

Accounting for Slavery: State-Level Gross Domestic Product in the United States, 1839–1899

Joseph Francis

April 12, 2025
(v1.0)

Abstract

New estimates of gross domestic product (GDP) for fifteen sectors by state for every census year from 1839 to 1899 provide insights into the role of slavery and its legacies in the economic history of the United States. They suggest that slavery was highly inefficient from a microeconomic perspective, given the costs imposed on the enslaved and their descendants. Yet this inefficiency implies that free labor could not have substituted for enslaved labor in the Deep South's low-productivity agricultural sector. For this reason, any macroeconomic benefits that American capitalism received from the nineteenth-century boom in cotton exports were substantially indebted to slavery.

Keywords: economic history, gross domestic product, nineteenth century, slavery, United States

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

Richard A. Easterlin's (1957; 1960; 1961) estimates of regional income have been central to debates about slavery's contribution to the growth of American capitalism. Economists used them, for example, to refute Douglass C.

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 is indebted to Tyler Cowen for financial support from the Emergent Ventures fund of the Mercatus Center at George Mason University. Pseudoerasmus provided moral support, while Thomas J. Weiss kindly gave technical advice, although all errors are the author's own. Supplementary materials, including a workbook containing the raw data and calculations, are available at https://github.com/joe Francis505/Accounting_for_Slavery.

North's (1961, 68) argument that "cotton was the most important influence in the growth in the market size and the consequent expansion of the economy" in the antebellum period. Easterlin's estimates of personal income in 1840 indicated that Southern demand for Northern goods and services was simply too small to have such an impact (Uselding 1976). Slavery, it seemed, had not aided the North's growth. In *Time on the Cross*, however, Robert William Fogel and Stanley L. Engerman (1974, 247–257; also Fogel 1989, 84–92) described how Easterlin's (1961, 528, Table 1) estimates for 1840 and 1860 indicated that the South itself was growing rapidly in the antebellum period. Furthermore, Easterlin's estimates for 1880 and 1900 showed that Southern personal incomes declined vis-à-vis the North after the Civil War, suggesting that abolition had made the region fall behind. Fogel and Engerman (1974) therefore told a more positive story about slavery's contribution to growth, leading to a fierce debate among economists (Hummel 2001; Hilt 2020). One of Fogel and Engerman's sternest critics, Gavin Wright (1975, 447–450; 1976, 314–316, 324–329; 1978, 103–106), attacked Easterlin's estimates as part of his rebuttal. Wright (1975, 447) argued that the South's apparent prosperity was a mirage generated by unusually bountiful cotton harvests and "essentially temporary growth in world demand for cotton." The postbellum Southern decline, Wright (1974; 1978, Ch. 4) argued, reflected stagnant world demand, rather than any negative impact of abolition. This interpretation has been subject to significant criticism (Hanson 1979; Yang 1992; Surdam 1998; Hummel 2001, 337–340; Craft and Monks 2008), but Wright has persisted. Wright (2022, 134) still claims that the "medium-term sources of growth in the pre-Civil War slave economy of the South were not sustainable," which means that Easterlin's work should be ignored because "per capita income estimates for two or three census years—especially estimates related to a year of peak cotton demand and extraordinary yields like 1860—are not a reliable way to assess regional progress."¹ Wright (2006, 60, Table 2.4; 2022, 135, Table 4) instead prefers his own estimates of wealth per capita, which show the South lagging far behind the North before the Civil War. Slavery thus seems to have impoverished the South, impeding the growth of American capitalism, which is the consensus view among economists today (Olmstead and Rhode 2018; Hilt 2020; Wright 2020, 2022).

¹ Wright (2022, 134) also references Alan L. Olmstead and Paul W. Rhode's (2008; 2011) observation that antebellum cotton production was boosted by biological innovation and westward expansion, which could not be repeated.

This paper intervenes in these debates using new estimates of gross domestic product (GDP) for fifteen sectors by state for every census year from 1839 to 1899. They show that the antebellum South's GDP per capita was relatively high and was not significantly distorted by large cotton harvests or buoyant world demand. The final version of the 1860 census statistics, moreover, show that the South was far wealthier than Wright supposes. It therefore seems that economists have overestimated the importance of slavery to the South's productive structure, much as Fogel and Engerman (1992) argued in their own response to Wright. The South's high levels of income and wealth came from the activities in which the free population engaged, while slavery's contribution came from forcing the enslaved to live and work in the low-productivity agriculture of the cotton belt. From a microeconomic perspective, then, slavery was highly inefficient because it led to a major misallocation of labor. As Richard Hornbeck and Trevon D. Logan (2023) discuss, slavery's externalities were massive and, it can be added, *intertemporal*, given the persistent effects of racism on black Americans after abolition. Yet this also implies that free white labor could not have substituted for enslaved and then coerced black labor in the cotton belt. As such, any macroeconomic benefits that American capitalism gained from King Cotton were indebted to slavery and its legacies.²

I

Easterlin's estimates have distinct shortcomings. For 1840, in particular, he was impeded by a lack of data, which means he uses a narrow definition of personal income. As Easterlin (1960, 125) explains, he excluded "trade,

² Lindert and Williamson (2016) also present estimates of regional incomes in 1774, 1800, 1840, 1850, and 1860. Their estimates are problematic, however, because they assume that the hours worked by each element of the labor force were fixed across time. Hence, Lindert and Williamson (2016, 283) assume annual working days of "222 for the urban unskilled, 280 days for rural unskilled, farmers, and construction workers, and a full 313 days for slaves, professionals, merchants, and skilled artisans." This means, for example, that their estimates cannot capture the reduced activity of the enslaved due to their underemployment after the collapse of the colonial export sector. The growth in Southern incomes due to the cotton boom in the antebellum period is therefore likely to be underestimated. Similarly, Lindert and Williamson miss how commercialization and mechanization allowed Northern farmers to increase the time they worked (Gallman 1975; Craig and Weiss 2000). As a result, they have probably overestimated incomes. Indeed, Lindert and Williamson (2016, 97) find that their "nominal GDP in 1860 is about 26 percent above that of the Weiss [1993] 'broad' GDP estimate," which is similar to the estimates used here.

finance, insurance, real estate, government, and service industries other than private households.” Furthermore, Easterlin’s estimates only covered selected census years and had limited sectoral disaggregation.

This paper addresses these issues by estimating GDP from the output side. Briefly put, they are calculated from national GDP estimates that are mainly taken from Robert E. Gallman’s (1956; 1960; 1966) pioneering work on gross national product (GNP). Published census data are then used to determine the state-level distribution of crops and livestock, manufacturing, and mining.³ The remaining sectors are generally estimated by treating Thomas J. Weiss’ (1992) labor force series and Steven Ruggles et al.’s (2023) IPUMS micro census data on occupations as proxies for the quantity of output and Stanley Lebergott’s (1964) compilation of wages as a proxy for its price.

