Shaping Ideology and Institutions: Economic Incentives and Slavery in the US South*

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October 3, 2019

Abstract

The US South was both economically reliant on slave labor and at the forefront of its ideological and political defense. This paper shows that economic conditions shaped the support for slavery. Exploiting the competitive forces generated by the Westward territorial expansion between 1810 and 1860, we identify shocks to counties' comparative advantage in the production of different crops. First, we provide evidence that an increase in the comparative advantage in wheat with respect to cotton, tobacco, and sugar affected production decisions and decreased the share of slave and slave-owning population. Second, using a unique collection of digitalized Southern local newspapers, information on free blacks, voting behavior, and ideological measures, we show that these shocks induced an increase in free blacks, lower consumption of pro-slavery newspaper's contents, lower support for pro-slavery party, the election of less conservative representatives, and a lower vote share in favor of secession. This paper, by jointly analyzing the economics and politics of slavery, suggests that changes in economic incentives can determine institutional and ideological transformations.

*We thank Luis Corchón Díaz and Irma Clots-Figueras for their guidance and support. We also thank Francesco Agostinelli, Julio Caseres, Matteo Cervellati, Daniel Crofts, Federico Curci, Elena Esposito, James Feigenbaum, James Fenske, Martin Fiszbein, Victor Ginsburgh, Pauline Grosjean, Jesus Huertas, James R. Irwin, Ethan Kaplan, Matilde Machado, Robert A. Margo, Jaime Millan, Luigi Minale, Ignacio Ortuño Ortín, Clara Santamaria, Jan Stuhler, Jordi Vidal Robert, Hasin Yousaf, Noam Yuchtman and the participants to seminars and conferences at CEMFI, ASREC, Carlos III, University of Queensland, Toulouse School of Economics, Université Libre de Bruxelles, University of Sydney, IOEA, Southern University of Denmark, University of Warwick, University of Auckland, Boston University, University of Maryland, Banco de España, University of Malaga, FRESH Meeting, LSE, UZH, EEA Meeting.

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You tell me whar a man gits his corn
pone, en I'll tell you what his 'pinions is.

Mark Twain, *Corn Pone Opinions*

1 Introduction

Slavery has been one of the most widespread and long-lasting labor institutions in the world. Most of the ancient civilizations— Greece, Rome, Egypt, among others — as well as most of the colonial societies, regarded slavery as essential to labor relations (Patterson, 1982; Acemoglu and Woitzky, 2011). Such a widespread reliance on slave labor has produced, throughout history, a variety of political and ideological systems in which slavery was both the primary productive technology and the core of the social order. Southern US is one of the most prominent examples. Hinging on the labor of 4 million enslaved African Americans, it constituted, at the eve of the Civil War, "the greatest center of slavery in the New World and the bulwark of resistance to abolition" (Fogel, 1989 p. 34). The survival of slave property rights rested both on the slaveholders' ability to respond to changing economic conditions and on the working of a legal system that relied on a broad consensus on political and social norms (Wright, 2006). This article studies how changes in economic conditions affected the ideological and political support for the institution of slavery by exploiting one of the central aspects of its evolution in the US South: the Westward territorial expansion.

While at the beginning of the nineteenth century, Southern states developed around the Atlantic shore, in the following decades (1810-1860), the Westward expansion shifted the epicenter of production toward the Mississipi valley. At the same time, about one million African Americans have been forcibly moved throughout the South, profoundly transforming its economic landscape. (Include Maps on Slave Relocation) This paper examines the impact of the Westward expansion on slave relocation and emphasizes a link between incentives to slave-ownership and the political and ideological support for the institution of slavery.

The movement toward the West increased the quantity of land employed in agricultural production. Because different types of land had different levels of crop-specific productivity, the shift in the distribution of agricultural productivity generated by the westward expansion affected differently different counties. Leveraging this variation, we compute county-level changes in the comparative advantage for the production of different crops that ultimately affected the comparative advantage in the use of slave labor. Such agricultural shocks affected, not only slave labor allocation but also political behavior and ideological attitudes toward slavery. We show that counties which experienced a decreases in the comparative advantage in the use of slave labor underwent an increase in the number of free black, consumed less pro-slavery newspaper's contents, voted less for the pro-slavery party, elected less ideologically conservative representatives, and were less likely to vote in favor of secession.

First, we determine the comparative advantage in agricultural production, comparing relative

crop productivity across counties. We compute each county's level of crop-specific productivity using detailed information on soil and climatological characteristics (FAO-GAEZ, 2002). Second, we exploit the changes in the distribution of productivity determined by the westward expansion. The increase in the quality and quantity of land implied heterogeneous changes in counties' position in the distribution of crops' productivity. We take advantage of the timing of the land expansion, from 1810 to 1860, to compute changes in the local comparative advantage in the production of different crops. Finally, we refer to the literature (Earle, 1978; Hanes, 1996; Wright, 2006) to guide our empirical analysis and establish links between crops and slave labor allocation. Relying on the idea that higher turnover costs — represented by crops' labor seasonality — imply an advantage in the use of slave labor, we show that changes in the comparative advantage in the production of cotton, sugar, and tobacco vs. wheat determined slaves relocation. In appendix A, we present a simple model that rationalizes the relationship between crops' labor seasonality and of slave labor allocation, showing how changes in comparative advantage may affect together crop production and labor inputs.

By focusing on the period starting from the end of the Atlantic Slave Trade (1807), we exploit the constrained nature of the stock of available slaves. Together, the expansion of agricultural land and the scarcity of slave labor determined waves of competitive pressure, which resulted in the relocation of slaves to the areas with the highest comparative advantage in the allocation of their labor.

The key identifying assumption behind our econometric model is the absence of unobservables county-specific characteristics that affect the allocation of slaves and are correlated with the changes in comparative advantage generated by the westward expansion. To assess the validity of our identification, we take several steps. First, we always control for the distance to the northern border (non-slave states) interacted with year fixed effects and only use variation inside either a state or a census region. Second, we show the absence of pre-trends by studying the distribution of slave labor before the end of the Atlantic slave trade. We deal with the serially correlated nature of our shocks, showing the presence of a non-monotonic effect for a subset of the sample. We further decompose the shocks into crop-specific variation and propose alternative specifications using changes in prices. Finally, we show that our estimation is robust to the restriction of the sample both to those counties belonging to the US in 1810 and the counties formed during the westward expansion.

In the first part of the paper, we look at the the effect of agricultural shocks on slave relocation and production decisions. We find that slaveowners responded to changes in economic incentives by adjusting the allocation of slave labor. Our baseline estimates show that changes in the comparative advantage in the production of crops such as cotton, sugar, and tobacco, as opposed to wheat, are precise predictors of the movement of slaves. An increase in a one s.d. (400,000 km^2) in the quantity of land with a higher comparative advantage for the use of slave labor determines a decrease in the share of slaves of 6% in a given county.

Exploiting the information in the Census of Agriculture — available for 1840-1860 — we show that these results are associated with cropping adjustment in the agricultural sector. Focusing on

cotton and wheat, we show that shocks to counties' position in the distribution of the two crops relative productivity, led to substantial changes in the size of production. An increase in .25 s.d. (100,000 km^2) corresponds to a drop of 60% in cotton production and a 36% increase in wheat.

We further unpack the mechanism looking at changes in slaveholders' distribution. Relying on data from the Full Household Count (1810-1840), we estimate the effect of agricultural shocks on several moments of the local slaveholder's distribution. The results show that the decrease in the share of slaves coincided with the reduction of the slaveholding population and an increase in inequality in slave-ownership. A one s.d. change in comparative advantage leads to a six percentage points drop in the share of slaveholding households, the decline of small slaveholders, and an increase in the number of slaves for larger slaveholding households.

In the second part of the paper, we draw on several data sources to establish that changes in economic conditions had broad effects on the political and ideological support for slavery. We use county-level voting return in the presidential elections and gubernatorial elections from ICPSR (1999) as well as newly collected information on the votes in favor of secession to study political support for slavery. Our results show that agricultural shocks had a large impact on southern politics. A one s.d. change in comparative advantage led to a six percentage points change in the share of votes for the Democratic party in both presidential and gubernatorial elections. The effect goes up to 10 percentage points in the case of the share of votes in favor of secession.

We then investigate ideological changes using a unique collection of digitalized Southern local newspapers, members of Congress voting behavior, and free black population. We collect newspaper articles from 1810 to 1860 from 210 southern outlets and study the supply of content related to abolition. Following Gentzkow and Shapiro (2010), we treat newspapers' slant as reflecting local ideology. Using information on newspapers' partisanship, we code each outlet's ideology and estimate changes in the share of issues related to abolition. Our results show that more pro-slavery newspapers increase the supply of issues discussing abolition when economic conditions favored more slavery. The effect is the opposite in the case of less pro-slavery newspapers.

Using Poole and Rosenthal (1985) algorithm and roll-call votes in Congress, we estimate the effect of agricultural shocks on politicians' ideology. Members of Congress elected in Congressional Districts which experienced a decrease in comparative advantage in the use of slave labor exhibit a less conservative voting behavior. This result is both due to the selection of less ideologically conservative politicians and to changes in the voting behavior of representatives themselves.

We finally show results on the dynamics of the free black population. Because free blacks were considered a threat to the institution of slavery, we interpret an increase in the number of free blacks as a decline in social norms in support of the institutions.[1] Our estimates suggest that agricultural shocks had substantial implications on the geographical distribution of the free black population.

Taken together, our results show that changes in economic conditions had significant political and ideological consequences on the US South, suggesting that material payoff can determine changes

[1] In a complementary results (7.4), we show that the share of free black in 1860 is correlated with more progressive interpretation of the historical burden of slavery on African American population.

in attitudes and non material constraints. These findings are consistent with an economic tradition which sees changes in the economic environment as the basis for changes in beliefs, values and preferences.[2]

The main contribution of our paper is to jointly analyze the economics and politics of slavery. Exploiting a deep transformation of the US agricultural landscape — the Westward expansion —, we show that economic incentives led to the adjustment of slave stock at the county level and triggered local changes in pro-slavery politics and ideology. We document that an increase in economic incentives to slave-ownership increased the support for the Democratic party (Acharya et al. (2016) do not find any for 1850 and 1860) and for secession. To our knowledge, this is the first analysis of the short term effect of economic incentives to slave-ownership on congressman ideology, newspaper behavior, and free black population. Our analysis complements the debate on the relationship between economics and institutions (North, 1990; Sokoloff and Engerman, 2000; Acemoglu et al., 2001;), showing that changes in economic conditions drive institutional change and the debate on culture and economic incentives (Bisin and Verdier, 2001, Fernández et al., 2004, Doepke and Zilibotti, 2008, Alesina et al., 2013, Greenwood et al., 2014, Grosjean and Khattar, 2019) providing suggestive evidence of that shocks to agricultural comparative advantage can be at the basis of the evolution of social norms regarding slavery.

Our paper relates to an extensive literature on the economics of US slavery. The bulk of these studies focused on the profitability of investments in slaves and the relative efficiency of slave and free labor.[3] This debate was intertwined with the problem of slave labor sector specialization. A plurality of competing hypothesis survived the debate — gang labor (Fogel and Engerman, 1974), seasonality of labor requirement (Earle, 1978), risk diversification (Wright, 1979), effort intensity (Fenoaltea, 1984), scale effects (Irwin, 1988), turnover costs (Hanes, 1996).[4]

Building on Earle (1978), Hanes (1996), and Wright (2006), we show the linkage between agricultural comparative advantage (cotton, sugar, and tobacco versus wheat) and slave labor allocation. By studying the effect of agricultural shocks on slave relocation, we also complement the research on the ability of the southern economy to efficiently relocate resources in response to changes in demand and the technology of production. Tadman (1989), Pritchett (2001) and, Steckel and Ziebarth (2013) have quantified the movement of slaves and provided estimates for the Interregional Trade. Fogel (1989) highlights the role of navigable rivers and steamboats in the westward movement and quantify its contribution to the southern growth rate.

[2]This economic tradition goes back at least to Smith and Marx and has been recently revived by Boyd and Richerson (1985), Bisin and Verdier (2001), Doepke and Zilibotti (2008), Greenwood et al. (2014) which have studied how the economic environment can affect the development of cultural traits either through learning or parental transmission. Another branch of these literature has focused on models of motivated cognition, in which agents changes their own beliefs as a consequences of changes in their actions (Akerlof and Dickens, 1982, Kuran, 1993, Rabin, 1994, Bénabou and Tirole, 2002, Benabou and Tirole, 2006, Di Tella et al., 2007,Di Tella et al., 2015a, Bénabou, 2013, and Bénabou and Tirole, 2016).

[3]The literature is too ample to be surveyed here. Among others, relevant contributions are Conrad and Meyer (1958), Yasuba (1961), Fogel and Engerman (1974, 1977, 1980), Fogel (1989), Wright (1975a,b, 1978, 1979, 2006), David and Temin (1979), Schaefer and Schmitz (1979), Haskell (1979).

[4]More recently Esposito (2018) studied the role of Malaria in the rise of slavery in the 17th and 18th century.

Finally our paper contributes to the literature on the politics of slavery. The sources of political and ideological support (and opposition) to the institution of slavery in the South has been the object of several studies. Although a lot has been said,[5] recent quantitative analysis are relatively few and mainly focus on the events surrounding the Civil War. Calomiris and Pritchett (2016) study slave price fluctuations and news in the month preceding the Civil War; Chacón and Jensen (2019) show that counties with more slaveholders and planters were systematically overrepresented in the secession conventions; Hall et al. (2019) show that slaveowners were more likely to volunteer for the confederacy; González et al. (2017) study the role of slave property as a source of collateral before and after emancipation in Maryland. There is instead a rich literature on the long term effect of slavery both inside and outside the US.[6]

The rest of the paper is organized as follows. Section 2 introduces the historical background. Section 3 discusses the relationship between slave labor allocation and the choice of crops. Section 4 presents the data. Section 5 lays out the empirical strategy. Section 6 studies the effect of the Westward territorial expansion on crop mix adjustment and slave labor allocation. Section 7 investigates the political and ideological consequences of agricultural shocks. Section 8 discusses the potential mechanisms that relate changes in economic incentives to political and ideological results. Section 9 concludes.

[5] Stampp (1943), Wooster (1958), Genovese (1975, 1989), Cooper (1978), Crofts (1989) Fox-Genovese and Genovese (2008), King and Haveman (2008), Budros (2005), Hammond (1974)

[6] Nunn (2008) on economic development; Bertocchi and Dimico (2014) income inequality; Baiardi (2018) gender division of labor; Bertocchi and Dimico (2019) family structure; Jung (2019) human capital. Dell (2010), Acemoglu et al. (2012); Bobonis and Morrow (2014); Caicedo (2015) for studies on Latin America. Buggle and Nafziger (2018) and Markevich and Zhuravskaya (2018) for the Russian Empire.

2 Historical Background

2.1 Agriculture and Slavery

During the period of our analysis, 1810 - 1860, slavery was a controversial institution, abolished in the Northern States and widely used as labor factor in the southern agricultural economy.[7] The number of slaves available to the southern economy was of about one million people in 1810 over a total population of less than three million people. The proportion has been roughly stable with a slave population of four million people in 1860 over a total southern population of twelve million. US economy was highly rural even in the last period of our analysis. In 1800 and 1860, the agricultural sector employed over 74% and 55% of the labor force and accounted for around 45% of 1860 total output in the US economy (Weiss, 1992). The southern economy was even more markedly rural, as reflected in the low number of its urban population who never surpassed 8% before the end of the civil war.[8] The main economic activities consisted in the production for the market of few cash crops in which slave labor was both the major capital investment and an important intermediate product, North (1961). The most relevant product within the southern economy was cotton, which accounted for 38% of the total agricultural values in 1860, followed by sugar (30%), corn (27%), wheat (8%) and tobacco (5%).[9]

The bounded labor needed for agricultural production was organized through a slave market which grew to maturity after 1808, when the Atlantic slave trade was officially ended, impeding the legal introduction of new slaves from abroad. Between 1810 and 1860, about one million of slaves have been relocates throughout the southern territory (Tadman, 1989, Pritchett, 2001 and Steckel and Ziebarth, 2013),[10] mostly through the interstate trade. The trade was conducted by professional agents who would purchase slaves through public auctions or advertisements and sell them to the south-western regions.

The Antebellum is a period of profound transformation in the structure of the southern economy, charcterized by a sharp increase in agricultural output and a shift of production to the west (between 1810 and 1850 the "cotton crop increased nearly tenfold and the share of the western states leaped from 7 to 64 percent", see Fogel, 1989 p. 64). Cliometricians have shown that the southern economy experienced a period of sustained growth. Fogel (1989) estimated a rate of growth in per capita income of 1.7 percent in the period between 1840 and 1860 which - the author maintains - not only was one third higher than the northern one, but also quite high for historical standards.

During this period, two major forces are at work. First, the increase in the land available for agricultural production through the westward expansion of the frontier. Between 1810 and 1860 the

[7] Slave States in Appendix

[8] Detailed Tables in Appendix A.

[9] Own computation from the Agricultural Census of the 1860. Total agricultural value is given by the sum of crop, orchard, and market garden values as reported in the Census, (Haines and ICPSR, 2010).

[10] On the relative importance between trade and slaveowners migration in the movement of slaves we refer to Tadman (1989), Pritchett (2001) and Steckel and Ziebarth (2013). Different estimates suggest that trading outweighed planters' migration by numerical importance, accounting for more than 50% of the overall movement of slaves.

inhabited land increased by three times in the southern States. Second, the Southern population increased by four times. These two elements, combined with the high international demand for the southern crops (in particular cotton demand grew at approximately 5% per year from 1830 to 1860 (Wright, 1975b)), are the economic forces that shaped the evolution of the economy of the antebellum South. The availability of new fertile land contributed to the individual choice of crop production as it represented a change in the comparative advantage for the production of specific cash crops, while the increase in the population represented both higher demand for food crops and newly available labor inputs.

2.2 The Politics of Slavery

This same period saw the consolidation of a bipartisan political system and the sectional (North-South) conflict over slavery. In the early years after the British-American War (1812), the Federalist and the Republican-Democrat came to dominate the political scene. During the First Party System (1792 - 1824), partisanship was minimal, and parties' role in shaping mass participation into politics very reduced. Up until the Missouri crisis, the issue of slavery was relatively little debated in congress. The crisis played a central role in shaping the sectional conflict and in focusing the national attention on slavery. The House Speaker, Henry Clay, remember the crisis as an event which "monopolized all our conversation, all our thoughts and ... all our time. Nobody seemed to think or care about anything else."[11] The crises ended up with the Missouri compromise (1820), establishing the Mason-Dixon line as the demarcation of slave and free territories. From the end of the 1820s congressional debates on slavery grew in importance, leading to controversies both around sectional lines (North vs South) and party lines.[12] Figure 11 show the increase in the slave debate over time.

The First Party System gave way to the Second Party System (1828 - 1854) which saw the rise of the Jacksonian and Anty-Jacksonian factions within the Republican-Democratic party and ultimately their transformation into Democratic and Whig parties. The two parties came to dominate Federal and State politics until the dissolution of the Whig party over the issue of slavery in 1854, the rise of the Republican party in the North, and the Civil War. Although the party system was meant to avoid party division over the issue of slavery, differences in the voting behavior between Whig and Democratic legislators existed. The difference is evident if we look at pro-slavery voting at the national level, but it is also true when we restrict attention to the South. Table 1 shows that, during the First Party System, there were no significant differences in pro-slavery voting behavior across the two dominant parties. The difference instead became relevant during the Second Party System which saw first the Jacksonian faction and then the Democratic party expressing a systematically more pro-slavery voting behavior. On average, a member of the Congress elected for the

[11] See Mason, 2006, p. 177

[12] Due to the explicit effort to organize national politics on lines other than slavery. Martin Van Buren, the principal architect of the Second Party System wrote that "if the old" party loyalties that bound "the planters of the South and the plain Republicans of the North" receded, "geographical divisions founded on local interests or, what is worse[,] prejudices between free and slaveholding states will inevitably take their place." Mason, 2006, p. 214)

Democratic party voted in favor of pro-slavery laws 10% more then other congressmen.[13] Overall the Democratic party, in the South, became increasingly associated with the defense of the State's rights and the institution of slavery.

The crises matured after the break down of the Whig Party in 1854 and the rise of the Republican Party in the free states. The 1860 election saw the Republican presidential nominee, Abraham Lincoln, winning the election with the support of only the Northern states. The victory led to the last sectional crisis before the Civil War. During the weeks after the elections, several southern states called for representatives conventions to discuss the opportunity of seceding from the Union. Between December 1860 and February 1861, South Carolina, Mississippi, Florida, Alabama, Georgia, Louisiana, and Texas seceded from the Union. At stake, it was the defense of the Southern property and the "right" to maintain the institution of slavery. Mr. Morgan, delegate of the Alabama Convention, clearly made this point on January 25th, 1861: "The Ordinance of Secession rests, in a great measure, upon our assertion of a right to enslave the African race, or, what amounts to the same thing, to hold them in slavery."[14] Virginia, Arkansas, Tennessee, and North Carolina followed after the Battle of Fort Sumter, a battle commonly regarded as the starting point of the Civil War.

2.3 The Public Debate and Newspapers

During the first half of the 19th-century newspapers and magazines had a crucial importance for the public debate as the press was the only source of political information. Even though circulation records are not available before 1870, scholars (see references in Pasley, 2002 p. 415) suggests that newspapers diffusion was extensive. Two main characteristics of the press are worth noticing: newspapers were highly local and highly partisan (Song (2016)). Although we do not have complete information about the antebellum newspaper's partisanship, a good approximation can be given by its figure in 1870, when as little as 11% of the newspapers declared themselves independent (Gentzkow et al. (2006)).

Newspapers and their editors were significant players in the political process, linking parties, voters, and providing the arguments that shaped popular views. As noticed by Pasley (2002), "newspapers conducted many if not most of the opinion-shaping activities we now call campaigning: communicating a party's message, promoting its candidates, attacking their opponents, and encouraging voters to turn out at the polls." [...] "Party newspapers contributed in fundamental ways to the very existence of the parties and the creation of a sense of membership, identity, and common cause among political activists and voters."[15] In a context where the reach of the conventional party system was limited, local newspapers represented the main actors in popular politics. As such, local newspapers represent a rich source of information concerning local ideological views.

[13] In **??** we provide a description of the coding behind the pro-slavery votes.
[14] See Smith, 1861 p. 196
[15] See Pasley, 2002 p. 4 and p. 11.

3 Slave Labor Allocation

3.1 The choice of labour input: slavery *vs.* free labor

What accounts for the heterogeneous distribution of slaves across sectors in colonial and Antebellum America has been the object of extensive debate. One of the prominent views is that certain crops were more suited for the use of slave labor because of the intensity of the working conditions.

