# Revisiting *Time on the Cross* After 45 Years: The Slavery Debates and the New Economic History

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**In recent years,** a wave of celebrated books by historians has explored the role of slavery in the development of the American economy. Early examples of these works, such as Walter Johnson's *River of Dark Dreams,* Ed Baptist's *The Half Has Never Been Told,* Sven Beckert's *Empire of Cotton,* and Beckert and Seth Rockman's volume *Slavery's Capitalism,* have analyzed the economic significance of cotton slavery, whereas more recent contributions, such as Keri Leigh Merritt's *Masterless Men,* Caitlin Rosenthal's *Accounting for Slavery,* and Stephanie Jones-Rogers's *They Were Her Property,* have focused on specific aspects of slavery and its legacies. These works differ in important respects, but together, they constitute the beginnings of a new literature on the economic history of slavery, and one that argues that American economic development can only be understood as the emergence of "slavery's capitalism."[1]

This nascent body of work is also quite distinct from the extensive literature by economic historians on slavery. This is at least partly a consequence of the differences in the methods utilized by the two disciplines; one would not expect historians to engage with the more technical issues that are of interest to economists. Yet at the same time, some of the new books, particularly Baptist's and Beckert's, make arguments that resemble those of the most prominent work by economists on slavery, Robert Fogel and Stanley Engerman's 1974 book *Time on the Cross: The Economics of American Negro Slavery.* For example, the new works attribute the sources of productivity in slavery to its potential to extract high levels of

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[1] Beckert and Rockman, *Slavery's Capitalism,* 1.

labor effort and to generate economies of scale—a view that is quite consistent with the framework of *Time on the Cross*.[2]

*Time on the Cross* was an ambitious reinterpretation of American slavery with an extremely broad range of analysis. It remains among the most controversial works of economic history ever published, and its critics, who included historians as well as economists, challenged virtually everything in it—especially its conceptualization of slave productivity, the element of its analysis that has had the strongest influence on the new literature on capitalism and slavery. Over the subsequent years, economic historians' research on slavery advanced considerably. Later works conceptualized slavery in new ways, as a system of property rights rather than merely a method of labor organization, and analyzed the relationships between masters and slaves using new theoretical tools.[3] These and other innovations have been shown to have far-reaching implications for the arguments of *Time on the Cross*, and even the book's strongest defenders would likely concede that it no longer represents the current state of knowledge on the economics of American slavery.

The complex debates surrounding *Time on the Cross* may have made the economic history literature on slavery difficult for non-specialists to apprehend. Today, anyone interested in works by economists on slavery is confronted by a dense thicket of papers and books published in the many rounds of challenges to *Time on the Cross*, replies from the authors, counter-replies, and so on, and some of the disputed issues remain unresolved. Perhaps for this reason, the extensive debates and the vast literature that they helped produce have been forgotten by at least some historians working on slavery today. This analytical amnesia is particularly striking given that some of the contours of the current debate on the role of slavery in the development of capitalism echo elements of the

[2] To be sure, the new works assign much greater significance to the use of violence by slave overseers, but both Beckert and Baptist share Fogel and Engerman's emphasis on slavery as an efficient method of labor organization. Beckert also specifically discusses economies of scale in cotton slavery (110), which is of fundamental importance to Fogel and Engerman. Clegg, in "Capitalism and Slavery," explores the commonalities between the new literature's conceptualization of slavery and that of *Time on the Cross*.

[3] On slavery as a system of property rights and the implications of this view, see Wright, *Slavery and American Economic Development*. In "Why Were Workers Whipped?" Michael Chwe uses the tools of game theory to show that Fogel and Engerman's model of the provision of incentives by slave masters fails to account for the contingent nature of the threat of violence.

literature that developed in response to *Time on the Cross.* Some of the criticisms of Fogel and Engerman in fact remain equally relevant to the works of Baptist and Beckert.[4] That those criticisms were in some cases produced by historians, or economists and historians in conversation with one another, suggests that something important has been lost.[5]

Because *Time on the Cross* was written in part to advocate for a particular vision of what constitutes good economic history, the debates surrounding that book focused not only on specific topics related to slavery, but also on broader issues such as the limits of particular methodologies and the importance of interdisciplinary perspectives for the study of those topics. Understanding the insights that emerged from those debates would benefit scholars from any field writing about the history of slavery. And by returning to some of those older conversations, we might find our way toward new conversations between the disciplines of economics and history.

This paper revisits the debates surrounding *Time on the Cross,* not just to shed light on the emerging literature on slavery and the development of capitalism, but also to make the insights produced by those earlier debates more accessible to non-specialists. Rather than attempting to offer a comprehensive account of the extensive debates that followed the book's publication, I focus on its most important arguments and the most important challenges made to those arguments. Where possible, I also provide a sense of which of the book's arguments have withstood scrutiny and which have been discredited.

In the 45 years that have elapsed since the publication of *Time on the Cross,* the fields of economics and economic history have evolved considerably. As I revisit the debates surrounding that book, I will also point out how methodological innovations developed after 1974 have changed how economists analyze some of the more difficult issues raised

[4] Hilt, in "Economic History," analyzes of the consequences of the lack of engagement with the economic history literature on slavery and *Time on the Cross* for the arguments of Johnson, Baptist, and Beckert.

[5] Most of the critics of the new books on slavery have been economists. Critiques of Johnson, Baptist, Beckert, and/or Beckert and Rockman include Wright, "Review of *River of Dark Dreams*" and "Review of *Slavery's Capitalism*"; Murray et al., "Roundtable of Reviews"; Hilt, "Economic History"; and Olmstead and Rhode, "Cotton, Slavery." However, historians have also criticized some of these works—see Lamoreaux, "Interchange," and Oakes, "Capitalism and Slavery and the Civil War"—as has at last one sociologist, John Clegg, in "Capitalism and Slavery."

in *Time on the Cross*. I also discuss some recent works that shed new light on some of those early arguments.[6] Most of the arguments of the book can be grouped into three topics: the productivity of slave agriculture, the treatment of the enslaved, and the growth of the southern economy in the long run. After a brief overview of the book and the initial critical response, I take up the arguments and counter-arguments on each of these three topics. I then try to address the claims made by some historians that social scientists fundamentally lack the appropriate tools for analyzing certain questions related to slavery.[7] In the end, I hope to demonstrate both the importance and the inherent difficulty of conversations between disciplines on this contentious terrain.