The first step, then, is to make sectoral estimates at a national level from various sources for the census years from 1839 to 1899. *Crops and livestock* are from Gallman (1960, 47, Table A-2), who also provided constant-value *farm improvements* (1966, 35, Table A-4), which are converted to current values and with missing years interpolated following Marvin Towne and Wayne Rasmussen’s (1960, 266, Table 1) series. *Construction* is from Gallman (1966, 38), as is *mining* (1960, 54, Table A-4), although supplemented with gold and silver output from Orris C. Herfindahl (1966, 323–324, Table A-1). Both *factory* and *home manufacturing* are from Gallman (1960, 43, Table A-1; 1966, 35, Table A-5), while *services* are from Gallman and Weiss (1969, 306, Table A-1). The results are shown in Table 1. For 1839, the estimates are somewhat higher (\$1.9 vs \$1.7 billion) than Louis Johnston and Samuel H. Williamson’s (2023) widely used series, but that is because Johnston and Williamson do not include home manufacturing. As home manufacturing declines, the two series converge until they are close (for example, \$20.0 vs \$20.1 billion in 1899).

Each sector is subsequently distributed among the states using various sources, as follows:

Crops and livestock are assigned to states based on estimates of value that are primarily based on census data. To take into account feed requirements, deductions are made from corn output based on 5 bushels per horse, 1 per head of cattle, 0.25 per sheep, and 5 per hog in each state.⁴ Milk yields per milch cow from 1859 to 1879 are estimated from

³ All published census data come via Haines et al. (2018) and Manson et al. (2022).

⁴ As suggested in *Commercial Review*, August 1848, 147.

Table 1

GDP by sector, 1839–1899

	1839	1849	1859	1869	1879	1889	1899
GDP	1,900	2,631	4,728	8,523	9,612	15,265	19,990
Agriculture	727	815	1,480	2,441	2,493	2,729	3,338
Crops and livestock	658	775	1,426	2,365	2,417	2,662	3,275
Farm improvements	70	40	54	76	76	67	63
Construction	137	206	385	1,064	953	1,830	2,090
Mining	9	82	82	186	232	381	606
Manufacturing	377	592	1,033	1,906	2,063	3,816	5,044
Factory	240	447	815	1,631	1,962	3,727	5,044
Home	137	145	218	275	101	89	0
Services	649	937	1,748	2,926	3,871	6,509	8,912
Education	8	15	31	86	98	172	266
Finance	32	29	51	129	201	372	558
Government	25	30	67	72	95	216	232
Hand trades	32	41	79	121	150	281	414
Personal	34	52	92	138	224	434	505
Professional	46	73	114	208	418	723	1,117
Shelter	166	248	395	711	697	1,074	1,390
Trade	197	346	661	970	1,294	1,944	2,653
Transportation	110	103	259	491	694	1,293	1,777

Note: Estimates are in million dollars. For the sources, see the text.

government data (Secretary of Agriculture 1890, 308–309). To account for non-marketed milk production, the minimum milk yield is set at 150 gallons per animal—an arbitrary procedure that is nevertheless preferable to ignoring on farm consumption. To convert the resulting quantity estimates, state-level and regional prices are then taken from various sources.⁵

Farm improvements are proxied by the absolute growth in Lee A. Craig and Weiss's (1998) agricultural labor force estimates, multiplied by Lebergott's (1964, 539, Table A-23) figures for farm wages. In states in which the agricultural labor force shrank, farm improvements are assumed to be zero.

⁵ For 1839, all prices come from Tucker (1843, 172–194). For 1859, crop prices are from Craig, Haines, and Weiss (2000), while livestock prices are estimated based on data for 1867 from the Bureau of Agricultural Economics (1927), which also provides all prices for the postbellum period. Prices for 1849 are estimated as the geometric mean of 1839 and 1859.

Construction is estimated as the population working in construction according to line 246 of IND1950 in the 1 percent IPUMS census samples, extrapolated back to 1839 using the labor force from Weiss (1992, 25–28, 32, Tables 4 and 5), with 1889 interpolated. The results are multiplied by Lebergott’s (1964, 541, Table A-25) wages.

Mining for 1839 comes from Ezra C. Seaman’s (1852, 461) contemporary estimates, followed by fragmentary census data for 1849 and 1859 (Kennedy 1859, 37, 57, 67, 107, Table 1; Secretary of the Interior 1865, clxxiii–clxxiv, clxxvii), with complete census data used for 1869 to 1899 (Walker and Seaton 1888, 2:1230–1231, 1242–1245; Steuart 1905, 50). Factory manufacturing for 1839 also comes from Seaman (1852, 461), followed by census data, with the mining estimates subtracted for 1849 and 1859.

Home manufacturing is from census data, extrapolated forward from 1869 to 1889 using the agricultural labor force (Craig and Weiss 1998).

Shelter is estimated using the total population from census data, with the enslaved weighted at 10 percent of the free, and the result multiplied by wages from Lebergott (1964, 541, Table A-25).

Other services are assigned to the states based on the occupational structure of the 1 percent IPUMS census samples, then adjusted by Lebergott’s (1964, 541, Table A-25) wage series. Various lines from the IPUMS samples are used: for trade, lines 606–699 in IND1950; for transportation and public utilities, lines 506–598 in IND1950; for finance, lines 716–756 and 807 in IND1950; for professional services, lines 868–879 and 896–899 in IND1950; for personal services, lines 826–847 and 849 in IND1950; for government, lines 906–987 in IND1950; for education, line 888 in IND1950; and for hand trades, line 848 in IND1950 and 501 and 590 in OCC1950. The total number of enslaved and free people working in services is taken from Gallman and Weiss (1969, 333, 339, 350, Table A-12). The enslaved domestic servants are then distributed to each state according to its enslaved population, while the free domestic servants are assigned based on IND1950 826–847 and 849 in the IPUMS samples. The missing census year 1889 is interpolated. Extrapolation back to 1839 uses some fragmentary occupational census data for that year: trade is assigned according to the number of people working in commerce; transportation and public utilities are based on internal and oceanic navigation; and professional services on the number of people

Table 2
Correlation Coefficients for Old and New Estimates

	Total	Per capita
	(a) Easterlin (1957)	
1879	0.99	0.93
1899	0.99	0.91
	(b) Easterlin (1960)	
1839	0.99	0.65
1879	1.00	0.90
1899	1.00	0.82
	(c) Klein (2013)	
1879	0.99	0.93
1889	1.00	0.93
1899	1.00	0.91

Note: The correlation coefficients are for the new estimates of GDP and the old estimates of personal income by state in the indicated year. The same census population data were used to convert all totals to per capita levels. Calculated from Easterlin (1957, 754, 757, Tables Y-2 and Y-5; 1960, 97-104, Tables A-1 to A-3), Klein (2013, 229-230, Table 12), and the new estimates described in the text, with population data from Manson et al. (2022).

working in professions. The remaining services are extrapolated back using Weiss's (1992, 25–28, Table 4) free labor force estimates. All labor force estimates are then multiplied by wages from Lebergott (1964, 541, Table A-25).

For all sectors, the resulting state values are then adjusted to match Gallman's (1960, 47, Table A-2) national values. The result is estimates of GDP by fifteen sectors for every state in every census year from 1839 to 1899, which is an improvement on the Easterlin-style estimates that have been used up to now.