Fogel and Engerman (1974) have argued that Sugar and Cotton were particularly suited for the employment of slave labor because these crops lended themselves to the use of the gang labor system: workers deployed in assembled lined of "highly disciplined, interdependent teams capable of maintaining a steady and intense rhythm of work."[16] According to the authors, the gang system made slave labor more efficient than free labor: this explained the prevalence of slaves in the cultivation of Cotton and Sugar. Fenoaltea (1984) made a similar argument. He maintained that certain sectors had a prevalence of slave labor because the specific operation to be performed were better conducted by workers motivated by anxiety, rather than reward. He argued that slaves were overseen in gangs because gangs are necessary to "maintain high levels of anxiety: only gang slaves can be subjected to the constant and immediate threat of the lash."[17]

A different view has been offered by Hanes (1996), who criticized this approach on the following ground. "The arguments of Fenoaltea and Fogel and Engerman cannot explain why many farmers chose to employ only a few slaves, often just one or two. On small farms, a slave worked alongside family members, performing similar tasks in similar ways.[..] Most importantly, Tobacco was not a gang-labor crop. Thus, as Galenson (1984) noted, a theory of slave distribution based on the use of gang labor cannot explain the rise of slavery in Virginia and Maryland."[18]

Earle (1978) argued that the seasonality of the labor requirement represents the primary determinant of the advantage of slavery vs. free labor in the cultivation of specific crops. He maintains that the sunk costs involved in slave-ownership are better recovered if the seasonality of the labor required by the cultivated crop covers a high proportion of the year. According to Earle (1978), "Wage labor was competitive for part of the year, but never on an annual basis. Farmers who needed labor for a few days, weeks or months, found the use of hired labor decidedly cheaper and more efficient economically than slaves. The decisive factor in the farmer's choice of either slave or free labor came down to the annual labor requirements of his staple crop: crops such as Wheat, which required only a few weeks of attention, lent themselves to wage labor; whereas crops such as Tobacco or Cotton, which demanded sustained attention during a long growing season, lent themselves to slave."[19]

In a complementary argument, Hanes (1996) argued that the "sectors that tended to employ slaves in the British American colonies and the antebellum South were the ones in which employers

[16] Quote from Hanes, 1996, p. 308
[17] Fenoaltea, 1984, p. 667
[18] Hanes, 1996, p.309
[19] Earle, 1978, p. 51.

faced especially high turnover costs."[20] The seasonality of the labor requirement, in the form of the number of peaks of labor required during the year, is the main feature that would explain the advantage in the production with slave labor in certain crops. The higher is the number of peaks in the labor requirement; the higher are the cumulated transaction cost the employer will have to face over the year and therefore the turnover cost in the case of free labor employment. This same argument has been re-proposed by Wright who noticed that "there is [. . .] an element of truth in the linkage between Cotton's labor requirement and slavery, which has to do with the crop's distinctive seasonality. Because Cotton needed so much attention early in the season for planting, weeding, and "chopping", there were typically two labor peaks during the crop year. [...] The important point is that both labor peaks had to be fulfilled for success in cotton growing. It is not difficult to see that year-round ownership of slave labor had a certain advantage in this regard." (Wright, 2006 p. 87) Fig. 7 illustrate the argument comparing the seasonality of the labor requirement in Cotton and Wheat. On the one hand, Cotton has two peaks of labor requirement, which makes the staple's turnover cost high. On the other hand, Wheat has a unique three weeks peak which makes it relatively less suitable for slave labor.[21] Further insights are given by the length of the growing season. While Cotton, Sugar, and Tobacco require a high amount of attention during the year[22] Wheat and other grains' needs are concentrated during the harvest season, which corresponds to a two to three weeks single peak of labor requirement. Taken together, the characteristics of the crop seasonality make the ownership of slaves relatively less advantageous in the case of Wheat than in Cotton, Sugar, and Tobacco in particular. Section A.4 reports a description of the yearly labor routine on Tobacco and Wheat's plantation showing that Tobacco-related labor occupied slaves on a year-round base, while Wheat had to be complemented with the production of alternative crops.

Finally, it is important to mention that our argument is not to be considered in absolute terms, but in relative ones. We do not maintain that Wheat and slavery are incompatible per se - counterexamples have been shown in the case of Piedmont Virginia by Irwin (1988). Instead, we claim that everything being equal, a cotton producer has a comparative advantage in owning slaves with respect to a wheat producer and that this has to be reflected in the allocation of slaves in the Antebellum South. To put it in Genovese (1996)'s terms: "Slavery requires all hands to be occupied at all times."[23] Crops such as Cotton, Tobacco and Sugar provided slave-owners with an advantage in the fulfillment of this task.

3.2 Rental market and slave market structure

A potential caveat of our theory is given by the nature of the slave market. A very active rental market would, in fact, reduce the importance of our theory in explaining slave allocation. The flexibility

[20] Hanes, 1996, p. 309

[21] As noted by Wright (2006), the seasonality of labor requirement in the early 20th century represents a lower-bound of the contrast between the two crops because of the mechanization involved in the production process at the time these figures were compiled.

[22] For example, Cotton's growing season needs at least two-hundreds frost-free days

[23] Anderson and Gallman defend Genovese's assertion in Anderson and Gallman, 1977

provided by such practice would imply theoretical equivalence between short term contracts (free labor) and slaves renting. Most of the available evidence indicates that rural rental markets were negligible with respect to the overall slave market. Friedman and Manning (1992) consider that the overwhelming majority of slaves lived and worked on property owned by their owner. Slave hiring was most widespread in urban areas, while - again according to Friedman and Manning (1992) - 6 % should be considered an upper-bound of the number of slaves rented in rural areas.[24]

A second concern may be raised by the slave market liquidity: evidence that slaves were bought and sold over a very short period of time. Even if it is difficult to make quantitative statements regarding the frequency of slave purchases, scholars seem to discard the importance of frequent trade to make short-term adjustment. Anderson and Gallman (1977) claim that a "slaveholder was unlikely to make adjustment to short-lived variations in the activities of his enterprise through the purchase and sale of fixed assets [slaves]; the risks and costs of such behavior were too large".

There are several economic reasons in support of this view. Firstly, only highly differentiated local economies could provide the condition for local demand to meet local supply. There is ample evidence against this argument since the economy was highly specialized (Fiszbein, 2016). Secondly, the cost of transactions involved markups appropriated by slave traders and transaction costs associated with quality assessment.[25] To put it in Hanes (1996) terms, buying a slave determined a "lemons" problem and the associated cost derived by adverse selection.

3.3 The farmer's crop decision and input factor adjustment

The theory of comparative advantage suggests that farmers specialize in the crop for which they have the highest relative productivity. Consider that each county, $i \in \mathbf{N}$, in the US is endowed with a set of parcels of land, each one constitutes a factor of production, $f \in \mathbf{F_i}$, with different productivity $A_f^c \geq 0$ for different crops, $c \in C$. If two factors, f_1 and f_2, are such that $A_{f_1}^{c_1}/A_{f_1}^{c_2} > A_{f_2}^{c_1}/A_{f_2}^{c_2}$ for two crops, c_1 and c_2, then factor f_1 has a comparative advantage in crop c_1. Costinot and Donaldson (2012) shows that in an efficient allocation, the set of factors allocated to the production of crop c in county i is

$$\mathbf{F_i^c} = \left\{ f = 1, ...F_i \;\mid\; \frac{A_f^c}{A_f^{c'}} > \frac{p^c}{p^{c'}} \right\} \tag{1}$$

Since each county is a collection of parcels, $\mathbf{F_i}$ for counties $i = 1, ...N$, the share of production devoted to crop c is given by the ratio between the production in the factors that in county i are allocated to crop c and total production in county i, $\frac{\mathbf{F_i^c}}{\mathbf{F_i}}$. Therefore, a change in the comparative advantage, either because of changes in relative productivity or because of changes in prices, have to be reflected in the share of each crop produced at the county level. As we previously suggested

[24] The number has been computed in by Goldin (1976) for the case of rural Virginia

[25] Evans (1961) estimated the costs of relocating slaves, which include brokerage fees, maintenance, the cost of runaways, and the unproductive period during the trades. Brokerage fees and costs of runaways, which do not exist in the case of free labor, may have made the cost of migration greater for slaves than for free men. Cf. EM, n. 35 in Friedman and Manning (1992).

the type of crop chosen maps into the type of labor input chosen. A decrease in local incentives to the production of slave crops implies, in our setting, a shock to incentives to slave ownership. On average, we expect that counties that experienced a decrease in their comparative advantage in the production of cotton, sugar, and tobacco, will also experience a decrease in the slaves as a share of the total population. In section 5, we will discuss several ways to measure changes in the comparative advantage at the county level.

4 Data

Our analysis relies on information at the county level from 1790 to 1860. Following the definition of the frontier in Turner (1920) and Bazzi et al. (2017), our sample includes all counties with a population density above two individuals per square mile. To obtain a constant geographical unit over time, we harmonize all historical Census data in the NHGIS to 1860 boundaries, following the procedure suggested in Hornbeck (2010). First, we intersect all the county shapefiles from 1810 to 1850 with the 1860 shapefile. Then for each variable, we sum up all the pieces that constitute an 1860 county weighted by the share of the area the piece had in the original county. We label the data as nonreliable if most of the information of an 1860 county comes from an old county that split in more than four sub-counties. To carry on the analysis, we combine information from several sources.

Land Productivity. We construct county-level measures for crop-specific land productivity using data from the Food and Agriculture Organization's Global Agro-Ecological Zones (FAO-GAEZ) database, Fischer et al., 2002. The FAO-GAEZ database constructs indices for each crop based on information on precipitation, frequency of wet days, mean temperature, diurnal temperature range, vapor pressure, cloud cover, sunshine, ground-frost frequency, wind speed, and information on the slope of the land. The result is a suitability measure that goes from 0 to 100. We aggregate this measure of suitability for each crop at the county level, using the average as a baseline variable for crop suitability.[26] We then standardize the suitability measure to have mean zero and standard deviation one. We take this as a measure of land productivity in specific crops. The measure we employ has been used in several studies in economics. Recent examples are Nunn and Wantchekon (2011), which uses a suitability measure to estimates the contribution of potatoes to the world population; Bustos et al. (2016) uses the dataset to show that changes in agricultural productivity led to structural transformation in Brazil. In the context of slavery, Baiardi (2018) looks at the effect of the gender division of labor across agricultural sectors in US slavery and Acharya et al. (2016) uses cotton suitability as an instrument in the prediction of slavery's political legacy.

Census data Data are taken from the decennial US Census of Population, made available by Haines and ICPSR (2010), which includes information on white, slaves, and free black from 1790 to 1860.

[26] All census data were obtained through the Natural Historical Geographic Information System (NHGIS) available at www.nhgis.org (see Minnesota Population Center, 2011), and the Inter-university Consortium for Political and Social Research (ICPSR) available at www.icpsr.umich.edu.

Data on the number of family members and slaves owned per household are from the IPUMS-USA 1790-1840, Full Count Household Level Data, are made available by Manson et al. (2018).
Production data and data on the value of the farmland are from the Census of Agriculture and Manufacture, respectively, Haines and ICPSR (2010). This information is available for 1840, 1850 and 1860.

Prices We collect Antebellum prices from several sources. Adams (1992) provides a series of wages for West Virginia. UK cotton prices are from Clark (2005), US crop prices are from Cole (1938). Finally, we obtain prices of slaves from Phillips (1905).

Geographical controls. We build geographical controls using the Census regions in Manson et al. (2018), and construct variables for counties' distance from the Mason-Dixon line. Data on the network of navigable rivers are from Atack (2017).

Presidential and gubernatorial elections. We obtain data on elections from the ICPSR (1999) which contains county- and state-level returns for all elections to the offices of president, governor, United States senator, and United States representative, from 1824 to 1860.

Legislators' ideology. We collect data on congressmen's ideology between 1810 and 1860 (11th to 36th Congresses) from Lewis et al. (2019). As suggested by Poole and Rosenthal (1985) and McCarty et al., 2006, we use the first dimension of the Poole-Rosenthal DW Nominate scores as a measure of politicians' ideology.[27] The scores rank members of Congress on an ideological scale from liberal to conservative using voting behavior on previous roll-calls. We use three different ways of computing the score. A first measure, Nominate, computes a single score for each elected member of the Congress and the Senate using votes cast throughout their entire career. This gives a single, fixed over time, ideological position to each legislator. A second measure, Nominate-NP, computes a score for each member of Congress in a given congress. This measure assigns an ideological position to a legislator which may change from Congress to Congress, capturing the ideological change of a given congressman over time. A third measure, Position, captures the relative position of a congressman with respect to the other legislators in a given congress. Because the boundaries of the Congressional Districts change over time, we use the same technique described in the case of counties to homogenize geographic unit over time, proposed by Hornbeck (2010). We then aggregate at the Congressional District level the information available at the county level. Finally, we use the algorithm proposed by Poole and Rosenthal (1985) to decompose ideological change on different issues.

Legislators' voting behavior. We use the Congressional Roll-Call Votes Database Lewis et al. (2019) to study changes in pro-slavery voting behavior. We code for each vote concerning slavery whether the vote was pro or against slavery, dividing votes into votes in defense of slavery or votes for the expansion of slavery in the territories.

Secession Votes. We constructed a database on the Secession Conventions' votes using several sources. In the State of Virginia, Tennessee and Texas referenda were held to ratify the Ordinance of Secession. In those cases, we collect information on the popular vote. For the rest of the States,

[27] For papers employing the same methodology see Autor et al., 2017 and Tabellini, 2018

we collect information on delegates' voting behavior or the share of popular votes obtained by the candidates to the secession conventions. Sources of information are the following.[28] In the case of Georgia, Arkansas and Florida, we refer to Wooster (1954, 1956, 1958); for Alabama to the original Journal of the Convention Smith (1861); for Louisiana to Dew (1970); for Mississippi to Rainwater (1938). We collected data for 9 out of 11 secessionists State. We excluded South and North Caroline because the delegates at the secession conventions voted unanimously to secede from the Union. A more detailed description of the secession data is provided in the Appendix.

Newspapers. We obtained over 2.7 million articles from 210 outlets published in the Southern US during the Antebellum period. We construct a unique database using two sources: 19th Century US Newspaper (Gale, 2019) and Chronicling America, a website providing access to information about historic newspapers and select digitalized newspaper pages, produced by the National Digital Newspaper Program. Using the information provided by Chronicling America, we coded for each newspaper the party affiliation in case it was reported.

Attitudes toward Slavery. Information on racial attitudes and on opinions on the role of slavery in determining African American's economic difficulties in contemporary US are from Kuriwaki (2018). The questions we analyze are the following. "Slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class.", and "Blacks should get by without special favors, just like Irish, Italians, and Jews did." Both answers are scaled from 1 to 5: 1 - strongly agree, 2 - somewhat agree, 3 - neither agree nor disagree, 4 - somewhat disagree, 5 - strongly disagree. "How would you define your ideology from 1 to 5?" 1 - very liberal, 2 - liberal, 3 - moderate, 4 - conservative, 5 - very conservative. All the dependent variable are rescaled from 0 to 1.

5 Empirical Framework

The main empirical challenge we address in the paper consists in identifying shocks to local incentives to slave ownership. Given the discussion in 3 on the relationship between crop choice and slave labor allocation, we assess changes in incentives to slave ownership by identifying changes to the local comparative advantage in the production of slave intensive crops (cotton, sugar, and tobacco) with respect to free labor intensive crops (wheat).

First we construct a measure to capture the county level productivity of any of the crops with an advantage in the use of slave labor (cotton, sugar, and tobacco). Using the FAO-GAEZ database, we aggregate at the county level the measures of productivity for all the crops of interest by taking the average of the grid-cells composing each county.[29] We then define the absolute level of slave productivity for a county i as the maximum productivity among the three *slave crops*. Since we are

[28] The information for the State of Texas are reported in Timmons (1973); in the case of Tennessee the data are available at the link www.arcgis.com/home/item.html?id=377f57406e51466699edf05b41bb7d77data; in the case of Virginia the data are available at the link www.newrivernotes.com/historical_antebellum_1861_virginia_voteforsecession.htm.

[29] As measure for productivity we use the suitability index described in section 4

only interested in the level of productivity in the use of slave labor, the relevant statistic is given by the maximum productivity among the three crops — cotton, sugar, and tobacco. In Appendix we provide alternative measure as robustness: simple average, average weighted for the share of aggregate value represented by each crop.

Relative productivity: Cotton, Sugar and Tobacco vs. Wheat

Second we construct a measure of the relative advantage in the production of slave intensive crops with respect to wheat. We use wheat to determine the relative productivity because, as discussed in section 3, this is the most important cash crop which is relatively less costly to grow with the use of free labor.

Define county i productivity in slave intensive crop as $A_i^{slave} = \max\{A_i^{cotton}, A_i^{sugar}, A_i^{tobacco}\}$, where each crop productivity is standardized, with mean zero and variance 1, for the counties in the sample in 1860, and productivity in wheat as A_i^{free}. We construct a measure of relative productivity in slave intensive crops and free crops computing $\frac{A_i^{slave}}{A_i^{free}}$. We extend our measure of relative slave productivity to account for other relevant crops by regressing A_i^{slave} on all the other crops and using the predicted residuals as a measure of relative productivity. In Appendix we provide description and robustness using all the different measures.

Comparative advantage: prices and productivity distribution

Consider two counties $i, j \in \mathbf{N}$. County i has a comparative advantage in the production of slave intensive crops if $\frac{A_i^{slave}}{A_i^{free}} > \frac{A_j^{slave}}{A_j^{free}}$. We therefore expect the sare of slaves in county i to be higher then the share of slaves in county j.

We propose two approaches to measure changes in the comparative advantage in agricultural production. First, relying on Costinot and Donaldson (2012), the set of factors allocated to the production of slave crops is given by:

$$\mathbf{N^{slave}} = \left\{ i = 1, ...N \;\mid\; \frac{A_i^{slave}}{A_i^{free}} > \frac{p^{slave}}{p^{free}} \right\}$$

Using the above expression, we construct a measure of comparative advantage changing over time and space by interacting $\frac{A_i^{slave}}{A_i^{free}}$ with the ratio of prices. We use both the prices of input (slave labor vs. free labor) and the prices of output (slave crops and free crops).

Second, our preferred estimators are calculated by directly using changes in the distribution of relative productivity, $\frac{A_i^{slave}}{A_i^{free}}$ resulted from the Westward territorial expansion.

The evolution of prices, aggregating information on the distribution of relative productivity and demand for agricultural crops, are the results of this competitive pressure. Maps in Fig. ?? represent the process of westward expansion and the increase in the size of agricultural land, while Fig. 12 shows the evolution of prices of input, output and the shift in the distribution of relative productivity (weighted for county size).

Our main measure of changes in comparative advantage is given by changes in each county position in the distribution of relative productivity from one census year to the other. Consider each county's measure of relative productivity, $\frac{A_i^{slave}}{A_i^{free}}$. In a given year t a given county i competes with a certain number of other counties in the production of cash crops, depending on the total size and quality of the inhabited land. Few of the counties at the top of the distribution of relative productivity in 1810 remained at the top of the distribution in 1860. Most of the counties, because of the characteristics of the land encountered in the process of westward expansion, saw their position in the distribution changed, determining changes in the comparative advantage. We measure such change as the change in the total amount of land (Km^2) with relative productivity higher than $\frac{A_i^{slave}}{A_i^{free}}$ for each county in a given year.

Define the random variable $Z \equiv \frac{A^{slave}}{A^{free}}$, then we define CA_{it} as the amount of land with a higher comparative advantage with respect to county i in year t:

$$CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$$

where w_j is the size of county j, z_i is the relative productivity of county i, N_t is the number of counties in year t and z_j is the relative productivity of county $j = \{1, ...N_t\}$.

5.1 Baseline Estimating Equation

We estimate the following equation.

$$y_{i,t} = \alpha_i + \alpha_t + \beta CA_{i,t} + \delta X_{i,t} + \epsilon_{i,t} \tag{2}$$

where i represents county, t represents the census year from 1810 to 1860, and $y_{i,t}$ is an outcome that varies at county and year level.

Our main variable of interest $CA_{i,t}$ is described above. The term α_i controls for county fixed effects absorbing all the time-invariant county characteristics which could potentially affect the number of slaves in a county. Differences in geographic, economic and institutional conditions that do not change over time are accounted for by these fixed effects. The term α_t accounts for census year fixed effect which captures changes over time common to all the counties: federal policy, broad cultural, economic or technological changes. Finally we include $X_{i,t}$, a vector of variables which vary over time and space. In our baseline specification this includes State trends and trends that vary with the distance from the North (defined as the Mason-Dixon line). The coefficient of interest β is estimated from changes in the size of the land with a higher comparative advantage within the same county over time, compared to other counties in the same state and at the same distance from the north, in a given census year. We expect β to be negative as our theory predicts a movement of slaves from counties with low slave productivity to counties with high slave productivity as a consequence of the increase in competition in the slave intensive sectors.

5.2 Identification and Alternative Specifications

Our identification strategy relies on changes in the counties' position in the distribution of relative productivity over time. On the one hand, the expansion of the amount of available agricultural land affects all counties — CA_{it} is weakly increasing for all counties —, on the other, the size of the change in CA_{it} varies heavily, for different counties. Counties at the bottom of the distribution of relative productivity experienced very large changes in CA_{it}, while, counties at the top experienced small changes. Counties in the central part of the distribution received shocks depending on their position in the distribution of relative productivity with respect to the new counties included in the US. For this reason, changes in CA_{it} vary in time. This generates a non-linear and time-varying relationship between relative productivity and CA_{it}.

The key identification assumption is that there are no unobservable characteristics that affect changes in the outcome of interests, differently across places with high and low relative productivity. Furthermore, given the time-varying non-linear relationship between relative productivity and changes in CA_{it}, the potentially problematic unobservable characteristic should follow a similar time-varying function.

One potential concern of our identification strategy is that the particular nature of the westward expansion might bias our estimate. For example, settlers may have decided to move in territories based on some specific soil characteristics found in the West. There are two reasons why this does not bias our results. First, we are exploiting the aggregate properties of the land found toward the West. Therefore, individual county settlers cannot influence the total amount of land included in the US between two census years. Second, our identification comes from the differential effect that the addition of new territory has on the CA_{it} of different counties. In other words, settlers take the aggregate characteristics of the land as given; specific soil characteristics of the county determine the effect at the county level; finally, any aggregate effect common to all counties determined by the Westward expansion is captured by the time fixed-effect. We exploit the fact that the common shock to the agricultural market affected differently distinct counties because of their specific relative productivity.

A more salient concern for the identification strategy is the fact that, as shown in Figure **??** panel (d), relative productivity, displays geographical clusters. These clusters may overlap with some institutional, cultural, and economic forces that affect changes in the slave population. For example, some regions in the Deep South have a high concentration of land suitable for slave labor and at the same time common social, demographic, political, and cultural characteristics that could affect changes in the decisions to rely on outcomes of interest. If these characteristics affected the outcome of interest with a similar time-varying function as the relation between relative productivity and changes in CA_{it}, this would generate a bias.

We address this issue by including regional or state trends, and trends that vary with distance from the North (Mason-Dixon line). The firsts guarantee that our results are not driven by characteristics that vary between region or state. Trends varying with distance from the North control

for the potential influence states with no slaves may have on the incentives to slave-ownership. Counties at the border with the North are more exposed to northern moral and political ideas and therefore may be more reluctant to the use of slave labor. Similarly, geographical proximity may imply stronger economic ties and influence production decisions which would affect labor input choices. Furthermore, the closeness to the border increases the likelihood of fugitive slaves both because of the geographical proximity to the Northern free states and the higher concentration of the "underground railroad": a network of secret routes and safe houses that facilitated the escape to freedom of slaves. Overall the increased probability of losing a slave increased the risk and cost of owning a slave. Controlling for the distance to North interacted with year fixed effect is a way to take care of the likely economic and cultural spillover. Finally, the serially correlated nature of the change in the comparative advantage over time and the presence of dynamic adjustments in the outcome Jaeger et al., 2017, may lead to inconsistent estimates. To deal with these issues, we perform several robustness checks, which we describe below and present with the main results.