## *Time on the Cross*—An Overview

*Time on the Cross* was published as two volumes—the book itself, which contained few footnotes and presented empirical evidence mainly in the form of graphs, and a separate volume, *Evidence and Methods*, which included citations of historical sources and the equations and tables underpinning the theoretical and empirical analysis. The main text was written for a popular audience in a brash and iconoclastic style, and its arguments were framed as a refutation of what the authors called the traditional view of slavery, which held that the enslaved were indolent and inept; that slave agriculture was inefficient, backwards, and dying out in the antebellum era; and that slave owners were irrational and unconcerned with their own economic self-interest in their efforts to perpetuate the system.[8] Fogel and Engerman stated that their research, which reflected recent methodological advances and used previously unknown sources, was "so much at variance with common beliefs . . . and so central to the understanding of contemporary issues, that . . . [it]

[6] Sutch, in "Economics," presents a chronological survey of recent cliometric literature on slavery. Engerman, in "Slavery and its Consequences," presents a survey of the literature by historians and economic historians on American slavery.

[7] This is particularly true of the discussions of the use of violence by slave owners, and its implications for the behavior of the enslaved. See below.

[8] A common criticism of *Time on the Cross* was that this characterization was not an accurate representation of the views of historians of slavery at that time, and served as little more than a strawman; see, for example, Parker, "Economists and History," and Stampp, "Introduction."

should no longer be restricted to the pages of esoteric scholarly journals."[9]

In the prologue, they summarized their conclusions in a list of ten findings that refuted the traditional view of slavery. These were: (1) owning slaves was profitable; (2) the antebellum slave economies of the South were thriving prior to the Civil War; (3) secessionist sentiments in the South were motivated by optimism about the economic future of slavery; (4) slave agriculture was 35 percent more efficient than family farming in the North; (5) slaves were hard-working and productive—more so than whites in farming; (6) slavery was fully compatible with manufacturing and urban environments; (7) claims that owners' sexual exploitation of slaves, or the breeding of slaves, "destroyed the black family" were false; (8) the material living conditions of slaves "compared favorably" with those of free laborers in manufacturing in the North; (9) the value of what was provided to the enslaved, in the form of clothing, food, and housing, was much closer to the value of what they produced than commonly assumed; and (10) income per capita grew more rapidly in the South than in the North and reached relatively high levels.[10]

*Time on the Cross* offered extensive quantitative evidence in support of these conclusions. The field of economic history was evolving rapidly at that time, and Fogel and Engerman's book was a pathbreaking work of what came to be known as the New Economic History or cliometrics—an approach to economic history that utilizes quantitative analysis and economic theory, and that defines the field today. The text described the results from numerous econometric analyses of data obtained from a broad range of sources, including some that were quite innovative.

But the book can also be understood as a work of neoclassical economics. That framework emphasizes the efficiency of market mechanisms in its analysis and assumes that individuals are rational and maximize their own welfare in their choices and actions. *Time on the Cross* applies this approach to the study of American slavery, proceeding from a view of plantation owners as rational, maximizing agents and developing the

[9] Fogel and Engerman, *Time on the Cross: The Economics of American Negro Slavery*, 4. All subsequent citations also refer to the book itself rather than the supplemental volume, *Evidence and Methods*.

[10] Fogel and Engerman, *Time on the Cross*, 4–6.

implications of that view. Such actors would have striven to produce cotton (or other products) as efficiently as possible, and achieving maximum efficiency, in turn, would have meant working to ensure that their labor force was organized in the best way possible and sufficiently motivated. In the context of slavery, this motivation might have included the use of physical punishments for poor performance, such as whippings. But the slave owner would have had a powerful incentive to ensure that whippings were modest and judicious, since brutal treatment would have risked damaging their most valuable assets. In Fogel and Engerman's view, economic incentives and maximizing behavior produced a relatively humane and efficient system of slavery; a different system would have left slave owners poorer.

Some of the historians who reviewed *Time on the Cross* noted the affinity between some of the book's claims and the rhetoric of antebellum proslavery figures such as Thomas R. Dew or even John C. Calhoun.[11] But whereas those writers' views on slavery were grounded in racism and in conceptions of slave owners as benevolent patriarchs, Fogel and Engerman rejected the former unequivocally and mostly did not emphasize the latter. Instead, they argued that rational, maximizing decisions regarding the utilization of valuable business assets, rather than gentlemanly codes of behavior toward inferior subjects, led slave owners to treat their human property reasonably well.

To Fogel and Engerman, the traditional view of slavery as backwards and unproductive was a "perversion" of African-American history. They argued that the high productivity of slave plantations was evidence of African-American achievement, whereas the traditional view of slavery cast the enslaved in the role of "pitiful victims" or worse. The conclusions of *Time on the Cross* are framed as a refutation of racist history—an effort to "strike down the view that black Americans were without culture, without achievement, and without development."[12] In a thoughtful essay, historian David Brion Davis noted that presentist concerns had led some historians to characterize slavery as unspeakably cruel, whereas Fogel and

[11] Stampp, in "Introduction," characterized the perspective of *Time on the Cross* as Neo-Dewism. In "Slavery and the Post World War II Historians," David Brion Davis noted that even though Fogel and Engerman held that their characterization of slavery as mild and productive disproved racist conceptions of African Americans as laborers, Calhoun would have approved of many of their arguments.

[12] Fogel and Engerman, *Time on the Cross*, 258.

Engerman argued it was mild and humane; Davis pointed out that "each new interpretation of slavery has professed to be more antiracist than the ones it replaces."[13]

Its astonishing claims and provocative rhetoric made *Time on the Cross* a sensation in the popular press, and it quickly attracted intense academic scrutiny.[14] In October of 1974, a conference on the book was held at the University of Rochester, and a number of distinguished historians and economic historians attended.[15] Some of the discussion centered on whether or not it was appropriate to apply the tools of neoclassical economics to antebellum slave owners. But much of the discussion was focused on specific claims that Fogel and Engerman had made.

