Betting on Secession:
Quantifying Political Events Surrounding Slavery and the Civil War*

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> We've borne enough insults from the Yankees.
> We'll keep our slaves with or without their approval.
> 'Twas the sovereign right of Georgia to secede from the Union.
> The South must assert herself by force of arms. (Gerald O'Hara)
>
> I'm saying very plainly that the Yankees are better equipped than we. They've got factories, shipyards, coal-mines... and a fleet to bottle up our harbors and starve us to death. All we've got is cotton, and slaves and ...arrogance. (Rhett Butler)
>
> *Gone with the Wind* (1939 screenplay)

I. Introduction

The struggle between the Southern slave-based labor system and the Northern "free soil" movement produced bitter and violent conflict throughout the 1850s, which culminated in 1861 with Southern secession and four years of Civil War. The Civil War remains a puzzling event to historians, economists and political scientists. The Southern decision to secede is clearly traceable, at least in large part, to a political push by Southern slave owners, especially in the Deep South. There is no doubt that the key issue in the minds of the advocates of secession was the future of slavery. Secessionists saw the risk that President Lincoln and the newly resurgent Republican Party posed to maintaining slavery as a labor system in the existing South, and to being able to expand the reach of the slave labor system into new regions (e.g., the Western territories that had not yet become states, and possibly other areas, including Cuba). But if the goal of secession was preserving the slave system, then why would the South initiate a conflict that it could not win, that would prove so costly to it in lives and resources, and that would end in emancipation of its slaves?

If secession is to be understood as a rational decision, therefore, it must have been a miscalculation. But exactly what was it a miscalculation about? And at what point did the

miscalculation first become apparent? In this paper, we investigate those questions by examining the connections between political news related to slavery and the price of slaves during the five-year period leading up to the Civil War.

Our main contributions include the estimation of slave prices using high frequency sales data from New Orleans and the construction of counterfactual experiments in order to predict temporal price movement in the absence of political events prior to the Civil War. We show that slave prices fell prior to the war, and continued to fall once the war commenced. Our findings are robust under a number of different scenarios. The overall decline in slave prices was large (more than a third from their 1860 peak) and occurred prior to any battle losses by the South. We also find that this steep initial decline in slave prices was the same for all age and sex cohorts of slaves sold. Thus, the early sharp decline in slave prices should not be interpreted as reflecting the expectation of a likely emancipation of southern slaves without compensation to their owners. Instead, the decrease in slave prices seems to have reflected rising concerns by slaveholders regarding the costs of Lincoln's election and the coming Civil War on the economic future of the South and its slaveholders.

II. The Historical Context of Secession, and Other Political Events, 1857-1861

There is no reasonable doubt that the struggle over the future of slavery was central to the conflict between the North and South that culminated in the Civil War. Given the central role of slavery in the conflict that ultimately led to the Southern decision to secede from the Union, given the large proportion of Southern wealth that consisted of slaves, and given the central role that slave owners played in advocating secession, economic historians not surprisingly have

attempted to understand the Southern states' decisions to secede as strategic political choices. We emphasize the plural (choices) because the decisions were taken individually by the various Southern states, and this is likely an important detail, as we discuss further below.

According to this line of research, slave owners political actions sought to maximize the value of their wealth, and the political shifts that brought Lincoln to office led them to conclude that secession was the best means to maximize the value of slaves.[1] This perspective seems especially relevant for thinking about the states of the Deep South, which not coincidentally, displayed the greatest reliance on slave labor, and were the first to secede.[2]

It is harder, however, to explain precisely *why* secession was perceived as value maximizing by slave owners. Economic historians have pointed to two obvious possibilities: first, that Lincoln and his Republican party would have used their new political power to enact legislation contrary to slave owners' interests, which would have threatened the viability of slavery within the existing Southern states. Second, by working to overturn the Dred Scott Decision, Lincoln and his allies might constrain the growth of slavery beyond the existing boundaries of the slave states, thereby reducing the value of slaves by limiting the options for deploying them as laborers.

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[1] We will not review here the literature establishing that secession was motivated by concern related to slavery, which we regard as beyond reasonable doubt, based on the simple facts surrounding the secession decisions (that is, the debates and conflicts that preceded and coincided with secession). For background on the struggle over slavery, from the perspectives of the North, the South, and the West, see, for example, Stampp (1965), Fehrenbacher (1962), Dusinberre (1965), Gaeddert (1974), Wright (1978, Chapter 5), Fogel (1989), Zarefsky (1990), Freehling and Simpson (1992, 2010), and Basler (2001).

[2] Indeed, one can argue that states in the Upper South were pulled into the Civil War by the actions of the Deep South, despite their greater reluctance to secede. There is evidence that slave owners in the Deep South decided to secede unilaterally, in part, as a means of forcing the Upper South to choose between becoming part of the new Confederacy, or remaining in a Union that would be very hostile to slavery (Deyle, 2009)

Wright (1978) reviews both of these categories of economic arguments relating to secession, and considers the difficult economic calculations that are embedded within them. Although Wright is sympathetic to some aspects of the economic argument for secession, he shows how challenging it is to demonstrate the connection between the decisions to secede and an increase in the expected value of slaves. Wasn't it just as reasonable to presume that the status quo of slavery or its expansion into the West would be better served by the Southern states' remaining in the Union as a powerful force blocking abolition, higher tariffs and free soil land settlement legislation, or the appointment of judges and Supreme Court Justices that were hostile to the Dred Scott Decision? By leaving the Union, the South created a new Union, from which it was excluded, with a united and powerful supermajority in favor of precisely those policies. Why would an isolated and hostile Confederacy be able to defend itself against the much more populous North, and how would the South be able to successfully compete militarily and economically against the North to expand into the Western territories? Furthermore, the permanent status of the territories of greatest obvious value for the potential expansion of slavery had already been determined (or could have been predicted) by December 1860. Most importantly, Kansas was finally admitted to the Union as a free state in January 1861.

The best evidence in favor of the view that the maximization of slave wealth played an important role in the decisions to secede comes from the secession debates themselves. There is no doubt that the primary goal of the most vocal parties advocating secession was to preserve and increase the value of slave wealth. But that does *not* mean that secession reflected a *large expected gain* in slave values, nor does it mean that secession was regarded as a low-risk decision. Opponents of secession argued strongly for remaining in the Union as a better way to preserve slave wealth. Proponents and opponents of secession engaged in protracted debates

about the probabilities of various political scenarios. They disagreed about the probabilities to attach to prospective events, and those disagreements explain why the debates were so protracted. Participants considered a wide array of forward-looking possibilities about the economic consequences for slavery of secession, and both sides recognized substantial probabilities of loss from secession as well as gain. The debates were extremely sophisticated and balanced. Indeed, reading the speeches now, it is hard to come to the conclusion that there was an obvious economic case either for or against secession.[3]

The one thing that is clear from the debates is that slavery was perceived as being at risk, *whether or not the South seceded*.[4] Both sides recognized that the consequences of secession or remaining within the Union were highly uncertain, given Lincoln's electoral victory. There was no way to "play it safe." Indeed, we think that a balanced reading of the secession debates, and the process that ultimately led to secession suggests that the expected gains from seceding or non seceding were likely small (because there were many legitimate arguments pro and con secession), and because there were risks associated with either action.

Of course, in the event, the Civil War resulted in enormous loss of life, destruction of property, the subjugation of the South, and the emancipation of its slaves without compensation paid to southern slaveowners. As it turned out, southern slaveholders made a huge mistake seceding. But hindsight is twenty-twenty. The outcome of the Civil War was hard to predict. The

[3] Georgia and Virginia were particularly crucial cases in the sequence of seceding states, and in neither case could one say that secession was considered to be obviously in the interest of slave owners. See Freehling and Simpson (1992, 2010).

[4] Indeed, the evidence we report below of falling slave prices prior to the Civil War could be seen as indicative of an increase in the risk of future bad news for slaveholders, as well as a reflection of particular pieces of bad news.

massive battles and loss of lives were themselves something new. The costs incurred in the War far exceeded the fiscal expectations of either side at the time the War began.

Most importantly, at the time that the Southern states seceded, it was not obvious that the North would invade the South, nor was it obvious that a Civil War, if it occurred, would require such vast expenditures, nor was it obvious that the North would be able to muster the political will necessary to devote the resources and lives necessary to preserve the Union once the scale of those expenditures had become clear. Nor was it obvious that the North would emancipate southern slaves without compensating their owners. Thus, one cannot judge from the outcome of the Civil War whether the South's decision to secede was reasonably based on value maximization.

Does the fact that all the states in which large numbers of slaves resided voted for secession indicate that secession was a proverbial "no brainer"? Not at all. Georgia's vote in favor of secession was quite close (on January 19, 1861, the Georgia Convention voted to secede by 166 to 130).[5] Virginia (which contained more slaves than any other state in 1861) was deeply divided over secession. Its decision to secede would possibly make it the front line of the Civil War, and would risk the loss of its western areas, which were pro-free soil. In the event, Virginia lost West Virginia almost immediately as the result of its decision to secede, and became the central battleground of the Civil War. Virginia's vote to secede happened very late and as a consequence of events overtaking its deliberations; secession was supported only after troops from both sides had already been mobilized. Virginians voted for secession after they had troops fighting in the field.

[5] Freehling and Simpson (1992), p. xxi.

Indeed, it is possible to argue that if secession had been voted on by the South *as a whole*, Union rather than secession would have carried the day. In fact, South Carolina and other states of the Deep South moved quickly to secede knowing that their actions would bring pressure on the states of the Upper South to secede. Virginia and other states of the Upper South ended up facing the choice between remaining in a Union without the Deep South, in which they would be a powerless minority, or seceding alongside the Deep South.

Our reading of the secession debates is that the effect of secession votes on the expected value of slaves should have been positive (slaveholders would not have favored secession if its immediate effect had been negative) but should not have been very large because there were many legitimate arguments on both sides that secession would save or endanger the future of slavery. Once it became clear, however, that the worst fears of the anti-secessionists were becoming realized – as Lincoln rejected the Constitutional arguments for the right to secede, mobilized tens of thousands of troops, blockaded the South's harbors, and prepared for invasion – one would expect severe and adverse consequences for slave prices.

We also consider the effects of earlier political news on the prices of slaves. In early March, 1857, the United States was shaken by the Supreme Court's Dred Scott decision. The Court ruled that Dred Scott (a Southern slave residing on free soil) had to be returned to his Southern master, but the Supreme Court's decision went much further, arguing that federal actions to limit the spread of slavery, beginning with the Missouri Compromise, were unconstitutional. The implication was that all land in America was open to slavery unless states decided individually to exclude slavery within their borders, but even then, states were obliged to respect the property rights of slave-owners over slaves residing within their own borders.

Every American schoolchild knows that the Dred Scott decision was a turning point in American political and legal history. Politically, it marked the beginning of Abraham Lincoln's prominence as a politician; seeking to overturn the Dred Scott decision became the focal point of Lincoln's speeches and his famous debates with Senator Douglas. Lincoln's successful election campaign in 1860 focused specifically on his advocacy against the Dred Scott decision, which had also been the main theme of his debates with Senator Douglas two years before. With respect to legal history, Dred Scott was the apogee of the Supreme Court's defense of "states' rights," and the Taney Court was the high water mark of Southern influence; Lincoln's election, the Civil War and its aftermath changed the direction of the Court, and ushered in a new era of Supreme Court acquiescence with the will of the national government under Northern control.

But was the Dred Scott decision important as a matter of *economic* history? Did the Dred Scott decision have important economic implications, and did those economic implications matter for subsequent political history? Calomiris and Schweikart (1991) and Wahl (2009) argue that the Dred Scott decision was an important adverse shock to Northern immigration and infrastructure expansion plans. Along with other events that contributed to the conflict between free soil and slave interests, especially in Kansas, it rendered politically impossible for the time being the construction of a transcontinental railroad, which was disastrous for the speculation in western railroad securities that was running very high in the mid-1850s. According to this view, the Dred Scott decision, and the broader conflict over slavery, was instrumental in setting in motion the Panic of 1857.

How was the South affected by the Dred Scott decision? The Panic of 1857 clearly had adverse consequences for the North and for railway interests there, but not so much for Southern economic interests. Indeed, the South's banking sector was able to weather the storm well, owing

to its stable branching structure and its lack of direct exposure to speculative railroad securities. The most obvious potential economic influence of the Dred Scott decision on the South was positive. Specifically, by legitimizing the right of states to maintain slavery ad infinitum, by expanding the territory in which slavery could operate and by protecting the property rights of slaveholders, the Dred Scott decision could have had a substantial effect on Southern slave prices. We consider that possibility in our analysis of slave prices during the Spring of 1857.