5.3 Input and Output Prices

In an alternative specification, we rely on changes in the prices of input and output as shocks to the comparative advantage. Because individual farmers are price takers, they react to changes in prices optimally choosing crop production and labor inputs. To estimate the model using shocks in prices, we construct the following regressor. $Z_{it} = Z_i \times P_t$, where Z_i is the relative productivity in county i and P_t is the ratio of prices of input and output, $P_t = \frac{p^w}{p^c} \times \frac{w^f}{w^s}$. Where p are crop prices and w are labor input prices. Our preferred specification relies on land expansion for two reasons. First, because we estimate the equation using census data taken each ten years. Individual farmers form expectations on changes in comparative advantage and adjust their capital stock (slaves) relying on persistent shocks. Changes in the quantity of land in agricultural production provide such shocks, while the more volatile nature of prices does not neatly map into long term production choices. To overcome this problem, we take ten years' average of prices which leads to very similar results to the specification where we do not use prices. Second, it is not clear which prices it is best to use. We use international (UK) prices for cotton because of the very high level of market integration, while in the case of wheat, for the opposite reason, we rely on US prices. Finally, we have little information about wages in the antebellum period. We employ a series of wages for Virginia provided by Adams (1992). We use a national series for slave prices computed by Phillips (1905).

5.4 Old and New Counties

In our main specification, we estimate the effect of changes in comparative advantage without imposing any restrictions on the sample. In this way, we obtain an unbalanced panel in which the counties included in 1810 are observed five times, those included from 1820 on, up to the counties included in 1850 which are observed twice. Using the entire sample, we estimate the causal effect

of changes in comparative advantage, both including counties losing comparative advantage and counties entering the US census at the top of the distribution of relative productivity. The results could, therefore, be driven by the comparison between counties that enter our sample at different times. Even though the issue is already partially addressed by including regional or state trends, we perform two additional exercises.

First, we restrict our attention to the counties included in the US in 1810 (old counties). Second, we study the effect of relative productivity on the use of slave labor, focusing on counties that just started being inhabited (new counties). These estimates reassure against the idea that the result comes from the comparison between old and new counties and rule out the potential problem of selection from which the full sample may suffer. Focusing on the sample of new counties, we proceed as follows. We take counties at the frontier (defined in section 3.2) and set both the percentage and the numbers of slaves to zero. We then observe each county the first time is inhabited (Year 0) and follow it for 2 other decades (Year 10, Year 20). We expect that new counties with high slave productivity will be the ones acquiring the most slaves. Restricting attention to this subsample, we estimate the following equation:

$$y_{i,t} = \alpha_i + \alpha_t + \sum_{j=0,10,20} \beta_j \times \mathbb{1}(Year\ \ j) \times \mathrm{Z}_i + \epsilon_{i,t} \tag{3}$$

5.5 Disaggregated Shocks and Non Monotonic Effect

Given the serially correlated nature of our time variation, one concern for our identification strategy regards alternative shocks over time which may affect monotonically slave-ownership incentives differently in places with high and low relative productivity. We provide evidence to rule out alternative hypothesis in two ways. First, we identify three groups of counties, those counties always losing comparative advantage, counties always at the top of the distribution of relative productivity, and switchers, counties which enters at the top of the distribution but then lose comparative advantage over time. This last group of counties should display a non monotonic behavior in the use of slave labor. Such non monotonicity strongly reassure against other potential theories explaining the observed patterns because any other alternative explanation should non-monotonically affect this particular counties. Second, we exploit the crop specific timing in the expansion of the land.

Figure ?? shows that, while land highly suitable for cotton was mainly added after 1830, the increase in land suitable for tobacco was all concentrated before 1830. Our theory predicts that before 1830 we should see counties especially suitable for tobacco gaining slave population. After 1830 slaves should move only to places good for cotton. We estimate the timing of the effect of tobacco and cotton relative productivity with respect to wheat using the following equation:

$$y_{i,t} = \alpha_i + \alpha_t + \sum_c \beta_c \text{Crop productivity}_{c,i} * Y_t + \epsilon_{i,t} \tag{4}$$

where Y_t is a dummy variable for each year in our sample. The omitted time dummy is the one

identifying the year 1810. c is a subscript for all the crops (tobacco, cotton, sugar). All measures for crop suitabilities are standardized to have mean 0 and standard deviation 1 and divided by wheat productivity.

5.6 Trends in Pre-Treatment Levels

Our strategy is robust to the inclusion of trends that vary depending on the pre-treatment levels of the slave population. We use both the percentage of slaves in 1790 and 1800, showing that the levels before the abolition of the Atlantic Slave Trades are not good predictors of the evolution of slavery in the US. Finally, in figure 21 we show that when dividing the sample into counties below and above the median of the distribution of slave relative productivity, there is no differential effect of slave relative productivity on the distribution of slaves prior to the year 1810. This supports the parallel trend assumption.

6 Agricultural Shocks and Slave Labor Allocation

6.1 Main Results on Slave Allocation

Table 11 shows our main results on slave labor relocation. All the coefficients show the effect of a decrease in the comparative advantage in slave intense crop on the presence of slaves at the county level. The results are consistent with the idea that when the westward expansion pushed up the agricultural competition, slaves were relocated to the land with a higher comparative advantage in their use. An increase in 100,000 Km^2 of land with higher productivity in the slave intensive crops, decrease the share of slaves by .5 pp when comparing counties within the same state and to 1 pp when comparing counties within the same region. To better capture the idea of slave intensity in the agricultural sector we also show the change in the number of slaves per 1000 Km^2 - 208 and 121, depending on whether we exploit within region or within state variation - and to a change in the absolute number of salves - 312 and 179 respectively. One standard deviation of CA_{it} corresponds to roughly 400,000 Km^2, leading to an estimated effect of about 4.5 pp. (2 pp.) - when comparing within region (state) over an average share of slaves of 29%. The estimates show a sizable effect of the change in the distribution of relative productivity on the allocation of slave labor.

6.2 Alternative Specifications

6.2.1 Input and Output Prices

Table 3 and 4 show the effect of change in prices interacted with relative slave productivity. Prices are given by the average of the previous ten years. Each price ratio is normalized to be zero in the minimum and 1 in the maximum. Output prices are obtained by taking the ratio between wheat and cotton. Input prices the ratio between slave price and wages. The changes in prices capture

the change in the comparative advantage in the cultivation of cotton with respect to wheat, using slave labor with respect to free labor. We construct the variable in such a way that a decrease in the ratio of prices corresponds to an increase in the comparative advantage of counties with a high level of relative productivity, $Z_i = \frac{A^{slave}}{A^{free}}$. The estimates in column (1-3) show that, given the change in prices, counties with a higher standard deviation in Z_i had around 2.5 pp more slaves at the end of the relocation process.

In Table 6, we compare the magnitude of the effect of the two variations, land expansion, and price change. CA_{it} and $Z_i \times P_t$ are standardized to have mean zero and standard deviation one.[30] The signs are opposite because CA_{it} captures the negative effect of an increase in one standard deviation in the size of land with higher relative productivity then itself; while $Z_i \times P_t$ captures the positive effect of a higher level of Z_i given the change in prices (the ratio of prices is constructed to be increasing over time). Columns (1) and (2) show that the two estimates for the change in the share of slaves are very similar, indicating the strong relationship between the change in prices and the change in land productivity. We further estimate the following non-linear equation.

$$y_{i,t} = \alpha_i + \alpha_t + \beta f(Z_i) \times P_t + \delta X_{i,t} + \epsilon_{i,t} \tag{5}$$

Figure 23 shows the plot of the function $f(Z_i)$, a 4th-degree polynomial, while the dashed line represents the natural growth of the slave population. Zero represents the average of Z_i. The function shows that counties below the average relative productivity lost slaves in favor of those above the average.

6.2.2 Old and New Counties

Figure 14 shows the values of β_0, β_{10}, β_{20} from regression (2). Panel (a) establishes that an increase in one standard deviation in relative productivity increases by 5.8pp the share of slaves in Year 0. This effect increases over time, reaching 8pp by Year 20. In panel (b) we show how an increase in one standard deviation in relative productivity increases the slave population in Year 0 by 200 slaves. This corresponds to one-quarter of the average slave population of a county in Year 0. The effect continues to increase over time. A one standard deviation increase in relative productivity increases the slave population in Year 20 by almost 800 slaves. This is more than a third of the average slave population in Year 20. These estimates reassure against the idea that the results are driven by the comparison between old land and new land.

In Table 7 we report the estimates restricting the sample to the counties not at the frontier in 1810. The effect is three times larger, showing a 1.5 pp change when we restrict to the original counties and to within state variation. The size of the effect indicates that the original counties are the ones who lost more slaves during the process of relocation. Because the original distribution of slaves was not reflecting the conditions of the market after 1810, the relocation process had larger

[30] $P_t = \frac{p^w}{p^c} \times \frac{w^f}{w^s}$

implication in those counties.

6.2.3 Disaggregated Shocks and Non Monotonic Effect

In Figure 18 panel (a) and (b) represents respectively β_{cotton} and $\beta_{tobacco}$ from regression (3). Until 1830 tobacco had a considerable influence on the percentage of slaves a county used. An increase in one standard deviation of tobacco productivity increased the share of slaves between 8 and 10pp with respect to 1810. After that year, the influence of tobacco remained roughly constant. The dynamics look very different for places highly suitable for cotton. Before 1830 cotton productivity had a negligible effect on slavery, while most of the change appears in the period after 1830. The dynamics in counties suitable for Cotton and Tobacco reflect the pattern of increase of the land available for Tobacco and Cotton, as shown in figure **??**.

First, figure 18 shows the increase over time in the percentage of land (computed in Km^2) whose relative productivity belongs to the top quartile of the distribution in 1860, respectively for cotton and tobacco ($\frac{A_i^{cotton}}{A_i^{wheat}}$ and $\frac{A_i^{tobacco}}{A_i^{wheat}}$). These patterns reduce the likelihood of unobservables affecting the evolution of slavery in a way that is systematically different in places highly suitable for Cotton and Tobacco. Second, figure 20 shows the existence of non-monotonic patterns in the percentage of slaves. The first graph shows the effect on three groups of counties. The switchers are those counties entering the US at the top of the distribution and acquiring slaves during the first decades and losing slaves in the last decades when losing their comparative advantage. The graph shows changes in behavior at the county level as a consequence of changes in the comparative advantage.

6.2.4 Trends in Pre-Treatment Levels

Figure 21 shows that the relative productivity of crops does not explain the distribution of slaves before the abolition of the Atlantic Trade (1807). This is in line with the theory proposed and shows that prior to the shock, slaves could be efficiently allocated in any of the agricultural activities. This graph shows the lack of persistence in the allocation of slaves at the county level, given the distribution of 1790 and 1800. In Table 8, we estimate the baseline regression, including trends in the level of the share of slaves in 1800.

6.3 Mechanism: Agricultural Transformation

In our hypothesis, changes in the share of slaves are the consequence of changes in the comparative advantage in the agricultural sector. These should, therefore, be reflected in the output. We expect that counties losing comparative advantage in the production of cotton increase their wheat production, decrease cotton production, and sell slaves. Table 10 confirm our hypothesis. Because of data limitation[31] we perform the analysis only for the years 1840 - 1860. The estimates show that an increase of 100.000 Km^2 of better land for cotton production, implies a reduction in output of

[31] the US census started to collect information on agricultural output from 1840.

about 60% and an increase in wheat of about 36%. In the appendix we show that the results are robust to a specification in which we look at the effect of changes in agricultural output on the share of slaves, instrumenting the production choices with changes in comparative advantage. Figure 25 further corroborate our results, showing the importance of the interplay between wheat and cotton productivity in the choice of labor input. We plot the marginal effect on the share of slaves of a 3rd degree polynomial of Z_i, conditioning on wheat productivity both at the 90% and 10% percentile. The plot shows that wheat productivity is a crucial aspect of the choice of changing the composition of the local labor force from more to less slave intense. Figure 25 shows that counties with a very low level of Z_i, if associated with a very high (90th percentile) level of wheat productivity, lost up to 40 pp. in the share of the slave population. This figure supports the seasonality of the labor requirement hypothesis discussed in 3.

We further investigate this hypothesis in relationship to the literature in Table 21 and 13. We show that the estimates of the change in comparative advantage are robust to the inclusion of changes in the availability of means of transportation (proximity to navigable rivers) and to the value of the farm. The importance of the expansion of the navigable river in the process of relocation of slave labor has been indicated by Fogel (1989). We compute, for each county and year, the log distance to the closest navigable river (maps are in Fig. 27), showing that our estimates are robust to this variation.

The role of high-valued farmland in determining the intensity of slave labor has been pointed out by Wright in several instances (see Wright, 2003). In Table 13, we show that changes in the comparative advantage still predict the share of slaves at the county level. Our estimates also confirm the important correlation existing between the value of the farm (share of ameliorated acres, cash value, and value of equipment) and the share of slaves at the county level.

6.4 Slave-ownership distribution

We conclude this section studying changes in the distribution of slave-ownership.

Using household-level data, we aggregate information on slaveholding household distribution at the county level and estimates the baseline specification using the share of the slaveholding household as the outcome variable. Results are reported in tables 14 and 15. These results show that changes in slave-ownership occurred through the decline of small slave-holders. The magnitude of these changes is high. A change in one standard deviation of CA_{it} leads to a decrease in the share of slaveholding families of six pp. and an increase of about 27% in the number of slaves owned by the median slaveholding household. Tables 14 and 15 indicate that inequalities in slave-ownership increased during the antebellum period in areas where relative slave productivity was declining.

These results are consistent with the view expressed by Irwin (1988) in which wheat production with slave labor exhibits increasing returns to scale.[32] As explained by Irwin (1988), "wheat, tobacco, and corn could not be grown on the same land in a given year, so in terms of their land input they

[32] Table 1 p. 298 Irwin, 1988

were competitive. However, descriptions of their respective crop cycles, in terms of their labor cycles, suggest that labor requirements "dovetailed", with each requiring labor when the other requirements were minimal." One possible interpretation is that larger farms are better able to afford the organizational efforts implied by the differentiation of the tasks required by the optimal crops mix.

7 Political and Ideological Effect of Agricultural Shocks

In this section, we show that the decrease in the agricultural comparative advantage in the use of slave labor had important implications on southern politics and ideology. Economic gains from slave labor moved not only official party politics but also newspaper activity and had implications on the distribution of the free black population, a small minority of individuals perceived as a threat to the institution of slavery. First, counties losing comparative advantage decreased their vote share in favor of the pro-slavery party (i.e., Democrats). Both in the presidential elections and in the gubernatorial elections (Section 7.1.1) and voted less in favor of secession in the secession conventions (Section 7.1.2). Second, congressional districts that became less slave intensive elected less conservative members of the Congress (Section 7.2). Third, newspapers operating in areas where agriculture became less slave intense, changed their supply of content related to abolition, depending on their ideological position (Section 7.3). Finally, where agricultural shocks decreased the number of slaves, it also increased the free black population (Section 7.4).

7.1 Electoral Returns

7.1.1 Presidential and Gubernatorial Election

We investigate the effect of a change in the distribution of relative slave productivity on electoral outcomes in the presidential and gubernatorial elections.

We start by categorizing parties in 2 groups, depending on their likelihood to vote in defence of slavery.

Table 1 shows that the Jacksonian and the Democratic were the more pro-slavery parties. The difference in pro-slavery voting behavior (in Congress) across the two main parties is significant only starting from 1823. These parties voted on average 10 pp more in favor of slavery with respect to their opponent, when restricting to southern members of the Congress. Electoral results are available at the county level starting from 1823. Table 17 reports estimates of the baseline specification where the dependent variable is the share of the votes in favor of the Democratic party and the Jacksonian. Because the opposition to the Democratic party reached stability with the foundation of the Whig party in 1836,[33] we also show estimates restricting the sample to the period from 1836 to 1860.

[33] The party was founded in 1834, but started to compete in the electoral campaigns only from the election of 1836 until its end in 1854.

During the 1860 crisis, we code as the democratic party the Southern Democratic party, opposed to less conservative factions of the Democratic Party.

Table 17 shows that, both in the case of the presidential elections and gubernatorial elections, the results are statistically and economically significant. Given that the mean share of votes in favor of the Democrats is around 50%, a one standard deviation increase in CA_{it} had an effect big enough (around 5pp.) to move the majority at the county level. This is particularly true in the case of the post-1836 Gubernatorial elections in which the effect rose to a magnitude of 9.6 pp.

One possible interpretation of our results is that the local decrease in the economic importance of slavery led to a decrease in the support for the more pro-slavery political platforms represented by the Democratic party.

7.1.2 Secession Conventions

To further understand the relationship between agricultural comparative advantage and political preferences in favor of slavery, we study voting behavior in the secession conventions. Secessions came as part of the political crisis determined by the election of Lincoln and the southern fear for the institution of slavery. In 1861, 11 out of 15 slave states had seceded from the Union. Ordinances of secession were voted by committees of delegates elected for that specific purpose and reunite in conventions known as secession conventions. In a few cases, the ordinance of secession had to be ratified by popular votes. In several instances,[34] the conventions explicitly declared the causes of secession. The document issued by the Georgia convention is an eloquent testimony that secession was indeed intended to defend the institution of slavery: "The people of Georgia [...] refuse to commit their own to the rulers whom the North offers us. Why? Because by their declared principles and policy they have outlawed $3,000,000,000 of our property [...]."[35]

Following this interpretation, we construct our outcome variable to capture support for secession. Because of the heterogeneity of the sources and timing of the votes for secession, we use different information for different states. In section A.1, we provide a description of the coding of the outcome variable. Although our measure of pro-secession votes is not uniform across states, our estimates are all computed from within state variation, reducing the concerns related to measurement error. The main caveat of this exercise is given by the crossectional nature of the votes in the Secession Conventions. This implies that we observe voting behavior only at one point in time. Keeping this caveat in mind, focusing on the year 1860 allows us to fully exploit the information contained in the 1860 Census — the richest of the census year we can rely on.

Our baseline specification includes state fixed-effect and distance from the Northern border. Table 19 show several specifications including a large number of correlates. Our independent variable is CA_i. The variable is fixed in time and represents the relative productivity in slave intense sectors. A higher CA_i measures a higher comparative advantage in the use of slave labor. We then expect the

[34] South Carolina, Georgia, Mississippi, Virginia, and Texas
[35] See Smith, 1861

share of votes in favor of secession to be increasing in CA_i. In the first column, we show the results for the baseline specification, when we only include state fixed effect and the log-distance from the North. In columns 2-6, we progressively include a series of controls. Columns 2-3 include variables capturing the value of agricultural land and capital. In columns 4-5, we add information about manufacturing capital and employment. Column 6 also includes information regarding religious communities, the number of churches per capita and the share of churches belonging to the two most represented confessions, the Baptist Church and Methodist Church. Our results are very stable throughout all the specifications. A one standard deviation higher level of comparative advantage in the production with slave labor (CA_i) increases the votes share for secession by 11 to 13 pp., with respect to a sample mean of 67 % in favor of secession. The stability of the coefficient and its magnitude seem to confirm the hypothesis that agricultural comparative advantage in slave intensive crops was at the basis of the political support for the institution of slavery.

The only other stable coefficient is the one associated with the distance from the North. In this context, the variable is capturing not only the cultural, commercial, and political influence the Northern states might have but also the costs of a potential war. Counties further away from the border, having a smaller cost of war, exhibit a higher propensity to vote in favor of secession. Among the other coefficients, only the ones associated with agricultural production are, depending on the specification, significant. However, these coefficients should not be interpreted causally as the associated variable are functions of CA_i.

7.2 Legislator's Ideology and Voting Behavior

In this section, we turn to the analysis of the congressmen's voting behavior. We investigate changes in legislator's ideology using the DW-Nominate score, developed by Poole and Rosenthal (1985). As Autor et al. (2017) and Tabellini (2018), we use the first dimension of the DW Nominate score to proxy for ideology.

In Fig. 29 and 29 we show two features of the ideological evolution of the member of the Congress representing the Southern States. We divide the member of the Congress into two groups, below and above the median score within the South, over the entire period. Fig. 29 plots the average Nominate score for the two groups. Two elements appear from the graph. The least conservative legislators display a relatively stable score, while the most conservative ones became even more conservative over time. The average score declined by more than 10 pp. from 1810 to 1860 for the individuals below the median.

In Fig. 31 we study how this compare to parties' Nominate score evolution. In this case, we aggregate congressman into a Conservative and Liberal faction, depending on the party they are elected with. Table 16 shows the list of all parties elected in Congress from 1810 to 1860 with their average Nominate score. We divide parties depending on their average score and taking as reference the main opposing factions: the Democratic-Republican vs. the Federalist between 1810 and 1822; the Jacksonian vs. the Anti-Jacksonian between the 1824 and 1836; and the Democratic

vs. Whig between 1838 and 1854. The rest of the parties are grouped by proximity to the main ones. The evolution of the Nominate score, based on the party system, shows an initial period of convergence in 1820, a clear separation during the Jacksonian period, and a progressive polarization during the Democratic vs. Whig opposition, from 1836 on. In Table 18, we study how changes in the comparative advantage in agricultural production affected legislator's ideology, both in the Senate and Congress.

Because members of Congress are elected at the Congressional district level, we aggregate the information from the FAO-GAEZ database on the soil quality using congressional districts as geographical units. We then reproduce the procedure described in Section 5 to compute CA_{it} at the Congressional district level. The estimates show that a one standard deviation increase in CA_{it} leads to a change in the legislator's ideology of 2.6 pp. toward a less conservative position. A comparison between the effect on Nominate-NP and Nominate score suggests that the .5 pp. (16% of the effect) change is due to changes in the voting behavior from one congress to the other of the same elected legislator, showing that the overall effect is not only due to selection of less conservative congressmen but also to less conservative voting behavior of the reelected ones. The effect corresponds to 0.20 standard deviations. This is relatively close in magnitude to that found in other papers. Autor et al. (2017) show that a one s.d. increase in trade exposure raises Nominate scores by 0.36 standard deviations; Tabellini (2018) shows that a one standard deviation increase in the fraction of immigrants increases Nominate scores by approximately 0.25 standard deviations.

7.3 Newspapers' Behavior and Abolitionism

To better understand the importance of changes in the ideological environment, we investigate newspapers' behavior. Following Gentzkow and Shapiro, 2010, we build a simple model in which newspapers maximize sales by choosing their ideological position. The comparative statics of the model motivates our empirical analysis. In equilibrium, newspapers react to changes in local ideology by modifying the supply of content related to abolition. Two are the key ingredients of the model. First, the assumption that readers have preferences for like-minded newspapers. Second, that newspapers are partizans, an assumption largely supported by historical evidence (Pasley, 2002). Given this structure, we derive a specification in which newspapers, depending on their political affiliation, react to a higher local level of relative slave productivity by either increasing (Democratic) or decreasing (Whig) the share of issues related to abolitionism. The logic behind this specification is formalized in section A.3. The main intuition is that, because newspapers are highly partizans, each outlet maintains its political position but modifies the level of supply to move toward its reader's preferences. Changes in local economic conditions in the use of slave labor would, therefore, affect newspapers behavior through their effect on the local reader's preferences.