In the years that followed historians and economic historians published searing criticisms of the book, and Fogel and Engerman published vigorous replies.[16] Most of the critiques acknowledged that *Time on the Cross* was, in spite of its flaws, an important work—one economic histo-

[13] Davis, "Slavery and the Post World War II Historians," 11.

[14] Weiss, in "Review," describes the response to the book and offers an overview of subsequent debates. Haskell presents a detailed account of the first rounds of the debates in "True & Tragical History."

[15] For a synopsis of the discussion, agenda, and presenters at the conference, see Siegel, "Time on the Cross: A First Appraisal."

[16] A chronology of the major publications in these debates is as follows. They began with Paul David and Peter Temin's review essay in the *Journal of Economic History* in 1974 ("Review: Slavery: The Progressive Institution?"), Herbert Gutman's book-length 1975 critique, *Slavery and the Numbers Game*, and a 1975 special issue of *Explorations in Economic History* devoted to papers on *Time on the Cross* (Walton, "Symposium"). The debates continued with the 1976 publication of a volume of essays that originated from the Rochester conference, which was entitled *Reckoning with Slavery* and edited by Paul David and others. Then in 1977, Fogel and Engerman published an article addressing criticisms of their productivity calculations in the *American Economic Review (AER)* ("Explaining the Relative Efficiency"). In 1979, the *AER* published a series of four papers that were critical of Fogel and Engerman's 1977 paper (David and Temin, "Explaining the Relative Efficiency"; Haskell, "Explaining the Relative Efficiency"; Schaefer and Schmitz, "Relative Efficiency"; and Wright, "Efficiency of Slavery"). In 1980, Fogel and Engerman published a response to these responses in the *AER* ("Explaining the Relative Efficiency"). Fogel later published *Without Consent and Contract*, which revised some of the claims of *Time on the Cross*, and which was accompanied by three additional volumes of technical papers by other authors and more detail on sources and methods (Fogel and Engerman, *Without Consent or Contract: Markets and Production, Technical Papers, Volume 1*; Fogel and Engerman, *Without Consent or Contract: Conditions of Slave Life and the Transition To Freedom, Technical Papers, Volume 2*; Fogel et al., *Without Consent or Contract: Evidence and Methods*). Finally, Fogel published an account of these episodes, entitled *The Slavery Debates*, in 2003.

rian wrote "surely it will be the *Das Kapital* of the literature on American Negro slavery for a long time to come."[17] In what follows, I discuss the main arguments of the book and the main criticisms of those arguments.

## The Sources of Productivity in Slave Agriculture

The central finding of *Time on the Cross* was that slave agriculture was productive and efficient. Fogel and Engerman supported this conclusion with an analysis of production on a large sample of farms, using data collected from the 1860 census manuscripts by William Parker and Robert Gallman in the late 1960s. Comparisons of total factor productivity—output per unit of inputs—revealed that farms with slaves were quite efficient, in fact on average 35 percent more efficient than northern farms. Fogel and Engerman's critics noted that differences in the crops grown in the North and the South create problems for comparisons of productivity across the two regions, and that the unusually large cotton crop of 1859—the cotton crop recorded in the 1860 census—likely exaggerated the measured productivity of southern plantations.[18] Yet even if their calculations overstated the relative advantages of slavery, Fogel and Engerman's results leave little doubt that slave agriculture was quite productive.[19]

Much more important than the comparisons of agricultural productivity between slave plantations and free farms were the comparisons of productivity among slave plantations of different sizes. To Fogel and Engerman, these comparisons revealed the ultimate sources of productivity in slave agriculture and the nature of the slave system's advantages.

[17] Parker, "Economists and History," 466.

[18] Since northern farms produced no cotton, to make their output comparable to that of southern farms Fogel and Engerman used the dollar value of farm output as the numerator in productivity calculations. But as David and Temin show in "Explaining the Relative Efficiency," the resulting productivity measures, which capture the dollar value of output per unit of input, are not in general representative of physical productivity, or physical units of output per unit of input. Gavin Wright, in "Prosperity, Progress and American Slavery," noted that strong demand for cotton in 1859, coupled with the exceptional cotton crop of that year, likely exaggerated the productivity of slave agriculture in Fogel and Engerman's calculations (313–14).

[19] Schaefer, in "Effect of the 1859 Crop Year," showed that accounting for the effects created by the large 1859 crop eliminated much of the measured productivity advantage of slave agriculture. But this still implies that, at a minimum, slave agriculture's productivity was roughly comparable to that of free northern farms.

These comparisons are presented as a bar chart showing the average level of total factor productivity among southern farms.[20] The productivity of farms with one to fifteen slaves was essentially equivalent to that of farms with no slaves. But the productivity of farms with sixteen or more slaves was substantially higher. To Fogel and Engerman, the productivity advantage of large plantations suggested that their overseers were able to manage their workforces in ways that were not available to the owners of smaller farms. One example of superior management Fogel and Engerman discussed briefly was that, on plantations with large numbers of slaves, at least some of them could have specialized in particular tasks and become more productive at them. In contrast, on small farms slaves would have needed to participate in all tasks.[21]

But Fogel and Engerman's main explanation for the productivity advantage of large plantations was that their managers could use gang labor. By organizing their workforces into teams that performed interdependent tasks, and carefully monitoring the operations of those teams, managers could ensure that production was more quick and efficient.[22] Fogel and Engerman argued that large plantations were like great factories in the fields, whose managers worked assiduously to organize and supervise their labor forces in the most efficient ways—and that typically meant the gang system. They also argued that being compelled to work in a gang labor system was likely intolerable to free laborers, which helps explain why the only large-scale farms with significant numbers of workers in the United States were slave plantations. The crucial organizational advantage of slavery was that it enabled land owners to employ this efficient but harsh system of labor management, which produced substantial productivity advantages for large-scale plantations. Fogel and Engerman also argued that the postbellum decline in cotton productivity was partly

[20] Fogel and Engerman, *Time on the Cross,* 193, figure 43.