Yet the new estimates are still approximate and subject to revision. On the one hand, they inevitably suffer from the problem of what D.C.M. Platt (1989) calls "Mickey Mouse Numbers in world history." But on the other, they represent the only valid defense: "It is only through using 'bad' numbers that 'better' numbers will emerge," as Roger Middleton (1991, 1080) puts it. They are rough approximations, then, but they still improve on what has gone before.

That said, the new estimates do not depart radically from previous estimates in terms of their overall levels. Table 2 provides the correlation coefficients between the new and old estimates, including both Easterlin's

(1957; 1960) originals and Alexander Klein's (2013) revised version, in both aggregate and per capita terms. The correlations are generally close, although with two major discrepancies. The correlation with Easterlin's estimates are looser, presumably because he used a narrow definition of personal income, as discussed above. They are, by contrast, close to Klein's estimates.⁶ At this level, then, the results of the new estimates are unsurprising and do not overhaul the existing literature on patterns of regional inequality in the nineteenth century. Nonetheless, the new estimates are still both more frequent and more granular than anything that has gone before, given that they cover every census year from 1839 to 1899 and divide each state's GDP into fifteen sectors.

What the new estimates cannot do, unfortunately, is provide estimates of regional growth rates. When using them, it is important not to make the same mistake as Engerman (1967), who took Easterlin's (1961, 535, Table 2) estimates of regional income shares in 1840, 1860, 1880, and 1900 in *current* prices, then applied them to the nearest period in Gallman's (1966, 26, Table A-1) GNP estimates in *constant* prices. This is an error because it does not take into account variability in the changes in price levels in different regions, which was a major issue in the nineteenth century because the construction of new transportation infrastructure led to price convergence.⁷

⁶ Klein both corrects Easterlin's estimates and introduces problems of his own, as can be seen by referring to his sources and their sources. For 1900, Klein (2013, 203, Table 5) takes his estimate of personal income as an average of the figures of 1899 to 1901 from Goldsmith (1956, 426, Table N-1), who calculated them from GNP figures drawn from "[u]published estimates by Kuznets, based on decadal figures [...] linked to [the] 1909 figure [...]," which came from "preliminary estimates by Kuznets, conforming to [the] Department of Commerce concept." The problem is that Kuznets' (1962) GNP estimates are known to be too low. This means, for example, that Goldsmith (1956, 427, Table N-1) found GNP to be \$17.3 billion in 1899, whereas the Johnston and Williamson (2023) estimates put GDP at \$20.1 billion, while the new estimates in Table 1 arrive at \$20.0 billion. An underestimate of personal income in 1900 in turn affects Klein's calculation of property income, which is the residual left when "services income" (the sum of wages, salaries, and proprietors' income) is subtracted from personal income. Furthermore, another issue arises when Klein estimates personal income for 1880 and 1890 by extrapolating back from the 1900 figure using Gallman's GNP series (2020, 111, Table 5.3). This tends to underestimate the growth in GNP because Gallman never incorporated his revised estimates of the rapidly expanding service sector (Gallman and Weiss 1969, 306, Table A-1).

⁷ National growth rates should also be estimated with care. In the supplementary materials, constant-price estimates have been calculated from various sources. For constant-price benchmark estimates, the same sources are used as for the nominal

The new estimates described here are therefore an advance on the existing literature while still being far from perfect. They can undoubtedly be improved, such as calculating regional price indices to estimate growth rates, extending the estimates into the twentieth century, interpolating between census years, improving the treatment of feed crops, and so on. To this end, all of the raw data and calculations described can be found in a workbook in the supplementary materials accompanying this paper. In making them available in this way, the goal is to help other researchers to improve on them, including by detecting any errors that may have been made in this initial version.

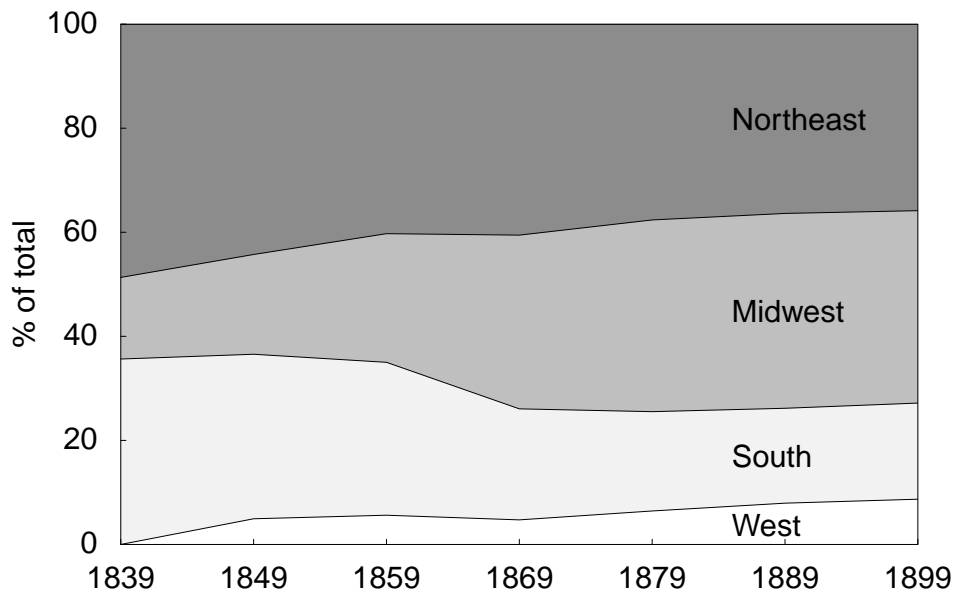
II

The basic patterns found in the new estimates are familiar. Easterlin (1961, 535, Tables 2 and 3) reports, for example, that the South's share of national personal income fell from 26 percent in 1860 to 15 percent in 1880, while the region's personal income per capita was reduced from 79 to 48 percent of the national average over the same period. The new estimates shown in Figure 1 similarly suggest that the South's share of GDP fell from 29 percent of the national total in 1839 to 19 percent in 1879, while Figure 2 indicates that the region's GDP per capita fell from 87 to 62 percent of the national average. New and old estimates thus show the South as having a fairly high GDP per capita before the Civil War and then falling behind.

For this reason, some of the criticisms of Easterlin's estimates must be addressed. As will be recalled, Wright presents estimates of wealth by

figures in Table 1, with the exception of services. For 1839 to 1869, the constant-price value of services uses Gallman and Weiss's (1969, 292, 306, Tables 3 and A-1) nominal values, deflated by their approximate weighted price index. From 1869 to 1899, constant values are then extrapolated using Kendrick's (1961, 298–303, Tables A-III and A-IV) indices, plus shelter's current values deflated using the Brady rent index in Gallman and Weiss (1969, 292, Table 3), with the weights of communications and public utilities from Weiss (1967, 202, Table 63). Interpolation of GDP between the census years of 1839 to 1859 and 1869 to 1899 follows the variations in the annual series calculated from Gallman (2000, 7, Table 1.3) and Gallman and Rhode (2020, 107, 109, 111, Tables 5.1 to 5.3). GNP is converted to GDP using Officer's (2021, 214–217, Table 1) income from abroad, deflated by the import price indices compiled by Irwin (2006, Series Ee432, Ee435, Ee438, and Ee441). Extrapolation back to 1793 then follows Gallman (2000, 7, Table 1.3), with gaps in the annual series interpolated following the variations in the geometric mean of a constant and Davis' (2004, 1189, Table III) industrial output index, which was inflated by the consumer price index from David and Solar (1977, 16–17, Table 1) for the current-price series, which can also be found in the supplementary materials. The series was extrapolated from 1899 to 1900 following Johnston and Williamson (2023).