The empirical analysis is conducted on a database of 210 outlets. For each outlet and year, we compute the share of issues discussing slavery and code (when the information was available) their

political affiliation.[36] The outcome of interest is the share of issues in which the word 'abolition' appears at least once. In Table 33 we report the 20 most frequent bigrams in our sample. The Table shows that our methodology is indeed selecting articles discussing the issue of slavery and its abolition. The most frequent bigram, after United States and New York, is Van Buren, president of the US between 1837-1842. Van Buren has been a controversial figure in the history of abolitionism. Although a member of the Democratic party and a *state rights* supporter during the first decades of his career, his opposition to slavery grew over time. In 1848 he became the presidential candidate of the Free Soil Party — an explicitly abolitionist political organization. The rest of the items are explicitly associated with slavery and abolitionism. Fig. 33 shows the evolution of the abolitionist debate over time, both in our sample and in the Congress. The left panel plots the average of our outcome variable — share of the issues related to abolition — per year. The right panel plots the number of laws concerning slave regulation voted in each Congress. The similarity of the trends and the sharp increase after 1835 in both panels (dashed line) suggest that our variable is reflecting the evolution of the debate on abolitionism. A Wald test suggests the presence of a structural break in both series in 1835. We reject the null of the absence of structural break around 1835 with a probability of a type I error smaller than 1%.[37]

We study changes in newspapers' behavior estimating the following equation.

$$y_{ct} = \alpha_c + \gamma_t + \beta_1 Z_{ct} + \beta_2 Z_{ct} \mathbb{1}_{\{\text{Whig}\}} + \delta X_{ct} + \epsilon_{ct} \tag{6}$$

The outcome of interest is the share of issues mentioning "abolition"[38] per newspaper and year. Newspapers' circulation was limited to areas (circulation areas) within a certain distance from the printing site. Because we do not have information about Antebellum circulation, we approximate this measure taking an area of 50Km radius from the printing city. 50 Km radius corresponds to an area between 4 and 5 counties.[39] In this way, for each newspaper we determine a circulation areas and compute statistics for soil characteristics at the circulation area level. Equation 6 estimates changes over time t in the supply of issues related to abolition by a given newspaper operating in circulation area c. The independent variable Z_{ct} is computed as the interaction between relative slave productivity computed at the circulation area level, and the ratio of prices of input and output. The procedure for the construction of this variable is described in section 5. We are interested in estimating the differential behavior across ideological positions in the supply of content related to abolition given a common shock to the local advantage in the use of slave labor. The parameters of interest are β_1 and β_2. β_2 captures the difference in the change of y_{ct} between Whig and other newspapers. The variable Whig takes value one if the outlet is affiliated to the Whig party, if it was abolitionist, and if it supported the Know-Nothing party. We code as Democratic any newspapers

[36] Information on political affiliations are made available by Chronicling America ad Gale.

[37] Fig. 33 reports the test statistics in both cases

[38] any words including "abolit"

[39] 50Km radius corresponds to an area of 7850 km^2 and the average size of a county in 1860 is about 1643 km^2, so that an area of 50Km radius corresponds to the area of 4.7 counties.

which explicitly supported slavery, the Democratic party, the Fire eaters, the State Rights, and the Confederacy. Description of the data and the coding is available in section A.3. In column (1) and (2), we show the estimates for the entire sample. β_1 captures the effect of an increase in a one standard deviation of Z_{ct} on y_{ct} in the case of non-Whig newspapers, while β_2 captures the difference between the effect across Whig and non-Whig newspapers. Summing the two coefficient we obtain the effect of a one standard deviation increase in Z_{ct}. The estimates of both the single coefficient and the difference, are all significant except β_1 in column (2). The signs of the coefficients are consistent with the theory proposed in section A.3. More antislavery newspapers, if operating in a more pro-slavery circulation area, would decrease the supply of content related to abolition. In column (1) and (2) we are implicitly assuming that all the newspapers for which we do not have ideological information are pro-slavery. When we do not include regional trends and trends that vary with distance from the North, the estimate is significant (column (1)), but the effect disappears when we include the vector of geographical trends (column (2)). In column (3), we estimate a specification for the sample restricted to only Whig and Democrat newspapers. In that case, the coefficients are statistically significant again. The magnitudes of the effects are high. Column (3) suggests that a one standard deviation increase in Z_{ct} increases the share of issues discussing abolition by 17 pp. for Democrat newspapers and decreases the same by 10 pp. (with a s.e of .0464035) in the case of Whig newspapers. These estimates suggest that changes in newspaper behavior might be capturing changes in the underlying local pro-slavery ideology.

7.4 Free Black Population

> [...] A free negro is an anomaly — a violation of the unerring laws of nature — a stigma upon the wise and benevolent system of Southern labor - a contradiction of the Bible. The status of slavery is the only one for which the African is adapted; and a great wrong is done him when he is removed to a higher and more responsible sphere.
> *Jackson, Semi-Weekly Mississippian, 21 May 1858*

We conclude this section with the analysis of the free black population. Free blacks were a small minority in the Antebellum South who accounted for 5 to 10 % of the black population between 1810-1860. Their particular status made them the object of rancor and envy. Because the ideology on which slavery was based and justified increasingly became to rely on racial arguments for the division between free and bond people, free back were perceived as a threat to the institution of slavery. A free black was considered a perverted element of the society as it represented a violation of its natural order. For this reason, differences in the number of free blacks could be an indicator of differences in local social norms and racial attitudes. In this section, we show that changes in the local advantage in the use of slave labor also affected the dynamics of the free blacks population.

Tab, 22 shows the results of both the main specification and the specification which relies on changes in input and output prices. The number of free blacks is computed as a share of the black population, the share of the total population, and as the log of the free black population. In our

baseline specification, the estimates are significant for all the outcome variables with an estimated effect of about 20% change on an average base of 240 individuals, corresponding to 6% of the black population and 1.6% of the total population. In all the specifications, the estimates are computed within states and fixing the distance from the North.

A few possible mechanisms can explain these outcomes. Changes in the number of free blacks could be the result of either migration or changes in local demographic patterns. The former could be explained by economic considerations (free blacks moving to economic opportunities) or immaterial ones (free blacks moving toward counties were the pro-slavery/ anti-free black ideology was lower). The latter could be the result of changes in fertility rates or changes in manumission rates.

Several economic drivers could explain the observed patterns. We study the role of manufacturing production, urban areas, and proximity to rivers. Counties with a higher level of manufacturing capital[40] are more likely to offer job opportunities and therefore represent a potential pooling factor for the free black population. Urban areas not only offer better job opportunities but are also places where it is easier to pass as unperceived and move in as foreigners or fugitive slaves. Finally, navigable rivers were a fundamental source of income for the free black population (see Berlin, 1974 for a discussion).

To better understand these relationship, we first regress these three potential economic drivers on both free black and CA_{it} separately (table 23). Then, in Table 24, we estimate the baseline specification including them as controls.

Column (1-3) in table 23, show that the free black population tended to be increasing in places with a growing urban population, higher level of manufacturing capital, and closer to a navigable river. Column (4-6) shows instead that these variables do not move in the expected direction when regressed on CA_{it}: the decline of intense slave productivity does not lead to an increase in urban population, manufacturing capital, nor happens in places closer to rivers. The direction of these relationships suggests that these economic factors do not explain the observed patterns in the free black population. Table 24 show that the effect of our main explanatory variable is always significant, and the magnitude of the effects is stable when we include these variables as controls. We estimate the model for the years 1840-1860 because of data availability. In column (2) and (4), we exclude the distance from navigable rivers because the too limited variation does not allow to estimates a model which includes both distance from rivers and manufacturing capital. Tables 23 and 24 suggest that changes in the comparative advantage in the use of slave labor explain changes in the free black population not because of changes in economic pooling factors such as manufacturing activities and trade routes.

There is another reason why it seems unlikely that these patterns could be explained by free blacks self-selecting into counties with higher CA_{it}: the limited mobility of the free black population. According to Berlin (1974), free blacks tended to remain in the counties where they were born because "immigration restrictions often stood in their ways[...]. Whites, unwilling to live near Free

[40] We use the variable Value of Manufacturing Capital because it is the only variable related to manufacturing production available for the three census years 1840, 1850, 1860.

Negros and ever fearful of mobile free Negros revolutionaries, had early passed laws to restrict free negro movement [...]. Far more restrictive than regulations, the Free Negroes' precarious, often impoverished situations, anchor them to their homes and made them reluctant to emigrate. Ties of home and kin, the reputation with white customers or employers, their familiar routine, and their knowledge of the countryside often provided the only security poor free negroes had in a society that was hostile to their very existence."

Excluding *selection*, the results could be explained by either changes in fertility (or death) rates, or changes in manumission rates. Unfortunately, we cannot test for changes in the manumission rate because of lack of information, but we can test the fertility hypothesis: differences in CA_{it} could affect changes in free blacks population by affecting fertility rates. We compute the fertility rate across slave and free population using the age categories reported by the census. Table 25 reports the results. The dependent variable is computed as the ratio between the number of children in a given census year and the fertile females populations in the previous census. The age categories used to define fertile females vary across census year because of data availability. Fertile females are defined as those between 16 to 34 in 1810; 14 to 25 in 1820; 10 to 23 in 1830;10 to 23 in 1840; 10 to 19 in 1850.[41] Children are defined as individuals from 0 to 13 in 1820 and form 0 to 9 in the rest of the Census years. Although this is a rough measure of fertility, the measurement error due to the age categories is constant across the entire sample and, therefore, does not constitute a concern for the exercise in Table 25. The estimates in columns (1-2) show that free black fertility rates do not vary with CA_{it}. This implies that counties losing comparative advantage in the use of slave labor are also those where free black fertility declined more. We conclude that changes in the fertility rate of the free black population cannot be held responsible for the results in table 22. In column (3-4), we estimate the same regressions for slave fertility. The results, in this case, are consistent with the idea that slave owners in more slave intensive areas would have promoted higher fertility rates or selectively purchased younger slaves.

Our results suggest that nor fertility nor selection should be held responsible for the observed patterns, implicitly pointing toward the manumission rate as a plausible explanation. We conclude this section with suggestive evidence that differences in the presence of the free black population are capturing differences in the underlying attitude toward slavery. Because we do not have information on attitudes toward slavery during the antebellum period, we rely on recent surveys. In table 26, we report estimates of the correlation between the log of the share of free blacks in 1860 and contemporaneous racial attitudes. Our results show that counties with a higher proportion of free black as a share of the black population in 1860 exhibit today different views of slavery. In particular, a higher proportion of free black is associated to a higher proportion of individuals agreeing on the idea that "slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class."[42] We report both OLS estimation and IV estimation were the excluded instrument is given by relative slave productivity (Z_i). Although purely suggestive,

[41] Robustness are reported in appendix

[42] Questions are reported in table 26.

table 26 bring additional evidence in support of the idea that a higher free black population during the antebellum period was associated with lower levels of 'pro-slavery' attitudes.

8 Economic, Political, and Ideological Transformation

Results in section 7 show that agricultural shocks, not only led to changes in the allocation of slave labor but also triggered a deep process of ideological and political transformation. Southern US was not a political monolith uniformly devoted to the defense of the institution of slavery, but diverging political behaviors emerged with the divergence of economic incentives. There are several potential interpretations of this transformation. One possibility is that the decline of incentives to slave-ownership, increasing the share of non-slaveholding individuals, lowered incentives to vote for the Democratic party, and in favor of secession. This interpretation is particularly appealing for what concerns results related to secession. The higher the assets individuals owned in slaves, the higher the incentives to protect the institution, even at the high costs involved by a secession. Complementary results are in Hall et al. (2019). The authors show that the likelihood to fight for the Confederacy was higher for slave-owners than non slave-owners and increasing in the number of slaves. While such considerations can explain results in section 7.1.2, the decline in the share of votes for the Democratic party and the selection of more liberal members of Congress are not obvious consequences of the diminished number of slaveholders. Ex slave-owners and their descendants could have maintained strong preferences in favor of the institution of slavery, even without holding slaves. The persistence of cultural motives in voting behavior is the object of a vast literature. A priori it is not clear if the reduction in the share of slave-owners should result in the decline of the democratic party, nor in the election of less conservative representatives, in the absence of a clear trade-off — as it was the case in the secession decision.

An alternative hypothesis is that there has been no change in behavior. Results would be driven by the selection of more 'pro-slavery' individuals in counties gaining a comparative advantage in the use of slave labor. This hypothesis would be consistent with the change in the share of votes in favor of the democratic party, the selection of less conservative representatives and changes in newspapers' behavior. Although the movement of slave-owners toward more rentable lands has been an important part of the westward expansion, the extent up to which it can account for our results is unclear. There are at least two caveats to this interpretation. First, the observed increase in inequality (shown in table 15) is consistent with the idea that political transformation is fully or mainly driven by selection under the assumption that very small slave-owners moved away from the counties where slave labor was declining and partly sold their slaves to larger local slave-owners. This would have implied a decrease in the share of slave-owners and at the same time, an increase in the number of slaves per slaveholding household.

Although we cannot rule out this possibility, studies relying on matched information on a sub-sample of the 1850 and 1860 censuses show that non slave-owners were more likely to migrate then

slave-owners (Foust, 1967; Schaefer, 1985). Whenever slave-owners migrated, they tended to move slaves with them since property rights in labor constituted a neat advantage in the movement toward the West. As Wright (2006) pointed out, "slave-owners could carry out [...] expensive [migration] plans because their property rights in slaves enabled then to bring labor to desired destinations at will, and because the self-contained character of the slave plantation allowed then to settle in new area and begin production for export without extensive infrastructural support from other local parties." It is therefore unlikely that small slave-owners systematically decided to sell their slaves in the county of origin and migrate toward the West.

In this perspective, the estimated increase in the share of non slave-owners in counties losing comparative advantage in the use of slave labor should not be explained by small slave-owners outmigration. This evidence suggests that an argument relying exclusively on selection can hardly explain the extent of the political transformation of the southern US.

A second caveat to this argument is the results concerning the free black population. In section 7.4 we have shown that the local decline of slave labor is associated with an increase in the number of free blacks. Even if we assume that changes in voting behavior are fully explained by the white selection, slave-owners moving toward the West would have brought their slaves with them to either employ them in production or sell them to a higher price. The increase in free blacks can not be explained by slave-owner migration. Free black pattern, whether explained by an increase in manumission rate or by free black migratory movements, is a signal of the transformation of the local social environment and the diverging character of the slavery system across the US South.

In a few generations, counties facing higher competition in the use of slave labor went through a process of economic transformation which resulted in a more liberal political and ideological environment. Taken together, results in section **??** indicate that the economic transformation of the institution of slavery led to a change in the basis of its social support. When slave related economic opportunities for small slave-owners declined, the ideological support of the slave society started to totter. Higher newspaper's propensity to discuss abolition, the increase in free blacks, and the lower willingness to secede are an indication of this transformation.

In our view, changes in the structure of the slave economy, leading to an increase in inequality, detaching slavery from its association to economic success and social prestige, contributed to the local erosion of social norms in favor of the institution of slavery. The structure of a slave society was maintained on the notion that "those who questioned or opposed this social system ran the risk of being defined as social outcasts" (Budros, 2004). The decline of the local dominance of slavery as economic activities contributed to loose these social constraints.

8.1 Economic Incentives and the Erosion of Social Norms

Our findings are consistent with a scientific tradition that sees changes in the economic environment as the basis for changes in beliefs, values, and preferences (Boyd and Richerson, 1985, Bowles, 1998,

Bisin and Verdier, 2001, Greenwood et al., 2014).[43] In particular, we argue that an individual's ideological view of slavery is partly the result of a process of motivated cognition: agents form beliefs to "respond to costs, benefits and stakes involved in maintaining different *self-views* and *world-views*"(Bénabou and Tirole, 2016). According to these models, attitudinal change can be a consequence of behavioral change, rather than its precondition. Therefore, changes in the economic environment, by affecting behavior, lead to changes in the structure of beliefs individuals hold. Central to this notion is the theory of Cognitive Dissonance[44]. According to the theory, when individuals commit to act in a manner that is contrary to their beliefs, individuals experience discomfort and adjust their beliefs to minimize the dissonance between their actions and their beliefs.

We interpret the action of owning a slave as behavior involving a certain cognitive cost which is accommodated with the production of belief on the justifiability of the institution. Motivated beliefs lead to the emergence of interdependence on how people think, determining collective values and social norms. The case of slavery is emblematic of such interdependence since an agent's payoff is a function of his own action (holding slaves) and the group's average action. A community with a "healthy" slave system not only reassure the individual slave owner about the economic demand for his assets but also implies a series of positive spillover related to his social image. Such interdependence reinforces themselves through horizontal and intergenerational transmission (Bisin and Verdier, 2001). In a slave society, the act of freeing a slave represents an individual deviation is, therefore, sanctioned by social norms.

Changes in economic incentives, by reducing the value of slave ownership, triggered changes in the incentives to the production of beliefs justifying slavery. Such changes, together with the reduction of the number of slaves at the local level, led to the erosion of local social norms in favor of slavery.

[43] A tradition to which can be traced back at least to Adams Smith and Karl Marx.

[44] First proposed by Festinger (1957) and later introduced in economics by Hirschman (1965) and by Akerlof and Dickens (1982). For recent works in economics see Di Tella et al., 2015b; Konow, 2000

9 Conclusion

10 Figures and Tables

10.1 Tables

Table 1: Party Difference in Pro-Slavery Votes

	Federalist vs. Rep-Dem	Jacksonian vs. Anti-Jackson	Democrat vs. Whig
	(1818 - 1822)	(1826 - 1836)	(1836 - 1860)
	(1)	(2)	(3)
Difference	-0.0211	0.105***	0.0951***
	(0.0289)	(0.0125)	(0.00546)
Observations	18913	18913	18913

Note: This table reports the difference in the average voting in favor of laws supporting slavery between the two main parties for the three periods. The main variable takes value 1 if a vote in favor of slavery is cast, value 0 if against slavery, value .5 in case of abstention. The sample includes all roll-call votes on slavery from 1818 (when the first vote on slavery was held) to 1860, in the Congress. The table reports estimates only for congressmen elected in southern congressional districts. On average, throughout the entire period, 70% of the southern votes cast on the issue of slavery were in support of the institution. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* **?**.

Table 2: Slave Relocation - Baseline

	% Slaves		Slaves per 1000 km^2		N. Slaves	
	(1)	(2)	(3)	(4)	(5)	(6)
CA_{it}	-0.0110***	-0.00474***	-208.8***	-121.0***	-312.1***	-179.5***
	(0.00115)	(0.00128)	(17.94)	(21.96)	(30.33)	(34.97)
Observations	4471	4471	4471	4471	4471	4471
Adj. Within R^2	0.259	0.329	0.393	0.426	0.386	0.487
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	Yes	No	Yes	No	Yes	No
State * Year	No	Yes	No	Yes	No	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the effect of changes in the distribution of relative productivities on slaves' relocation between 1810 and 1860. The variable of interest is $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ which captures the number of (100,000) Km^2 of land with higher level of relative productivity in year t for county i. The mean of CA_{it} is 6.6 ($\times$ 100,000 Km^2) and it ranges from 0, for the best county in the sample, to 17.3 for the worst. The coefficients in columns (1) and (2) report the effect of an increase of 100,000 Km^2 of land with higher relative productivity than in county i on the share of slaves with respect to the total population. Columns (3) and (4) report the effect on the number of slaves per 1000 Km^2 and columns (5) and (6) for the absolute number of slaves. Each regression includes county and year fixed effect, and trends in distance from the north (the Mason-Dixon line). The odd columns include census regional trends, while odd columns include state trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 3: Slave Relocation - Input and Output Prices

	% Slaves			Slaves per 1000 km^2		
	(1)	(2)	(3)	(4)	(5)	(6)
$Z_i \times$ Output Price$_t$	0.0266***			334.4***		
	(0.00297)			(71.20)		
$Z_i \times$ Input Price$_t$		0.0243***			269.7***	
		(0.00284)			(69.45)	
$Z_i \times$ Input $\times$ Output Price$_t$			0.0253***			305.1***
			(0.00296)			(67.67)
Observations	4471	4471	4471	4471	4471	4471
Adj. Within R^2	0.348	0.346	0.347	0.428	0.426	0.427
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the effect of changes in prices interacted with relative productivity on slaves' relocation. Output price is given by the ratio between UK cotton price and wheat price observed in the Cincinnati market; Input price is given by the ratio between wages in West Virginia and slave prices. Finally, columns (3) and (6) report results using the interaction between input and output prices. For the sake of interpretation, we take both ratios to be increasing over time: wheat price over cotton price and slave price over wages. $Z_i = \frac{A^{slave}}{A^{free}}$ is the ratio between cotton and wheat productivity at the county level, standardized with mean zero and variance 1. The coefficient in column (1) shows that given the decrease occurred in the ratio between wheat and cotton prices, counties with a higher s.d. in Z_i had 2.6 pp more slaves at the end of the relocation process. The second panel shows the same effect on the number of slaves per 1000 of squared Km. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Clark (2005) for cotton prices, Cole (1938) for wheat, Adams (1992) for wages, Phillips, 1905 for slave prices; suitability and population data are from Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 4: Slave Relocation - Input and Output Prices 2

	N. Slaves		
	(1)	(2)	(3)
$Z_i \times$ Output Price$_t$	513.8***		
	(78.64)		
$Z_i \times$ Input Price$_t$		444.0***	
		(78.03)	
$Z_i \times$ Input $\times$ Output Price$_t$			481.1***
			(80.45)
Observations	4471	4471	4471
Adj. Within R^2	0.489	0.487	0.488
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
State * Year	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes

Note: This table shows the effect of changes in prices interacted with relative productivity on slaves' relocation. Output price is given by the ratio between UK cotton price and wheat price observed in the Cincinnati market; Input price is given by the ratio between wages in West Virginia and slave prices. Finally, columns (3) reports results using the interaction between input and output prices. For the sake of interpretation, we take both ratios to be increasing over time: wheat price over cotton price and slave price over wages. $Z_i = \frac{A^{slave}}{A^{free}}$ is the ratio between cotton and wheat productivity at the county level, standardized with mean zero and variance 1. The coefficient in column (1)-(3) shows that given the increase in the ratio of prices, counties with a higher s.d. in Z_i had about 500 more slaves at the end of the relocation process. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Clark (2005) for cotton prices, Cole (1938) for wheat, Adams (1992) for wages, Phillips, 1905 for slave prices; suitability and population data are from Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 5: Slave Relocation - Baseline and Prices Comparison

	% Slaves		Slaves per 1000 km^2		N. Slaves	
	(1)	(2)	(3)	(4)	(5)	(6)
$Z_i \times$ Input $\times$ Output Price$_t$	0.0150***		180.5***		284.7***	
	(0.00175)		(40.04)		(47.61)	
CA_{it}		-0.0204***		-520.1***		-771.3***
		(0.00550)		(94.36)		(150.3)
Observations	4471	4471	4471	4471	4471	4471
Adj. Within R^2	0.347	0.329	0.427	0.426	0.488	0.487
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	No	No	No	No	No	No
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table compares the effect of changes in prices and changes in the distribution of relative productivity on slave relocation. Output price is given by the ratio between UK cotton price and wheat price observed in the Cincinnati market; Input price is given by the ratio between wages in West Virginia and slave prices. Both ratios are taken to be increasing over time: wheat price over cotton price and slave price over wages. $Z_i = \frac{A^{slave}}{A^{free}}$ is the ratio between cotton and wheat productivity at the county level, standardized with mean zero and variance 1. $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ captures the number of (100,000) Km^2 of land with higher level of relative productivity in year t for county i. Both variables are standardized to have mean 0 and St. Dev. 1. We report the effect of an increase in one s.d. of CA_{it} and of Z_i interacted with prices, respectively on, the share of slaves, the number of slaves per 1000 of squared Km and the number of slaves. The sings are opposite because Z_i is reporting the effect of a one s.d. higher level of relative productivity in slave intensive crops given the change in prices, while CA_{it} is capturing the level of competition in slave intensive crops faced by county i in year t. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Clark (2005) for cotton prices, Cole (1938) for wheat, Adams (1992) for wages, Phillips, 1905 for slave prices; suitability and population data are from Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 6: Slave Relocation - Baseline and Prices Comparison