[21] See Fogel and Engerman, *Time on the Cross*, 203. This specialization would be an example of a greater division of labor leading to greater productivity, an insight of Adam Smith's analysis of the operations of a pin factory presented in chapter 3 of *The Wealth of Nations*. However, Fogel and Engerman strongly emphasize that the benefits of such specialization were made possible only by the organization of enslaved laborers into gangs.

[22] "This feature of plantation life—the organization of slaves into highly disciplined, interdependent teams capable of maintaining a steady and intense rhythm of work—appears to be the crux of the superior efficiency of the large-scale operations on plantations, at least as far as field work was concerned" (Fogel and Engerman, *Time on the Cross,* 204).

due to the fact that land owners were no longer able to use the gang system with their tenant farmers.

The productivity advantages of large plantations at the heart of Fogel and Engerman's analysis of slavery were well supported by their empirical evidence. Yet their critics noted that some of the same measurement problems that may have biased their comparisons of the productivity of northern and southern farms were also likely to have affected their comparisons of the productivity of plantations of different sizes. For example, Gavin Wright argued that large plantations may have been better able to specialize in the production of cash crops such as cotton, whereas the owners of smaller farms may have been more likely to choose a less risky crop mix and devote a larger share of their land to food production.[23] This argument implies that the total factor productivity index calculated by Fogel and Engerman may have overstated the productive efficiency of large plantations purely because of their greater allocation of resources to cotton production.

More important than these questions about the relative composition of crops were challenges to Fogel and Engerman's arguments regarding the underlying causes of the higher levels of productivity among large plantations. These challenges called into question Fogel and Engerman's interpretation of the slave system and the sources of its advantages.

The census data utilized by Fogel and Engerman did not contain much information about the management practices of different plantations in their sample and did not reveal whether or not farms actually used the gang system. Instead, they ascribed the productivity advantage of large-scale plantations to the gang system on the basis of various forms of indirect evidence. Since planting gangs, for example, included "five types of hands," with several hands of each type, the gang system clearly could not have worked on small farms with only a few slaves.[24] Fogel and Engerman emphasized the importance of the fact that members of gangs specialized in performing particular tasks, and that multiple gangs operating simultaneously under intense supervision performed interdependent

[23] Wright, in "Prosperity, Progress and American Slavery," argues that owners of smaller farms pursued a "safety-first" strategy in which they sought to "achieve self-sufficiency in foods first, and only then venture into risky cash crops," so that in the event of a collapse in the price of cash crops relative to the price of food, the family would be ensured access to adequate food supplies (318).

[24] See Fogel and Engerman, *Time on the Cross*, 203.

tasks. The gang system was like an assembly line, facilitating specialization and enabling plantation owners to compel slaves to work rapidly and efficiently. Fogel and Engerman argued that the intense interest in labor management among plantation owners was also evidence that they worked assiduously to find the best ways of creating a "highly disciplined, highly specialized, and well-coordinated work force," which to them meant the gang system.[25]

Although Fogel and Engerman's critics conceded that organization and management practices likely differed across plantations of different sizes, the specific importance they ascribed to the gang system was not well supported by their narrative or quantitative evidence.[26] More recently, scholars have cast doubt on the importance of the gang system in slave productivity, noting that there were different schools of thought regarding labor organization among plantation owners, and that the gang system was regarded as obsolete in the 1840s.[27] Others have noted that plantation owners themselves did not attribute the productivity of their operations to the gang system.[28]

These debates regarding the sources of the productivity advantage of large plantations point to a fundamental limitation of Fogel and Engerman's empirical analysis: it was based on cross-sectional comparisons of different farms at a single point in time. Although their analysis was quite sophisticated for its moment, econometric research methods have evolved considerably since then, in part due to a greater awareness of the problems than can be created by unobservable characteristics of the units under analysis.[29] In the context of the study of plantation productivity, the problem is as follows: if plantations with different numbers of slaves also differed in other, unobservable ways, those unobservable differences could be responsible for the productivity gains ascribed to greater scale in a cross-sectional comparison. Suppose, for example, larger plantations

[25] See Fogel and Engerman, *Time on the Cross*, 203.

[26] See, for example, David and Temin, "Review." For a more recent analysis, see O'Sullivan, "Intelligent Woman's Guide to Capitalism."

[27] Wright, *Slavery and American Economic Development*, 95–96.

[28] Olmstead and Rhode, in "Biological Innovation," note that they found "no slave era testimony extolling the productivity advantages of the gang system (under any name) in any cotton production activity" (1152).

[29] For an accessible introduction to recent changes in empirical methods in economics that relate to these issues, see Angrist and Pischke, "Credibility Revolution."

were owned by wealthier and better-connected families, who got access to the best land.[30] If this were true, then the unobservable differences in land quality that were associated with plantation scale would be responsible for the higher productivity of large plantations. One solution to this problem would be to try to accurately account for land quality and adjust for it in the analysis. But if accurately measuring land quality were not reasonably possible, and if there could have been other unobservable differences across plantations beyond land quality, a better solution would be to study the same plantations repeatedly over time. Focusing on changes in productivity at the same plantations as they changed scale over time would remove the effect of the plantations' unobservable characteristics, such as the quality of their land, and come closer to identifying the true effect of scale on productivity.[31]

In recent years, scholars have drawn on previously unutilized archival sources to produce new forms of evidence that overcome these problems and shed new light on these productivity debates. Alan Olmstead and Paul Rhode collected hundreds of thousands of daily cotton picking records for individual slaves and compiled them into yearly measures of average picking rates for a large number of cotton plantations.[32] Although not a comprehensive measure of efficiency, picking rates—expressed as pounds of cotton picked per day—capture labor productivity in a critically important task in cotton agriculture. These data also offer the important advantage that they can be observed for the same slave plantation over time.

[30] Wright, in *Slavery and American Economic Development*, argues that this was indeed the case (102–106). See also David and Temin, who analyze problems associated with land values in Fogel and Engerman's productivity comparisons between northern and southern farms in "Review."