Figure 1
Regional GDP, 1839–1899

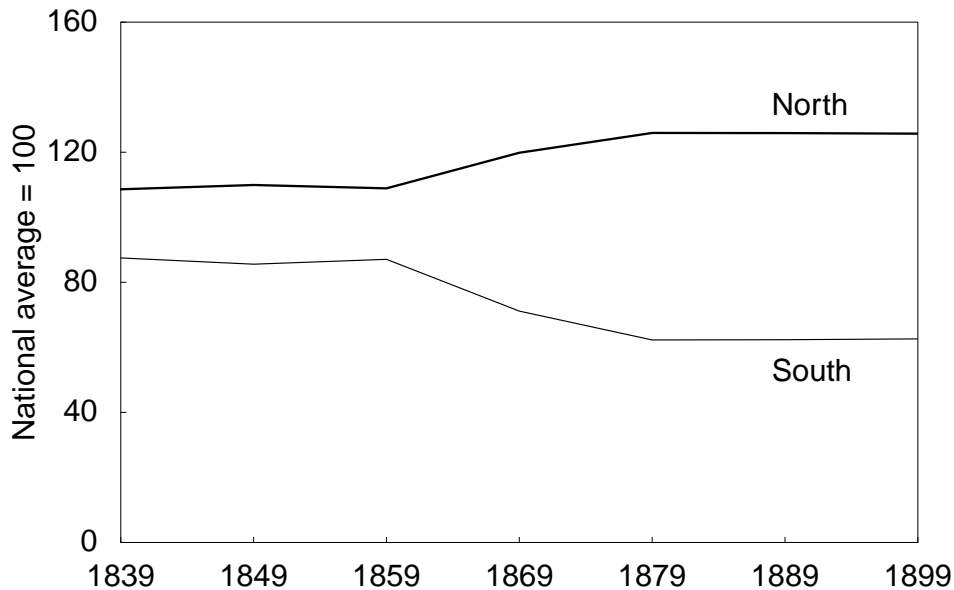


Note: Calculated as described in the text.

region for 1850 and 1860 and uses them to critique Easterlin's estimates of personal income. Wright shows the South lagging far behind the North, which he takes as conclusive evidence that slavery impeded growth. The South only seemed wealthy, according to Wright (2006, 61), was an illusion because planters "accumulated wealth in a form that had no counterpart in nonslave societies, a form that vanished when slavery was forcibly ended. Compared to an alternative scenario in which the South had been settled by free family farmers," Wright continues, "the South was impoverished by slavery." Hence, according to Wright's (2006, 60, Table 2.4; 2022, 135, Table 4) calculations, wealth per capita in 1860 was \$482 in the North and just \$294 in the South—60 percent of the Northern level. The South was far poorer than the North. "From a macroeconomic perspective," Wright (2006, 61) explains, "the matter really is as simple as that. Contrary to the oft-repeated claim that a highly developed slave economy suffered a massive setback during the war years, this analysis holds that the roots of postbellum regional backwardness are plainly visible in the antebellum data, consistently interpreted." In this simple narrative, then, slavery made the South poorer. The region's relative decline after the Civil War is an illusion.

A methodological error nevertheless undermines this analysis. In arriving at his estimates, Wright (2006, 60, Table 2.4; 2022, 135, Table 5) uses a

Figure 2
Regional GDP per Capita, 1839–1899



Note: The North includes the Northeast and the Midwest. Population data are for the census years. Calculated from Manson et al. (2022) and as described in the text.

preliminary publication from the 1860 census, rather than the final version. In doing so, he relies upon what the Secretary of the Interior (1866, 294) described as “an account of the value of real and personal estate as assessed for taxation” by the 33 states and 9 territories that existed at the time, with the “proper amount” added to ensure “that the return should represent as well the true or intrinsic value as the inadequate sum generally attached to property for taxable purposes.” Wright uses, then, rough estimates of wealth. Furthermore, the final version of the census contained more accurate wealth statistics as reported by individuals to the census takers, which provide a more comprehensive account of regional differences. If Wright had looked at those data, he would have found that the South was wealthier than he supposes. As seen in Table 3, the census suggested that wealth per capita was \$542 in the North and \$455 in the South—84 percent of the Northern level, which is similar to the new estimates of GDP per capita. Wright’s simple macroeconomic analysis thus hinges on a methodological error.

The new estimates also cast doubt on some other problematic claims. Wright’s (1975, 447–450; 1976, 314–316, 324–329; 1978, 103–106) assertions that world demand for cotton was the principal determinant of Southern growth appears unconvincing when the structure of the region’s GDP is

Table 3
GDP and Wealth per Capita, 1859–1860

	\$ per capita		North = 100	
	GDP	Wealth	GDP	Wealth
United States	150	510	96	93
North	156	542	100	100
Northeast	180	592	115	109
New England	187	575	119	105
Middle Atlantic	177	599	113	110
Midwest	129	483	82	89
East North Central	128	496	82	91
West North Central	129	439	82	81
South	125	455	80	83
South Atlantic	104	408	66	75
East South Central	132	510	84	94
West South Central	171	471	109	86
West	429	490	273	90
Mountain	137	221	87	40
Pacific	545	597	347	109

Note: The North is the sum of the Northeast and Midwest. The GDP estimates for 1859 are calculated as described in the text. The wealth statistics for 1860 are based on the value of property that individuals reported to the census, with an estimate of the value of the enslaved subtracted. The enslaved are included in the denominator. Calculated from Secretary of the Interior (1866, 294–319, Tables 1–3), Ransom and Sutch (1988, 151, 158, Tables A.1 and A.6), and Manson et al. (2022).

considered, as Fogel and Engerman (1992) also argue. Table 4 indicates that cotton accounted for about 14 percent of Southern GDP in 1859, which implies that world demand for cotton could not have had the overwhelming importance that Wright ascribes to it. Hence, Figure 3 illustrates how excluding cotton makes little difference to the evolution of the South’s relative GDP per capita. From 1839 to 1859, the South’s GDP per capita was, on average, 80 percent of the North’s but then fell to 50 percent from 1879 to 1899. Without cotton, meanwhile, the fall was from 71 to 44 percent. Taking the difference between these figures suggests that cotton’s direct contribution was just 10 percent of the overall decline. Furthermore, limiting the analysis to the Deep South still does not support Wright’s story. In Alabama, for example, cotton’s direct contribution was just 26 percent of the decline; in Georgia, 19 percent; in Mississippi, 28 percent; in Louisiana,