Various events in Kansas in 1857-1860, and John Brown's attempt to start a slave rebellion at Harper's Ferry in October 1859 are other events that our analysis can explore. We expect to find little effect of the October 1859 battle at Harper's Ferry on slave prices. This was an isolated event, and the rebellion was considered an act of suicidal lunacy even by many of Brown's abolitionist friends. No one reasonably expected that it would threaten slavery as an institution. With respect to events in Kansas, the struggle between free soil and slave holding interests over the political future of the state was extremely intense during the period 1857-1858. An investigation of the possible importance of some of the key turning points in that conflict must await the completion of our data collection of slave prices for that period.

III. Data on Slave Prices from New Orleans

Slave prices measure market perceptions of the discounted present value of future income and other benefits that masters expected to gain from the labor of their slaves. Because slaves were mobile, the prices of slaves in New Orleans should reflect those of other slaves deployed elsewhere in the South. New Orleans slave prices, therefore, can provide an important measure of the expected consequences of political events for the future of slavery throughout the South.

Table 1 lists the principal political events related to the conflict over slavery from 1857 through mid-1861. Some of the salient events of this era include the end of the bloody political struggle over whether Kansas would be admitted to the Union as a slave or free-soil state, which was resolved in pieces over the period 1855-1860, the Dred Scott Decision by the Supreme Court on March 6, 1857, the attack by John Brown on Harper's Ferry in October 1859, the nomination of Lincoln in May 1860, Lincoln's election in November 1860, the secession of the various Southern states that occurred in the aftermath of Lincoln's election (beginning with South Carolina's decision to secede on December 20, 1860), the South's attack on Fort Sumter on April 12, 1861, and President Lincoln's response, which took the form of a massive troop mobilization, a blockade of southern ports, and various military campaigns into the South beginning in July 1861.

To track short-term responses of slave prices to political events one needs high frequency data on prices. Given that individual slaves and slave transactions were highly heterogeneous in several important respects, the construction of a price index for slave prices requires a sample with many observations of sales. The Fogel and Engerman database on slave sales is useful for many purposes (see, for example, Calomiris and Pritchett 2009), but it does not contain a sufficiently large number of observations for each month to make it usable for our purpose.

Unlike states with a common law tradition, Louisiana treated slaves like real estate, and slave sales had to recorded and notarized in order to establish title (Louisiana 1806, section 10). Prior to the establishment of the Notarial Archives in 1867, a notary's records (as well as those of his predecessors) were stored and maintained in his office. In order to locate a legal document, a researcher needed information on the date of sale, the name of the notary who recorded the sale, and the name and location of the current notary who held the document.

Recognizing the difficulties facing researchers, the Louisiana legislature created the office of Register of Conveyances in 1827, whose duties were to register all acts of transfer of real estate or slaves. Public notaries were required to certify the date and location of the act, a description of the slaves, "with all necessary details," the price of the transfer, and whether the transaction was for cash or credit. In addition, transfers passed "under private signature" were to be recorded in toto. The Register maintained an index which allowed researchers to locate the sale date and the notary who recorded the act of sale (Louisiana 1827, pp. 136-141).

The Conveyance Records represent an alternative (and under used) source of information on New Orleans slave slaves. Because the Notarial Archives preserve the actual acts of sale, these records provide a more complete description of the transaction, including more information about the slave. The conveyance records provide a relatively brief summary of the sale. Although the name and age of the slaves was always recorded, information on occupations or maladies is often under reported. The Conveyance Records, however, are more complete than the Notarial records. Some notarial records were destroyed by office fires whereas others are simply missing due to the passage of time. Although few in number, sales passed under private signature (typically a parish judge) were not recorded by the notaries. In contrast, none of the Conveyance Records appear to be missing; thus, they should provide a better accounting of the total number of sales within the city.

The Conveyance records are handwritten in either English or French. So far, for the two periods October 1856-June 1857 and May 1858-August 1861, we have collected all the records of slave transactions in New Orleans from the Conveyance Records (representing the sales of 13,661 slaves). We are in the process of collecting the records for the period July 1857-April 1858 (which will be included in subsequent drafts of this paper).

Table 2 reports descriptive statistics for usable sales data we have collected thus far.[6] The variables reported in Table 2 are those that have been identified by prior research (Fogel and Engerman (1974), Kotlikoff (1979, 1992) and Calomiris and Pritchett (2009)) as slave and transaction characteristics that are relevant for modeling slave transaction prices. Following previous practice, we express slave prices as logarithms.

Transaction prices reflect characteristics that are observable in our dataset as well as those that are unobservable to us, but observable to market participants. The latter category of characteristics affects market prices in ways that our model cannot capture, and thus produce "residuals" from the perspective of our model. Because our goal is the construction of monthly averages of residuals there is an inherent tradeoff involved in screening data for outliers. Including observations improves the accuracy of the measurement of the average price, but extreme outliers can bias the measured average. To omit outliers, we first ran a basic hedonic regression using a functional form from previous studies (Regression 1 of Table 4), and then omitted a very small number of observations with residuals of the log of slave transaction prices that were greater than 2 or less than -2. None of the findings reported below is sensitive to the omission of these observations.

The residuals from the hedonic model reported in Regression 1 of Table 4 are plotted in Figure 1. As is apparent in the Figure, the density of transactions volume is not a constant over time. The summer months are a time of relatively few transactions. Nonetheless, the number of transactions for each month (plotted in Figure 2) is substantial, although the combination of the

[6] Observations were excluded from the sample for a variety of reasons. Transactions with missing values for age, gender, date of sale, or sales price were excluded from the sample. Also excluded were the sales of partial ownerships, transactions bundled with real estate or other property, self purchases, donations, and exchanges. Group sales which list only a single sales price were also omitted from the working sample.

summer months and the beginning of the Civil War makes the number of transactions especially small for June-August 1861. The summer months saw fewer transactions for an obvious reason: New Orleans was a dangerous place to bring slaves in summertime. Yellow fever threatened the lives of slaves and masters alike, and the risk of contracting yellow fever was specific to the summer. Further magnifying the incentive to avoid selling slaves in New Orleans in the summer was the adverse-selection problem associated with yellow fever: given the difficulty of detecting whether a slave had been exposed to the risk of yellow fever, buyers would require higher discounting for slave transactions that took place in summer months.

We follow Kotlikoff (1979, 1992) and others in modeling the age profile of slave prices using a sixth-degree polynomial. Figure 3 reports the price-age profile, which shows the familiar pattern of a hump-shaped relationship between price and age, which peaks around age 20.

Our model includes measures of slave characteristics (sex, age, etc.) as well as measures of transaction characteristics. Transactions that offered buyers guarantees commanded higher prices, as did transactions that offered credit to buyers. Calomiris and Pritchett (2009) show that other attributes of transactions included here (whether they are part of family or group sales, and the origin of the buyer) mattered for transactions through a variety of potential channels, including selectivity bias.

Figure 4 plots the monthly average of residuals estimated from Regression 1 of Table 4. As indicated by the figure, the trend in slave prices is upward throughout the late 1850s. Although the turning point is uncertain, nominal prices appear to peak in summer 1860 (possibly coinciding with Lincoln's nomination) and begin to decline during the fall presidential campaign. After accounting for seasonal price variation, we find that slave prices fell 13 percent by

November 1860 and 18 percent by April 1861 (and the onset of the War). Attributing this price decline to the perceived threat of Lincoln's nomination and election is problematic, however. After all, prices might have declined because of changing market fundamentals rather than the political events leading up to the war. To control for those influences, one must construct a counterfactual model that controls for changes in fundamental variables that affected slave prices over time.

IV. Constructing a Slave Price Counterfactual

Measuring the effect of political events requires the construction of a credible counterfactual measure of slave prices – that is, what slave prices would have been absent the political events – by properly taking into account other, non-political influences and their effects on slave prices. For example, given the close association between cotton and slavery, shocks to the demand and supply of cotton (that were expected to persist) should have affected the future cash flows generated by owning slaves, and therefore, should have affected slave prices. The implications of cotton price changes for future cash flows from slave labor, however, are far from clear: Persistent positive supply shocks that raise cotton output and lower cotton price should raise slave prices, but persistent positive demand shocks that raise both cotton output and price should also raise slave prices; thus, the association between cotton and slave prices could be negative or positive depending on whether persistent shocks in the cotton market were mainly from the demand side or the supply side. Furthermore, the prices of all assets change over time for reasons unrelated to their cash flow streams. Slave prices are most analogous to equity prices because slaves are risky assets, and therefore, their returns are subject not only to discounting by

a time-varying riskless interest rate, but also reflect a time-varying risk premium. A proper counterfactual model of slave prices must posit linkages between observable fundamentals that affect cash flows and asset valuation changes over time.

In financial economics, the technique of the "event study" is commonly used to identify effects on asset prices of news that is released on or around a particular date. News is presumed to influence the "residual" asset price; that is, news affects the "abnormal return" or the "cumulative abnormal return" to the asset, after controlling for the return that one would expect based on observable fundamentals. The simplest approach to analyzing announcement effects on individual equity returns is to model equity returns as a function of the riskless interest rate and each stock's "beta" relative to the market (as implied by the one-factor Capital Asset Pricing Model, or CAPM). More recently, announcement effect studies tend to estimate multiple betas on various market factors, which are intended to capture different risk factors that are relevant to asset pricing. Individual stock returns are modeled against the riskless interest rate and the various risk factors for a period of time prior to the event window of interest. The estimated coefficients from the pre-event period are then used to project returns during the event window, and serve as a counterfactual model of equity returns. They answer the question: "if not for the event, what would equity returns have been?"

In constructing a counterfactual model of slave prices, as a means of measuring the effect of political events on those prices, some alterations of the standard procedure are necessary. First, we observe individual slave prices, not equity prices. Equity is homogeneous (one share of General Motors is the same as any other), but slaves were individuals with unique attributes. We observe each slave's price once, not repeatedly, and therefore, we cannot construct a measure of returns for individual slaves to use in a regression. We can, however, measure the elasticity of

each slave's price relative to market prices of traded securities by regressing the natural log of the slave price on the natural large of securities prices.

Second, there is no available long-term U.S. riskless interest rate to use when modeling slave prices. Government bonds changed over time in their characteristics, there were no Treasury bills in circulation, and to the extent that Treasury bonds traded, they did not trade continuously as homogeneous securities in a secondary market (i.e., there is no series for the benchmark ten-year Treasury bond for our period). A series on commercial paper rates on New York does exist during our sample period, from Smith and Cole (1935). This is not a riskless rate, and it is of very short duration, making it unsuitable to use as a measure of a long-term riskless rate. Furthermore, the accuracy of this measure is hard to gauge, and the reported range of traded values was sometimes quite wide. We did experiment with including this measure in our analysis through various regression specifications. When we did so, the New York commercial paper interest rate tended to co-vary positively with the log of slave price (the opposite of what one would expect from a CAPM framework) and its effects were not generally of high economic or statistical significant in the regressions. We decided, therefore, to exclude it from our analysis. Of course, the effects of shifts in U.S. interest rates are still captured by the railroad equities price series included in our analysis, because those securities prices themselves, like slave prices, reflect changes in discount factors related to interest rates. We also report regressions and implied counterfactual slave price residuals that include the British consol price in lieu of the railroad equities index, which we argue may be desirable as a means of avoiding problems associated with the endogeneity of railroad equity prices with respect to U.S. political news.

The securities price series that we include in our study is constructed from several overlapping railroad stock indexes constructed by Smith and Cole (1935). Smith and Cole report one monthly series for the period 1834 to 1845, a second one for the period 1843 to 1853, and a third one for the period 1853 to 1862 (as well as two component series for the third sub-period). There are various potential techniques that could be employed to splice these series together. One approach is to regress overlapping series on one another and use the regression coefficients (the estimated intercept and slope coefficients) to merge the series. Another technique (which we label the "weighted-average approach") splices series together using weighted averages of the two series being spliced. To preserve continuity over time, when using that approach, we weighed the returns in a time varying fashion to give the "early" series greater initial weight, and the "later" series increasing weight over time. Specifically, over a ten-month splicing period, the weights for the early series in each month fall from 0.9 to 0.8 to 0.7… to 0.0, while the weights for the later series rise from 0.1 to 0.2 to 0.3 to… 1.0. Because there is substantial overlap between the first and second series, we are able to estimate a regression connecting the two series quite well. We find that the two alternative approaches yielded identical results. For the later period, owing to the small interval of overlap, the regression did not yield reliable estimates and did not overlap with the weighted-average approach. Thus, we concluded that the weighted-average approach produced a more reliable method of splicing and we employed that method in constructing the railroad stock price index used in our study. Figure 5 plots our spliced series for the railroad stock price index for 1834-1861 against the monthly means of slave price residuals plotted in Figure 4.