[31] Repeated observations of outcomes for the same units of analysis (in this case, farms) over time is denoted panel data; panel data regressions with fixed effects for the different farms in the sample would reveal the within-farm effect of scale on productivity. This framework itself has limits, since the changes in scale may themselves be correlated with other changes occurring over time among plantations. To address the latter problem, economists look for natural experiments, or sources of variation over time in the variable of interest (in this case, scale) that are unrelated to other changes, perhaps because they are induced by some kind of external event.

[32] Olmstead and Rhode, "Biological Innovation." They argue that these records of cotton picking enabled plantation owners to set performance standards for particular slaves, and were an early predecessor of scientific management studies. Rosenthal, in *Accounting for Slavery*, studies plantation owners' accounting and management practices.

Olmstead and Rhode's analysis of their data shows that, on average, productivity on large plantations did indeed exceed that of smaller farms. But when they focus their analysis on variations in productivity on the same plantations over time, they find that these differences disappear: when the same plantation used larger numbers of slaves for picking, those slaves were not more efficient (in the sense of more cotton picked per slave) than when fewer slaves were working.[33] This finding suggests that the scale advantage in productivity observed in cross-sectional comparisons may in fact result from other, unobservable differences across plantations.

Olmstead and Rhode also show that cotton picking efficiency increased quite significantly over time; from 1801 to 1862, the average amount of cotton picked per day increased four-fold. They argue that these gains resulted from shifting cotton cultivation to more fertile regions to the West and from the development of improved cotton varieties, which produced higher yields along with larger bolls and taller plants that facilitated easier picking. This latter argument points to a critically important determinant of productivity that was almost entirely unrelated to the labor management practices at the center of Fogel and Engerman's analysis.[34] Olmstead and Rhode offer convincing evidence that improved cotton varieties, rather than changes in management practices, were responsible for the productivity increases they observed. They compare changes in productivity on plantations that adopted the new varieties with those of plantations on the islands off Georgia and South Carolina where the Sea Island cotton variety continued to be cultivated. If these gains in productivity were due to better management practices, then the productivity of picking in both areas should have increased by about the same amount. But if the productivity change were due to the new varieties of cotton, then productivity should have improved only in the regions where the improved varieties were cultivated. Olmstead and Rhode find the latter and argue that managerial innovations were unlikely to have been responsible for changes in productivity over time. Because it is

[33] Compare the estimates reported in tables 2 and 3 in Olmstead and Rhode's "Biological Innovation."

[34] Fogel and Engerman do mention efforts to develop improved cotton varieties, but argue that "perhaps the most important technological advance within the agricultural sector of the South after 1800 was in the realm of management," and in particular highlight "organizational methods" that enabled slave owners to benefit from greater scale (*Time on the Cross*, 199–200).

focused only on cotton picking, this result does not comprehensively refute Fogel and Engerman's claims about the central role of labor management in slave productivity, but it does contradict their analysis quite strongly.

Recent work by economic historian Trevon Logan also sheds light on productivity in cotton picking. In a remarkable contribution, Logan utilizes daily cotton picking books from the sharecropping cotton farm of his own family from the mid-twentieth century, and finds that his family members as children picked about the same amount of cotton as the enslaved children in Olmstead and Rhode's data.[35] Assuming the Logan family's productivity was representative of that of other sharecroppers, this would imply that the disappearance of slave plantations and the systems of labor organization they employed did not actually reduce productivity in cotton picking.

These quantitative explorations of the sources of productivity in slave agriculture have been accompanied by a smaller but equally important literature arguing for a different conceptualization of slavery. Whereas Fogel and Engerman emphasized slavery's properties as a system of labor organization, facilitating the use of the gang system and other means to extract high levels of labor effort, Gavin Wright has argued that slavery was also a system of property rights.[36] According to this view, the ownership of labor was productive because it created a means to resolve labor shortage problems inherent in agriculture under free labor. Slave owners could quickly move large numbers of workers to areas where little free labor was available for hire, facilitating the rapid development of the Old Southwest. The owners of slave families could also compel women and young children normally employed in the household to work in the fields when necessary, obtaining the additional labor needed during periods of peak demand, such as harvest time. The property rights view of slavery is not mutually exclusive of the labor organization view, but it does help explain the widespread use of slavery in the production of crops such as wheat and tobacco that required work routines very different from cotton. The property rights view also has important implications for the role of slavery in economic development, as we will see below.

[35] Logan, "A Time (Not) Apart."
[36] Wright, *Slavery and American Economic Development.*

## The Treatment of the Enslaved

Among all the claims made in *Time on the Cross,* those relating to the treatment of the enslaved aroused the most controversy. Although they acknowledged that slavery was exploitative and harsh, Fogel and Engerman claimed that the material conditions under which most slaves lived and worked were generally humane. They argued that slaves were given adequate food and clothing, and that plantation management emphasized positive incentives such as bonus payments for good performance rather than physical punishments for poor performance. They also discussed sales of enslaved people and concluded that "about 84 percent of the slaves engaged in the westward movement migrated with their owners," meaning that fewer slave families were broken up through sales than previously believed.[37]

Fogel and Engerman offered detailed quantitative evidence in support of their characterization of the treatment of slaves, some of which was the first of its kind ever collected. Many scholars challenged this evidence and expressed skepticism about Fogel and Engerman's interpretation and use of their sources. For example, Richard Sutch argued that their method of inferring the content of slave diets from plantation food production data exaggerated the quality and quantity of food slaves were given.[38] Herbert Gutman and Sutch challenged Fogel and Engerman's interpretation of their source for data on whippings and argued that the true rate at which the slaves were whipped on that plantation was likely higher.[39] And Gutman argued that slaves were sold at much higher rates than Fogel and Engerman claimed.[40]

Over subsequent decades, historians and economic historians have collected new evidence about the treatment of slaves, and much of it suggests that their living conditions were bleaker than claimed in *Time on the Cross*. For example, Richard Steckel found evidence of severe nutri-

[37] Fogel and Engerman, *Time on the Cross,* 48.