Table 4
Structure of Southern GDP, 1839–1899

	1839	1849	1859	1869	1879	1889	1899
Agriculture	55.0	50.3	48.4	45.2	41.4	31.7	28.2
Crops and livestock	51.1	47.7	46.7	44.6	39.8	30.8	27.1
Livestock and feed crops	25.8	24.3	19.6	20.4	14.9	13.0	12.2
Food grains	3.5	2.4	3.0	2.3	3.1	1.4	1.5
Cotton	8.9	10.3	14.2	13.6	14.6	11.4	8.8
Other	12.9	10.7	9.9	8.2	7.2	5.0	4.7
Farm improvements	3.9	2.6	1.7	0.6	1.6	0.9	1.1
Construction	3.7	4.2	4.6	7.9	7.7	8.9	7.7
Mining	0.3	0.8	0.2	0.5	0.6	1.2	2.4
Manufacturing	17.1	18.4	18.0	15.7	12.5	15.6	16.3
Factory	6.7	7.7	7.4	8.1	9.7	14.0	16.3
Home	10.4	10.7	10.6	7.5	2.8	1.6	0.0
Services	23.9	26.3	28.7	30.7	37.9	42.6	45.4
Trade	7.8	7.9	9.1	8.3	10.1	10.1	10.9
Transport and public utilities	2.0	1.9	3.3	3.9	5.2	7.4	8.5
Finance	0.7	0.8	0.6	0.7	0.9	1.5	1.8
Professional	1.7	2.3	2.6	2.9	5.1	5.6	6.6
Personal	3.1	3.0	3.4	2.1	2.9	3.4	3.0
Government	1.0	1.3	1.2	1.0	1.2	1.7	1.3
Education	0.3	0.6	0.4	0.7	0.8	1.0	1.3
Hand trades	0.6	1.0	0.9	0.9	1.2	1.5	1.7
Shelter	6.7	7.6	7.1	10.3	10.5	10.5	10.3

Note: The figures show the percentage contribution to Southern GDP in each census year. See the text for sources.

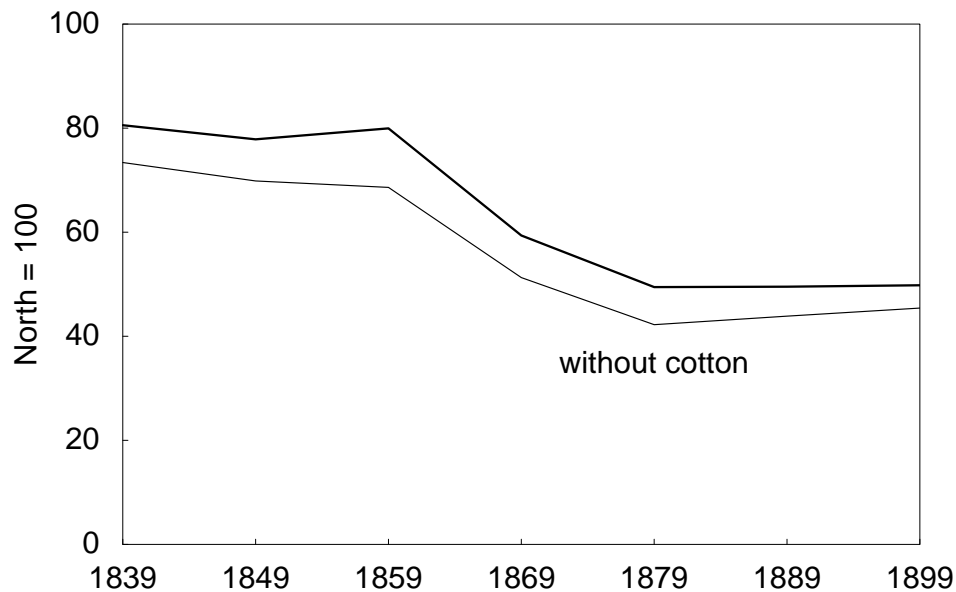
16 percent; in South Carolina, 4 percent. Cotton did not have the dominant position in the South's productive structure that Wright assumes.⁸

By extension, slavery itself was not as important to the South as is sometimes implied. At the national level, Rhode (2024) demonstrates that the enslaved accounted for only a fairly small part of GDP, but he does not draw out the implications of this finding. Table 5 does so by comparing Rhode's estimate of the output per member of the captive labor force with the new estimates of GDP by state. It shows that despite making up almost half of the slave states' labor force, the enslaved only accounted for about a

⁸ Including cotton-related activities would not massively boost cotton's importance. In his estimate for 1859, for example, Gallman (1956, 169, Table 17) uses a farm price of 9.3 cents per pound of cotton, while the free-on-board export price was 11.6 cents for that year and 10.8 cents for 1860 (Evans 1894, 121). The margins between these values are too small for cotton's impact on GDP to be greatly increased by including the value added to the crop after it left the farm.

Figure 3

Relative Southern GDP per Capita, 1839–1899



Note: See the text for sources.

third of their GDP, based on Rhode's rough estimates of output per captive laborer.

Even that modest contribution to Southern GDP was, moreover, inflated by enslaved children and women being made to participate in the labor force. Pregnant women, for instance, were forced to work almost until birth, and their babies were often separated from them early, to be looked after by the plantation's elderly enslaved population. Abolition therefore led to a rapid fall in the South's relative GDP per capita when formerly enslaved children and women used the opportunity to withdraw from the labor force, as Roger Ransom and Richard Sutch (2001, Ch. 3) describe. Figure 4 illustrates the normalization of the South's labor force participation rate. Rather than having to grow cotton, children learned and played, and their mothers looked after them instead of using the socialized childcare arrangements that had previously predominated. This explains approximately half of the decline in the South's relative GDP from 1859 to 1879.⁹

That divergence was then amplified by racism. After the Civil War, the formerly enslaved were prevented from leaving the Southern countryside

⁹ Estimated by comparing the fall in GDP per capita with the fall in GDP per member of the labor force from 1859 to 1879. Calculated from Weiss (1992, 25–28, 32, Tables 4 and 5), Manson et al. (2022), and as described in the text.

Table 5
GDP per Worker, 1859

	Labor force (millions)	GDP (billion \$)	(\$ per worker)
United States	11.3	4.7	419
Free states	5.9	3.2	510
Slave states	5.1	1.5	306
Enslaved	2.5	0.5	200
Free	2.6	1.0	410

Note: The slave states include Missouri. Calculated from Weiss (1992, 25–28, 32, Tables 4 and 5), Rhode (2024, 9, Table 8), and the GDP estimates described in the text.