Cotton Prices, Cash Flows, and the Contested Persistence of Slave Productivity Changes

In our study, an issue arises that generally does not arise in the finance literature on event studies, owing to the fact that our study focuses on multiple events over a long period of time. Because our counterfactual model must take account of slave prices at multiple event dates, we must control not only for the "betas" of slave prices, but also for changes in the expected cash flows over time that are associated with slave labor. If we were only analyzing one event, there would be no need to control for changes over time in our counterfactual model. Given that we are examining slave prices over five years, and given the large potential changes in the expected cash flows from slave labor over such a period of time, it is important to try to control for such variation.

The most important observable factor influencing the expected cash flows from slave labor is the price of cotton. The link between cotton and slave prices has been a central theme of the empirical literature on slavery from its inception. As Phillips (1918) noted, cotton cultivation was among the most profitable uses of slaves: "The cotton belt and the sugar bowl accordingly made a market to attract labor by offering prices higher than rice or tobacco earnings would warrant. The younger staples thus, on different schedule of buoyancy, were the main factor determining slave prices in every corner of the South. Cotton by reason of its immense area and volume of production, reduced even sugar to a secondary role; and the fluctuations of its price were accordingly plotted on the same chart" (p. 176). As Phillips recognized, "The slaves themselves were 'securities' – investments made with a view to future income. … The price of a slave was affected by the price of cotton for the same reason that copper shares are influenced by the current price of copper metal." (p. 179).

Gray (1933) – who referenced Phillips' work – also commented on the connections between slave and cotton prices: "Slave prices were strongly influenced by the rise and fall in cotton prices. In the earlier years of the nineteenth century there was a belief that slaves should rise $100 for each increase of 1 cent in price of cotton above cost of production." (p. 664).

Nevertheless, the connection between cotton prices and slave prices is not straightforward. As Phillips and Gray both recognized, the relationship between the long-term price trends of slave prices and cotton prices seems to have changed in the 1850s. Phillips noted that: "After five years of western bankruptcy a new climb was begun, roughly parallel to the cotton curve until 1857, when cotton went down but slaves continued upward. In this concluding decade there was again a notable spread between the two pairs of markets." (p. 178) Gray noted that the diverging trends of cotton and slave prices produced big changes in their ratios over time: "In this last speculative movement [of the late 1850s], as Phillips has shown, the prices of slaves advanced much higher in relation to the prices of cotton than in earlier periods of peak prices. Thus, in terms of cents of cotton to hundreds of dollars in average slave prices in New Orleans, the ratio was nearly 4 to 1 in 1805, a little over 1 to 1 in 1819, 1 to 1 in 1837, but only about 0.6 to 1 in 1860." (p. 667)

Of course, any comparison of slave and cotton price co-movements requires a measure of slave prices. Phillips and Gray based their analysis on simple slave price data, not the residual from an hedonic model of slave prices that controls for observable individual characteristics. Nevertheless, their insights about the diverging trends of cotton and slave prices were correct; similar patterns are visible when plotting cotton prices against Fogel and Engerman's average slave prices of prime age males (or when plotting residual slave prices from a hedonic pricing model).

The divergent trends of cotton and slave prices in the 1850s raises problems for constructing a counterfactual model of slave prices (from the pre-1856 period) to apply to the subsequent period (the period of our study). How can one use estimates from the pre-1856 dataset to forecast co-variation of cotton and slave prices for the period after 1856?

Phillips saw the divergence between cotton and slave prices as an indication of unsustainable speculation because he viewed the ratio of slave prices to cotton prices as something akin to a price-earnings ratio. As Fogel and Engerman (1974) put it: "To [Phillips] the ratio of cotton to slave prices was as crucial in evaluating the wisdom of an investment in slaves as the price-to-earnings ratio was for evaluating the wisdom of an investment incorporate stocks…. The data assembled by Phillips showed that the ratio of slave to cotton prices rose by over six fold between 1805 and 1860. A change of this magnitude clearly indicated to Phillips that, by the last decade of the antebellum era, slave were overvalued – that is, price too high to permit an investor to earn a normal rate of profit….The rise, Phillips concluded was primarily the consequence of speculation. The supply of slave had been 'cornered' as a consequent of the closing of the slave trade. Hence 'it was unavoidable that the price should be bid up to the point of overvaluation.'" (pp. 61ff).

As Fogel and Engerman (1974) pointed out, Phillips was not necessarily correct in that conclusion. Indeed, they argued that slave productivity in cotton cultivation had increased substantially over the 1850s, and that the rising ratio of the price of slaves relative to the price of cotton reflected a legitimate market perception of increased productivity. Gray had recognized that cotton output had risen dramatically over this period, which reflected that increase in productivity, and both Gray and Fogel and Engerman argued that cotton prices had probably fallen somewhat as the result of the expansion in production. Fogel and Engerman (1974, pp. 91-

93) saw "… nothing unusual about the slight decline in cotton prices that occurred between 1857 and 1860. The fact is that the general trend of raw cotton prices was downward from 1820 on (see figure 26). Although there were fluctuations about this trend, the average annual rate of decrease was 0.7 percent. The basic cause of this long-term decline was the steady increase in productivity. Among the developments which made cotton farming increasingly more efficient were the improvements in the varieties of cotton seeds, the introduction of the cotton gin, the reduction in transportation and other marketing costs, and the relocation of cotton production in the more fertile land of the New South." Like Fogel and Engerman, Gray concluded that the effect on revenues of the production expansion had more than offset its effects on cotton prices: "In the last five years of the period cotton sold at prices that were highly remunerative, especially considering the fact that the average annual product of the five years was much larger than it had ever been before. In the Cotton Belt, therefore, as in other parts of the South, the Civil War brought to a close a period of exceptional prosperity." (p. 700).

Wright (1978) questioned Fogel and Engerman's assumption that the productivity improvement in cotton cultivation was permanent. According to Wright's econometric identification of supply and demand of the cotton market, and his inferences about the permanent and transitory components of supply and demand: "The fundamental underpinning of most of this growth is, again, the rapid but essentially temporary growth in world demand for cotton…. Econometric estimates of the cotton demand curve indicate, as noted above, that demand was above its trend value in 1859-60 (i.e., that the price of cotton was above the level predicted on the basis of production and trend) by 7.6 to 15.9 percent…. I am led to the conclusion that the expansion of cotton demand was the only fundamental dynamic force driving the slave economy." (pp. 325-328) Wright argued that it was unreasonable to see the expansion of

demand as permanent: "Fogel and Engerman argue that the sanguinity evidence 'should not be interpreted as supporting the claim that the price of slaves was determined by wild speculation. Pessimism and optimism were generally rooted in experience. . . . Such behavior is more characteristic of sober businessmen doing their best to perceive an uncertain future' (Fogel and Engerman, I. p. 105). In order to find in Phillips's favor, Fogel and Engerman would apparently settle for nothing less than a drunken random walk of slave prices, bearing no relationship whatever to prices and profits. But even 'reckless speculators' do not march off in a direction *opposite* to that indicated by 'experience.' No reasonable man could support such an argument, and Phillips certainly did not." (p. 307)

Some of this debate about the connection between the cotton and slave markets is relevant for our analysis, but some of it is not. An identifiable predictable relationship between cotton prices and slave prices – that is, an influence from the cotton market that slave market participants believed was important – should be included in our counterfactual model whether or not market participants were acting "reasonably" according to an economist's modeling of persistent shocks when making the connections they made between cotton prices and slave prices. For example, if market participants believed that the ratio of the two prices should have risen over time due to increased productivity, then that is the belief that is relevant for our model's identification of the effects of political events, irrespective of whether it was reasonable to believe this. Thus, the Wright criticism of Fogel and Engerman's (and the market's) perceptions of the permanence of shocks in the cotton market may be correct or incorrect, but it does not affect our use of cotton prices in constructing a counterfactual.

Nonetheless, the fact that there was a *changing* relationship between cotton and slave prices – something about which all of these researchers agree – does raise potential problems for

our estimation. If the relationship between cotton prices and slave prices changed over time, and if important changes were happening during the 1850s, how can we use observed co-variation prior to 1856 to construct a counterfactual projection of the relationship between cotton and slave prices after 1856? Indeed, we will argue that the instability of the relationship between cotton and slave prices requires us to consider the potential superiority of in-sample estimation of the counterfactual model, using data for the post-1856 period to estimate model coefficients rather than data for the pre-1856 model. We discuss both potential approaches in detail below.

There is no doubt that the structural changes relating cotton and slave prices identified by previous researchers were important. The structural change in the cotton-slave price relationship is particularly apparent when one compares estimates of the effects of cotton prices on slave prices from a hedonic model of slave prices for the period 1835-September 1856 with estimates from a similar model estimated over the period 1835 through August 1861. Furthermore, this change seems to reflect changes over time in the relative importance of supply and demand shocks – which provides a fundamental economic explanation for the observed structural change.

Table 3 reports estimates of hedonic pricing models for the two different periods. We use Fogel and Engerman database of slave prices (the only available dataset that covers slave transactions over a long period of time). To ensure comparability with subsequent estimates based on our Conveyance Records database, the hedonic pricing model employed in Table 3 includes the same characteristics that are observable based on Conveyance Records (that is, the same model reported in Table 4). The models use slave and transaction characteristics (e.g., age, sex, and whether the transaction involved a guarantee or the granting of credit), as well as monthly fixed seasonal effects (not reported here). We report versions of the specifications that

exclude or include the contemporaneous log of cotton price, as well as both the contemporaneous log of cotton price and the contemporaneous log of the railroad stock price index.

For the period ending in 1856, there is a large, positive, and statistically significant coefficient on the log of the contemporaneous cotton price, and a similarly large, positive, and statistically significant coefficient on the log of the railroad price index. Interestingly, however, when the sample period is extended to August 1861, those coefficient estimates change. Specifically, both coefficient estimates become smaller and less statistically significant.[7]

The implication of this comparison is that the relationships between cotton and securities prices, on the one hand, and slave prices, on the other hand, are not stable over time. This implies that it is problematic to use out-of-sample estimates of coefficients for the log of cotton price and the log of the railroad stock price index to project a counterfactual expectation of time variation in average slave price residuals over time for October 1856 through August 1861.

What is driving the change in the relationship between cotton and slave prices? It is important to recognize that there is no theoretical presumption that the relationship between the two should be positive. If cotton price variation were driven entirely by transitory shocks to supply and demand (that is, shocks viewed as transitory by slave market participants) then there should be no observed relationship between slave and cotton prices. If the *persistent shocks* affecting the price of cotton (that is, those that slave market participants expected to persist) were

[7] We also experimented with numerous lag structures of cotton prices, which did not prove significant. It appears that the most robust connections between cotton and slave prices are contemporaneous. We also considered a variety of alternative time series specifications (including the differencing of log cotton prices), and these did not affect our results. We also performed a wide variety of analyses of stationarity and the time series properties of the two prices. Given the stationarity of cotton prices and slave prices, we regard the log levels specification reported in Tables 3 and 4 as preferable to any of the variants we explored.

exclusively *demand-side* shocks, then the relationship between cotton and slave prices should be positive. If the persistent shocks were exclusively supply-side shocks, then the relationship between cotton prices and slave prices could be either positive or negative, depending on the elasticities of supply and demand in the cotton market (which would determine the relationship between supply shocks and revenue changes).

To arrive at a better understanding of the relationship between cotton and slave prices, we first performed a simple analysis of the co-variation of cotton price with the annual quantity of cotton produced. Figure 6 illustrates a striking fact: the correlation between the quantity and price of cotton is positive (0.319) from 1815 to 1850, but is negative (-0.217) from 1851 to 1861. From this admittedly simple analysis, it appears that demand shocks dominated the cotton market prior to 1850, but that supply shocks (related to changes in productivity) dominated the market after 1850.

Of course, that does not imply a similar pattern of change in the dominant shocks that were regarded as *persistent* by market participants. The only way to measure market participants' views of the changes in the nature of persisting shocks is to look at the connection between cotton prices and slave prices. Judging from Table 3's results for the positive elasticity of slave prices with respect to cotton prices, using Fogel and Engerman's data for slave transactions, prior to 1856 demand-side shocks were the dominant source of persistent shocks. Their data contain too few observations to offer reliable forecasts for the post-1856 period, but our data from Conveyance Records contains over 7,600 observations. Although the post-1856 sample contains only 49 monthly observations of the log of cotton price (owing to the July 1857-April 1858 gap in our coverage at the moment), the regression results reported in Table 4 show that the co-variation between cotton prices and slave prices was large, negative, and statistically significant

during the period October 1856-August 1861. This seems to corroborate the Fogel and Engerman view that slave market participants during the 1850s and early 1860s saw the changes in cotton output and price as implying persistent supply shocks related to the cotton market that were relevant for slave pricing.