[38] Sutch, "Care and Feeding."

[39] Gutman and Sutch, "Were Slaves Imbued with the Protestant Work Ethic?"

[40] Gutman, *Slavery,* 102–39. The debates regarding Fogel and Engerman's evidence on the treatment of slaves encompassed many more issues and were too detailed and complex to summarize adequately here. See Gutman, *Slavery*; David et al., *Reckoning with Slavery*; Fogel, *Without Consent or Contract*; and Fogel and Engerman, eds. and Fogel et al., eds. *Without Consent or Contract: Markets and Production, Technical Papers, Volume 1*; *Conditions of Slave Life and the Transition To Freedom, Technical Papers, Volume 2*; and *Evidence and Methods.*

tional deprivation in the birthweights and heights of enslaved children.[41] In addition, a growing body of evidence suggests that slave sales that separated family members were likely common.[42] Other research has shown that punishments and rewards were often not meted out on plantations in ways consistent with Fogel and Engerman's framework.[43]

But putting aside Fogel and Engerman's empirical evidence, the analytical reasoning they offered in support of some of their claims regarding the treatment of the enslaved is not always convincing. To be sure, in some cases their analysis of how self-interest would have led owners to behave is quite plausible; it seems clear that economic motives would have led owners to provide sufficient nutrition to sustain their slaves as workers, and it is also likely the case that such motives would have made owners reluctant to physically punish their slaves in a way that would have impaired their value as workers. But in other cases, the connections they drew between the owners' self-interest and their treatment of their human property are much more tenuous. For example, Fogel and Engerman argued that the "seduction of the daughter or wife of a slave could undermine the discipline that planters so assiduously strove to attain," because it could generate "anger and discontent" among the slaves and might "undermine the air of mystery and distinction" that underpinned the authority of slave owners.[44] Yet they also emphasize that the relationship between masters and slaves was "strongly reminiscent of medieval life," and that owners held near absolute authority over "the regulation of the family lives of slaves, the control of their public behavior, the provision of their food and shelter, the care of their health, and the protection of their souls."[45] This assertion suggests that owners had ample means of addressing any discipline problems or discontent on their plantations,

[41] Steckel, "Peculiar Population" and "Dreadful Childhood."

[42] Tadman, *Speculators*; Logan and Pritchett, "On the Marital Status of US Slaves."

[43] Crawford, in "Punishments and Rewards," uses evidence from WPA interviews with people who were once enslaved to reveal that whippings were used differently across plantations and often seemed to serve as a device for social control rather than a response to insufficient work effort.

[44] Fogel and Engerman, *Time on the Cross*, 134.

[45] Fogel and Engerman, *Time on the Cross*, 129. They make this argument in support of their claim that even though slave marriages were not recognized by the law, slave owners had more than sufficient power to enforce them. But the revelations of sexual abuse by clergy, business leaders, and political office holders in the years prior to this writing suggests that such authority over subordinates is not always used for good.

and that their authority could not have been so easily weakened by discontent among their slaves. The arguments Fogel and Engerman made in support of their claim that "slave owners were averse to breaking up black families" in sales, which would have been quite contrary to their financial interests, suffer from similar problems.[46]

More importantly, some of their descriptions of the treatment of slaves have complex and sometimes perverse implications that Fogel and Engerman did not consider. For example, in support of their claim that plantation owners sought to maintain strong slave families, they stated that "for many planters, adultery was an offence which required whippings for the guilty parties. Some planters also used the threat of the whip to discourage divorce."[47] It is not difficult to imagine circumstances in which such a policy would have had a malign effect on the well-being of the enslaved. More subtle issues emerge in connection to Fogel and Engerman's statement that "an average of 0.7 whippings per hand per year" occurred on the Barrow plantation. If whippings were indeed administered as "punishments meted out against errant slaves," then the rate at which they actually occurred does not convey much information about the effects of whippings.[48] Enslaved people lived under the threat that they could be whipped, and the threat itself would have affected their behavior and their psychological well-being. Similarly, even if it were uncommon for plantation owners to sexually abuse slaves, the threat that it could occur might have induced changes in behavior, for example making young enslaved women more likely to enter into marriages they otherwise would have avoided if such an arrangement offered them some measure of protection from the predations of their owners.

Critics of *Time on the Cross* noted these flaws in the book's interpretations of data on the treatment of enslaved people.[49] But in the early

[46] Fogel and Engerman, *Time on the Cross*, 52. They state that this aversion derived from the "extremely important role that the master class assigned to the family institution" and later argue that encouraging family formation and stability served owners' economic interests. But it is difficult to see how slave owners would actually have benefitted from keeping families intact in the context of slave sales. Any effect on the stability of families losing members would have had to be weighed against the very large financial costs of restricting sales to complete families (and even then, if a family were sold to a slave dealer, it seems unlikely that the dealer would then have resold family members together).

[47] Fogel and Engerman, *Time on the Cross*, 128.

[48] Fogel and Engerman, *Time on the Cross*, 145, 144.

[49] For example, Parker noted that "the depth of repression is not quantifiable by the number of infractions of the repressor's code. In Northern Ireland in the last two years only a

1970s, the field of economics was only beginning to appreciate the significance of what is now called strategic behavior and analyzed using the tools of game theory. For example, Gutman and Sutch noted their misinterpretation of whippings, but then stated that "as economists, Fogel and Engerman might be forgiven for their confusion of the frequency and incidence of punishment with its effectiveness, a point more within the expertise of sociologists and criminologists."[50] In the concluding remarks of their critique of *Time on the Cross,* Paul David and colleagues stated that, in future research, economic historians should consider "the implications of modern analyses dealing with the strategy of conflict and bargaining."[51]

Economic historians' scholarship on slavery has responded to these insights mainly by showing greater care in the interpretation of data on the treatment of the enslaved. But some theoretical analyses of these issues have been produced using the tools of game theory, which have become a key part of the modern field of economics. In the most important of these analyses, Michael Chwe models the interactions between a principal and an agent when the principal has the ability to provide positive rewards and also to inflict pain.[52] Among other results, Chwe shows that Fogel and Engerman's treatment of the use of "force" and "wages" neglects the conditional nature of threats of violence in response to poor performance, which has far-reaching implications for their analysis. More recently, Daron Acemoglu and Alexander Wolitzky embedded a model like Chwe's into a general equilibrium framework—essentially, a model of an entire economy—in order to analyze the conditions under which slavery is likely to be adopted and also its consequences for social welfare.[53]

## Slavery and Southern Economic Growth

Fogel and Engerman discussed at length—and rejected—historians' arguments that slavery was inefficient or led to economic stagnation. In

fraction of 1 percent of the population has been killed in civil violence. But terror on this scale is sufficient to disrupt the province's political and social life" ("Economists," 472).