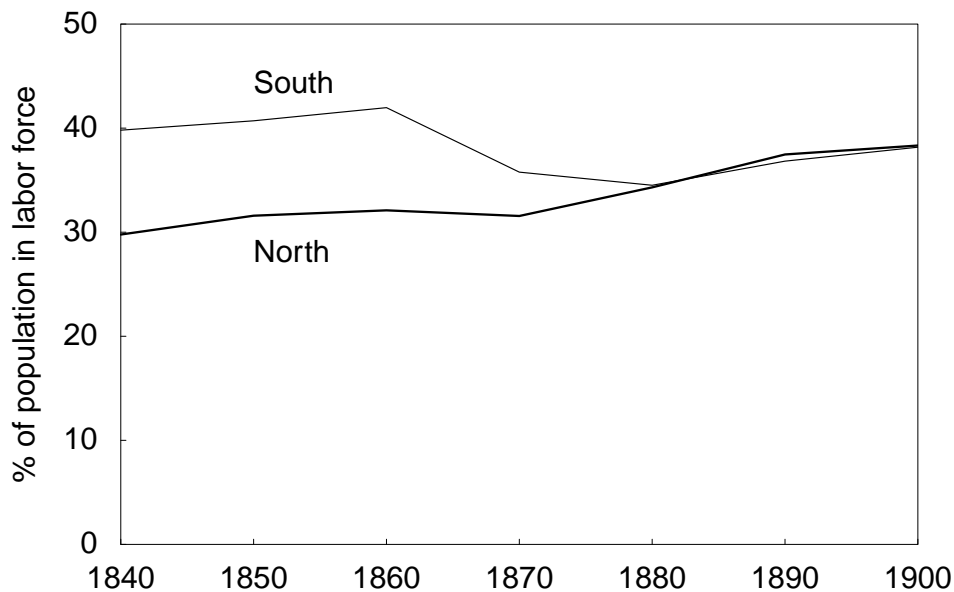
by racist discrimination and violence, both in Southern cities and in the North (Litwack 1979, Chs. 4–6; Cohen 1991, Ch. 4). The result was a relative lack of structural transformation, as shown by Craig and Weiss' (1998) labor force statistics in Figure 5. Most black Southerners remained trapped in the region's low-productivity agricultural sector, where they made up the bulk of the farm labor force. As shown in Figure 6, North and South diverged in terms of their agricultural productivity due to the falling land-labor ratio in the latter. By preventing black Southerners from escaping King Cotton, racism made their region fall behind.

III

A revision of American economic history is necessary. The new estimates demonstrate how some of the country's most prominent economists have misunderstood the origins of the North-South divergence after the Civil War. Wright, for example, has implied that the South's falling land-labor ratio was a sign of progress. In Wright's (1986, 55) words, an increasing rural population density 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 that agricultural labor productivity increased by "about 1 percent per year from the late 1870s to 1908," but he does not mention that it still remained 16 percent below its 1860 level at the end of this period. Furthermore, in these years, the United States annual GDP per capita growth rate was about 1.7 percent, which means the South's

Figure 4

Labor Force Participation Rate, 1840–1900



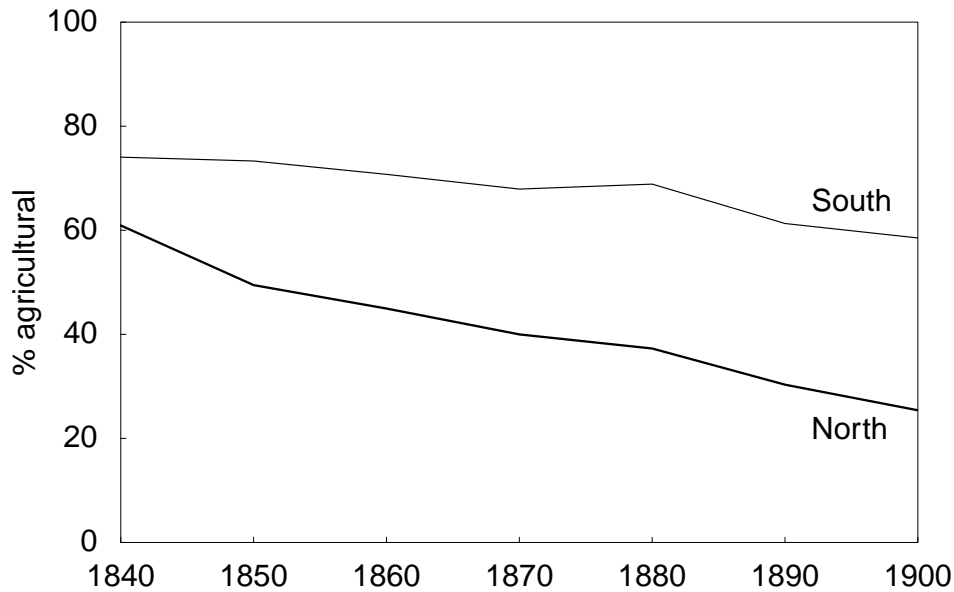
Note: The North includes the Northeast and the Midwest. Calculated from Weiss (1992, 25–28, 32, Tables 4 and 5) and Manson et al. (2022).

rural population was clearly becoming poorer than the rest of the country. Despite this, Wright (2006, 79) continues to imply that the South becoming “the highest rural population-density section of the country” was a sign of progress. In reality, the problem was that too many Southerners—above all, black Southerners—remained trapped in the region’s relatively unproductive agricultural sector.

This interpretation of the South’s relative decline in turn requires a revision of the standard counterfactual for what the region would have looked like in the absence of slavery. As already noted, Wright (2006, 61) imagines “an alternative scenario in which the South had been settled by free family farmers,” which is the standard assumption in much of the literature. The question, though, is why free family farmers would have been willing to settle in the Deep South, given the low levels of agricultural productivity there. Without a captive labor force to exploit, what exactly would have been the attraction of the Deep South for the free population? Only through coercion was it possible to settle the region to such an extent, which explains why farm values per acre collapsed in the Deep South after abolition (Francis 2025). Once the black Southerners could no longer be exploited to such an extreme degree, the land ceased to be as productive as it previously had been, depressing farm values. The counterfactual

Figure 5

Agricultural Share of the Labor Force, 1840–1900



Note: The North includes the Northeast and the Midwest. Calculated from Weiss (1992, 25–28, 32, Tables 4 and 5) and Craig and Weiss (1998).

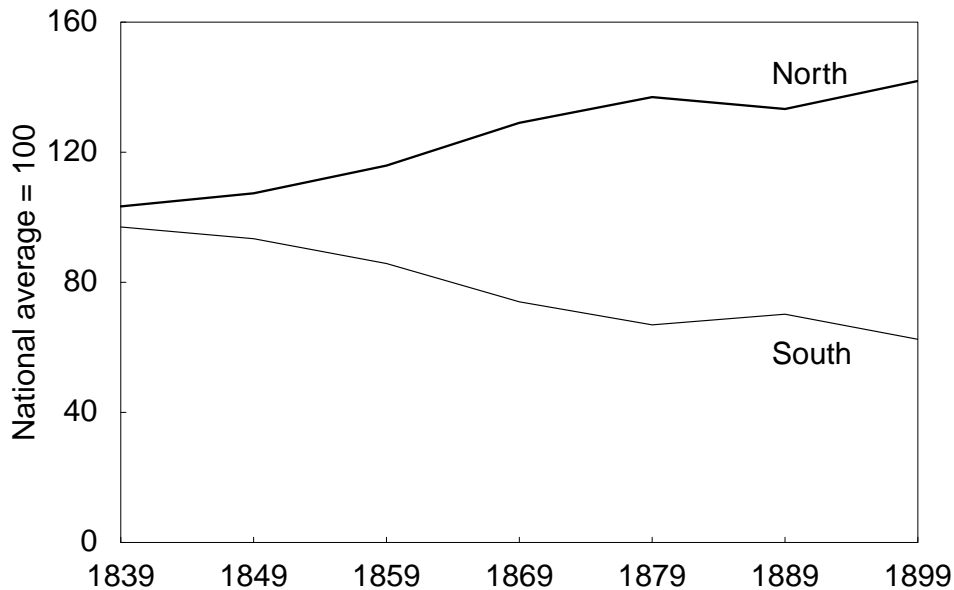
Deep South would therefore have been even less densely populated than it ultimately became.

