgia's Piedmont region, reporting a negative correlation between the number of white people per acre in 1860 and the increase in cotton production from 1860 to 1880. David F. Weiman (1985), however, explicitly disagrees with Temin's framing. "Regional analysis of crop production demonstrates that the shift into cotton was not limited geographically to the Southern Piedmont Plateau," Weiman (1985, 80) states. Furthermore, in Weiman's words (1985, 82n27), "[t]he relationship between specialization in cotton and race cannot be interpreted causally, as Temin seems to imply in his analysis." Temin confuses correlation with causality because "the racial composition of the population effectively discriminates between counties in the Cotton Belt and the Upcountry, the density of blacks and whites per acre are negatively correlated with each other and are strongly correlated with other possible determinants of the crop mix, such as the rate of tenancy and average farm size." Weiman (1985, 87) emphasizes, moreover, that access to new phosphate fertilizers was "essential to cotton production" in the Piedmont. J. William Harris' (1994) analysis of three counties in Georgia then confirms this impression. In the Upcountry county he studied, white farmers only drove increased specialization in cotton because new fertilizers had made it far more profitable to grow the crop. In Harris' (1994, 534) words, "fertilizers were essential to the success of cotton farming" in that county. The scientific discoveries necessary for the use of phosphate fertilizers were, however, only made in the 1840s and 1850s, and the industry had just begun to expand when the Civil War interrupted it (McKinley 2014, Ch. 1). For this reason, it is anachronistic to claim that the Piedmont's white farmers were held back by slavery because the turn toward cotton required technologies that were previously unavailable.⁹

William N. Parker's (1979) estimates of regional productivity levels provide the basis for a better analysis. Reproduced in Table 5, they show a major increase in yields in the Piedmont from 127 pounds per acre in the

⁹ McKinley (2014, 16) defers to Wright when he claims that slavery "helped to undermine planters' need to practice intensive farming." If this were correct, it could be argued that the lack of demand for fertilizers slowed scientific innovation. Yet Wright's (1986; 2006) analysis is logically problematic because there was little sense investing in fertilizers as long as land was abundant—shifting cultivation was a more rational choice, as discussed by Majewski and Tchakerian (2007). There is, moreover, little evidence that slavery depressed farm values. Indeed, farm values collapsed in the Deep South following abolition (Francis 2025b). Slavery's effect therefore seems to have been to raise the price of farm land and lower the cost of labor, making land-saving technological change more likely.

Table 5

Labor Requirements in Cotton, 1840–1920

	Pre-harvest (hours per acre)	Yield (lb per acre)	Picking time (hours per lb)	Total (hours per acre)	Total hours per lb
(a) 1840–1860					
Coastal plain	87	201	0.23	133	0.66
Piedmont	117	127	0.19	141	1.11
Eastern hills	75	169	0.20	109	0.65
River bottom	98	409	0.20	179	0.44
Western hills	89	280	0.19	141	0.50
Western prairie	50	252	0.15	88	0.35
(b) 1900–1920					
Coastal plain	70	142	0.22	101	0.71
Piedmont	75	213	0.19	114	0.54
Eastern hills	73	191	0.20	111	0.58
River bottom	66	236	0.20	113	0.48
Western hills	48	189	0.19	84	0.45
Western prairie	32	174	0.15	58	0.33

Note: Calculated from Parker (1979, 232, 238, Tables 2 and 4).

late antebellum period to 213 pounds in the early twentieth century, despite falling yields in the rest of the cotton belt. This reflected the increased use of new fertilizers, as Weiman (1985) and Harris (1994) indicate. The Piedmont's soil was ideally suited to this new technology because a high clay content prevented the added nutrients from leaching away. As more fertilizer was applied, yields increased, making cotton production on the Piedmont attractive to many white farmers for the first time. When analyzing the Piedmont, then, economists have confused technological and institutional change. The interaction of fertilizers, a new technology, with the region's environment is the primary reason why white farmers grew more cotton there.

The privileging of institutions over all else is ultimately what undermines the economists' attempts to understand American economic history. David and Wright's (1997, 204) claim that natural resources are "socially constructed" can be taken to an extreme that makes it difficult to see the forest for the trees. It means, for example, that economists have underappreciated ecological differences in the cotton belt. Hence, a myopic focus on institutions could lead them to argue that the postbellum expansion of cotton production in the western hills and prairie was due to abolition.

That argument would, however, miss how labor requirements were lower in these regions because the arid climate made weed control less of a problem, reducing the amount of pre-harvest labor required (Holley and Arnold 1938, 44–46), as shown in Parker’s (1979) estimates in Table 5. For this reason, German immigrant farmers in Texas had already begun to specialize in cotton in the antebellum period—they were willing to do so because the plant’s labor requirements were lower there than in the rest of the cotton belt.