Interestingly, the regression results of Tables 3 and 4 also display another structural change over time. The elasticity of slave prices with respect to the railroad stock price index also switches from positive prior to 1856 to negative afterward. That observed change is consistent with the Calomiris and Schweikart (1991) interpretation of the way political events in 1857 had opposite implications for the values of slaves and the values of railroad investments. They argued that political news (like the Dred Scott decision) that increased the value of slaves harmed the prospects of railroads because political news relating to the conflict between free soil and slave-holding interests had far-reaching implications for the ability of railroads to expand their operations westward.

If that interpretation of the switch in the coefficient on railroad stock indexes, from positive to negative, is correct, then it would be inappropriate to include the railroad stock price index in the counterfactual model for gauging the effects of political news on slave prices. If political news is affecting railroad stocks, then including railroad stocks in the counterfactual will necessarily reduce the measured impact of political news because railroad stocks are capturing, in part, the implications for slave prices of those political events. It is hard for us to see another explanation of the switch from a positive to a negative coefficient on railroad stock price in the slave price regressions. Thus, in our view, it is probably best to omit railroad stock prices entirely from the counterfactual.

Unfortunately, when one omits the railroad stock price index, and employs only the cotton price to measure the counterfactual change in slave prices, the regression is lacking a control for changes in asset prices over time. To address that problem, in the final column of Table 4, we include the log of the price of the British consol, as discussed above. The consol is a long-term asset, and its price variation is likely to be largely (but not entirely) exogenous to political news coming from the United States. Given a constant and perpetual dividend on consols, its price is a reasonable (inverse) proxy for the global riskless interest rate. As Table 4 shows, when we include the log of the consol price, its coefficient is large and positive, although the coefficient is not estimated very precisely. We also note that, in out-of-sample estimates not reported here, using the Fogel and Engerman database, we experimented with including the log of the consol price. It sometimes displayed large and statistically significant effects, but it entered with a negative sign. One interpretation of that finding is that interest rate changes were correlated in the pre-1857 sample with other macroeconomic variables that mattered for expected cash flows associated with slave labor.

Out-of-Sample vs. In-Sample Estimation of the Counterfactual Model

In light of the previous discussion, we consider four alternative ways to construct a counterfactual model of slave prices, each of which implies a distinct "residual" of monthly slave prices, which can be linked to political news. The first approach (which we label Out-of-Sample Approach 1) uses the coefficients on the log cotton price and log railroad stock price index for the pre-1856 period (using Fogel and Engerman's data) to project a counterfactual model for the post-1856 period. This approach follows the conventional out-of-sample forecasting method

used in event studies. Despite that advantage, it suffers from an insurmountable problem: it imposes a relationship between slave prices and the prices of cotton and railroad stocks that is inappropriate to the post-1856 sample period. For purpose of reference, however, we report the implied monthly residuals from Out-of-Sample Approach 1 in Figure 7. We emphasize that we do not regard this as a proper measure of time-varying residuals related to political news about slavery. It better illustrates how far wrong one can go when constructing a counterfactual model that fits the rules of event study analysis but ignores the historical context within which the event study is constructed.

A second approach (which we label "In-Sample Approach 1") estimates the coefficients for the log of cotton price and the log of the railroad stock price index using the data from the Conveyance Records for the post-October 1856 sample. The main problem in this approach is that it may be inappropriate to include railroad prices in the counterfactual model, as discussed above. The residuals implied by In-Sample Approach 1 are plotted in Figure 8. A third approach (which we label "In-Sample Approach 2") uses the Conveyance Records data to estimate the cotton price elasticity, but drops railroad prices from the counterfactual model. The residuals implied by In-Sample Approach 2 are plotted in Figure 9. A fourth approach (which we label "In-Sample Approach 3") adds the log of the consol price as a regressor. The residuals by In-Sample Approach 3 are plotted in Figure 10. It is notable that the qualitative results derived for all four figures are quite similar. In particular, we find that slave prices decreased by 10 to 20 percent during the fall of 1860 and they that continued to decline during the early stages of the War.

Of course, none of these various approaches is perfect as a means of removing the influence of demand and supply shock in the cotton market on slave prices. If some years –

1860, in particular – saw a mix of both persistent supply and demand shocks (which is consistent with the view of Wright 1978), then a counterfactual model that imposes a stable relationship between cotton prices and slave prices would understate the effect of the cotton market on slave price increases in 1860. This possible counterfactual misspecification could lead one to overstate the extent of the decline in slave prices from their 1860 peak. We return to this issue in our discussion of slave price changes below.

V. Political and Economic Events Seen through the Lens of Regression Residuals

Are there clear connections between the historical narratives of the political struggle over slavery and the various residual plots that are implied by our counterfactual models? To conserve on space, we will focus our discussion on Figure 10. This residual plot avoids the problems that arise from structural shifts in the relationship between cotton and slave prices, and from biases that likely arise from including railroad stock prices (which themselves are responsive to political events) in the counterfactual model of slave prices.

Figure 10 displays rises and falls in slave prices that coincide in plausible ways with the major political events of the time. There is a significant rise in slave values around the announcement of the Dred Scott decision. Slave prices are 5-10% higher in March-May than in February 1857. The adverse economic effects of the Panic of 1857, which begin (according to Calomiris and Schweikart (1991)) as early as May 1857, and the recession that coincided with it, may explain why that rise did not persist. There was also an increasing awareness over time that the Dred Scott decision would provoke active opposition in the North, which would target overturning the decision.

The initial reaction to the Dred Scott decision was jubilant in the South.[8] On March 14, 1857, an article in New Orleans' *Daily Bee* predicted that the decision "...will exert the most powerful and salutary effect influence throughout the United States." Similarly, on March 15, the *Louisiana Courier* wrote that "[n]o judicial tribunal has ever rendered a more important decision than that of the U.S. Supreme Court in the case of Scott vs. Sanford...It must be exceedingly gratifying to the advocates of democracy, who have so long and so vigorously contended against the odious Missouri restriction, to hear from the highest authority a confirmation of all they have heretofore maintained, as to the unconstitutionality of that act." New Orleans' *Daily Picayune,* optimistically predicted on March 20, 1857 that "the Union men of the country, of all sections, who are for the constitution as it is, will be able, we trust, to put down effectively all forms of incendiary agitation, and restore quiet and harmony to the country."

But as early as March 19, 1857, there was recognition of the fact that a political backlash in the North could offset or even eliminate the gains from the decision. On that date, the *Louisiana Courier* wrote about its concern that "Black Republican lamentations" might "succeed in electing Ethiopian presidents..." In New Orleans' *Daily Bee*, on March 21, 1857, similar fears were voiced: "But he is a shallow observer of events and an unskilful judge of human nature, who imagines that the verdict of the Supreme Court—though consonant with right and justice, and consistent with the soundest interpretation of the federal compact—will, as if by magic, dissipate all preconceived opinions, dispel hostile views, and restore the era of fraternal harmony and peace...The verdict of the Supreme Court breaks like an angry wave against the impregnable

[8] There were rumors about the decision prior to March. On January 1, 1857, *New York Herald* reported the false rumour that the Court had decided to rule that the Missouri Compromise was unconstitutional. In fact, we know from internal documents that the Court did not decide to broaden the case until mid-February 1857, so any such rumours were wrong. Nonetheless, they may have affected slave prices.

rock of Northern fanaticism." The April 1857 issue of *De Bow's Review* expressed a similar sentiment, predicting that the North "is about to change its position" and will "organize upon the basis of this another party, which shall struggle again for the control, and as must be the result if successful, the overthrow of the Republic..."

It is interesting to note the level of sophistication of the discussion of Dred Scott's potential effects on slave prices, including the recognition of the possible harm to slave owners (and benefit to the North) from reduced commodity prices. Consider this passage from *De Bow's Review*, April 1857: "Economically, the extension of slavery will injure the South and benefit the North. It will cheapen the raw material and enhance the price of manufactured articles. It will increase the trade and commerce of the North, multiply her customers, cheapen cotton, sugar, molasses, rice, meats, wheat, and Indian corn, and thus injure the South whilst it benefits the North. The extension of free society will have the exact opposite effect, and rear up rivals and competitors, instead of customers, for the old free States. The South desires slavery extension only as a means of defence against the inroads of abolition." Clearly, as people thought about the consequences of the Dred Scott decision, they saw complex implications for slave prices.

From 1858 through May 1860, Figure 10 displays a rising trend with substantial ups and downs, but overall it shows a flatter pattern than Figures 4 or 6, indicating that when one takes account of the effects of the cotton market on cash flows using in-sample forecasts, there is less of an unexplained trend in the residuals. We can think of specific political events in 1858, 1859 and early 1860 (for example, events related to the disposition of Kansas) that coincided with the ups and downs of slave prices, but we find the broader narrative of the trends in the graph more convincing.

Slave prices recover to their peak May 1857 values by the beginning of 1860, perhaps reflecting the imperfect ability of cotton prices to capture all the effects of increases in cotton productivity on slave prices. Around the time of Lincoln's nomination in May 1860 slave prices begin to fall. Lincoln's nomination and election correspond to a sharp downward trend in residuals. The secession of the Deep South in December 1860-January 1861 is not associated with any noticeable improvement in slave prices. March and April of 1861 are associated with some temporary improvement in slave prices. But after hostilities begin, from May onward, the price of slaves gathers increasing negative momentum. We interpret this as reflecting the news of Lincoln's rejection of the legitimacy of Southern secession, and his decisions to blockade Southern ports, amass troops, and prepare for invasion. Although the initial battleground victory of the South at the Battle of First Manassas in July 1861 seems to have had a positive initial influence on slave prices, prices declined sharply in August.

The peak-to-trough decline in slave prices from June 1860 to August 1861 is roughly 40%. Even if one removes the increase in slave prices that occurred during the first half of 1860 – on the grounds that it may reflect an unusual confluence of demand and supply shocks in the cotton market during that year, as argued by Wright (1978) – doing so removes no more than about one-fourth of that decline. It might also be reasonable to take into account the small sample size for the summer of 1861. Although the increasingly demonstrated resolve of the North to fight the Civil War in the weeks and months after mid-April 1861 probably provides the best explanation for the catastrophic fall in slave prices during 1861, the large negative August 1861 residual may overstate the extent of that decline owing to the small sample size for that month. Taking into account both the potential influence of the cotton market in early 1860 and the small sample size of August 1861, a more conservative peak-to-trough decline estimate for

slave prices would be in the neighborhood of 25%.[9] In future versions of this paper, we plan to extend our analysis into the rest of 1861 and 1862, and come to grips better with the high-frequency changes in slave prices in the summer of 1861. We note, however, a challenge in doing so: not only is the August volume of sales unusually low – even for August – it is also the case that the volume of sales remains depressed in the fall of 1861 to an extent not seen in prior years.

VI. Expectations and the Relative Prices of Slaves

The decrease in slave prices during and after the summer of 1860 is consistent with increased pessimism regarding the future of slavery. Because slaveholders valued slaves as financial assets, slave prices should have equaled the discounted present value of their expected future earnings. To the extent that political news led buyers of slaves to think that they might lose ownership of slaves at some future date as the result of emancipation without compensation (for slaveholders) they would have reduced the price they were willing to pay for slaves. On the other hand, it is not clear that the political news of 1860 and 1861 should be seen primarily as affecting the probability of emancipation without compensation. After all, emancipation without compensation would have been unprecedented. Given the legality of slavery in the rebel states and elsewhere, as of 1860 or 1861 it likely would have been seen as an illegal taking.

[9] Our use of the New Orleans short staple cotton price in modeling the counterfactual slave price series may lead to a slight under-estimation of the decline of slave prices from late 1860 to April 1861, and a slight over-estimation of the decline in slave prices subsequently. Note that our counterfactual model uses the log of cotton prices, which enters with a negative sign. By using cotton price in the counterfactual model, we implicitly assume that changes in cotton prices are themselves not affected by political events. It may be that some of the increase in cotton price through the April 1861 peak in the series reflected concerns about the effects on cotton price of political events. After April, the cotton price falls somewhat, reflecting the abundance of cotton in the South due to the blockade against the South, and the South's early 1861 decision to embargo cotton shipments, which was clearly a response to a political event.

An increase in the probability of emancipation without compensation is not the only possible explanation for the decrease in slave prices during 1860 and 1861. For example, the increased probability of regional conflict likely would have lowered expectations for the southern economy's ability to sell its produce on international markets, which would have reduced expected income and, in turn, would have also reduced the prices of slaves. Furthermore, because slaves constituted a large part of southern wealth, any taxation to pay for the South's war efforts would have fallen largely on slaveholders. Whether taxes were expected to be levied on income or wealth, the effect would have been the same: even if the war was expected to end in a stalemate or a southern victory, a large and costly Civil War would have hurt slaveholders and reduced the market value of their slaves.