The costs of slavery can then be reassessed as well. Hornbeck and Logan (2023) have taken the first step by noting that the enslaved bore massive costs that were not reflected in the market prices used to calculate GDP, including the new estimates described here. Yet it is possible to go further because slavery's externalities were also *intertemporal*. Racism, especially, was its major legacy with effects that were similar to how the burning of coal during the Industrial Revolution polluted the atmosphere for future generations.¹⁰ A stock of racist ideas accumulated in American culture due to the defense of slavery, and they were then retooled to justify further discrimination against black Americans after abolition. Northern employers' racism thwarted the attempts of the formerly enslaved to move Northward (Cohen 1991, Ch. 4). Black Southerners then struggled to access education. Where black politicians were elected, they proved successful in providing their constituents with schools (Logan 2020). Racists responded, however, by attacking both the schools and the politicians who had succeeded in getting them built (Butchart 2010, Ch. 6). Such violence proved

¹⁰ Gillingham and Sweeney (2010) discuss the difference between flows and stocks of externalities and the latter's intertemporal effects.

Figure 6

Agricultural Labor Productivity, 1839–1899



Note: The series show value added in agriculture per member of the agricultural labor force. The North includes the Northeast and the Midwest. The labor force estimates are for the census years. Calculated from Craig and Weiss (1998) and the GDP estimates described in the text.

instrumental to allowing the Democrats to regain control of the South in the 1870s. Thereafter, racist legal discrimination would be used to make it harder for black Southerners to improve their position, severely impacting their social mobility (Collins and Wanamaker 2022). Such were the intertemporal externalities of slavery.

But that does not mean that slavery brought no benefits for American capitalism. Hornbeck and Logan's (2023, 17) error is to implicitly assume that slavery contributed little or nothing to growth, even if they claim not to take a position on the issue. Nonetheless, their statement that the massive costs of slavery were "entirely wasted" when they were not reflected in the enslaved's own consumption or the profits extracted by their captors only makes sense if it is assumed that slavery's impacts were felt at the microeconomic level. If, on the other hand, the boom Southern export sector depended on slavery, as the new GDP estimates suggest, it may be that the planters' precious institution had macroeconomic effects that have been overlooked up to now. Those benefits may, moreover, have been felt beyond the South—in the North.

References

- Bureau of Agricultural Economics (1927) "Prices of Farm Products Received by Producers." United States Department of Agriculture, Statistical Bulletin 14.
- Butchart, Ronald E. (2010) *Schooling the Freed People: Teaching, Learning, and the Struggle for Black Freedom, 1861–1876*. Chapel Hill: University of North Carolina.
- 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.
- Craft, Erik D. and James Monks (2008) "The Postbellum Demand for Cotton Revisited." *Explorations in Economic History*. 45(2), 199–206.
- Craig, Lee A., Michael Haines, and Thomas J. Weiss (2000) "U.S. Census of Agriculture by County, 1860." Dataset, Colgate University. https://drive.google.com/file/d/1spVpnsOr49PX9L_7ITqSGOe4DbvwNcXW/view.
- Craig, Lee A. and Thomas J. Weiss (1998) "The Agricultural Labor Force by State, 1800 to 1900." Dataset, University of Kansas. https://drive.google.com/file/d/1spVpnsOr49PX9L_7ITqSGOe4DbvwNcXW/view.
- (2000) "Hours at Work and Total Factor Productivity Growth in Nineteenth-Century U.S. Agriculture." In: Kyle D. Kauffman (ed.), *Advances in Agricultural Economic History*. Stamford: JAI Press, 1–30.
- David, Paul A. and Peter Solar (1977) "A Bicentenary Contribution to the History of the Cost of Living in America." *Research in Economic History*. 2, 1–80.
- Davis, Joseph H. (2004) "An Annual Index of U. S. Industrial Production, 1790–1915." *Quarterly Journal of Economics*. 119(4), 1177–1215.
- Easterlin, Richard A. (1957) "State Income Estimates." In: Simon Kuznets and Dorothy Swaine Thomas (eds.), *Population Redistribution and Economic Growth: United States, 1870–1950*. Philadelphia: American Philosophical Society, 702–759.
- (1960) "Interregional Differences in Per Capita Income, Population, and Total Income, 1840–1950." In: Conference on Research in Income and Wealth (ed.), *Trends in the American Economy in the Nineteenth Century*. Princeton: Princeton University Press, 73–140.
- (1961) "Regional Income Trends, 1840–1950." In: Seymour E. Harris (ed.), *American Economic History*. New York: McGraw-Hill Book Company, 525–547.
- Engerman, Stanley L. (1967) "The Effects of Slavery upon the Southern Economy: A Review of the Recent Debate." *Explorations in Entrepreneurial History*. 4(2), 71–97.
- Evans, Charles H. (1894) "Imports and Exports: Part II." 53rd Cong., 2nd sess., Sen. Rep. 259, Part 2.

- Fogel, Robert William (1989) *Without Consent or Contract: The Rise and Fall of American Slavery*. New York: W.W. Norton & Company.
- Fogel, Robert William and Stanley L. Engerman (1974) *Time on the Cross: The Economics of American Negro Slavery*. Boston: Little, Brown and Company.
- (1992) “Notes on the Explanation of the Growth of Southern per Capita Income, 1840–1860.” 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, 278–282.
- Francis, Joseph (2025) “Did Slavery Impede the Growth of American Capitalism? Two Natural Experiments Using Farm Values per Acre.” Unpublished paper, v3.0, Apr. 12. https://github.com/joeFrancis505/Francis_Farm_Values.
- Gallman, Robert E. (1956) “Value Added by Agriculture, Mining and Manufacturing in the United States, 1840–1880.” PhD diss., University of Pennsylvania.
- (1960) “Commodity Output, 1839–1899.” In: Conference on Research in Income and Wealth (ed.), *Trends in the American Economy in the Nineteenth Century*. Princeton: Princeton University Press, 13–72.
- (1966) “Gross National Product in the United States, 1834–1909.” In: Dorothy S. Brady (ed.), *Output, Employment, and Productivity in the United States after 1800*. New York: Columbia University Press, 1–90.
- (1975) “The Agricultural Sector and the Pace of Economic Growth: U.S. Experience in the Nineteenth Century.” In: David C. Klingaman and Richard K. Vedder (eds.), *Essays in Nineteenth Century Economic History: The Old Northwest*. Athens, OH: Ohio University Press, 35–76.
- (2000) “Economic Growth and Structural Change in the Long Nineteenth Century.” In: Stanley L. Engerman and Robert E. Gallman (eds.), *The Cambridge Economic History of the United States*. Cambridge: Cambridge University Press, 1–55.
- Gallman, Robert E. and Paul W. Rhode (2020) *Capital in the Nineteenth Century*. Chicago: University of Chicago Press.
- Gallman, Robert E. and Thomas J. Weiss (1969) “The Service Industries in the Nineteenth Century.” In: Victor R. Fuchs (ed.), *Production and Productivity in the Service Industries*. New York: Columbia University Press.
- Gillingham, Kenneth and James Sweeney (2010) “Market Failure and the Structure of Externalities.” In: Boaz Moselle, Jorge Padilla, and Richard Schmalensee (eds.), *Harnessing Renewable Energy in Electric Power Systems: Theory, Practice, Policy*. New York: Routledge, 69–91.
- Goldsmith, Raymond W. (1956) “Estimates of National Product, National Income, and Personal Income, 1897 to 1949” In: Dorothy S. Brady and Horst Mender-shausen (eds.), *A Study of Saving in the United States*. Princeton: Princeton University Press.