A multifaceted analysis is therefore necessary to understand the Southern export sector in the nineteenth century. As this paper has shown, the cheap labor of the enslaved and technological change facilitated by the plantation system allowed the United States to become the world’s principal cotton exporter in the antebellum period. Racism then became an imperfect substitute for slavery during the postbellum recovery. Black Southerners were trapped in the cotton belt, which led to a falling land-labor ratio. As a result, specialization in cotton became a rational choice because it provided greater returns to the increasingly scarce factor of production. Slavery and its legacies were thus key to the international competitiveness of the Southern export sector. Without them, King Cotton may not have been American at all.

References

- Ager, Philipp, Leah Boustan, and Katherine Eriksson (2021) “The Intergenerational Effects of a Large Wealth Shock: White Southerners after the Civil War.” *American Economic Review*. 111(11), 3767–3794.
- Allen, Robert C. (2014) “American Exceptionalism as a Problem in Global History.” *Journal of Economic History*. 74(2), 309–350.
- Anderson, Ralph V. and Robert E. Gallman (1977) “Slaves as Fixed Capital: Slave Labor and Southern Economic Development.” *Journal of American History*. 64(1), 24.
- Baird, Robert H. (1863) *The American Cotton Spinner and Managers’ and Carders’ Guide: A Practical Treatise on Cotton Spinning*. Philadelphia: Henry Carey Baird.
- Bodenhorn, Howard and Hugh Rockoff (1992) “Regional Interest Rates in Antebellum America.” In: Claudia Goldin and Hugh Rockoff (eds.), *Strategic Factors in Nineteenth Century American Economic History: A Volume to Honor Robert W. Fogel*. Chicago: University of Chicago Press, 159–187.
- Boykin, Leander L. (1949) “The Status and Trends of Differentials Between White and Negro Teachers’ Salaries in the Southern States, 1900-1946.” *Journal of Negro Education*. 18(1), 40.
- Bureau of the Census (1908) “Cotton Production 1908.” Bulletin 100.

- Byman, Daniel (2021) "White Supremacy, Terrorism, and the Failure of Reconstruction in the United States." *International Security*. 46(1), 53–103.
- Carew, Pole (1848) "Cotton, and Cotton Manufactures." Parliamentary Papers, HC 1847–1848 (383), June 2.
- Cohen, William (1991) *At Freedom's Edge: Black Mobility and the Southern White Quest for Racial Control, 1861–1915*. Baton Rouge: Louisiana State University Press.
- Collins, William J. and Marianne H. Wanamaker (2022) "African American Intergenerational Economic Mobility since 1880." *American Economic Journal: Applied Economics*. 14(3), 84–117.
- Coxe, Tench (1817) *A Memoir, of February, 1817, upon the Subject of the Cotton Wool Cultivation, the Cotton Trade, and the Cotton Manufactories of the United States of America*. Philadelphia.
- David, Paul A. and Gavin Wright (1997) "Increasing Returns and the Genesis of American Resource Abundance." *Industrial and Corporate Change*. 6(2), 203–245.
- Donnell, E.J. (1872) *Chronological and Statistical History of Cotton*. New York: James Sutton & Co.
- Ellison, Thomas (1886) *The Cotton Trade of Great Britain*. London: Effingham Wilson.
- Evans Jr., Robert (1962) "The Economics of American Negro Slavery, 1830-1860." In: A Conference of the Universities-National Bureau Committee for Economic Research (ed.), *Aspects of Labor Economics*: Princeton University Press, 185–256.
- Fogel, Robert William and Stanley L. Engerman (1974) *Time on the Cross: The Economics of American Negro Slavery: Evidence and Methods, a Supplement*. Boston: Little, Brown and Company.
- Francis, Joseph (2025a) "Accounting for Slavery: State-Level Gross Domestic Product in the United States, 1839–1899." Unpublished paper, v1.0, Apr. 12. https://github.com/joeFrancis505/Accounting_for_Slavery.
- (2025b) "Did Slavery Impede the Growth of American Capitalism? Two Natural Experiments Using Farm Values per Acre." Unpublished paper, v3.1, Apr. 24. https://github.com/joeFrancis505/Francis_Farm_Values.
- Friedman, Gerald and Dongyhu Yang (1992) "The Debate on the Elasticity of the Cotton Supply." In: Robert William Fogel, Ralph A. Galantine, Richard L. Manning, and Nicholas Scott Cardell (eds.), *Without Consent or Contract: The Rise and Fall of American Slavery: Evidence and Methods*. New York: W.W. Norton & Company, 264–269.
- Greenberger, Michael (2022) "Undoing Reconstruction: Racial Threat and the Process of Redemption, 1870–1920." *Social Science Quarterly*. 103(3), 649–669.
- Hanson, John R. (1980) *Trade in Transition: Exports from the Third World, 1840–1900*. New York: Academic Press.