	% Slaves		Slaves per 1000 km^2		N. Slaves	
	(1)	(2)	(3)	(4)	(5)	(6)
$Z_i \times$ Input $\times$ Output Price$_t$	0.0150***		180.5***		284.7***	
	(0.00249)		(51.50)		(61.28)	
CA_{it}		-0.0204**		-520.1***		-771.3***
		(0.00810)		(138.4)		(220.0)
Observations	4471	4471	4471	4471	4471	4471
Adj. Within R^2	0.347	0.329	0.428	0.427	0.489	0.487
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	No	No	No	No	No	No
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
St. Error Cluster Level	County	County	County	County	County	County
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table compares the effect of changes in prices and changes in the distribution of relative productivity on slave relocation. Output price is given by the ratio between UK cotton price and wheat price observed in the Cincinnati market; Input price is given by the ratio between wages in West Virginia and slave prices. Both ratios are taken to be increasing over time: wheat price over cotton price and slave price over wages. $Z_i = \frac{A^{slave}}{A^{free}}$ is the ratio between cotton and wheat productivity at the county level, standardized with mean zero and variance 1. $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ captures the number of (100,000) Km^2 of land with higher level of relative productivity in year t for county i. Both variables are standardized to have mean 0 and St. Dev. 1. We report the effect of an increase in one s.d. of CA_{it} and of Z_i interacted with prices, respectively on, the share of slaves, the number of slaves per 1000 of squared Km and the number of slaves. The sings are opposite because Z_i is reporting the effect of a one s.d. higher level of relative productivity in slave intensive crops given the change in prices, while CA_{it} is capturing the level of competition in slave intensive crops faced by county i in year t. Standard errors clustered at the county level in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Clark (2005) for cotton prices, Cole (1938) for wheat, Adams (1992) for wages, Phillips, 1905 for slave prices; suitability and population data are from Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 7: Slave Relocation - Old Counties

	% Slaves		Slaves per 1000 km^2		N. Slaves	
	(1)	(2)	(3)	(4)	(5)	(6)
CA_{it}	-0.0440***	-0.0148**	-760.4***	-454.3***	-1050.6***	-504.7***
	(0.00535)	(0.00583)	(79.61)	(101.4)	(135.5)	(150.5)
Observations	2766	2766	2766	2766	2766	2766
Adj. Within R^2	0.259	0.324	0.377	0.409	0.357	0.463
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	Yes	No	Yes	No	Yes	No
State * Year	No	Yes	No	Yes	No	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table show the process of relocation of slaves as a consequence of the expansion of the agricultural land from 1810 to 1860, restricting the sample to those counties which were not at the frontier in 1810. The variable of interest is $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ which captures the number of (100,000) Km^2 of land with higher level of relative productivity in year t than county i. The mean of CA_{it} is 6.7 ($\times$ 100,000 Km^2) and it ranges from 0, for the best county in the sample, to 16.5 for the worst. The coefficients in columns (1) and (2) report the effect of an increase of 100,000 Km^2 of land with higher relative productivity than in county i in the share of slaves with respect to the total population. Columns (3) (4) report the effect on the number of slaves per 1000 Km^2 and columns (5) (6) for the absolute number of slaves. Each regression includes county and year fixed effect, and trends in distance from the North (Mason-Dixon line). The odd columns do not include States trends, the odd do columns do. We don't include regional trends because there was only one region in 1810. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 8: Slave Relocation - Trends in 1800 % of Slaves

	% Slaves		Slaves per 1000 km^2		N. Slaves	
	(1)	(2)	(3)	(4)	(5)	(6)
CA_{it}	-0.00509***	-0.00930***	-120.8***	-133.4***	-134.5***	-157.8***
	(0.00143)	(0.00130)	(22.89)	(24.49)	(37.17)	(31.97)
Observations	2328	2328	2328	2328	2328	2328
Adj. Within R^2	0.319	0.386	0.460	0.461	0.485	0.487
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
% Slaves in 1800 * Year	No	Yes	No	Yes	No	Yes
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the effect of changes in the distribution of relative productivity on slaves' relocation between 1810 and 1860, restricting the sample to those counties which were not at the frontier in 1810 and including trends in the % of slaves at the county level in 1800. The variable of interest is $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ which captures the number of (100,000) Km^2 of land with higher level of relative productivity in year t than county i. The mean of CA_{it} is 6.07 ($\times$ 100,000 Km^2) and it ranges from 0, for the best county in the sample, to 17.28 for the worst. The coefficients in columns (1) and (2) report the effect of an increase of 100,000 Km^2 of land with higher relative productivity than in county i on the share of slaves with respect to the total population. Columns (3) and (4) report the effect on the number of slaves per 1000 Km^2 and columns (5) and (6) for the absolute number of slaves. Each regression includes county and year fixed effect, trends in distance from the North (Mason-Dixon line), and State trends. The odd columns include trends in pre treatment levels of the % of slave population, while the odd don't. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 9: Slave Relocation - Old Compare Cluster

	% Slaves		Slaves per 1000 km^2		N. Slaves	
	(1)	(2)	(3)	(4)	(5)	(6)
$Z_i \times$ Input $\times$ Output Price$_t$	0.0149***		145.9**		208.4**	
	(0.00341)		(72.33)		(82.59)	
CA_{it}		-0.0148		-454.3***		-504.7**
		(0.00929)		(159.9)		(231.9)
Observations	2766	2766	2766	2766	2766	2766
Adj. Within R^2	0.342	0.324	0.407	0.410	0.464	0.464
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	No	No	No	No	No	No
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
St. Error Cluster Level	County	County	County	County	County	County
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table show the process of relocation of slaves as a consequence of the expansion of the agricultural land from 1810 to 1860, restricting the sample to those counties which were not at the frontier in 1810

Table 10: Mechanism - Agricultural Transformation

	ln(Production)		ln(Value)	
	(1)	(2)	(3)	(4)
	Cotton	Wheat	Cotton	Wheat
CA_{it}	-0.616***	0.365***	-0.465***	0.373***
	(0.130)	(0.0537)	(0.107)	(0.0553)
Observations	2790	2785	2790	2785
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State * Year	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes

Note: This table shows the effect of changes in the distribution of relative productivity on agricultural production between 1840 and 1860. The variable of interest is $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ which captures the number of (100,000) Km^2 of land with higher relative productivity in year t than county i. The mean of CA_{it} is 8.1 ($\times$ 100,000 Km^2) and it ranges from 0, for the best county in the sample, to 17.29 for the worst. The coefficients in columns (1) and (2) report the effect of an increase of 100,000 Km^2 of land with higher relative productivity than in county i on the log of production of cotton and wheat respectively. Columns (3) and (4) report the effect on the value produced in cotton and wheat. Each regression includes county and year fixed effect, trends in distance from the North (Mason-Dixon line), and State trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 11: Mechanism - Agricultural Transformation - IV

	% Slaves	% Slaves	% Slaves	% Slaves
	(1)	(2)	(3)	(4)
Ln Cotton (Production)	0.00858**			
	(0.00432)			
Ln Wheat (Producction)		-0.0146*		
		(0.00775)		
Ln Cotton (Value)			0.0114**	
			(0.00576)	
Ln Wheat (Value)				-0.0143*
				(0.00759)
Observations	2790	2785	2790	2785
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State * Year	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes
C-D Wald F	19.86	51.53	17.17	51.42

Note: This table shows the effect of changes in the distribution of relative productivity on agricultural production between 1840 and 1860. The variables of interest are the log value and log production of both cotton and wheat. These variables are instrumented with CA_{it} and predict the change in the share of slaves at the county level. Each regression includes county and year fixed effect, trends that vary with distance from the North (Mason-Dixon line), and regional trends. The F statistic reported for the First Stage is the Cragg-Donald Wald F statistic. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 12: Mechanism - The Role of Navigable Rivers

	% Slaves	Slaves per 1000 km^2	N. Slaves
	(1)	(2)	(3)
CA_{it}	-0.00481***	-127.8***	-188.0***
	(0.00128)	(21.85)	(34.84)
Ln Distance to Navigable Rive	-0.00157	-146.0***	-183.7***
	(0.00138)	(32.34)	(45.02)
Observations	4471	4471	4471
Adj. Within R^2	0.329	0.431	0.490
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
State * Year	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes

Note: This table reproduces the results in the baseline estimation including as control the log distance from the closest navigable river. The network of navigable rivers has been expanded continuously from 1810. The regressor captures the effect of a change in distance to the closest navigable river on the share of slaves at the county level. Each regression includes county and year fixed effect, trends that vary with distance from the North (Mason-Dixon line), and State trends. *Ln distiance* is computed as the distance between each county's centroid and the closest navigable river. Data are from Atack (2017). All the estimates include Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 13: Mechanism - The Role of Farm Value

	% Improved Acres	Ln Value of Farms	Ln Value of Equipment	% Slaves			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CA_{it}	-0.0234***	0.0839**	0.0767**	-0.0101***	-0.0158***	-0.0150***	-0.0137***
	(0.00572)	(0.0331)	(0.0303)	(0.00338)	(0.00314)	(0.00320)	(0.00305)
% Improved Acres				0.0985***			0.0968***
				(0.0214)			(0.0182)
Ln Value of Farms					0.0428***		0.0346***
					(0.00536)		(0.00517)
Ln Value of Farm Equipment						0.0366***	0.0122**
						(0.00574)	(0.00543)
Observations	1936	1934	1934	1936	1934	1934	1934
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State * Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table analyses the relationship between CA_{it} and the value of the farm between 1840 - 1860. The variable % Improved Acres is given by the ratio between the number of improved acres of farmland and the number of the unimproved acres of farmland at the county level. Ln Farm Value and Ln Value of Equipment are respectively the log of the cash value of the farms and the log of the agricultural equipment value in a given county. All regressions include county and year fixed effect, trends that vary with distance from the North (Mason-Dixon line), and State trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 14: Slave Household and Slave Ownership

	% of Slave Household	N of Slave Household	N Slave
	(1)	(2)	(3)
CA_{it}	-0.0601***	-133.2***	-1518.3***
	(0.0154)	(31.81)	(286.0)
Observations	2128	2128	2128
Mean	0.341	320.6	2709.5
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
State * Year	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes

Note: Dependent variables are the share of households owning at least one slave in a given census year between 1810 and 1840; the absolute number of households owning at least one slave and the absolute number of slaves. The independent variable is CA_{it} as described in the baseline. All regressions include county and year fixed effect, trends that vary with distance from the North (Mason-Dixon line), and State trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 15: Distribution of Slaves per Household

	Ln Slave per Slave Household			
	(Average Hh.)	(Median Hh.)	(Top Quartile)	(Bottom Quartile)
CA_{it}	0.216***	0.271***	0.248***	0.186**
	(0.0548)	(0.0628)	(0.0596)	(0.0759)
Observations	1921	1921	1921	1921
Mean	6.459	3.660	8.069	1.491
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State * Year	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes

Note: Dependent variables are the Ln number of slaves per household. From left to right, the reported coefficients correspond to the Ln number of slaves for the average household, the median household, the top quartile, and the bottom quartile. Moments computed from Full Count Household Data. All regressions include county and year fixed effect, trends that vary with distance from the North (Mason-Dixon line), and State trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 16: Parties' Ideology

	Nominate Score		Party Activity		
	Mean	S.d.	First Year in Congress	Last Year in Congress	Tot. Seats
			Conservative Parties		
Democrat	.3100214	.0037918	1838	1860	593
State Rights	.3379281	.0122688	1852	1852	3
Nullifier	.3405403	.0168177	1832	1838	21
Union	.3447051	.0206817	1852	1852	11
Ind. Democrat	.38544589	.04133	1852	1860	8
Crawford Republican	.3871434	.0130997	1824	1824	17
Conservative	.3921037	.0575023	1840	1840	2
Jackson Federalist	.4316181	.	1824	1824	1
Jackson	.4386941	.00651896	1826	1836	258
Jackson Republican	.4899344	.02255769	1824	1824	31
Democrat-Republican	.4906124	.00586592	1810	1822	307
			Liberal Parties		
Whig	.5257777	.0055872	1838	1854	256
Adams-Clay Federalist	.5589049	.	1824	1824	1
American	.5650793	.01188684	1856	1860	47
Opposition	.5765628	.03890863	1856	1856	5
Anti-Jackson	.5930719	.0139106	1830	1836	73
Ind. Whig	.6140355	.	1852	1852	1
Crawford Federalist	.6444843	.032572	1824	1824	2
Adams	.6492928	.01673307	1826	1828	29
Federalist	.6622379	.01724847	1810	1822	41
Adams-Clay Republican	.6726916	.02127854	1824	1824	10

Note: The table reports the mean and s.d of the Nominate score for all the parties with at least one member elected in the Congress from 1810 to 1860, ordered from the most conservative to the most liberal. We also report the first and last years in which the party was represented in Congress and the total number of seats it had during the entire period of activity. The table is divided into two groups representing the two opposing factions in Congress which we label as Conservatives and Liberal parties. *Data Source:* Lewis et al. (2019)

Table 17: Electoral Results

	Presidential Election		Gubernatorial Election	
	% Democrats (1828 - 1860)	% Democrats (1836 - 1860)	% Democrats (1825 - 1860)	% Democrats (1836 - 1860)
CA_{it}	-0.0579***	-0.0457**	-0.0382**	-0.0962***
	(0.0183)	(0.0194)	(0.0186)	(0.0221)
Observations	6568	5773	7528	6580
Mean Dependent V.	0.557	0.538	0.498	0.510
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region * Year	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes

Note: The table shows the effect of changes in CA_{it} on the share of votes received by the Democrats. "Democrats" include the Democratic Party and the Jacksonian Democratic. Before the election of Jackson (1828), there are no votes in the presidential elections identified by its faction, while in the gubernatorial election, candidates are labeled as Jacksonian starting from 1825. We show results for the full sample (1825 - 1860) and the period starting from 1836 when the Whig and Democratic parties stabilized the political system. All regressions include county and year fixed effect, trends that vary with distance from the North (Mason-Dixon line) and regional trends. Robust Standard Errors, clustered at the county level are in parenthesis, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010), ICPSR (1999).

Table 18: Legislator's Ideology

	Panel A: Congress			**Panel B: Senate**		
	Nominate - NP	Nominate	Position	Nominate - NP	Nominate	Position
CA_{it}	0.0266**	0.0318***	6.878**	0.00914**	0.00983**	1.076**
	(0.0115)	(0.0112)	(3.063)	(0.00407)	(0.00410)	(0.497)
Observations	1575	1575	1575	754	754	754
Cong. District FE	Yes	Yes	Yes	No	No	No
State FE	No	No	No	Yes	Yes	Yes
Cong. Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes
Party * Year	Yes	Yes	Yes	No	No	No

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table shows the effect of a change in a 1 s.d. in CA_{it} on three different measures of Ideology, for both the Congress and the Senate. The Nominate - NP, a fixed score for each congressman. Nominate, a score changing for each congressman per Congress. Position, the rank of each congressman. Both the Nominate-NP and the Nominate score are between 0 and 1, from conservative to liberal. Position goes from 0 to 100, where 0 is assigned to the most conservative member of Congress, 100 to the most liberal. In 1860 there are 89 southern members of Congress. All regressions include county and year fixed effect, regional trends and trends varying with distance from the North (Mason-Dixon line). CA_{it} is computed at the Congressional District. Robust Standard Errors, clustered at the Congressional District level for the Congress and at the State level for the Senate are in parenthesis. *Data Source:* Lewis et al. (2019), Manson et al. (2018)

Table 19: Secession Conventions

	% Votes for Secession					
	(1)	(2)	(3)	(4)	(5)	(6)
Z_i	0.113***	0.114***	0.113***	0.128***	0.129***	0.129***
	(0.0153)	(0.0153)	(0.0157)	(0.0197)	(0.0197)	(0.0201)
North Distance	0.238***	0.237***	0.242***	0.229***	0.230***	0.228***
	(0.0184)	(0.0189)	(0.0191)	(0.0255)	(0.0263)	(0.0280)
Ln Value of Farms		0.0328	0.0716*	0.0470	0.0461	0.0561
		(0.0251)	(0.0373)	(0.0554)	(0.0560)	(0.0592)
Ln Value of Livstock		0.0185	0.0320	0.0966*	0.0949*	0.0897
		(0.0303)	(0.0300)	(0.0551)	(0.0553)	(0.0572)
Ln Value of Farm Equip.			-0.0721**	-0.0926**	-0.0952**	-0.102**
			(0.0345)	(0.0450)	(0.0452)	(0.0459)
% Improv. Acres			0.221**	0.190	0.191	0.185
			(0.110)	(0.146)	(0.146)	(0.154)
Ln Value Home Manufac.				-0.00112	-0.000151	-0.000134
				(0.0119)	(0.0119)	(0.0120)
Manuf. raw materials (value)				5.13e-09	4.64e-08	5.09e-08
				(1.47e-08)	(3.47e-08)	(3.60e-08)
Ln Value Manufac. Output				0.00479	0.00602	0.00702
				(0.0129)	(0.0264)	(0.0272)
Ln Value Manufac. Capital					0.00631	0.00826
					(0.0250)	(0.0264)
N. Manufac. Estab.					-0.000413	-0.000407
					(0.000268)	(0.000267)
Share of Manuf. Empl.					-0.666	-0.776
					(1.748)	(1.817)
Churches per Capita						4.556
						(5.090)
% Baptist Ch.						0.0182
						(0.0990)
% Methodist Ch.						0.100
						(0.106)
Observations	642	635	635	500	500	494

Note: The table shows that counties with a higher standard deviation in relative productivity, Z_i, voted on average about 11.5 pp more in favor of secession. The sample mean is 67%. The first specification only includes the variable of interest and the distance from the Northern states. Column (2-4) introduce information on the value of the farm, the value of the livestock, the value of the farm equipment, the share of improved acres, the value of home manufacture production, the value of total manufacture production, the value of the raw material used in manufacture production, the value of capital in the manufacture sector, the number of manufacture establishment, the share of individuals, both males and females employed in manufacture. The variable is computed as a share of the total population in the county. The number of churches per capita, and the share of Baptist and Methodist churches. All specifications include state fixed effect. Robust standard errors are in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Sources:* reported in appendix.

Table 20: Newspapers Words Counts

United State (8,735)	New York (6,063)	Van Buren (2,618)	Southern State (2,222)
Democratic Party (2,145)	Free State (2,113)	Anti Slavery (2,101)	Slave State (2,028)
South Carolina (1,969)	Fugitive Slave (1,836)	Slave Trade (1,713)	North Carolina (1,629)
Abolition Slavery (1,465)	Whig Party (1,392)	District Columbia (1,387)	Slave Law (1,239)
State Union (1,205)	North South (1,195)	Know Nothing (1,158)	Wilmot Proviso (1,128)

Note: The table lists the 20 most frequent bigrams among the articles mentioning 'abolition' and 'slavery' (both stemmed) at least once. The most frequent bigram is "United States". Frequency in parenthesis. *Sources:* Gale and Chronicling America.

Table 21: Newspapers

	Share of Issue on Abolition		
	(1)	(2)	(3)
Z_{ct}	0.0686*	0.0575	0.176**
	(0.0369)	(0.0427)	(0.0710)
Anti-slavery=1 × Z_{ct}	-0.163***	-0.176***	-0.275***
	(0.0501)	(0.0495)	(0.0855)
Observations	1482	1471	599
Newspaper FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
ln(Distance North) × Year	No	Yes	Yes
Region × Year	No	Yes	Yes
Sample	Full	Full	Anti and Pro

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table shows the effect of Z_{ct} on the share of issue on abolition by newspaper's ideology. Z_{ct} is the interaction between relative productivity (cotton, sugar, tobacco vs. wheat) at the circulation area level with the ratio of prices. Column (1-2) shows results for the entire sample, including the newspaper for which we do not have the ideological position. Column (3) restricts attention to ideologically coded newspapers. Dependent variable is the share of issues reporting the words 'slavery' and 'abolition' at least once. Standard errors are clustered at the newspaper level. Robust Standard Errors, clustered at the county level are in parenthesis, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Sources:* Gale and Chronicling America.

Table 22: Free

	% Free on Black		% Free on Tot.		Ln Free	
	(1)	(2)	(3)	(4)	(5)	(6)
$Z_i \times$ Input and Output Prices	-0.00673***		0.00109***		0.0225	
	(0.00177)		(0.000416)		(0.0258)	
CA_{it}		0.0139***		0.00196**		0.217***
		(0.00380)		(0.000877)		(0.0762)
Observations	4470	4470	4471	4471	4471	4471
Mean Dep. Var.	0.0597	0.0597	0.0162	0.0162	4.060	4.060
Adj. Within R^2	0.265	0.262	0.240	0.238	0.267	0.269
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region * Year	No	No	No	No	No	No
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the effect of changes in the distribution of relative productivities on the free black population. $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ captures the size of land with higher level of relative productivity in year t for county i. $Z_i = \frac{A^{slave}}{A^{free}}$ is the ratio between cotton and wheat productivity at the county level. Output price is given by the ratio between UK cotton price and wheat price observed in the Cincinnati market; Input price is given by the ratio between wages in West Virginia and slave prices. Both ratios are taken to be increasing over time: wheat price over cotton price and slave price over wages. The product is standardized to have mean 0 and s.d. 1. Dependent variables are the number of free blacks over the black population. The number of free black over the total population, and the Ln. of free black population. Each regression includes county and year fixed effect, trends that vary with distance to the North (the Mason-Dixon line), and state trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 23: Urban Population, Navigable Rivers and Manufacturing Capital

	Ln Free Black			Ln Distance Rivers	Ln Urban Population	Ln Manufacturing Capital
	(1)	(2)	(3)	(4)	(5)	(6)
Ln Distance River	-0.0438*					
	(0.0262)					
Ln Urban Pop.		0.0785***				
		(0.00979)				
Ln Manuf. Capital			0.0136***			
			(0.00451)			
CA_{it}				-0.200***	-0.536***	-1.858*
				(0.0544)	(0.138)	(1.081)
Observations	4471	4471	2606	4471	4471	2606
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State * Year	Yes	Yes	Yes	Yes	Yes	Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: Ln Distance River is the log distance between each county centroid and the closest access to the US Network of navigable rivers. Ln Urban population represents the log of the urban population in the county. Urban areas are defined as above 2,500 people. Ln Manuf. Capital is the log of the Manufacturing Capital reported in the Census. All specification include county and year fixed effect, trends that vary with distance to the North (the Mason-Dixon line), and state trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 24: Free Blacks, Urban Population, Navigable Rivers and Manufacturing Capital

	% Free on Black		Ln Free Black	
	(1)	(2)	(3)	(4)
CA_{it}	0.0160***	0.0140*	0.255***	0.546***
	(0.00510)	(0.00772)	(0.0911)	(0.178)
Ln Urban Pop.	0.00355***	0.00194**	0.0810***	0.0751***
	(0.00102)	(0.000947)	(0.0109)	(0.0205)
Ln Distance River	0.000683	0	-0.0291	0
	(0.00154)	(.)	(0.0310)	(.)
Ln Manufacturing Capital		0.0000936		0.0147***
		(0.000250)		(0.00449)
Observations	4470	2606	4471	2606
Adj. Within R^2	0.271	0.0763	0.282	0.107
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region * Year	No	No	No	No
State * Year	Yes	Yes	Yes	Yes
St. Error Cluster Level	County	County	County	County
ln(Distance North) * Year	Yes	Yes	Yes	Yes
Sample	Full	1840 - 1860	Full	1840 - 1860

Note: Ln Distance River is the log distance between each county centroid and the closest access to the US Network of navigable rivers. Ln Urban population represents the log of the urban population in the county. Urban areas are defined as above 2,500 people. Ln Manuf. Capital is the log of the Manufacturing Capital reported in the Census. All specification include county and year fixed effect, trends that vary with distance to the North (the Mason-Dixon line), and state trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* Fischer et al. (2002), Manson et al. (2018), Haines and ICPSR (2010).