[50] Gutman and Sutch, "Were Slaves Imbued with the Protestant Work Ethic?" 58n3.

[51] David et al., *Reckoning with Slavery,* 353.

[52] Chwe, "Why Were Workers Whipped?"

[53] Acemoglu and Wolitzky, "Economics of Labor Coercion."

addition to producing evidence that slave agriculture was quite productive, they argued that claims that slave labor was fundamentally incompatible with manufacturing, commercial development, urban life, or "the shifting labor requirements of capitalist society" were all false.[54] Fogel and Engerman also argued that slavery contributed to the South's economic progress and noted that slave prices on the eve of the Civil War reflected no small measure of optimism about the future viability of slavery.[55]

Yet slavery may have harmed the South's long-run economic prospects in ways that Fogel and Engerman did not consider. The field of economics was only beginning to comprehend the role of institutions in economic growth when *Time on the Cross* was written; over the past twenty years, economists and economic historians have produced a large body of research on institutions. The consensus of that literature is that societies with institutions that have facilitated greater access to opportunity for ordinary people tend to enjoy greater levels of economic prosperity today.[56] This conclusion is relevant to the arguments of *Time on the Cross* because the historical presence of slavery has been shown to be associated with institutions that perpetuate economic and political inequality rather than facilitating access to economic opportunity.[57] Whatever its effect on southern incomes in the 1850s, slavery contributed to the formation of institutions that were harmful to economic growth over the very long run.

Although it predates the work in which he formally analyzed the role of institutions in economic development, Douglass North's 1961 book, *The Economic Growth of the United States, 1790–1860,* identified a number of different connections between slave agriculture and the structure

[54] See, for example, Fogel and Engerman, *Time on the Cross*, 57, 187, 247–57.

[55] In important recent work, "Betting on Secession," Calomiris and Pritchett study the effect of political developments leading up to the outbreak of the Civil War on slave prices as reflected in the New Orleans market.

[56] Important examples of this literature include North, Wallis, and Weingast, *Violence and Social Orders*; Engerman and Sokoloff, *Economic Development*; and Acemoglu and Robinson, *Why Nations Fail.*

[57] In *Economic Development*, Sokoloff and Engerman present this argument in detail for different former colonies in the western hemisphere. Acemoglu, García-Jimeno, and Robinson, in "Finding Eldorado," offer an empirical test focusing on different municipalities in Colombia. They find that the historical presence of slavery is associated with higher levels of poverty and lower levels of public goods provision and school enrollment today.

of the southern economy that impeded its growth.[58] North noted the lack of urbanization and, with it, the relative absence of what he called "locally oriented industries and services" in the South; the extreme level of inequality in income and wealth there; and the low levels of school attendance and investment in education among the white population. North argued that southern slave owners, who controlled the vast majority of that region's wealth, used their influence over state governments to oppose large-scale public education expenditures, since they "could see little return to them."

Gavin Wright drew on these arguments in his responses to *Time on the Cross* and in subsequent research. Wright's analysis made an important contribution by identifying a specific mechanism connecting slavery with the path of the region's institutional development, which followed from the property rights view of slavery. Wright noted that whereas land prices capitalize the value of local amenities (such as transportation infrastructure, schools, and employment opportunities) and increase as immigrants are attracted to an area, slave prices did not. Since slaves were moveable assets, their values were determined in a well-integrated national market and were generally not responsive to local conditions. So southern slave owners, whose wealth was overwhelmingly held in the form of slaves rather than land, had relatively little interest in attracting immigrants or promoting the development of local towns or schools. This is not to say that the slave societies of the South completely failed to create school systems for the white population or to promote economic development or transportation infrastructure. But the elites in those societies had much weaker incentives for sponsoring such initiatives.

These arguments differ in a fundamental way from earlier claims about the effects of slavery that Fogel and Engerman refuted. Whereas earlier historians had argued that slave labor was incompatible with urban environments or with manufacturing, Wright argued that because of the incentives created by slave ownership, there were fewer cities and fewer manufacturing enterprises in the South. Wright also argued that the end

[58] North's book was pathbreaking in its extensive use of quantitative evidence to analyze the development of the American economy; it was written well before most of the cliometrics literature, which made available many new sources of data. Although it continues to be influential, some of its many hypotheses and ideas have been partly overturned by subsequent scholarship; see Engerman, "Douglass C. North."

of slavery brought new "railroad investment, town building, minerals-based industrial development, and a vigorous cotton textile industry" in the South.[59] Of course the institutional reforms of Reconstruction were ultimately undermined as the former slaveholding class consolidated its economic and political power in the postbellum decades. But to Wright, one of the most important legacies of slavery was "the persistence of a bifurcated society in which economic elites did not identify with or internalize the well-being of the majority of the population."[60]

Slavery also likely reinforced southern backwardness in manufacturing.[61] For example, with such significant investments in capitalized agricultural labor, the South had little incentive to develop a means of mechanizing cotton harvesting, whereas agricultural mechanization was an important impetus for the development of manufacturing in the North.[62] Fogel and Engerman acknowledge that the South lagged in industrialization, but argued that patterns of comparative advantage dictated that the South had to specialize in agriculture. Slavery, according to this view, reinforced the South's impetus to specialize in agriculture by making it more profitable and efficient. Yet, in their study of southern manufacturing, Richard Bateman and Thomas Weiss found that manufacturing's rate of return in the antebellum South was quite high—higher even than that of cotton agriculture. They conclude that southern elites were reluctant to invest in manufacturing, in part due to fears about how the resulting changes to the structure of the economy might affect their role in society.[63]

Slavery may also have diminished both the incentives and the means to produce technological innovations in the South. Patenting rates in

[59] Wright, *Slavery,* 125.