- Harnetty, Peter (1971) "Cotton Exports and Indian Agriculture, 1861–1870." *Economic History Review*. 24(3), 414–429.
- Harris, J. William (1994) "Crop Choices in the Piedmont Before and After the Civil War." *Journal of Economic History*. 54(3), 526–542.
- Hilt, Eric (2020) "Revisiting Time on the Cross After 45 Years: The Slavery Debates and the New Economic History." *Capitalism: A Journal of History and Economics*. 1(2), 456–483.
- Holley, William C. and Lloyd E. Arnold (1938) *Changes in Technology and Labor Requirements in Crop Production: Cotton*. Philadelphia: Works Progress Administration.
- Irving, William (1811) "Accounts Relating to the Importation of Cotton Wool." *Parliamentary Papers*, HC 1810–1811 (185), May 22.
- (1815) "An Account of the Import of Cotton Wool into Great Britain." *Parliamentary Papers*, HC 1814–1815 (275), Apr. 14.
- (1819) "An Account of Cotton Wool, Imported into Great Britain from All Parts of the World." *Parliamentary Papers*, HC 1819 (276), May 5.
- Irwin, James R. and Anthony Patrick O'Brien (2001) "Economic Progress in the Postbellum South? African-American Incomes in the Mississippi Delta, 1880–1910." *Explorations in Economic History*. 38(1), 166–180.
- Kilbourne, Richard Holcombe (1995) *Debt, Investment, Slaves: Credit Relations in East Feliciana Parish, Louisiana, 1825–1885*. Tuscaloosa: University of Alabama Press.
- Lakwete, Angela (2005) *Inventing the Cotton Gin: Machine and Myth in Antebellum America*. Baltimore: Johns Hopkins University Press.
- Lebergott, Stanley (1964) *Manpower in Economic Growth: The American Record since 1800*. New York: McGraw-Hill.
- Litwack, Leon F. (1979) *Been in the Storm so Long: The Aftermath of Slavery*. New York: Alfred A. Knopf.
- Majewski, John and Viken Tchakerian (2007) "The Environmental Origins of Shifting Cultivation: Climate, Soils, and Disease in the Nineteenth-Century US South." *Agricultural History*. 81(4), 522–549.
- Manson, Steven, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles (2022) "IPUMS National Historical Geographic Information System (NHGIS): Version 17.0." Dataset, IPUMS. <https://www.ipums.org/projects/ipums-nhgis/d050.v16.0>.
- McKinley, Shepherd W. (2014) *Stinking Stones and Rocks of Gold: Phosphate, Fertilizer, and Industrialization in Postbellum South Carolina*. Gainesville: University Press of Florida.
- Officer, Lawrence H. (2007) "An Improved Long-Run Consumer Price Index for the United States." *Historical Methods: A Journal of Quantitative and Interdisciplinary History*. 40(3), 135–148.

- Officer, Lawrence H. (2009) *Two Centuries of Compensation for U.S. Production Workers in Manufacturing*. New York: Palgrave Macmillan.
- Olmstead, Alan L. (2017) "Antebellum US Cotton Production and Slavery in the Indian Mirror." *Agricultural History*. 91(1), 5–33.
- Olmstead, Alan L. and Paul W. Rhode (2008a) "Biological Innovation and Productivity Growth in the Antebellum Cotton Economy." *Journal of Economic History*. 68(4), 1123–1171.
- (2008b) *Creating Abundance: Biological Innovation and American Agricultural Development*. New York: Cambridge University Press.
- (2011) "Productivity Growth and the Regional Dynamics of Antebellum Southern Development." In: Paul W. Rhode, Joshua L. Rosenbloom, and David F. Weiman (eds.), *Economic Evolution and Revolution in Historical Time*. Stanford: Stanford University Press, 180–213.
- (2018) "Cotton, Slavery, and the New History of Capitalism." *Explorations in Economic History*. 67, 1–17.
- Parker, William N. (1979) "Labor Productivity in Cotton Farming: The History of a Research." *Agricultural History*. 53(1), 228–244.
- Pereira, Thales A. Zamberlan (2018) "The Rise of the Brazilian Cotton Trade in Britain during the Industrial Revolution." *Journal of Latin American Studies*. 50(4), 919–949.
- Rabinowitz, Howard N. (1974) "Half a Loaf: The Shift from White to Black Teachers in the Negro Schools of the Urban South, 1865-1890." *The Journal of Southern History*. 40(4), 565.
- Rable, George Calvin (1984) *But There Was No Peace: The Role of Violence in the Politics of Reconstruction*. Athens, GA: University of Georgia Press.
- Ransom, Roger and Richard Sutch (1988) "Capitalists without Capital: The Burden of Slavery and the Impact of Emancipation." *Agricultural History*. 62(3), 133–160.
- Ransom, Roger L. and Richard Sutch (2001) *One Kind of Freedom: The Economic Consequences of Emancipation*. Cambridge: Cambridge University Press.
- Rathbun, Ted A. and Richard H. Steckel (2002) "The Health of Slaves and Free Blacks in the East." In: Richard H. Steckel (ed.), *The Backbone of History: Health and Nutrition in the Western Hemisphere*. New York: Cambridge University Press, 208–225.
- Rhode, Paul W. (2021) "Biological Innovation without Intellectual Property Rights: Cottonseed Markets in the Antebellum American South." *Journal of Economic History*. 81(1), 198–238.
- Rönnbäck, Klas (2021) "Were Slaves Cheap Laborers? A Comparative Study of Labor Costs in the Antebellum U.S. South." *Labor History*. 62(5–6), 721–741.
- (2024) "Free or Enslaved Labor: A Theoretical Comparative Model." *Journal of Global Slavery*. 9(3), 303–335.