Was the decline in slave prices primarily due to fears of emancipation without compensation or some other expected consequence of the struggle over slavery? Changing expectations regarding possible emancipation without compensation should have affected the prices of some slaves more than others. In particular, in response to news that increased the perceived likelihood of emancipation without compensation, the prices of children (and women of childbearing age) should have fallen more than those of other slaves. The earnings of young children, net of maintenance costs, were negative (Fogel and Engerman, 1974). They sold for positive market prices only because buyers anticipated increased future earnings from the slaves as they matured. Because emancipation without compensation would eliminate that source of future income for the slaveholder, political news that increased its likelihood should have reduced the prices of children relative to those of adults. Similarly, increased expectations of future emancipation without compensation should have reduced the market value of the

childbearing capacity of a young adult female slave, thus decreasing her price relative to those of other slaves.

These considerations give rise to two testable implications about the "emancipation without compensation" hypothesis: if the probability of emancipation without compensation is rising over time, then (1) the age-price profile should change over time to reflect the declining relative value of children and young women, and (2) for a time invariant age-price profile, the regression residuals for children and childbearing women should decline more than those for other slaves.

Age-Price profiles have been estimated by different researchers using a variety of different data sources (Fogel and Engerman 1974; Kotlikoff 1979; Levendis 2007; Choo and Eid 2008; Chenny, St-Amour and Vencatachellum 2003; Fraginals, Klein, and Engerman 1983; Margo and Steckel 1982; Newland and Segundo 1996; Calomiris and Pritchett 2009). Although the exact regression specification varies, most authors use a high order (6^{th} degree) polynomial to estimate this relationship (Fogel and Engerman 1974). The shapes of these age-price profiles are remarkably similar. The estimated price of a newborn infant is positive but relatively low (recall the debate between Fogel and Engerman (1974) and Gutman and Sutch (1976, pp. 158-161) regarding the value of a so-called 'birthright'). Prices rise with age and, for female slaves, reach a peak in their late teens or early twenties. The prices for males peak in their lower to mid twenties. For older slaves, prices decrease with age yet remain positive even for slaves in their fifties and early sixties.

Rising expectations of emancipation without compensation should affect the shape of the age-price profile in a predictable fashion. As argued by de Mello (1992), the prices of prime-aged slaves (those in their twenties) should fall relative to those of older slaves because of the

reduced length of their working life under slavery. Indeed, de Mello finds precisely this empirical result for Brazilian slaves immediately prior to emancipation in that country. And as we point out above, the prices of children also should have fallen relative to those of adults. In unreported regressions, we estimate the age-price profiles that plot the relationship between a slave's age and his/her price for different time periods and plot the estimated age-price profiles in Figure 11. All profiles exhibit the same basic shape: Children command positive prices for all of the time periods, prices reach a maximum for slaves in their early twenties, and older slaves sold at discount relative to slaves aged twenty years. Note that we do not observe a flattening of the age-price profile, as predicted by de Mello (1992) if buyers expected slaves to be emancipated in the near future. The similarity of these profiles suggests that slaveholders were not reassessing the probability of the future emancipation of their slaves.

A closely related test of the emancipation without compensation hypothesis focuses on the residuals of various subgroups in a model that does not allow the age-price profile to vary over time. Using regression 1 from Table 4, which assumes a time-invariant age-price profile, we plot the residuals for different subgroups of slaves. If the assumption of a constant age-price profile were incorrect, then the residuals for the subgroups that include children (aged 0 to 10 years) and young women (aged 16 to 28 years) should decline faster than the other residuals. As seen in Figure 12, the residuals for both children and young women decrease at approximately the same rate as those for all slaves in the sample. The uniform decline in prices suggests that rising expectations of emancipation without compensation was not the cause of the observed decrease in slave prices following Lincoln's nomination in summer 1860.

VII. Conclusion

The Civil War remains a puzzling event in American political and economic history. Clearly, those who most pushed for secession – slave owners in the Deep South – were also the ones most harmed ultimately by the outcome of the Civil War. A close examination of slave prices from October 1856 through August 1861 shows that they can be a useful tool for gauging how slave market participants viewed the consequences of political events for the risks that attended slave ownership.

One of the most daunting challenges of identifying linkages between slave prices and political events is the construction of a counterfactual model of economic fundamentals to serve as a benchmark against which movements in actual slave prices related to political events can be gauged. Two challenges can confound attempts to construct a counterfactual model. First, the relationship between cotton prices and slave prices changed dramatically in the 1850s, making it inappropriate to model the influence of cotton prices on slave prices using historical patterns of co-variation. Second, there is also an important change in the relationship between slave prices and railroad stock prices in the 1850s, which likely reflects the importance of political news about the conflict between free soil and slave-holding interests for the prospects of western railroad expansion. We argue that these challenges favor in-sample estimation of the connections between cotton and slave prices, and the exclusion of railroad stock prices from the counterfactual model.

Under these assumptions, the implied time series of slave price residuals that we derive in Figure 10 – which we argue should capture movements in slave prices that are related to political events – displays patterns that coincide reasonably with the dominant political events of the time.

The Dred Scott decision was associated with an increase in slave prices. The nomination and election of Lincoln were associated with negative changes in slave prices. The most important negative movements in the value of slaves came in the late spring and summer of 1861, after Lincoln took office and demonstrated a resolve to blockade and invade the South. Furthermore, the price decrease seems not to have been driven primarily by fears of emancipation without compensation for slaveholders. Rather, the price decrease was more generally the result of rising fear of war and its economic consequences for slaveholders— something that slave-owning advocates of secession had bet against.

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Table 1: Significant Political Events Related to the Civil War, 1857-July 1861

March 6, 1857	Supreme Court's Dred Scott decision is announced.
June 7, 1859	Kansas election of delegates to Wyandotte Constitutional Convention (in which Republicans elected 35 delegates against the Democrats' 17.
July 5, 1859	Wyandotte Constitutional Convention meets
October 4, 1859	Ratification (by popular vote) of Wyandotte Constitution, despite Democratic opposition
October 16, 1859	John Brown's Raid on Harper's Ferry
December 2, 1859	John Brown is executed
May 8, 1860	Abraham Lincoln nominated as US Republican Presidential Candidate
November 6, 1860	Lincoln wins the Presidential election
December 18, 1860	Crittenden Compromise proposed in US Congress to preserve slavery in South
December 20, 1860	South Carolina secedes
January 9, 1861	Mississippi secedes
January 10, 1861	Florida secedes
January 11, 1861	Alabama secedes
January 18, 1861	Georgia secedes
January 21, 1861	Louisiana secedes
January 29, 1861	Kansas becomes admitted as a state
February 1, 1861	Texas secedes
February 4, 1861	Confederate States of America are formed
February 1861	Attempted Peace Conference
March 2, 1861	Corwin Amendment Passed by US Congress
March 4, 1861	Abraham Lincoln is inaugurated
March 11, 1861	Confederate States Constitution adopted
April 12, 1861	Confederacy fires on Fort Sumter
April 17, 1861	Virginia secedes
May 6, 1861	Arkansas secedes
May 7, 1861	Tennessee secedes
May 13, 1861	Queen Victoria recognizes the Confederacy as having "belligerent rights," signaling possible British intervention on their behalf.
May 20, 1860	North Carolina Secedes
May 23, 1861	West Virginia secedes from Virginia
July 21, 1861	First Battle of Manassas, Confederate victory
July 25, 1861	Crittenden-Johnson Resolution to preserve the Union

Table 2
Descriptive Statistics: Fogel and Engerman sample and conveyance sample

	December 1835 – August 1861		October 1856 – August 1861	
	Fogel & Engerman sample		Conveyance sample	
Covariate	Mean	Standard deviation	Mean	Standard deviation
Logarithm of slave price	6.507	0.510	6.916	0.505
Logarithm of monthly cotton price	2.184	0.269	2.442	0.072
Logarithm of railroad share price	4.653	0.279	3.989	0.159
Male (1=yes, 0=no)	0.523	0.500	0.517	0.500
Light-colored female (1=yes, 0=no)	0.132	0.338	0.131	0.337
Light-colored male (1=yes, 0=no)	0.102	0.302	0.100	0.300
Male sold with guarantee (1=yes, 0=no)	0.425	0.494	0.487	0.500
Female sold with guarantee (1=yes, 0=no)	0.412	0.492	0.458	0.498
Age in years	24.355	9.662	25.208	10.915
$Age^2 \cdot 10^{-2}$	6.864	5.821	7.546	6.808
$Age^3 \cdot 10^{-3}$	22.187	30.676	26.252	37.322
$Age^4 \cdot 10^{-4}$	80.987	162.938	103.276	206.511
$Age^5 \cdot 10^{-5}$	327.077	904.080	446.942	1190.520
$Age^6 \cdot 10^{-6}$	1432.818	5290.908	2081.890	7190.400
Sold on credit (1=yes, 0=no)	0.207	0.406	0.231	0.421
Sold with family member (1=yes, 0=no)	0.010	0.098	0.012	0.109
Buyer from New Orleans (1=yes, 0=no)	0.679	0.467	0.654	0.476
Sold in group of 2 to 5 slaves (1=yes, 0=no)	0.137	0.344	0.146	0.353
Sold in group of 6+ slaves (1=yes, 0=no)	0.102	0.302	0.138	0.345
Number of observations	1876		7627	

Source: Slave sale data: Fogel and Engerman, "New Orleans Slave Sale Sample," and the New Orleans conveyance office. Cotton prices: L. C. Gray, History of Agriculture in the Southern United States to 1860 2 (Carnegie Institution of Washington, Washington, 1933), p. 1027. Railroad share prices: see text for description of derivation.

Note: Sample includes New Orleans slaves for whom the sale price pertains only to the principal slave. * indicates the regression coefficient is statistically different from zero at the 5 percent level. Standard errors are listed in parentheses.

Table 3

Regression Results: Fogel and Engerman New Orleans Slave Sale Sample

	December 1835 – September 1856		December 1835 – August 1861	
Covariate	Regression coefficient	Standard error	Regression coefficient	Standard error
Logarithm of monthly cotton price	0.338*	0.053	0.618*	0.062
Logarithm of railroad share price	0.258*	0.044	0.022	0.056
Male (1=yes, 0=no)	0.084	0.055	0.049	0.056
Light-colored female (1=yes, 0=no)	0.020	0.032	0.037	0.029
Light-colored male (1=yes, 0=no)	0.024	0.032	0.035	0.031
Male sold with guarantee (1=yes, 0=no)	0.310*	0.036	0.321*	0.040
Female sold with guarantee (1=yes, 0=no)	0.224*	0.042	0.224*	0.042
Age in years	0.086	0.061	0.096	0.054
$Age^2 \cdot 10^{-2}$	0.551	0.638	0.452	0.572
$Age^3 \cdot 10^{-3}$	-0.485	0.320	-0.434	0.293
$Age^4 \cdot 10^{-4}$	0.121	0.082	0.108	0.076
$Age^5 \cdot 10^{-5}$	-0.013	0.010	-0.011	0.010
$Age^6 \cdot 10^{-6}$	0.001	0.000	0.000	0.000
Sold on credit (1=yes, 0=no)	0.140	0.023	0.112*	0.023
Sold with family member (1=yes, 0=no)	-0.179	0.120	-0.202	0.172
Buyer from New Orleans (1=yes, 0=no)	-0.049*	0.022	-0.040	0.023
Sold in group of 2 to 5 slaves (1=yes, 0=no)	0.090*	0.028	0.088*	0.031
Sold in group of 6+ slaves (1=yes, 0=no)	0.113*	0.045	0.214*	0.059
Intercept	2.816	0.357	3.337	0.334
Number of observations	1619		1876	
F statistic	126.16		62.40	
R^2	0.516		0.492	
Root MSE	0.336		0.366	

Source: Slave sale data: Fogel and Engerman, "New Orleans Slave Sale Sample." Cotton prices: L. C. Gray, History of Agriculture in the Southern United States to 1860 2 (Carnegie Institution of Washington, Washington, 1933), p. 1027. Railroad share prices: see text for description of derivation.

Note: The dependent variable is the logarithm of the slave's price. Robust standard errors clustered by month of sale. Sample includes New Orleans slaves for whom the sale price pertain only to the principal slave. Estimated covariates indicating month of sale are not reported. The omitted variable refers to an unguaranteed dark-colored female, sold singly for cash to an out-of-town buyer.

* indicates the regression coefficient is statistically different from zero at the 5 percent level.