Table 25: Fertility Rates

	Free Black Fertility		Slave Fertility	
	(1)	(2)	(3)	(4)
CA	-0.138	-0.181	-0.088***	-0.092***
	(0.10)	(0.13)	(0.03)	(0.04)
Observations	1250	1250	1933	1933
Mean Dep. Var.	3.896	3.896	3.679	3.679
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region * Year	Yes		Yes	
State * Year		Yes		Yes
ln(Distance North) * Year	Yes	Yes	Yes	Yes

Note: This table shows the changes in fertility rates as determined by the expansion of the agricultural land for both the free black and the slave population. The independent variable is is $CA_{it} = \sum_{j=1}^{N_t} w_j I_{(z_j \geq z_i)}$ which captures the number of (100,000) Km^2 of land with higher relative productivity in year t then county i. The dependent variable is computed as the ratio between the number of children in a given census year and the fertile females populations in the previous census. The age categories used to define fertile females are 16 to 34 in 1810; 14 to 25 in 1820; 10 to 23 in 1830; 10 to 23 in 1840; 10 to 19 in 1850. Children are defined as 0 to 13 in 1820 and form 0 to 9 in the rest of the years. The analysis is run at the county level. We restrict the analysis to those counties with at least a fertile female in the population. Each regression includes county and year fixed effect, trends in distance from the North (Mason-Dixon line), and either Region or State trends. Robust Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Data Source:* GAEZ-FAO, NHGIS, IPUMS.

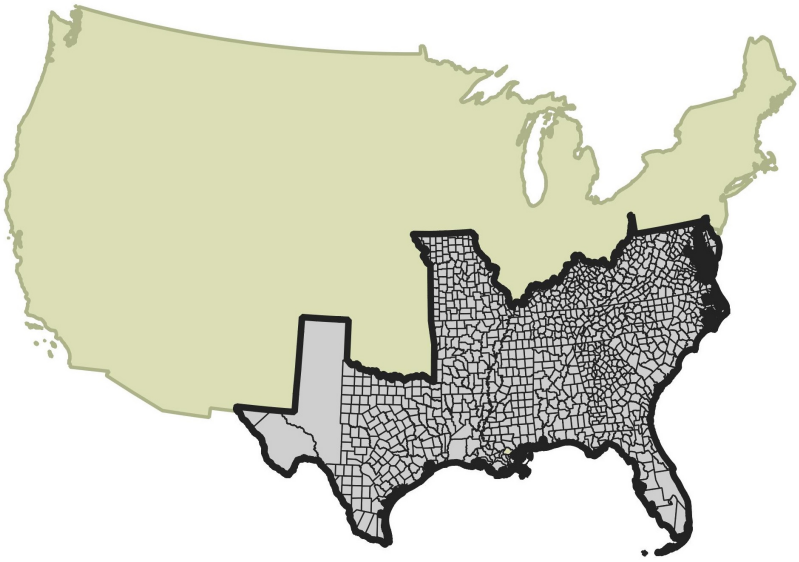
Table 26: Free Blacks and Long Term Racial Sentiment and Ideology

	Racial Sentiment 1		Racial Sentiment 2		Ideology	
	(OLS)	(IV)	(OLS)	(IV)	(OLS)	(IV)
Ln Share of Free Black	-0.0634***	-0.143***	0.0507***	0.111***	-0.0555***	-0.134***
	(0.0146)	(0.0441)	(0.0103)	(0.0351)	(0.00936)	(0.0332)
Observations	823	823	823	823	848	848
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
C-D Wald F	.	78.52	.	78.52	.	80.61

Note: The dependent variables are the following. Racial Sentiment 1: Slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class. Racial Sentiment 2: Blacks should get by without special favors, just like Irish, Italians, and Jews did. Both answers are scaled from 1 to 5: 1 - strongly agree, 2 - somewhat agree, 3 - neither agree nor disagree, 4 - somewhat disagree, 5 - strongly disagree. Ideology is a scale going from 1 to 5. 1 - very liberal, 2 - liberal, 3 - moderate, 4 - conservative, 5 - very conservative. All the dependent variable are rescaled from 0 to 1. The independent variable is the log of the share of Free Black on the Black population in 1860. The excluded instrument is $Z_i = \frac{A^{slave}}{A^{wheat}}$, the ratio of productivity in slave crop with respect to wheat. The counties included are all the 1860 counties which could be matched with the counties in the Cooperative Congressional Election Study 2006 - 2012. Individual answers for the white population are averaged at the county level. All estimates include region fixed effect. Robust standard errors are in parenthesis. *Data Source:* GAEZ-FAO, NHGIS, IPUMS, CCES 2006 - 2012.

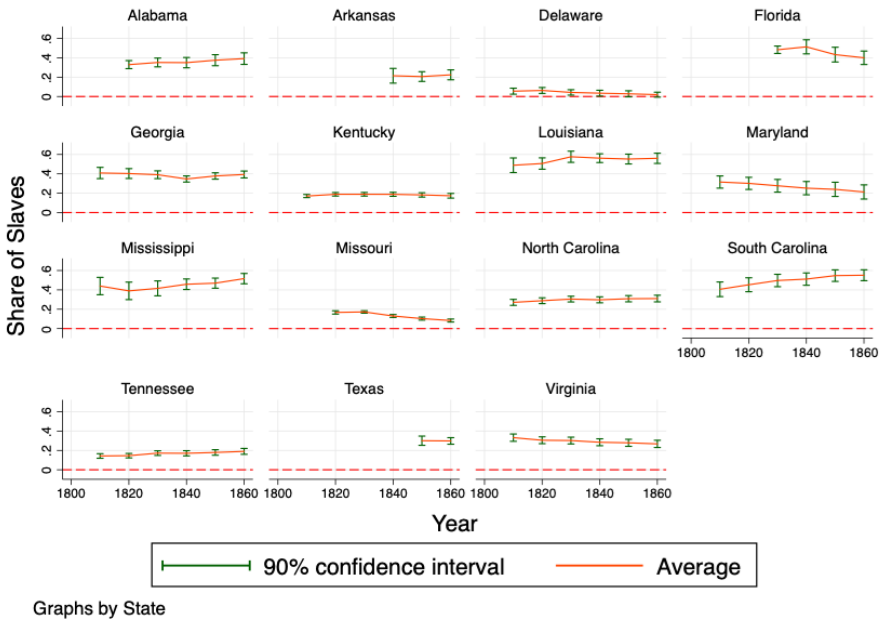
11 Figures

Figure 1: Slave States



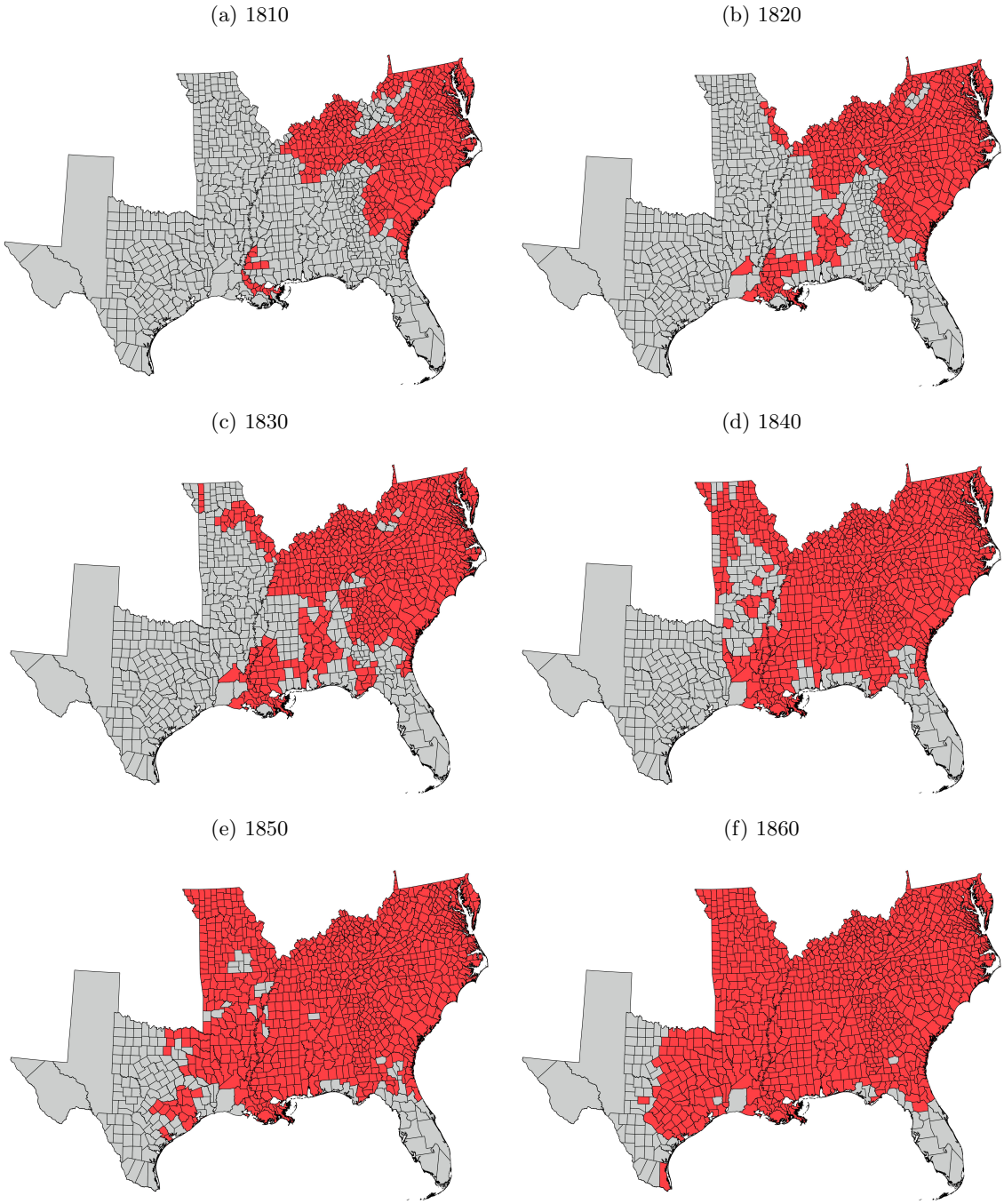
Note: The figure reports the counties belonging to a slave state which appear in at least two censuses between 1810 and 1860. These are: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas, Virginia. Manson et al. (2018), Haines and ICPSR (2010)

Figure 2: Share of Slaves per State-Year



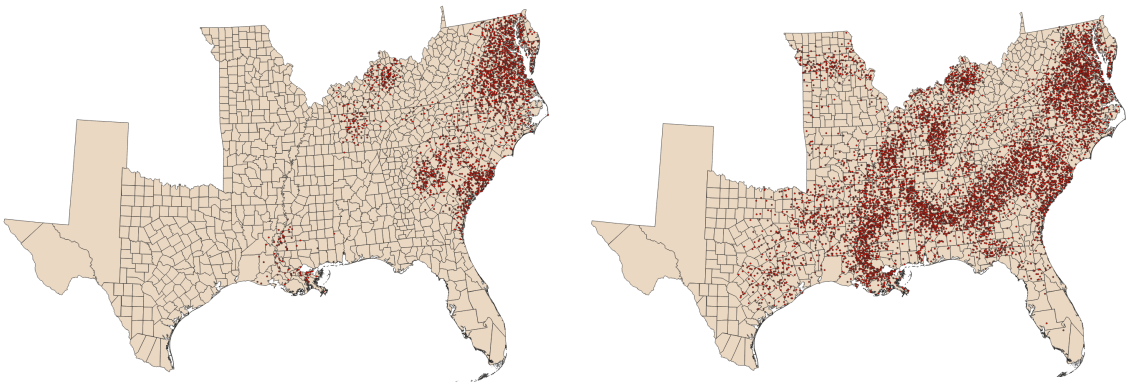
Note: Average share of slaves at the state level by year. Manson et al. (2018), Haines and ICPSR (2010)

Figure 3: Westward Expansion



Note: Red counties represents counties with a population density higher then 2 individuals per Km^2. Grey counties are counties belonging to the US Slaves State in 1860. *Source:* Manson et al. (2018), Haines and ICPSR (2010)

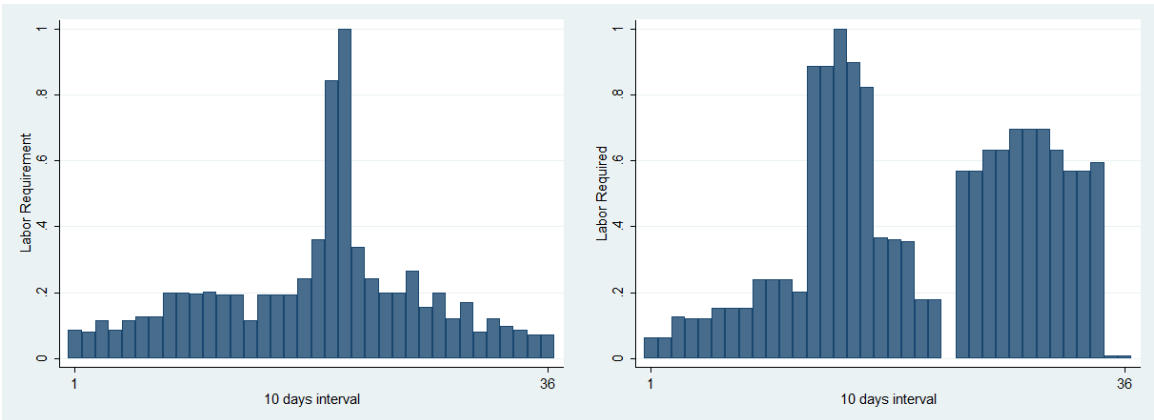
Figure 5: Slave Relocation



(a) 1810 (b) 1860

Note: Panel (a) represents the distribution of slaves in 1810, panel (b) the distribution of slaves in 1860. Each dot corresponds to 500 slaves. The counties represented are those counties belonging to a Slave State in 1860. *Source: Manson et al. (2018), Haines and ICPSR (2010)*

Figure 7: Seasonality of Labor Requirement

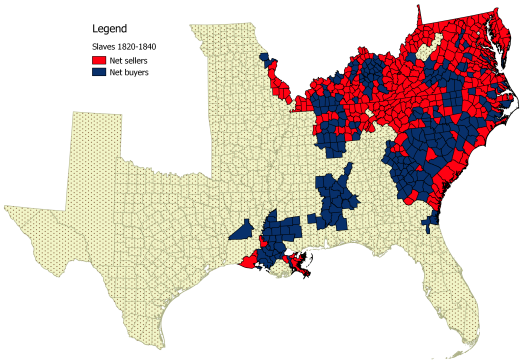


(a) Wheat Labor Requirement (b) Cotton Labor Requirement

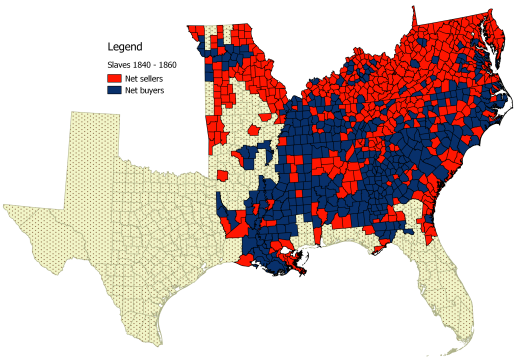
The Figure represents the seasonality of labor requirement for wheat and cotton in the case of Washington and Georgia respectively as reported by the US Department of Agriculture in 1919. *Source: Yearbook of the Department of Agriculture, 1917 p. 545-46. in Wright (2006).*

Figure 9: Agricultural Transformation and Slave Labor Adjustment

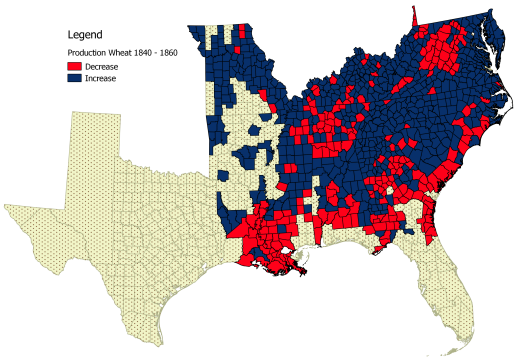
(a) Slave Labor 1820 - 1840



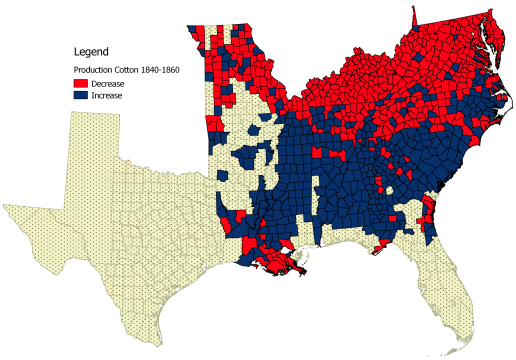
(b) Slave Labor 1840 - 1860



(c) Wheat Change 1840 - 1860

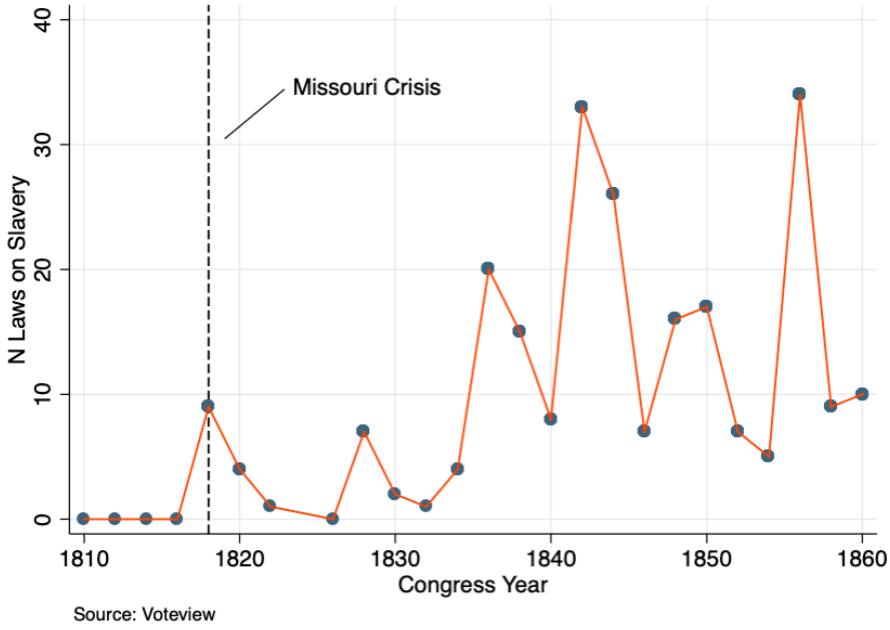


(d) Cotton Change 1840 - 1860



Changes in production and slave labor allocation. Panel (a) represents in redo counties which decreased the number of slaves between 1820 and 1840 in counties with population density higher than 2 in 1820. Changes are net of the slave population growth. Panel (b) represents the same for the period 1840-1860. Panel (c) and (d) show respectively the change in production of wheat and cotton between 1840-1860 in counties with population density higher than 2 in 1840. Red counties decreased production while blue counties increased. *Source: Manson et al. (2018), Haines and ICPSR (2010)*

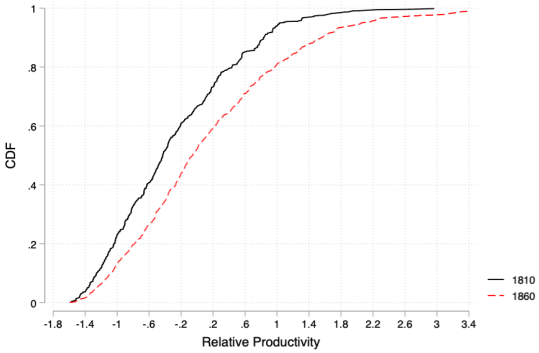
Figure 11: Political Debate on Slavery



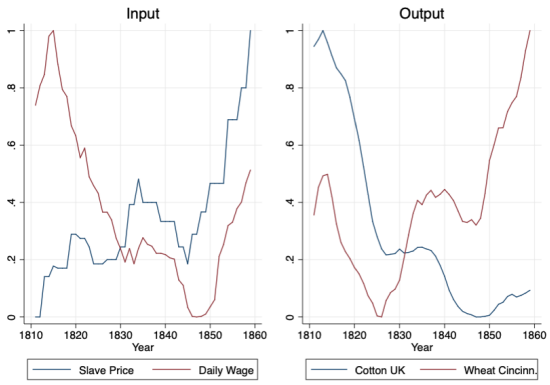
Number of laws about slavery discussed in Congress per year. Dashed line represents the Missouri crises. *Source: Lewis et al. (2019)*

Figure 12: Productivity and Price Changes

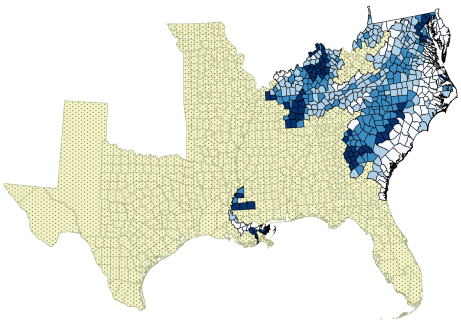
(a) Cumulative Distribution



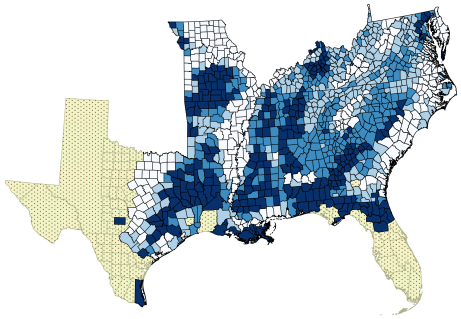
(b) Prices Evolution



(c) Relative Productivity in 1810



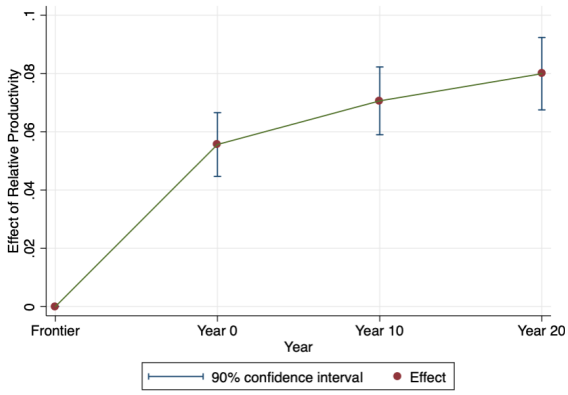
(d) Relative Productivity in 1860



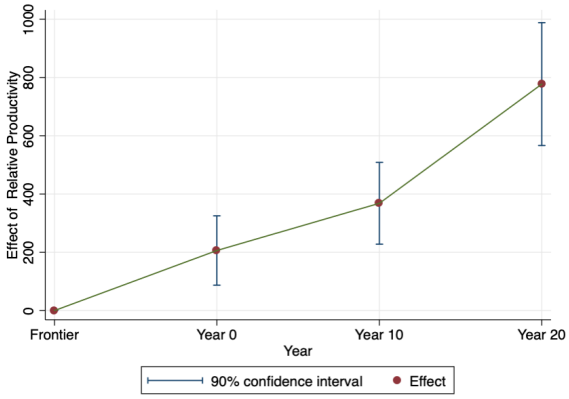
Panel (a) shows the shift of the CDF of $Z_i = \frac{A^{slave}}{A^{wheat}}$ from 1810 to 1860. Black line plots the C.d.f. in 1810, the red line the C.d.f. in 1860. Panel (b) shows the evolution of prices. The left table reports the moving average of slave prices and daily wages. Right table shows the moving average of UK cotton prices and Wheat Cincinnati prices. 0 is set to match the minimum and 1 the maximum of each price. Panel (c) and (d) shows the distribution of Z_i. Darkest counties are the highest quartile, lightest the lowest. Panel (d) shows the distribution for counties with population higher than 2 person per Km^2 in 1860. Panel (c) shows the same distribution but only for counties with population higher than 2 person per Km^2 in 1810.