[60] Wright, *Slavery,* 126.

[61] Bateman and Weiss show that in the 1860 Census of Manufactures, manufacturing output per capita was $149 in New England and only $19 in the South (*Deplorable Scarcity,* 17).

[62] Wright, *Political Economy,* 8. Innovations such as the reaper helped address the critical problem of labor shortages at harvest time in wheat farming; slave owners' property rights in labor meant that they did not face this problem and could expand their operations without mechanization.

[63] Bateman and Weiss, *Deplorable Scarcity.* In a related contribution, *One Kind of Freedom,* Roger Ransom and Richard Sutch argued that slavery reduced the accumulation of physical capital through its effects on savings rates. Since the value of slave wealth increased as the slave population grew, slave owners' incentive to save a share of their income, which would normally be required to accumulate wealth, was weakened.

general were considerably lower in the South than in the North, which may partly reflect the low levels of educational attainment and low rates of urbanization there.[64] This is not to say that the South lacked any capacity to generate innovations—it was quite innovative in producing improved cotton varieties, which complemented slave labor in agriculture.[65] Except for those biological innovations, the southern economy was likely less dynamic than its counterpart in the North.

## The Limits of the Cliometric Approach

My discussion has focused on the most important arguments in *Time on the Cross* and the most important criticisms of those arguments. But some criticisms of the book by historians focused less on the substance of particular arguments than on its general approach to its subject. Kenneth Stampp, for example, noting that even the most sophisticated quantitative analysis requires subjective interpretation, argued that Fogel and Engerman's interpretation of their evidence was overly simplistic and ignored the variation in relationships between slave owners and enslaved people that is evident in slave narratives and other records. Stampp, a distinguished historian of slavery, also noted the "perplexing mixture of rational and irrational behavior of white masters and black slaves" typical of plantation life, which was far more nuanced and complicated than what a simple model of rational, maximizing self-interest would imply.[66] A later critic characterized the work as a "curious combination of technical sophistication and historical naiveté."[67]

Some of these criticisms were a natural consequence of the difference between a social scientific approach to history and a more humanist one. The argument that the varied and ambiguous nature of some relationships on plantations was "averaged out and depersonalized" in Fogel and Engerman's analysis, for example, reflects the humanist's emphasis on the complex variety of actors and interactions in contrast to the social scien-

[64] Majewski, in "Slavery and Capitalism," documents the differences in patenting rates across American counties and suggests that they may be related to rates of educational attainment.

[65] These innovations are not reflected in patent data because biological innovations could not be patented until the Plant Patent Act of 1930. See Moser and Rhode, "Plant Patents."

[66] Stampp, "Introduction," 30.

[67] Kolchin, "More Time on the Cross?" 498.

tist's focus on typical or average ones.[68] Such criticisms point to the limits of a purely cliometric approach to economic history and the natural complementarities between social scientific and humanist methods. It is not unreasonable to say that *Time on the Cross* "seldom give[s] readers a glimpse of real slaves and masters" and that it would have been a stronger work of history if such material had figured more prominently in the text.[69]

Other elements of these criticisms had more serious implications for some of the book's arguments. Consider Fogel and Engerman's claim that slave owners would have been deterred from sexually exploiting their human property because doing so might "undermine the air of mystery and distinction" surrounding them.[70] Fogel and Engerman provide no credible evidence in support of this claim, and Stampp and others argued that *Time on the Cross* did not present a sufficiently nuanced analysis of the motivations of slave owners or the dynamics of plantation life to support any claim related to such matters. For all of the book's technical sophistication, such claims simply went beyond what Fogel and Engerman's analysis and empirical evidence could plausibly support. In this sense, the controversies surrounding *Time on the Cross* resemble those about Ed Baptist's *The Half Has Never Been Told*: critics of the latter have also argued that it makes provocative claims not supported by its evidence.

Finally, critics from both history and economics noted that Fogel and Engerman's celebration of slave productivity raised some ethical problems. In refuting traditional views of the enslaved as indolent, Fogel and Engerman claimed that slaves were quite productive—and extolled their hard work as evidence of "achievement under adversity."[71] In doing so, they generally ignored slave resistance, which presents obvious problems for their argument. But they also ignored deeper questions about what should be regarded as laudable "achievements" in the context of chattel slavery.[72]

[68] Stampp, "Introduction," 29.

[69] Stampp, "Introduction," 28.

[70] Fogel and Engerman, *Time on the Cross*, 134.

[71] Fogel and Engerman, *Time on the Cross*, 264.

[72] See Gutman, *Slavery*; Stampp, "Introduction"; and David and Temin, "Capitalist Masters."

## Conclusion

In recent years, the economic history of American slavery has re-emerged as a subject of considerable scholarly interest. Some of the new books by historians on that subject have conceptualized slavery in ways that are quite similar to those of Fogel and Engerman's 1974 book *Time on the Cross*. Yet *Time on the Cross* was intensely controversial, and many of its critics argued that its conceptualization of slavery was deeply flawed. Most of the new works by historians on slavery have not engaged with the literature that emerged in the wake of *Time on the Cross*, and in some cases those books are vulnerable to some of the same critiques.

This paper has revisited the arguments made in the controversies over *Time on the Cross* in the hope that those arguments will influence future scholarship on slavery. *Time on the Cross* utilized the framework of neoclassical economics to argue that American slavery contributed to Southern economic progress and was efficient, productive, and humane. Many economists and historians contested those claims and argued convincingly that slavery was unlikely to have been as productive or humane as Fogel and Engerman claimed, and that slavery actually impeded Southern economic development in the long run through its effect on institutions. The literature that developed in the wake of *Time on the Cross* is quite contentious and complex, but it includes many important insights that are well worth revisiting.

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