Table 4
Regression Results:
New Orleans Conveyance sample, October 1856 – August 1861

	Regression 1		Out-of-Sample Approach 1		In-Sample Approach 1		In-Sample Approach 2		In-Sample Approach 3	
Covariate	estimated coefficient	Std. error	estimated coefficient	Std. error	estimated coefficient	Std. error	estimated coefficient	Std. error	estimated coefficient	Std. error
Logarithm of monthly cotton price					-0.817*	0.178	-1.144*	0.123	-1.093*	0.116
Logarithm of railroad share price					-0.225*	0.076				
Logarithm of British consol price									1.108	0.667
Male (1=yes, 0=no)	0.386*	0.073	0.379*	0.074	0.391*	0.071	0.385*	0.070	0.386*	0.070
Light-colored female (1=yes, 0=no)	0.039*	0.014	0.039*	0.015	0.038*	0.013	0.038*	0.014	0.038*	0.013
Light-colored male (1=yes, 0=no)	-0.014	0.014	-0.009	0.015	-0.019	0.014	-0.017	0.014	-0.017	0.014
Male sold with guarantee (1=yes, 0=no)	0.090	0.045	0.074	0.047	0.120*	0.043	0.127*	0.042	0.120*	0.042
Female sold with guarantee (1=yes, 0=no)	0.356*	0.050	0.337*	0.054	0.387*	0.047	0.388*	0.048	0.383*	0.048
Age in years	0.341*	0.031	0.339*	0.032	0.345*	0.030	0.346*	0.029	0.348*	0.029
$Age^2 \cdot 10^{-2}$	-1.727*	0.317	-1.706*	0.329	-1.766*	0.307	-1.779*	0.305	-1.794*	0.305
$Age^3 \cdot 10^{-3}$	0.457*	0.160	0.445*	0.166	0.477*	0.156	0.482*	0.155	0.489*	0.155
$Age^4 \cdot 10^{-4}$	-0.074	0.041	-0.071	0.043	-0.079	0.040	-0.081	0.040	-0.082*	0.040
$Age^5 \cdot 10^{-5}$	0.007	0.005	0.006	0.005	0.007	0.005	0.007	0.005	0.008	0.005
$Age^6 \cdot 10^{-6}$	-0.0003	0.0002	-0.0002	0.0003	-0.0003	0.0002	-0.0003	0.0002	-0.0003	0.0002
Sold on credit	0.073*	0.009	0.073*	0.012	0.073*	0.008	0.073*	0.008	0.074*	0.008

(1=yes, 0=no)										
Sold with family member (1=yes, 0=no)	0.013	0.044	0.023	0.045	-0.002	0.044	-0.003	0.044	-0.006	0.044
Buyer from New Orleans (1=yes, 0=no)	-0.087*	0.012	-0.091*	0.013	-0.083*	0.012	-0.085*	0.012	-0.084*	0.012
Sold in group of 2 to 5 slaves (1=yes, 0=no)	0.124*	0.016	0.131*	0.018	0.114*	0.014	0.118*	0.014	0.115*	0.014
Sold in group of 6+ slaves (1=yes, 0=no)	0.160*	0.016	0.171*	0.020	0.145*	0.015	0.153*	0.015	0.149*	0.015
Intercept	4.136*	0.146	2.312*	0.165	6.972*	0.247	6.859*	0.295	1.675*	3.077
Number of observations	7627		7627		7627		7627		7627	
F-statistic	639.140		670.400		761.760		440.100		535.220	
R^2	0.574		0.547		0.599		0.596		0.597	
Root MSE	0.331		0.349		0.321		0.322		0.321	

Source: Slave sale data: New Orleans Conveyance records. Cotton prices: L. C. Gray, History of Agriculture in the Southern United States to 1860 2 (Carnegie Institution of Washington, Washington, 1933), p. 1027. Railroad share prices: See text for description of derivation. The consol price is the end-of-month closing price on 3% consols.

Note: The dependent variable is the logarithm of the slave's price. Robust standard errors clustered by month of sale. Sample includes New Orleans slaves for whom the sale price pertain only to the principal slave. Estimated covariates indicating month of sale are not reported. The omitted variable refers to an unguaranteed dark-colored female, sold singly for cash to an out-of-town buyer.

* indicates the regression coefficient is statistically different from zero at the 5 percent level.

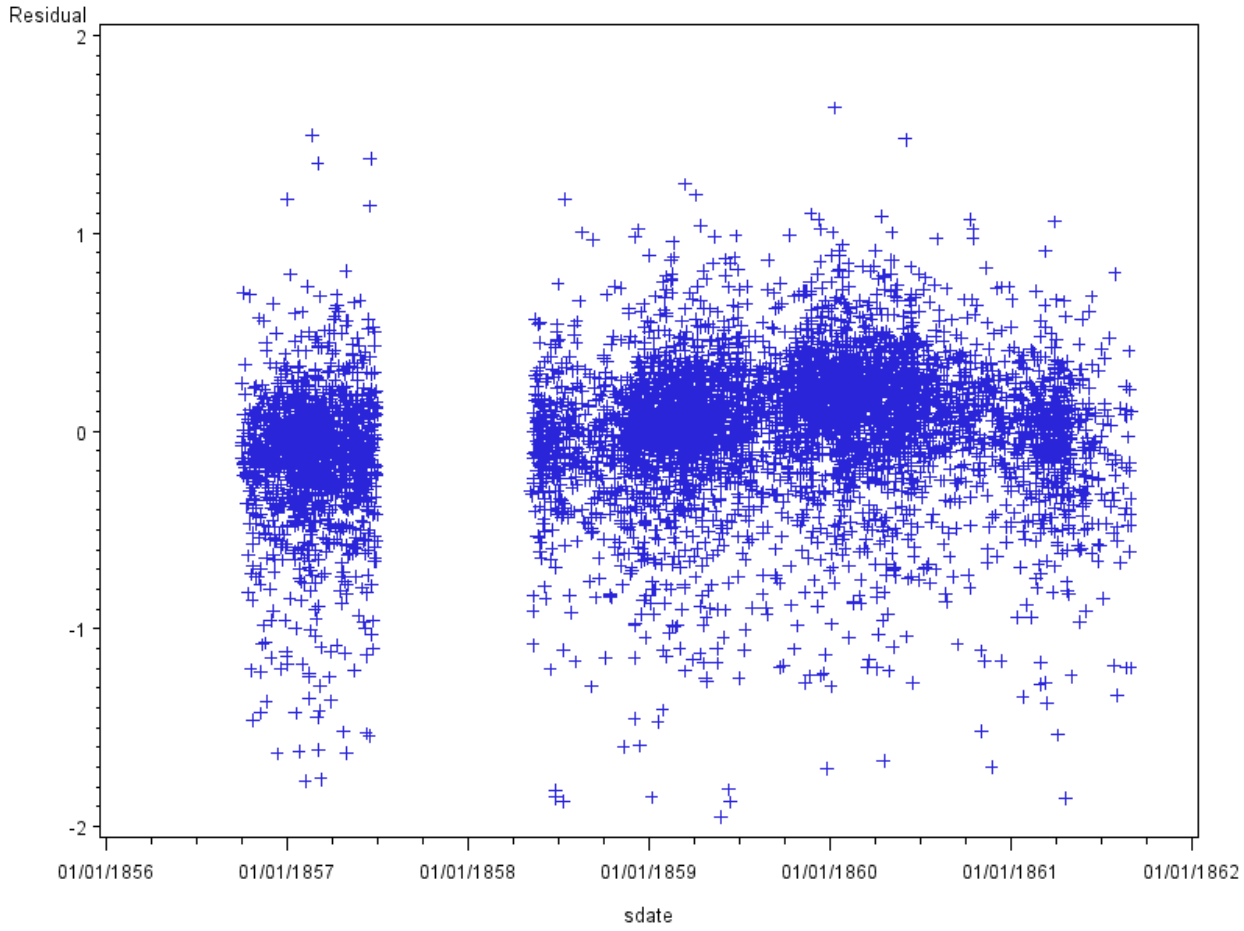


Figure 1 -- Individual Residuals of Observations from Regression 1, Table 4.

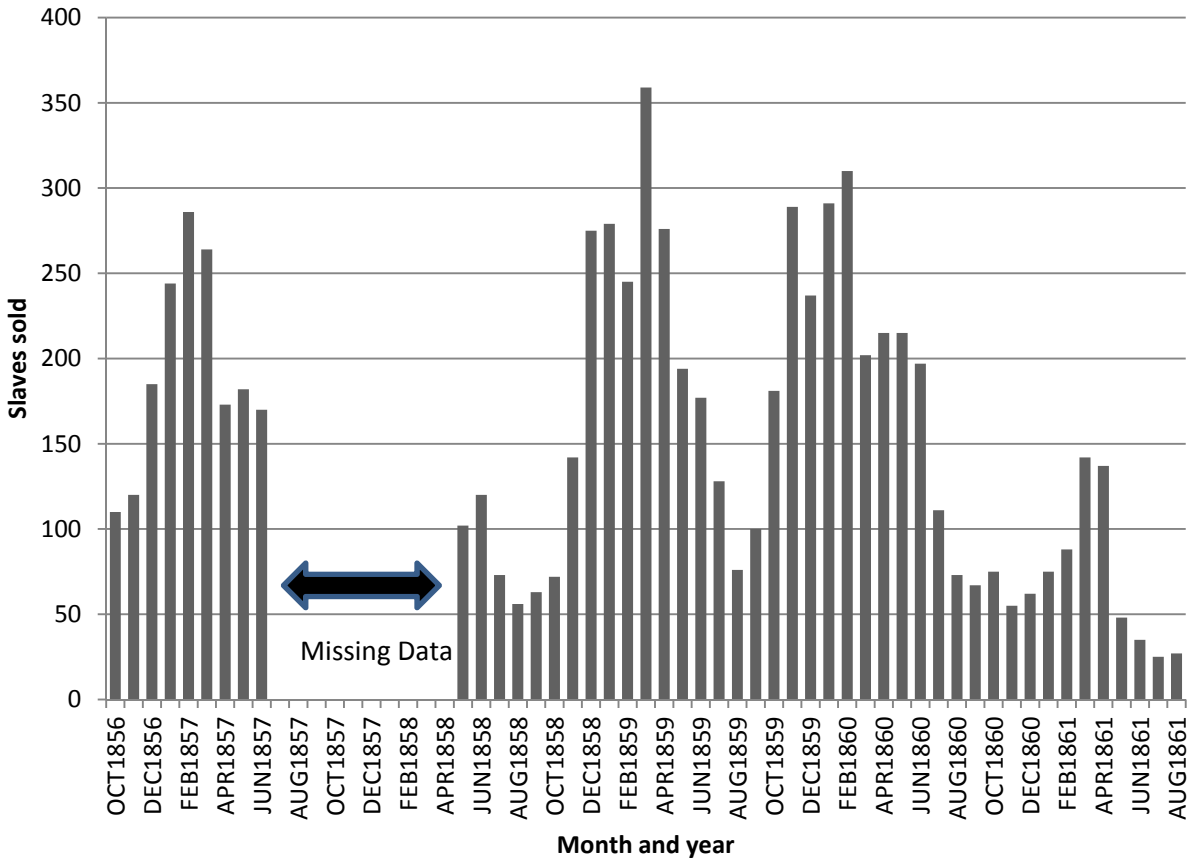


Figure 2 -- Frequency of New Orleans slave sales, 1856 – 1861, Conveyance records

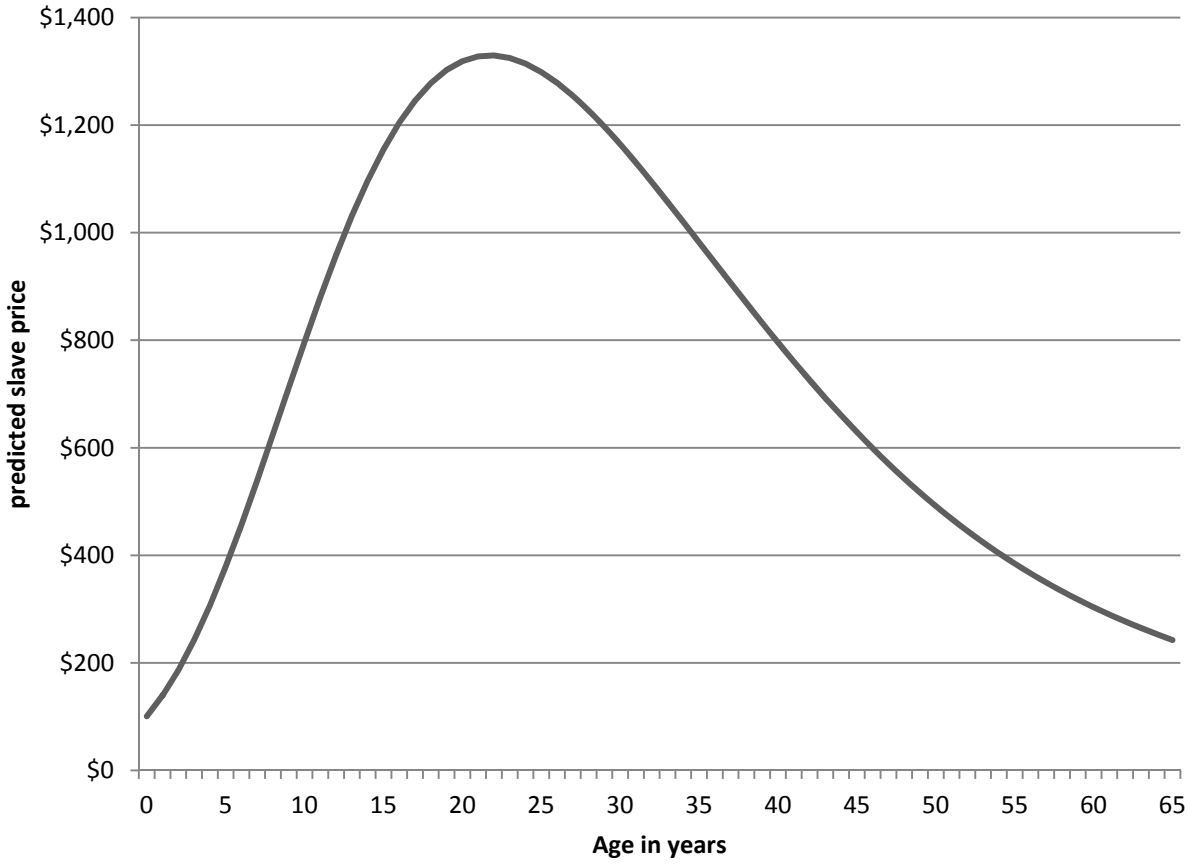


Figure 3 -- Predicted Age-Price Profile from Regression 1, Table 4.