Figure 14: New Counties

(a) Percentage of Slaves



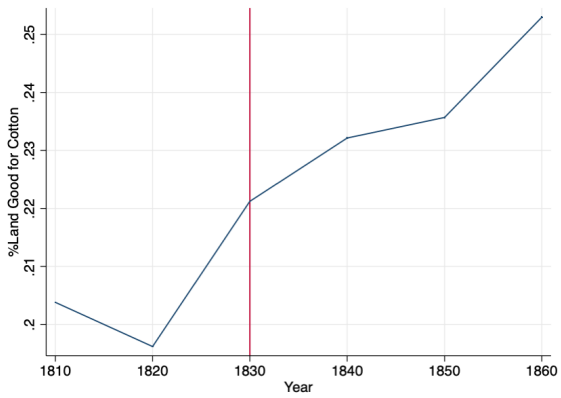
(b) Number of Slaves



The figure plots the coefficients of the effect of relative productivity on the share of slave (a) and number of slaves (b) over time. Counties at the frontier have a density inferior to 2 individuals per Km^2. Year 0 captures after leaving the frontier status. Regression includes regional trends and trends varying with the distance to the North (Mason-Dixon line).

Figure 16: Time variation

(a) Cotton



(b) Tobacco

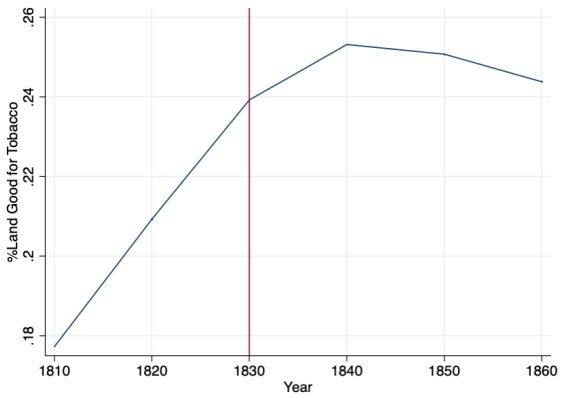
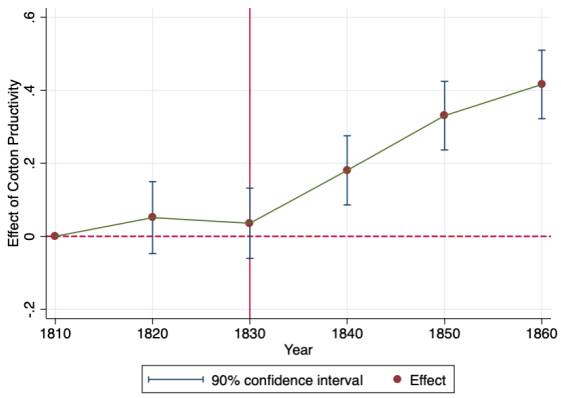


Figure 18: Timing effect

(a) Cotton



(b) Tobacco

Figure 20: Swithcers

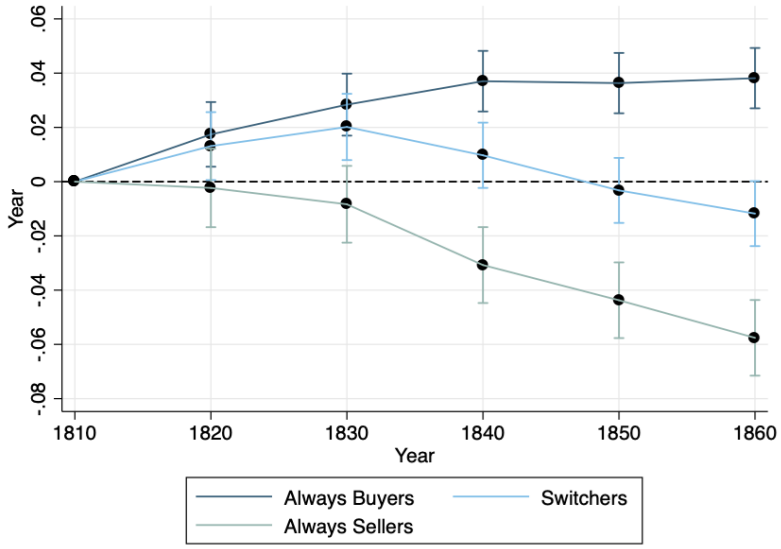
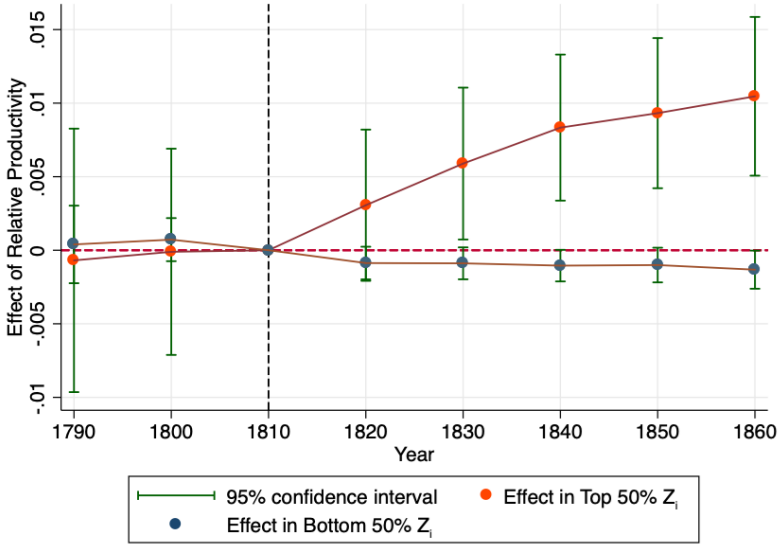


Figure 21: Parallel Trends



A note

Figure 23: Marginal Effect on Share of Slaves

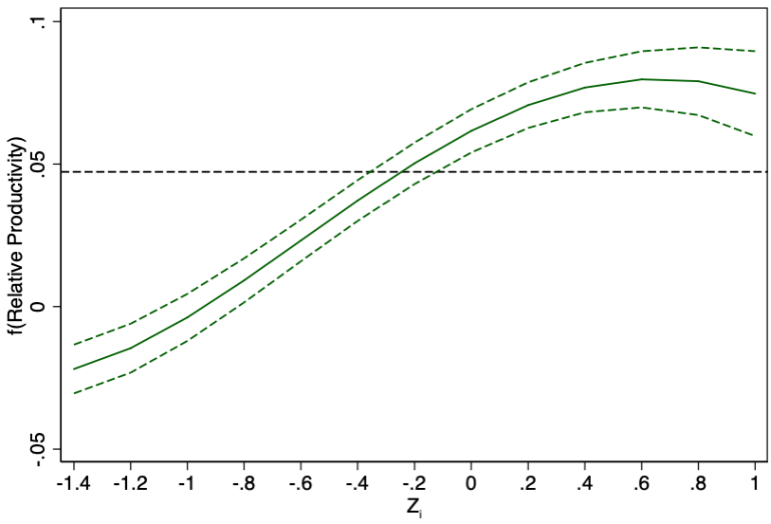


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Figure 25: Marginal Effect Conditional on Wheat

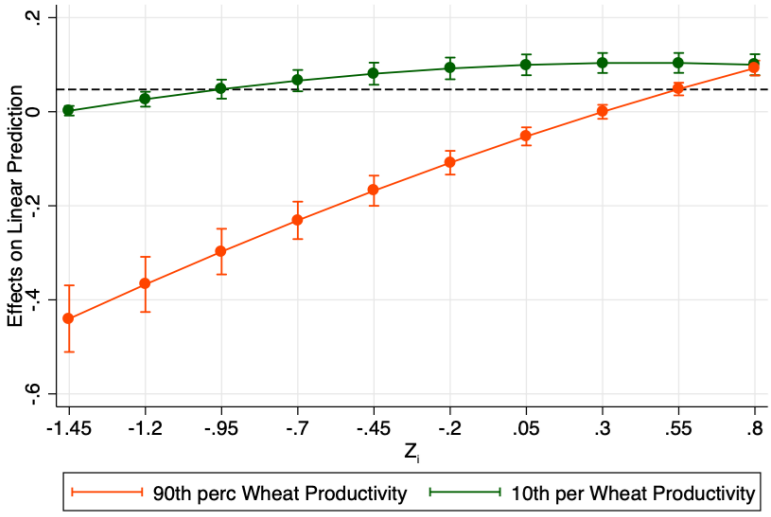

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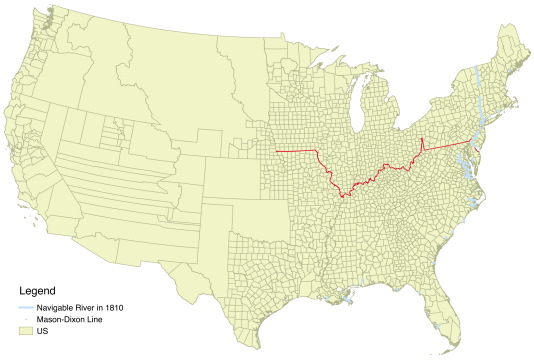
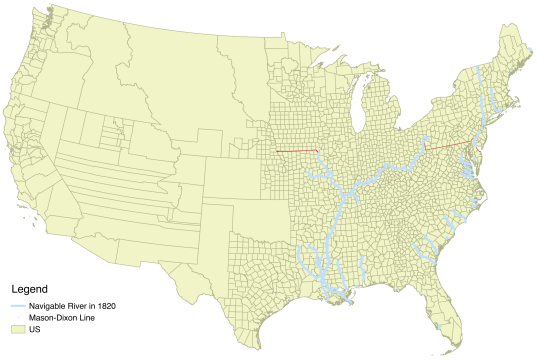
Figure 27: Navigable Rivers Expansion

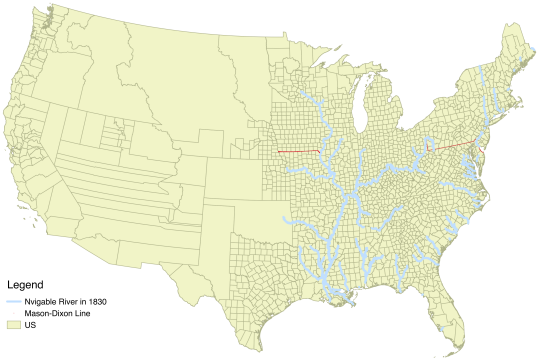
(a) 1810



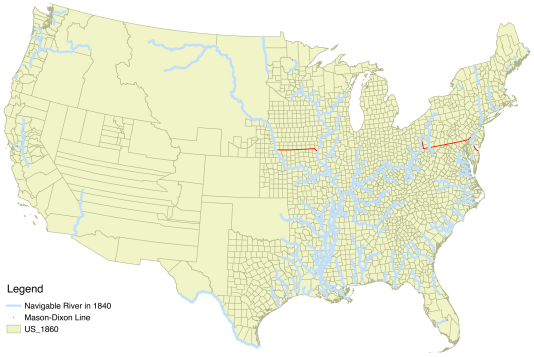
(b) 1820



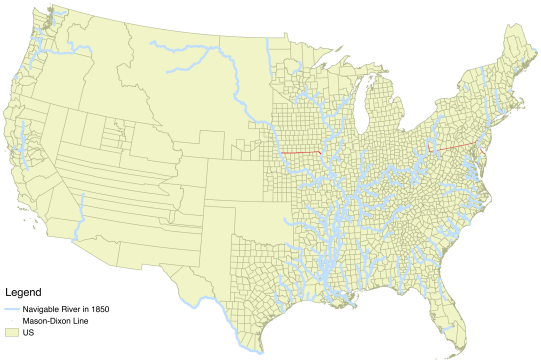
(c) 1830



(d) 1840



(e) 1850



(f) 1860

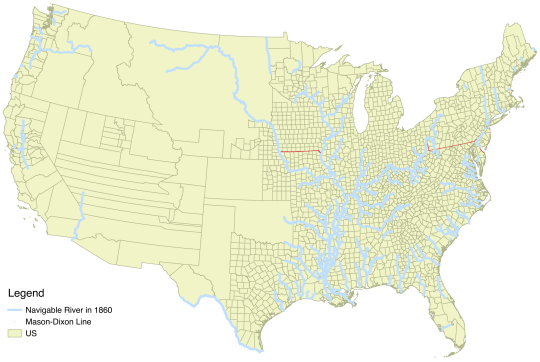
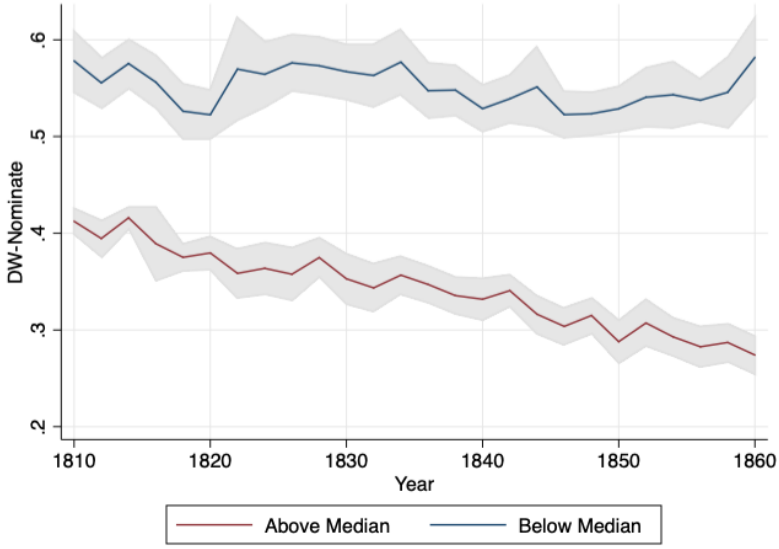
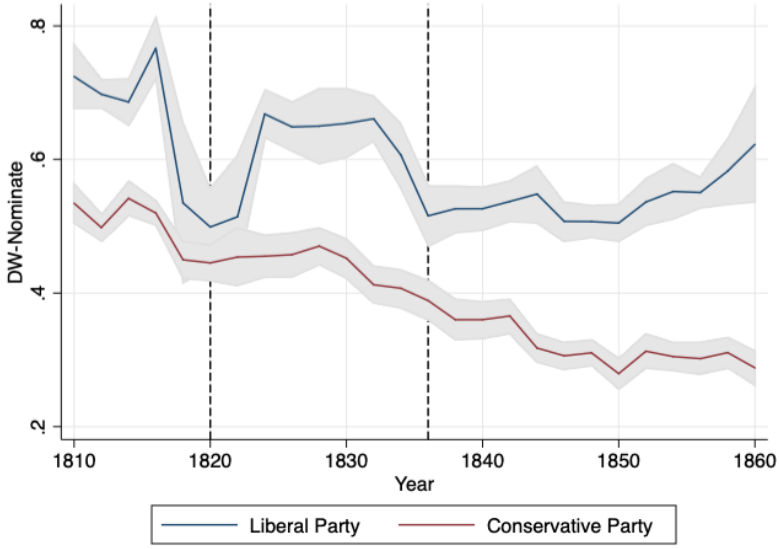


Figure 29: Southern Politics Polarization



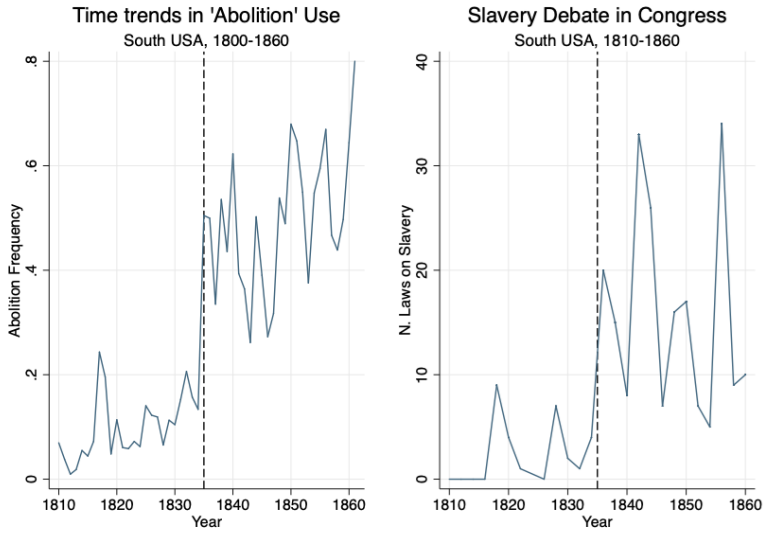
A note

Figure 31: Southern Politics Polarization



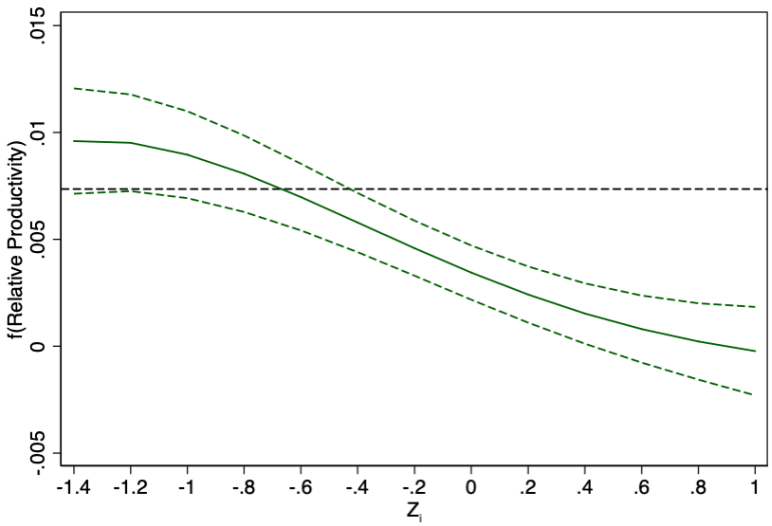
The graph display the evolution of the average nominate score computed for two groups of congressmen: above and below the median (over the entire period). The graph clearly shows an increase in polarization with the more liberal congressmen maintaining a relatively stable average score, while the more conservative ones moving toward a more conservative position. The conservative group saw a decrease in the average score of more than 10 pp. between 1810 and 1860. The shaded areas report 95% confidence intervals, computed with robust Standard Errors.

Figure 33: Slavery Debate



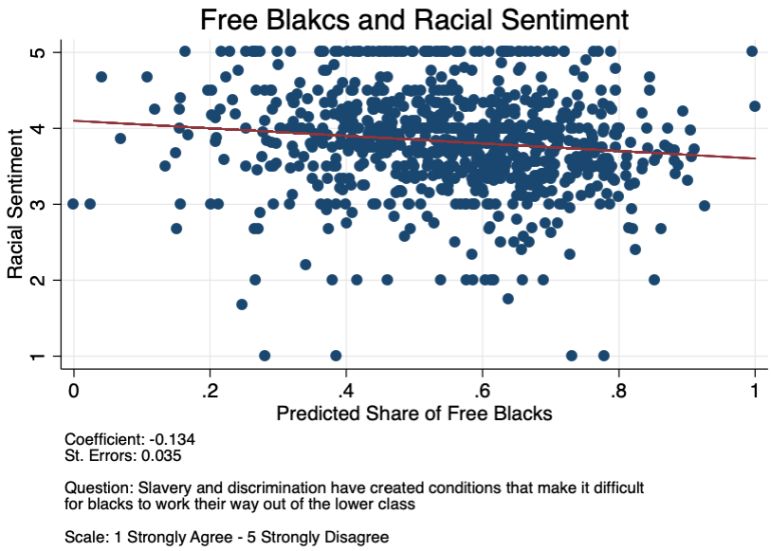
A note

Figure 35: Marginal Effect on Share of Free Blacks



A note

Figure 37: Racial Sentiment



A note

Figure 39: Fertility Rate

A note

References

Acemoglu, D., C. Garcia-Jimeno, and J. A. Robinson (2012): "Finding Eldorado: Slavery and long-run development in Colombia," *Journal of Comparative Economics*, 40, 534–564.

Acemoglu, D., S. Johnson, and J. a. Robinson (2001): "The Colonial Origins of Comparative Development: An Empirical Investigation," *The American Economic Review*, 91, 1369–1401.

Acemoglu, D. and A. Woitzky (2011): "The Economics of Labor Coercion," *Econometrica*, 79, 555–600.

Acharya, A., M. Blackwell, and M. Sen (2016): "The Political Legacy of American Slavery," *The Journal of Politics*, 78, 621–641.

Adams, D. R. J. (1992): "Prices and Wages in Antebellum America: The West Virginia Experience," *The Journal of Economic History*, 52, 206–216.

Akerlof, G. A. and W. T. Dickens (1982): "The Economic Consequences of Cognitive Dissonance," *The American Economic Review*, 72, 307–319.

Alesina, A., P. Giuliano, and N. Nunn (2013): "On the Origins of Gender Roles: Womenand the Plough," *The Quarterly Journal of Economics*, 128, 469–530.

Anderson, R. V. and R. E. Gallman (1977): "Slaves as Fixed Capital : Slave Labor and Southern Economic Development," *The Journal of American History*, 64, 24–46.

Atack, J. (2017): "Historical Geographic Information Systems (GIS) database of Nineteenth Century U.S. Canals," .

Autor, D., D. Dorn, G. Hanson, and K. Majlesi (2017): "Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure," *Working Paper*.

Baiardi, A. (2018): "The Persistent Effect of Gender Division of Labour: African American Women After Slavery," *Working Paper*.

Bazzi, S., M. Fiszbein, and M. Gebresilasse (2017): "Frontier Culture: the Roots and Persistence of "Rugged Individualism" in the United States," .

Bénabou, R. (2013): "Groupthink : Collective Delusions in Organizations and Markets," *Review of Economic Studies*, 80, 429–462.

Bénabou, R. and J. Tirole (2002): "Self-confidence and personal motivation," *The Quarterly Journal of Economics*, 117, 871–915.

Benabou, R. and J. Tirole (2006): "Belief in a just world and redistributive politics," *Quarterly Journal of Economics*, 121, 699 – 746.

Bénabou, R. and J. Tirole (2016): "Mindful Economics: The Production, Consumption, and Value of Beliefs," *Journal of Economic Perspectives*, 30, 141–164.

Berlin, I. (1974): *Slaves without Masters: The free negro in the antebellum south*, Oxford University Press.

Bertocchi, G. and A. Dimico (2014): "Slavery, education, and inequality," *European Economic Review*, 70, 197–209.

——— (2019): "Bitter Sugar: Slavery and the Black Family," *Working Paper*.

Bisin, A. and T. Verdier (2001): "The Economics of Cultural Transmission and the Dynamics of Preferences," *Journal of Economic Theory*, 97, 298–319.

Bobonis, G. J. and P. M. Morrow (2014): "Labor coercion and the accumulation of human capital," *Journal of Development Economics*, 108, 32–53.

Bowles, S. (1998): "Endogenous Preferences : The Cultural Consequences of Markets other and Economic Institutions," *Journal of Economic Literature*, 36, 75–111.

Boyd, R. and P. J. Richerson (1985): *Culture and the Evolutionary Process*, Chicago, IL: The University of Chicago Press.