- Haines, Michael, Price Fishback, and Paul W. Rhode (2018) "United States Agriculture Data, 1840–2012: Version 4." Dataset, ICPSR study 35206. <https://www.icpsr.umich.edu/web/ICPSR/studies/35206/versions/V4>.
- Hanson, John R. (1979) "World Demand for Cotton during the Nineteenth Century: Wright's Estimates Re-examined." *Journal of Economic History*. 39(4), 1015–1021.
- Herfindahl, Orris C. (1966) "Development of the Major Metal Mining Industries in the United States from 1839 to 1909." In: Dorothy S. Brady (ed.), *Output, Employment, and Productivity in the United States after 1800*. New York: Columbia University Press, 293–348.
- 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.
- Hornbeck, Richard and Trevon D. Logan (2023) "One Giant Leap: Emancipation and Aggregate Economic Gains." NBER Working Paper 31758. <https://www.nber.org/papers/w31758>.
- Hummel, Jeffrey Rogers (2001) "Deadweight Loss and the American Civil War: The Political Economy of Slavery, Secession, and Emancipation." PhD diss., University of Texas at Austin.
- Irwin, Douglas A. (2006) "Merchandise Imports and Duties: 1790–2000." In: Susan B. Carter, Scott Sigmund Gartner, Michael R. Haines, Alan L. Olmstead, Richard Sutch, and Gavin Wright (eds.), *Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition*. New York: Cambridge University Press.
- Johnston, Louis and Samuel H. Williamson (2023) "The Annual Real and Nominal GDP for the United States, 1790–1928." Dataset, Measuring Worth. <https://www.measuringworth.com/datasets/usgdp/constructiongdp.php>.
- Kendrick, John W. (1961) *Productivity Trends in the United States*. Princeton: Princeton University Press.
- Kennedy, Joseph C.G. (1859) "Abstract of the Statistics of Manufactures, According to the Returns of the Seventh Census." 35th Cong., 2nd sess., Sen. Ex. Doc. 39.
- Klein, Alexander (2013) "New State-Level Estimates of Personal Income in the United States, 1880–1910." *Research in Economic History*. 29, 191–255.
- Kuznets, Simon (1962) "Annual Estimates 1869–1955: T-Tables 1–15: Technical Tables Underlying Series in *Capital in the American Economy: Its Formation and Financing*, Appendices A–E." Dataset, NBER. <https://data.nber.org/data-appendix/c1454/appendix.pdf>.
- Lebergott, Stanley (1964) *Manpower in Economic Growth: The American Record since 1800*. New York: McGraw-Hill.
- Lindert, Peter H. and Jeffrey Gale Williamson (2016) *Unequal Gains: American Growth and Inequality since 1700*. Princeton: Princeton University Press.

- Litwack, Leon F. (1979) *Been in the Storm so Long: The Aftermath of Slavery*. New York: Alfred A. Knopf.
- Logan, Trevon D. (2020) "Do Black Politicians Matter? Evidence from Reconstruction." *Journal of Economic History*. 80(1), 1–37.
- 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>.
- Middleton, Roger (1991) "Mickey Mouse Numbers in World History: The Short View by D.C.M. Platt." *English Historical Review*. 106(421), 1079–1080.
- North, Douglass C. (1961) *The Economic Growth of the United States, 1790–1860*. Englewood Cliffs: Prentice-Hall.
- Officer, Lawrence H. (2021) *A New Balance of Payments for the United States, 1790–1919: International Movement of Free and Enslaved People, Funds, Goods and Services*. Cham: Palgrave Macmillan.
- Olmstead, Alan L. and Paul W. Rhode (2008) "Biological Innovation and Productivity Growth in the Antebellum Cotton Economy." *Journal of Economic History*. 68(4), 1123–1171.
- (2011) "Productivity Growth and the Regional Dynamics of Antebellum Southern Development." In: Paul Webb 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.
- Platt, D.C.M. (1989) *Mickey Mouse Numbers in World History: The Short View*. Basingstoke: Macmillan 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.
- Rhode, Paul W. (2024) "What Fraction of Antebellum US National Product Did the Enslaved Produce?" *Explorations in Economic History*. 91, 101552.
- 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>.
- Seaman, Ezra C. (1852) *Essays on the Progress of Nations, in Civilization, Productive Industry, Wealth and Population*. New York: Charles Scribner.
- Secretary of Agriculture (1890) "Report of the Secretary of Agriculture: 1890."
- Secretary of the Interior (1865) "Manufactures of the United States in 1860; Compiled from the Original Returns of the Eighth Census."

- Secretary of the Interior (1866) "Statistics of the United States, (Including Mortality, Property, &c.), in 1860; Compiled from the Original Returns and Being the Final Exhibit of the Eighth Census."
- Steuart, William M. (1905) "Mines and Quarries 1902." Secretary of the Interior.
- Surdam, David G. (1998) "King Cotton: Monarch or Pretender? The State of the Market for Raw Cotton on the Eve of the American Civil War." *Economic History Review*. 51(1), 113–132.
- Tucker, George (1843) *Progress of the United States in Population and Wealth in Fifty Years, as Exhibited by the Decennial Census*. New York: Press of Hunt's Merchants' Magazine.
- Uselding, Paul J. (1976) "A Note on the Inter-Regional Trade in Manufactures in 1840." *Journal of Economic History*. 36(2), 428–435.
- Walker, Francis A. and Charles W. Seaton (1888) "Compendium of the Tenth Census (June 1, 1880): Revised Edition: Part I." Department of the Interior.
- Weiss, Thomas J. (1967) "The Service Sector in the United States: 1839 through 1899." PhD diss., University of North Carolina.
- (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.
- (1993) "Estimates of Gross Domestic Output for the United States, 1800 to 1860." Unpublished paper.
- Wright, Gavin (1974) "Cotton Competition and the Post-Bellum Recovery of the American South." *Journal of Economic History*. 34(3), 610–635.
- (1975) "Slavery and the Cotton Boom." *Explorations in Economic History*. 12(4), 439–451.
- (1976) "Prosperity, Progress, and American Slavery." In: Paul A. David, Herbert G. Gutman, Richard Sutch, Peter Temin, and Gavin Wright (eds.), *Reckoning with Slavery: A Critical Study in the Quantitative History of American Negro Slavery*. New York: Oxford University Press, 302–338.
- (1978) *The Political Economy of the Cotton South: Households, Markets, and Wealth in the Nineteenth Century*. New York: W.W. Norton & Company.
- (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.
- (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.
- Yang, Dongyhu (1992) "The Debate over the Growth in the Demand for Cotton." 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, 269–272.