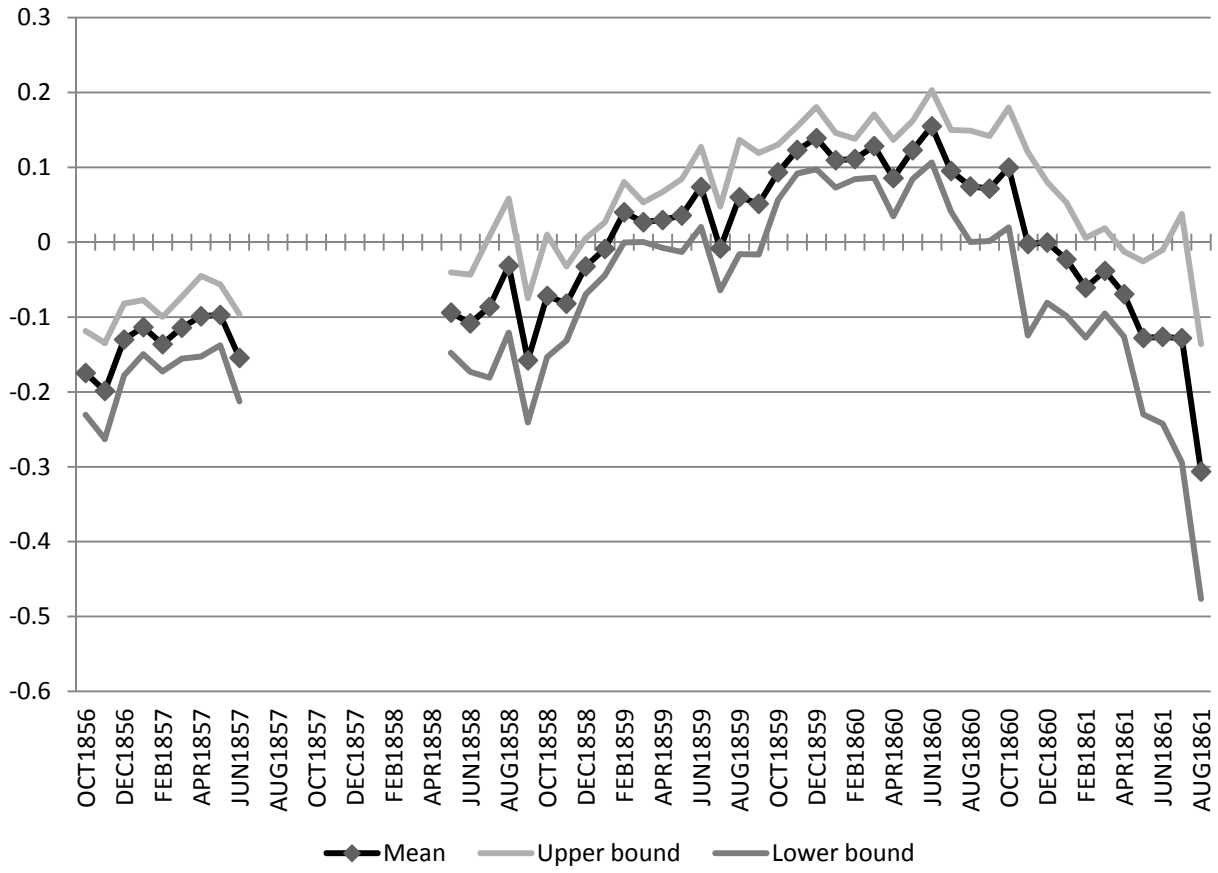


Figure 4 – Plot of monthly means of residuals from regression 1, Table 4.



Figure 5 -- Railroad Price Index & Slave Price Residuals.

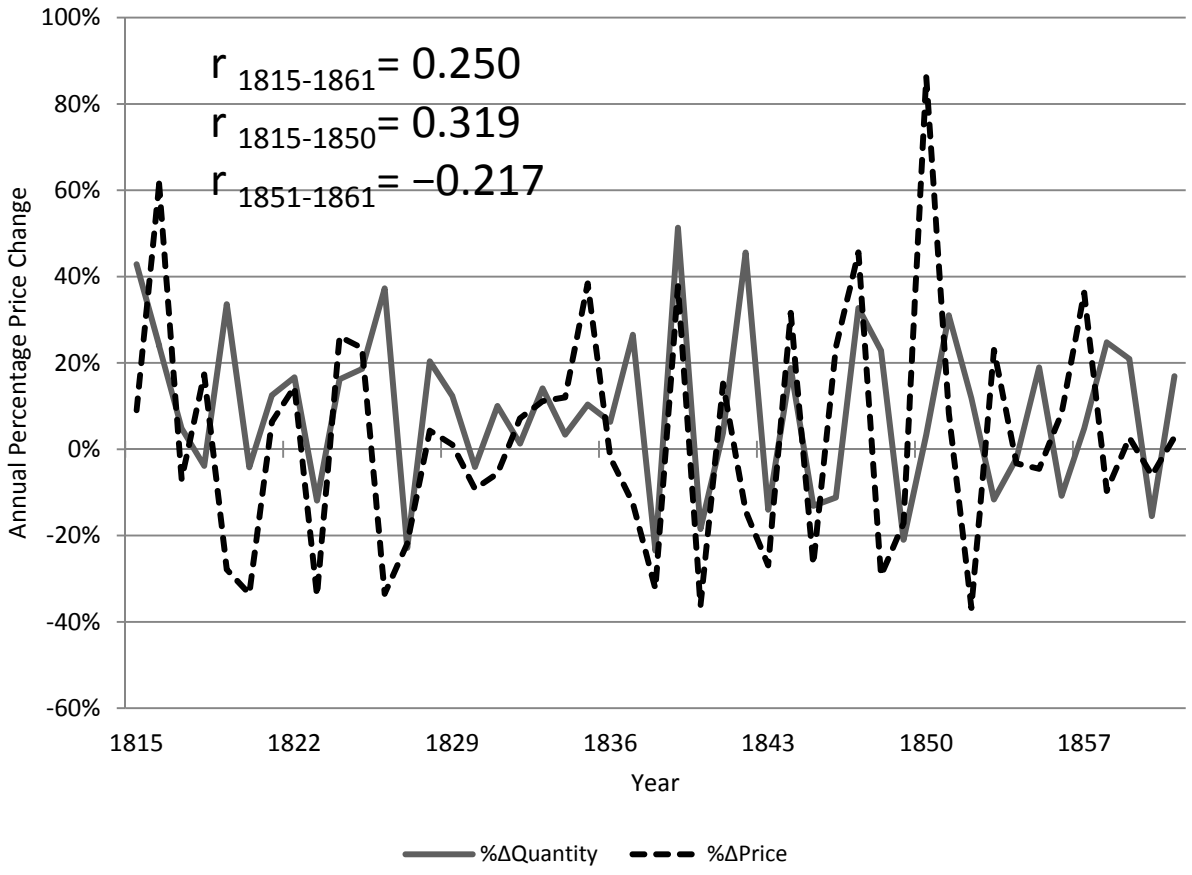


Figure 6 -- Annual Cotton Prices and Production

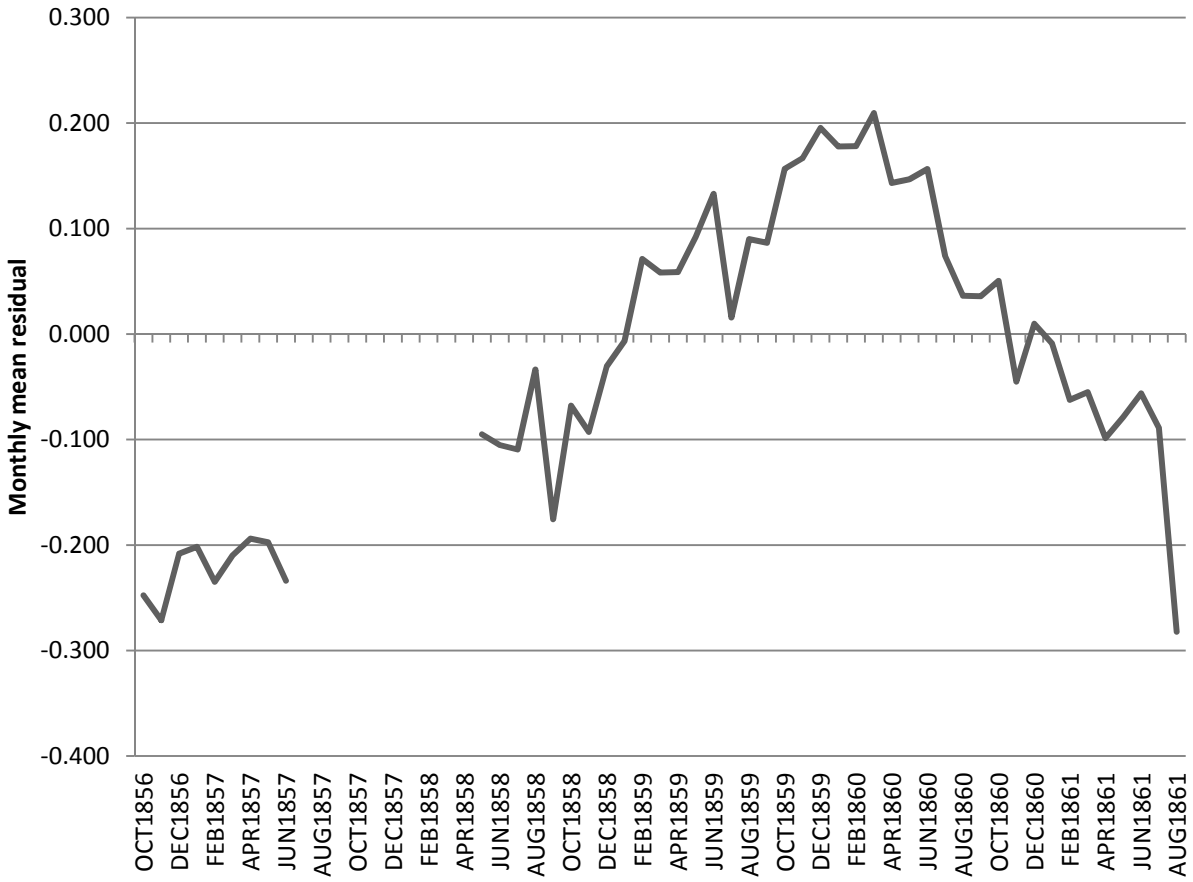


Figure 7 -- Plot of Monthly Means of residuals for Out-of-Sample Approach, Table 4.