Budros, A. (2004): "Social Shocks and Slave Social Mobility: Manumission in Brunswick County, Virginia, 1782–1862," *The American Journal of Sociology*, 110, 539–579.

——— (2005): "The Antislavery Movement in Early America: Religion, Social Environment and Slave Manumissions," *Social Forces*, 84, 941–966.

Buggle, J. C. and S. Nafziger (2018): "The Slow Road from Serfdom: Labor Coercion and Long-Run Development in the Former Russian Empire," *Working Paper*.

Bustos, P., B. Caprettini, and J. Ponticelli (2016): "Agricultural productivity and structural transformation: Evidence from Brazil," *American Economic Review*, 106, 1320–1365.

Caicedo, F. V. (2015): "The Mission : Human Capital Transmission , Economic Persistence and Culture in South America This article examines the long-term consequences of a historical human capital intervention . The Jesuit order founded religious missions amongst the Guarani , ," .

Calomiris, C. W. and J. Pritchett (2016): "Betting on secession: Quantifying political events surrounding slavery and the civil war," *American Economic Review*, 106, 1–23.

Chacón, M. L. and J. Jensen (2019): "The Political and Economic Geography of Southern," *Working Paper*.

Clark, G. (2005): "The Condition of the Working Class in England , 1209 – 2004 The Condition of the Working Class in England," *Journal of Political Economy*, 113, 1307–1340.

Cole, A. H. (1938): *Wholesale Commodity Prices in the United States, 1700-1861*, Harvard University Press.

Conrad, A. H. and J. R. Meyer (1958): "The Economics of Slavery in the Ante Bellum South," *Journal of Political Economy*, 66, 95–130.

Cooper, W. J. (1978): *The South and the Politics of Slavery 1828-1856*, Baton Rouge and London: Louisiana State University Press.

Costinot, A. and D. Donaldson (2012): "Ricardo's Theory of Comparative Advantage: Old Idea, New Evidence," *American Economic Review: Papers and Proceedings*, 102, 453–458.

Crofts, D. (1989): *Reluctant Confederates: upper South unionists in the secession crisis*, The University of North Carolina Press.

David, P. A. and P. Temin (1979): "Explaining the Relative Efficiency of Slave Agriculture in the Antebellum South: Comment," *The American Economic Review*, 69, 213–218.

Dell, M. (2010): "The Persistent Effects of Peru's Mining Mita," *Econometrica*, 78, 1863–1903.

Dew, C. B. (1970): "Who Won the Secession Election in Louisiana?" *Southern Historical Association*, 36, 18–32.

Di Tella, R., S. Galiani, and E. Schargrodsky (2007): "The formation of beliefs: evidence from the allocation of land titles to squatters," *The Quarterly Journal of Economics*, 1, 209–241.

Di Tella, R., R. Perez-Truglia, A. Babino, and M. Sigman (2015a): "Conveniently Upset: Avoiding Altruism by Distorting Beliefs about Others' Altruism," *The American Economic Review*, 105, 3416–3442.

——— (2015b): "Conveniently Upset: Avoiding Altruism by Distorting Beliefs about Others' Altruism," *The American Economic Review*, 105, 3416–3442.

Doepke, M. and F. Zilibotti (2008): "Occupational Choice and the Spirit of Capitalism," *Quarterly Journal of Economics*, 1, 747–793.

Earle, C. V. . (1978): "A Staple Interpretation of Slavery and Free Labor," *Geographical Review*, 68, 51–65.

Esposito, E. (2018): "Side Effects of Immunities : African Slavery in the US South," .

Fenoaltea, S. (1984): "Slavery and Supervision in Comparaitive Perspective: A Model," *The Journal of Economic History*, 44, 635–668.

Fernández, R., A. Fogli, and C. Olivetti (2004): "Mothers and sons: preference formation and female labor force dynamics," *The Quarterly Journal of Economics*, 119, 1249–1299.

Festinger, L. (1957): *Theory Cognitive Dissonance*, Standford University Press.

Fischer, G., H. Van Velthuizen, M. Shah, and F. Nachtergaele (2002): "Global agro-ecological assessment for agriculture in the 21st century: methodology and results," .

Fiszbein, M. (2016): "Agricultural Diversity, Structural Change and Long-run Development: Evidence from US Counties," *Working Paper*.

Fogel, R. (1989): *Without Consent or Contract: The Rise and fall of American Slavery* , New York: W.W. Norton & Co.

Fogel, R. W. and S. L. Engerman (1974): *Time on the Cross: The Economics of American Negro Slavery*, Little, Brown and Company.

——— (1977): "Explaining the Relative Efficiency of Slavery," *The American Economic Review*, 67, 275–296.

——— (1980): "Explaining the Relative Efficiency of Slave Agriculture in the Antebellum South: Reply," *The American Economic Review*, 70, 672–690.

Foust, J. D. (1967): "The Yeoman Farmer and Westward Expansion of U. S. Cotton Production," *The Journal of Economic History*, 27, 611–614.

Fox-Genovese, E. and E. D. Genovese (2008): *Slavery in White and Black*, Cambridge: Cambridge University Press.

Friedman, G. and R. L. Manning (1992): "The Rent and Hire of Slaves," in *Without Consent or Contract: The Rise and Fall of American Slavery - Evidence and Methods*, ed. by R. W. Fogel, R. A. Galantine, and R. L. Manning, New York: W. W. Norton & Co., 129–158.

Gale (2019): "19th Century U.S. Newspapers Database," .

Galenson, D. W. (1984): "The Rise and Fall of Indentured Servitude in the Americas: An Economic Analysis," *The Journal of Economic History*, 44.

Genovese, E. D. (1975): "Yeomen Farmers in a Slaveholders ' Democracy," *Agricultura*, 49, 331–342.

——— (1989): *The political economy of slavery : studies in the economy & society of the slave South*, Wesleyan University Press.

——— (1996): *The Political Economy of Slavery: Studies in the Economy & Society of the Slave Sout*, New York: Pantheon Books.

Gentzkow, M., E. L. Glaeser, and C. Goldin (2006): "The Rise Of The Fourth Estate: How Nespapers Became Informtive and Why it Mattered," in *Corruption and Reform*, University Of Chicago Press, 187–230.

Gentzkow, M. and J. M. Shapiro (2010): "What drives media slant? evidence from U.S. daily newspapers," *Econometrica*, 78, 35–71.

Goldin, C. (1976): *Urban Slavery in the American South, 1820-1860: A Quantitative History*, University of Chicago Press.

González, F., G. Marshall, and S. Naidu (2017): "Start-up Nation? Slave Wealth and Entrepreneurship in Civil War Maryland," *Journal of Economic History*, 77, 373–405.

Greenwood, J., J. Fernández-Villaverde, and N. Guner (2014): "From Shame to Game in One Hundred Years: an Economic Model of the Rise in Premarital Sex and its De-Stigmatization," *Journal of the European Economic Association*, 12, 25–61.

Grosjean, P. and R. Khattar (2019): "It's Raining Men! Hallelujah? The Long-Run Consequences of Male-Biased Sex Ratios," *Review of Economic Studies*, 86, 723–754.

Haines, M. R. and ICPSR (2010): "Historical, Demographic, Economic, and Social Data: The United States, 1790-2002. ICPSR02896-v3." *Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].*

Hall, A. B., C. Huff, and S. Kuriwaki (2019): "Wealth, Slaveownership, and Fighting for the Confederacy: An Empirical Study of the American Civil War," *American Political Science Review*, 113, 658–673.

Hammond, J. L. . (1974): "Revival Religion and Antislavery Politics," *American Sociological Review*, 39, 175–186.

Hanes, C. (1996): "Turnover Cost and the Distribution of Slave Labor in Anglo-America," *The Journal of Economic History*, 56, 307–329.

Haskell, T. (1979): "Explaining the Relative Efficiency of Slave Agriculture in the Antebellum South : A Reply to Fogel-Engerman," 69, 206–207.

Hirschman, A. O. (1965): "Obstacles To Development: A Classification and a Quasi-Vanishing Act," *Economic Development and Cultural Change*, 13, 385–393.

Hornbeck, R. (2010): "Barbed Wire: Property Rights and Agricultural Development," *Quarterly Journal of Economics*, 125, 767–810.

ICPSR (1999): "United States Historical Election Returns, 1824-1968," *Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor],.*

Irwin, J. (1988): "Exploring the Affinity of Wheat and Slavery in the Virginia Piedmont'," *Explorations in Econopmic History.*

Jaeger, D. A., J. Ruist, and J. Stuhler (2017): "Shift-Share Instruments and the Impact of Immigration," *NBER Working Paper Series*, 55.

Jung, Y. (2019): "How the Legacy of Slavery Survives : Labor Market Institutions and Demand for Human Capital," *Working Paper.*

King, M. D. and H. A. Haveman (2008): "Antislavery in America : The Press , the Pulpit , and the Rise of Antislavery Societies," *Administrative Science Quarterly*, 53, 492–528.

Konow, J. (2000): "Fair Shares: Accountability and Cognitive Dissonance in Allocation Decisions," *The American Economic Review*, 90, 1072–1091.

Kuran, T. (1993): "Rationality and Society," *Rationality and Society*, 5, 473–505.

Kuriwaki, S. (2018): "Cumulative CCES Common Content (2006-2018)," .

Lewis, J. B., K. Poole, H. Rosenthal, A. Boche, A. Rudkin, and L. Sonnet (2019): "Voteview: Congressional Roll-Call Votes Database," .

Manson, S., J. Schroeder, D. Van Riper, and S. Ruggles (2018): "IPUMS National Historical Geographic Information System: Version 13.0 [Database]," *Minneapolis: University of Minnesota.*

Markevich, B. A. and E. Zhuravskaya (2018): "The Economic Effects of the Abolition of Serfdom: Evidence from the Russian Empire," *American Economic Review*, 108, 1074–1117.

Mason, M. (2006): *Slavery and Politics in the Early American Republic*, The University of North Caroline Press.

McCarty, N., K. T. Poole, and H. Rosenthal (2006): *Polarized America : The Dance of Ideology and Unequal Riches*, MIT Press.

North, D. C. (1961): *The Economic Growth in the US 1790 - 1860*, Prentice-Hall.

——— (1990): *Institutions, Institutional Change and Economic Performance*, Cambridge, MA: Cambridge University Press.

Nunn, N. (2008): "Slavery, Inequality, and Economic Development in the Americas: An Examination of the Engerman-Sokoloff Hypothesis," *Institutions and Economic Performance*, 148–180.

Nunn, N. and L. Wantchekon (2011): "The slave trade and the origins of Mistrust in Africa," *American Economic Review*, 101, 3221–3252.

Pargas, D. A. (2006): "WORK AND SLAVE FAMILY LIFE IN ANTEBELLUM NORTHERN VIRGINIA," *Journal of Family History*, 31, 335–357.

——— (2011): "From the Cradle to the Fields : Slave Childcare and Childhood in the Antebellum South," *Slavery & Abolition*, 32, 477–493.

Pasley, J. L. (2002): *The tyranny of printers: Newspaper politics in the early American republic*, University Press of Virginia.

Patterson, O. (1982): *Slavery and Social Death*, Cambridge, MA and London, En: Harvard University Press.

Phillips, U. B. . (1905): "The Economic Cost of Slaveholding in the Cotton Belt Author," *Political Science Quarterly*, 20, 257–275.

Poole, K. T. . and H. Rosenthal (1985): "A Spatial Model for Legislative Roll Call Analysis," *American Journal of Political Science*, 29, 357–384.

Pritchett, J. B. (2001): "Quantitative Estimates of the United States Interregional Slave Trade , 1820-1860," *The Journal of Economic History*, 61, 467–475.

Rabin, M. (1994): "Cognitive dissonance and social change," *Journal of Economic Behavior and Organization*, 23, 177–194.

Rainwater, P. L. (1938): *Mississipi storm center for secession, 1856-1861*, Baton Rouge: O. Claitor.

Schaefer, D. F. (1985): "A Statistical Profile of Frontier and New South Migration: 1850-1860," *Agricultural History*, 59, 563–578.

Schaefer, D. F. and M. D. Schmitz (1979): "The Relative Efficiency of Slave Agriculture: A Comment," *The American Economic Review*, 69, 208–212.

Smith, W. R. (1861): *The History and Debates of the Convention of The People of Alabama*, Montgomery, Al.: White, Pfister Co.

Sokoloff, K. L. and S. L. Engerman (2000): "History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World," *Journal of Economic Perspectives*, 14, 217–232.

Song, B. K. (2016): "Newspaper Market Structure and Behavior: Partisan Coverage of Political Scandals in the United States from 1870 to 1910," 78.

Stampp, K. M. . (1943): "The Fate of the Southern Antislavery Movement," *The Journal of Negro History*, 28, 10–22.

Steckel, R. H. and N. Ziebarth (2013): "A troublesome statistic: Traders and coastal shipments in the westward movement of slaves," *Journal of Economic History*, 73, 792–809.

Tabellini, M. (2018): "Gifts of the Immigrants , Woes of the Natives : Lessons from the Age of Mass Migration," .

Tadman, M. (1989): *Speculators And Slaves: Masters, Traders, And Slaves In The Old South*, The University of Wisconsin Press.

Timmons, J. T. (1973): "The Referendum in Texas on the Ordinance of Secession , February 23 , 1861 : The Vote," *East Texas Historical Journal*, 11, 11–28.

Turner, F. J. (1920): *The Frontier in American History*, The Significance of Sections in American History.

Weiss, T. J. (1992): *U. S. Labor Force Estimates and Economic Growth, 1800-1860*, University of Chicago Press.

Wooster, R. (1954): "The Arkansas Secession Convention," *The Arkansas Historical Quarterly*, 13, 172–195.

——— (1956): "The Georgia Secession Convention," *The Georgia Historical Quarterly*, 40, 21–55.

——— (1958): "The Florida Secession Convention," *The Florida Historical Quarterly*, 36, 373–385.

Wright, G. (1975a): "Cotton , Corn and Risk in the Nineteenthand," *The Journal of Economic History*, 35, 526–551.

——— (1975b): "Slavery and the Cotton Boom," *Explorations in Econopmic History*, 12, 439–451.

——— (1978): *The Political Economy of the Cotton South*, Norton.

——— (1979): "The efficiency of slavery: another interpretation," *American Economic Review*, 69, 219–226.

——— (2003): "Slavery and the American Agricultural History," .

——— (2006): *Slavery and American economic development*, Louisiana State University Press.

Yasuba, Y. (1961): "The Profitability and Viability of Plantation Slavery in the United States," *The Economic Studies Quarterly*, 12, 60–67.

A Appendix

A.1 Secession Conventions Votes

For the states of Georgia, Alabama, we compute the share of votes in favor of secession as the share of delegates voting in favor of secession. For the state of Arkansas, because the secession ordinance was voted only at war already started, we follow Wooster (1956) and study the voting for the Hanly Motion. Thomas B. Hanly proposed an ordinance of secession to go into effect only when ratified by the people of the state in a popular vote. We consider the vote in favor of the Hanly's motion as a vote held by the cooperativist and rejected by the immediate secessionist. Also in the case of Florida we follow Wooster (1958). We uses the Allison motion to distinguish between the cooperativist and the secessionist. The Allison motion, similarly to the Hanly motion, proposed that the secession ordinance proposed by the committee should not take effect until Georgia and Alabama had seceded. The immediate secessionists would vote against the amendment. For Louisiana we obtained the returns of the election of convention delegates from Dew (1970). The candidates were running either as cooperativists or as secessionist. We compute the share of the votes in favor of the secessionist. As for Louisiana, in the case of Mississippi, we use the return from the elections of the convention delegates and compute the share of votes for the secessionist candidates. The information are taken from Rainwater (1938).

A.2 Pro-slavery Votes Coding

A.3 Ideology and Newspaper Behavior

A.4 Crops Seasonality and Slave Labor

A.4.1 Fairfax County - Virginia

Pargas (2006) analyses the economy of the Fairfax County in its transformation from a Tobacco producing county to a Wheat producing one.

The author describes in this way the labor patterns in tobacco cultivation.

> For eighteenth-century slaves employed in the cultivation of Tobacco, work began in January, when new land and old beds were cleared or burned and the soil was prepared for early planting. Between the end of February and beginning of March, field hands began to carefully sow tobacco seeds in specially prepared beds of mulch. This was an extremely fragile stage, as a late frost could kill the young seedlings. Consequently, slaves were required to make certain that the seedlings remained cov- ered with leaves to protect them from the cold. By the beginning of April, transplant- ing could begin, and slaves'work became steadily more demanding. New fields had to be prepared to receive the young tobacco plants. Field hands were required during this stage not only to clear old or new fields but also, with their hoes, to make thousands of small hills into

which the tobacco plants would be transplanted. Most hands were expected to make at least 350 hills a day. During the summer months, slaves were kept busy weeding, transplanting, and replant- ing tobacco plants. They also rid the fragile tobacco leaves of ravishing caterpillars—a seemingly endless task. By the end of August, the hoes were laid by and the firsttobacco plants were ready for harvesting. Determining the ripeness of Tobacco was no simple matter because not all tobacco plants ripened at the same time. Consequently, the harvest was dragged out and often lasted from August through September and into early October. Once harvested, slaves hung the cut Tobacco from the rafters in the tobacco house, allowing the leaves to fully dry before stripping them from the stalks and individually rolling and packing them into hogsheads. These tasks were tedious and required long hours, patience, careful handling, and close supervision, as the tobacco plants remained delicate and fragile, even after the harvest. Packing the leaves too tight or not drying them sufficiently could ruin the value of the crop. Moreover, the leaves still had to be protected from the weather as well as pests such as caterpillars, worms, and insects. While the harvest was usually finished by October, tasks such as drying, stripping, and packing kept most hands busy through December, after which the cycle repeated itself.

Wheat

The antebellum farm journal of David Wilson Scott, a Fairfax County slaveholder, offers insight into the local cultivation of grains. The agricultural calendar for Scott's workforce began not in January, as it did on tobacco plantations, but rather in the late summer or early autumn, when the winter crops — Wheat and rye —— were planted. In the year 1819, field hands on Scott's farm began early, on August 31, to prepare the fields for wheat planting by ploughing and hoeing for just more than a month. On October 2, field hands began to sow, plough, and harrow in a total of fifty-five bushels of Wheat on different lots throughout the estate, a labor-intensive task that kept them busy until the 25th. Between October 24 and November 2, hands were employed sowing approximately twenty bushels of rye. During the remainder of the month of November and into the first week of December, David Wilson Scott's field hands harvested and stored the corn that they had planted in the spring. They also fertilized the recently planted wheat fields by sowing in plaster. The winter months ushered in a relatively slow period in the agricultural calendar. Slaves were put to task grinding corn and Wheat in the mill, chopping wood, repairing fences, building stalls for the livestock, slaughtering hogs, and smoking and preparing almost two thousand pounds of pork. By the beginning of February, slaves began to plant again, this time in the farm's communal vegetable garden. Potatoes, peas, lettuce, and cabbage were planted, as well as a number of fruit trees, mostly peach and apple. At the same time, other field hands were employed ploughing and preparing the soil for the planting of the summer crops, corn and oats.

From April 2 to April 15, several bushels of oats were planted in the fields, as well as a number of carrots, parsnips, beets, and pumpkins in the vegetable garden. From April 15 on, almost all hands were employed planting corn, a labor-intensive occupation requiring field hands to make thousands of small hills with their hoes to receive the corn seeds. Even Saturdays offered little respite from corn planting. On Saturday, April 24, 1819, Scott proudly recorded in his diary that his hands had "planted about 19,000 Corn hills which was all the ground on the W[est] side of the road." Corn planting lasted until May 7, after which slaves were continually employed ploughing and hoeing the cornfields, hoes following the ploughs. The cornfields were fully ploughed and hoed at least three times—the only break from this routine came on June 7, when a number of hands were employed shearing Scott's twenty-nine sheep and three lambs. One bondsman, Jim, was put to work hilling up potatoes in the vegetable garden on different dates in June. The first winter crops were ready to be harvested by the end of June, ushering in the most labor-intensive season in the agricultural calendar. First the rye was harvested, then the Wheat. This was accomplished by mowing the Wheat with scythes or reaping it with sickles, then raking, binding, and stacking. The Wheat was then brought to the barn where it was threshed, and the stalks left in the fields were cut for hay to be used as fodder for the livestock. While the wheat and rye harvest lasted only until the middle of July, tasks such as stacking, binding, threshing, and cutting hay kept enslaved people busy throughout the summer. In the meantime, the oats were harvested at the end of July, and during the month of November—after a new crop of Wheat had been planted—the planted—the corn was harvested, at which time the annual cycle began anew. As Fairfax County planters adopted a system of diversified agriculture at the turn of the nineteenth century, they in fact turned their traditionally monoculture plantations into mixed farms, and their slaves had little choice but to adapt and learn a number of new agricultural skills. They had to learn how to sow and harvest a variety of new crops, as well as tend to beasts of burden such as horses and oxen, which were used to plow the Wheat and cornfields. They also had to learn to use a number of different tools, such as scythes, sickles, plows, and carts. In the case of David Wilson Scott's field hands, they even had to learn how to shear sheep. Slaves in Fairfax County became jacks-of-all-trades, and it is no coincidence that they were often described as multiskilled farm laborers from an early age. Local newspapers advertised the sale or hire of slaves who could perform any number of different tasks. One typical advertisementt read, "To Hire ...a steady young NEGRO MAN, who has been accustomed to almost any kind of work." An enslaved man on Walney Plantation was responsible for no less than forty-two different tasks, "from mending roads and fences, to planting corn and shearing sheep.

The above description shows the high complexity involved in the organization of slave labor in grains and the level of differentiation of the production activities which was required to maintain

slaves occupied all the time. This complements the argument in section 3 showing that although grains and slavery are not incompatible, the use of slaves in grain production required, to fully recover the sunk costs, a high level of crop mixing which made slavery relatively more suited to the cultivation of Cotton, Tobacco, and Sugar.

Slaveholders, changing production activities, adjusted the stock of slaves required in agriculture. This is testified by the steady decline in the number of slaves in the Failfax County from 1810 to 1860. The number of slaves passed from 5942 in 1810 to 4673 in 1820, 4001 in 1830, 3453 in 1840, 3250, in 1850, and 3116 in 1860.

Pargas (2011) describes in the following way the decline of slavery in Falifax County.

> The new cash crops [Wheat] did not make many planters rich, however, and with time it became increasingly difficult for slaveholders to keep their account books in the black. One prominent local planter and heir to a long line of tobacco barons gave voice to a common sentiment among slaveholders throughout the region when he admitted in 1827 that: 'I am accounted one of the richest men in Virginia, yet I seldom have a dollar.' The fluctuating demand for Virginia wheat in Europe proved unreliable, and although the domestic market for grains remained relatively steady and exports to the Iberian Peninsula picked up during the 1830s, most northern Virginians were hard put to turn a profit throughout the first half of the nineteenth century. Continued low crop yields, soil depletion and the failure to employ progressive fertilizing techniques until the 1840s and 1850s exacerbated their economic woes. As a result, slaveholding size declined dramatically, as planters increasingly got rid of surplus slaves. The percentage of slaves living on plantations (holdings containing more than 20 slaves) was slashed from 42 percent to only 16 percent between 1810 and 1860, while the percentage of slaves living on farms (holdings containing 20 slaves or less) increased from 58 percent to fully 84 percent. Indeed, by the outbreak of the Civil War, a majority of slaves lived on tiny farms which contained less than 10 slaves. In absolute numbers, the Fairfax slave population was reduced by 47 percent in the antebellum period. Cross-plantation households became the norm among local slaves, as slaveholding size and the slave population dwindled.