- Rönnbäck, Klas and Dimitrios Theodoridis (2022) "Cotton Cultivation under Colonial Rule in India in the Nineteenth Century from a Comparative Perspective." *Economic History Review*. 75(2), 374–395.
- Rothbard, Murray N. (1962) *The Panic of 1819: Reactions and Policies*. New York: Columbia University Press.
- Ruggles, Steven, Sarah Flood, Matthew Sobek, Danika Brockman, Grace Cooper, Stephanie Richards, and Megan Schouwiler (2023) "IPUMS USA: Version 13.0." Dataset, IPUMS. <https://usa.ipums.org>.
- Saraydar, Edward (1964) "A Note on the Profitability of Ante Bellum Slavery." *Southern Economic Journal*. 30(4), 325.
- Steckel, Richard H. (1986) "A Dreadful Childhood: The Excess Mortality of American Slaves." *Social Science History*. 10(4), 427.
- (2007) "A Pernicious Side of Capitalism: The Care and Feeding of Slave Children." Unpublished paper. <http://web.econ.ohio-state.edu/rsteckel/VITA/2007%20Pernicious.pdf>.
- Temin, Peter (1983) "Patterns of Cotton Agriculture in Post-Bellum Georgia." *Journal of Economic History*. 43(3), 661–674.
- Thomas, William G., Richard G. Healey, and Ian Cottingham (2017) "Reconstructing African American Mobility after Emancipation, 1865–67." *Social Science History*. 41(4), 673–704.
- Todd, John A. (1923) *The World's Cotton Crops*. London: A. & C. Black.
- U.S. Department of Agriculture (1901) "Wages of Farm Labor in the United States: Results of Eleven Statistical Investigations, 1866-1899."
- Vandal, Gilles (2000) *Rethinking Southern Violence: Homicides in Post-Civil War Louisiana, 1866-1884*. Columbus: Ohio State University Press.
- Weiman, David F. (1985) "The Economic Emancipation of the Non-Slaveholding Class: Upcountry Farmers in the Georgia Cotton Economy." *Journal of Economic History*. 45(1), 71–93.
- Weiss, Thomas J. (1992) "U.S. Labor Force Estimates and Economic Growth, 1800–1860." In: Robert E. Gallman and John Joseph Wallis (eds.), *American Economic Growth and Standards of Living before the Civil War*. Chicago: University of Chicago Press, 19–78.
- (1999) "Estimates of White and Nonwhite Gainful Workers in the United States by Age Group, Race, and Sex Decennial Census Years, 1800–1900." *Historical Methods: A Journal of Quantitative and Interdisciplinary History*. 32(1), 21–36.
- Whaples, Robert (1990) "The Shortening of the American Work Week: An Economic and Historical Analysis of Its Context, Causes, and Consequences." PhD diss. University of Pennsylvania.
- Wright, Gavin (1971) "An Econometric Study of Cotton Production and Trade, 1830-1860." *Review of Economics and Statistics*. 53(2), 111–120.
- (1974) "Cotton Competition and the Post-Bellum Recovery of the American South." *Journal of Economic History*. 34(3), 610–635.

- Wright, Gavin (1982) "The Strange Career of the New Southern Economic History." *Reviews in American History*. 10(4), 164–180.
- (1986) *Old South, New South: Revolutions in the Southern Economy since the Civil War*. New York: Basic Books.
- (2006) *Slavery and American Economic Development*. Baton Rouge: Louisiana State University Press.
- (2013) *Sharing the Prize: The Economics of the Civil Rights Revolution in the American South*. Cambridge: Belknap Press of Harvard University Press.
- (2020) "Slavery and Anglo American Capitalism Revisited." *Economic History Review*. 73(2), 353–383.
- (2022) "Slavery and the Rise of the Nineteenth-Century American Economy." *Journal of Economic Perspectives*. 36(2), 123–148.