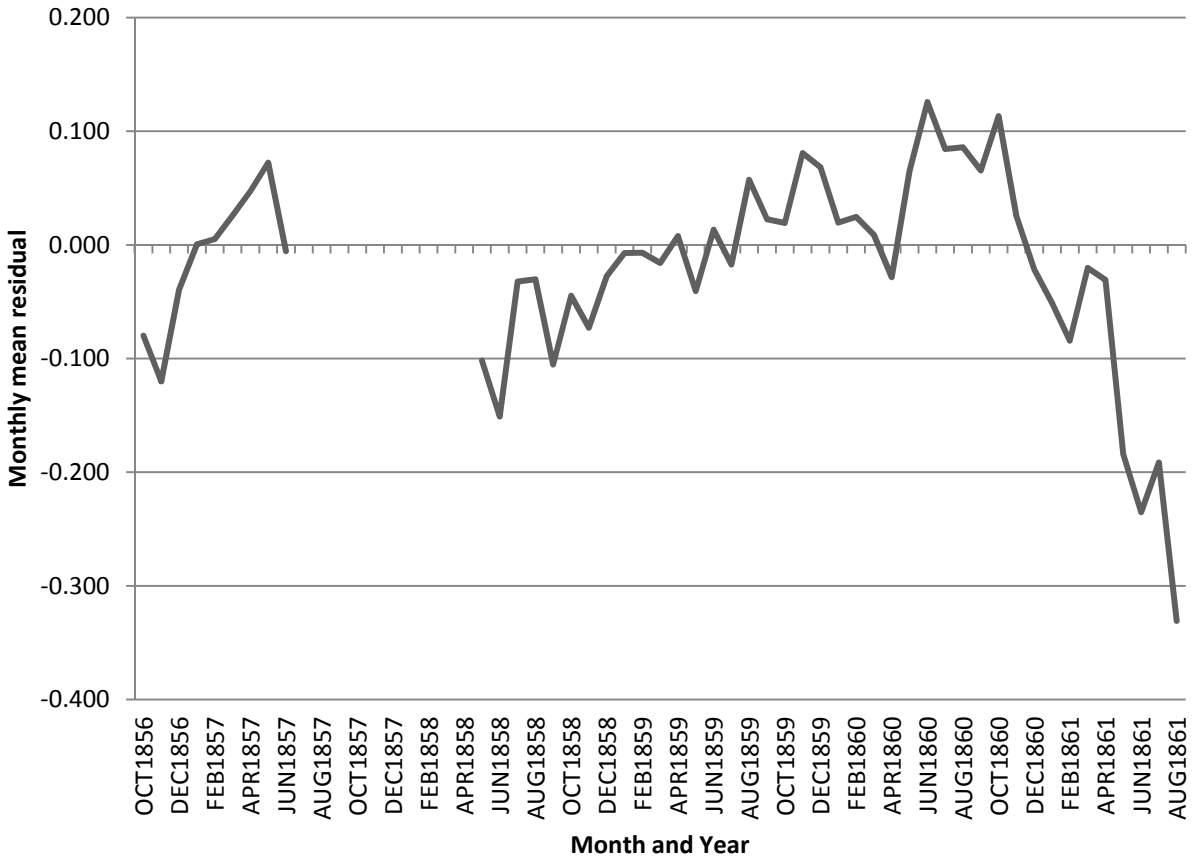


Figure 8 -- Plot of monthly mean residuals for In-Sample Approach 1, Table 4.

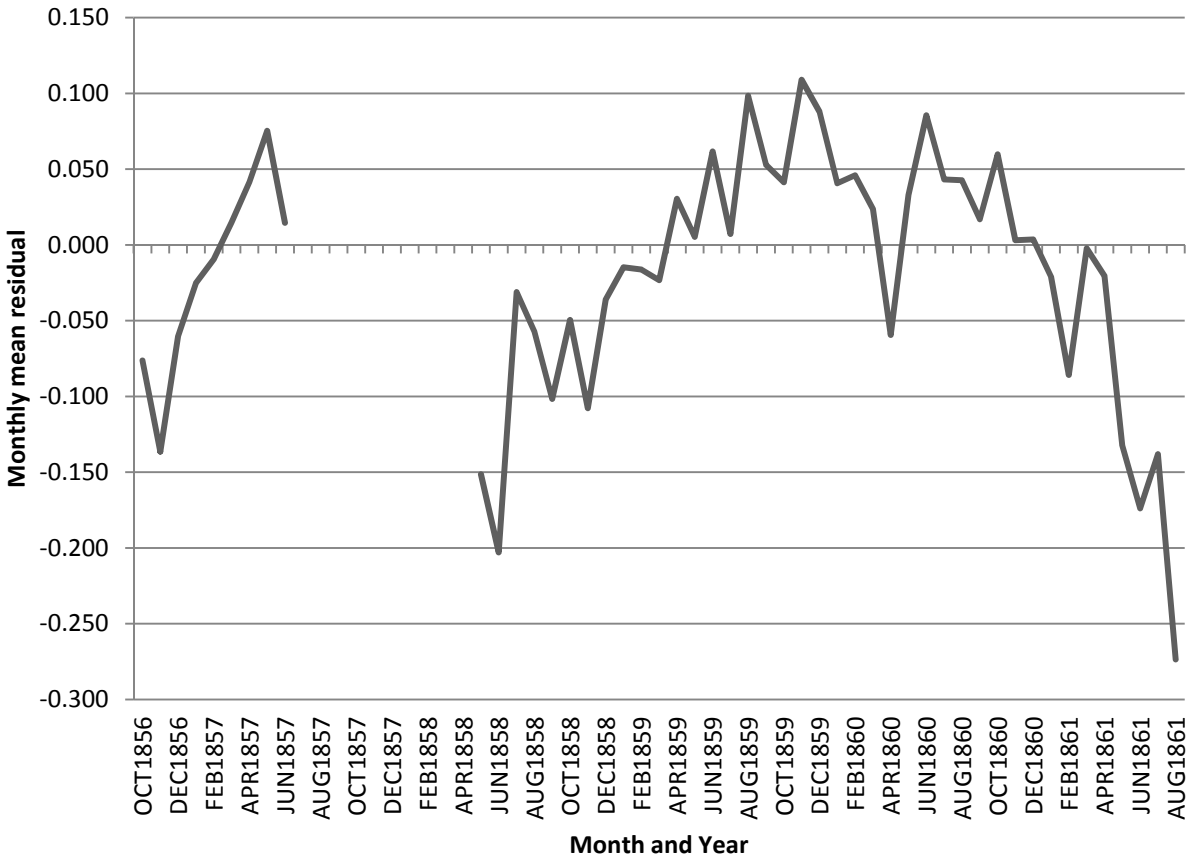


Figure 9 -- Plot of monthly mean of residuals for In-Sample Approach 2, Table 4.

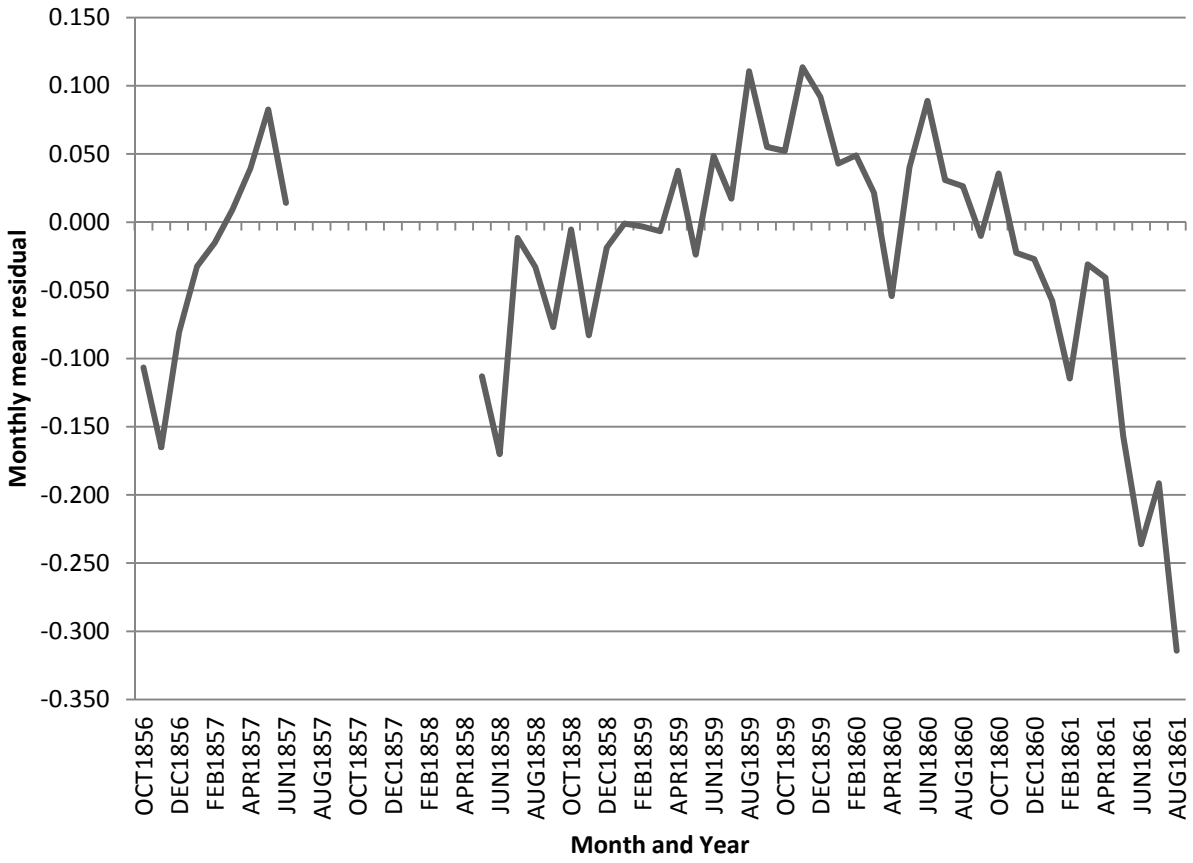


Figure 10 -- Plot of monthly mean of residuals for In-Sample Approach 3, Table 4.

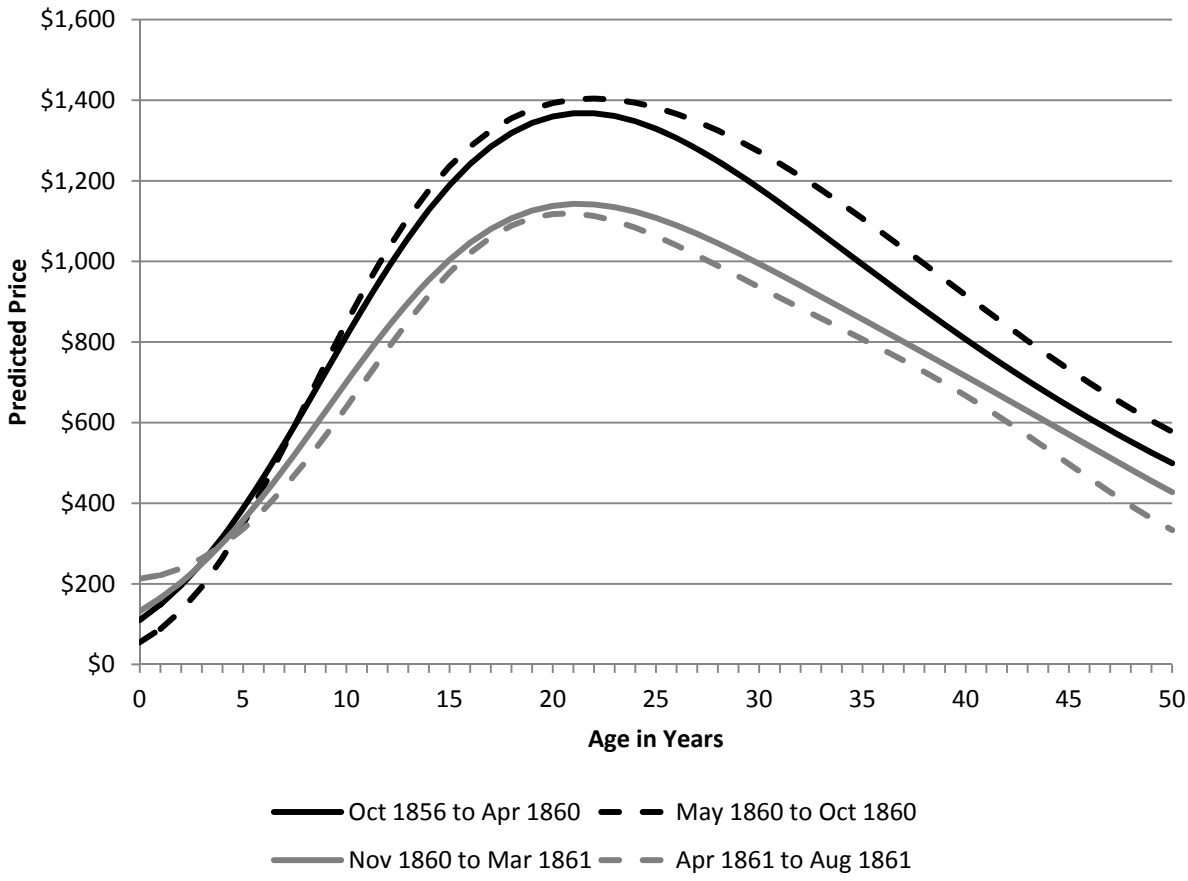


Figure 11 -- Predicted Age-Price Profile for Unskilled Males sold with Guarantees

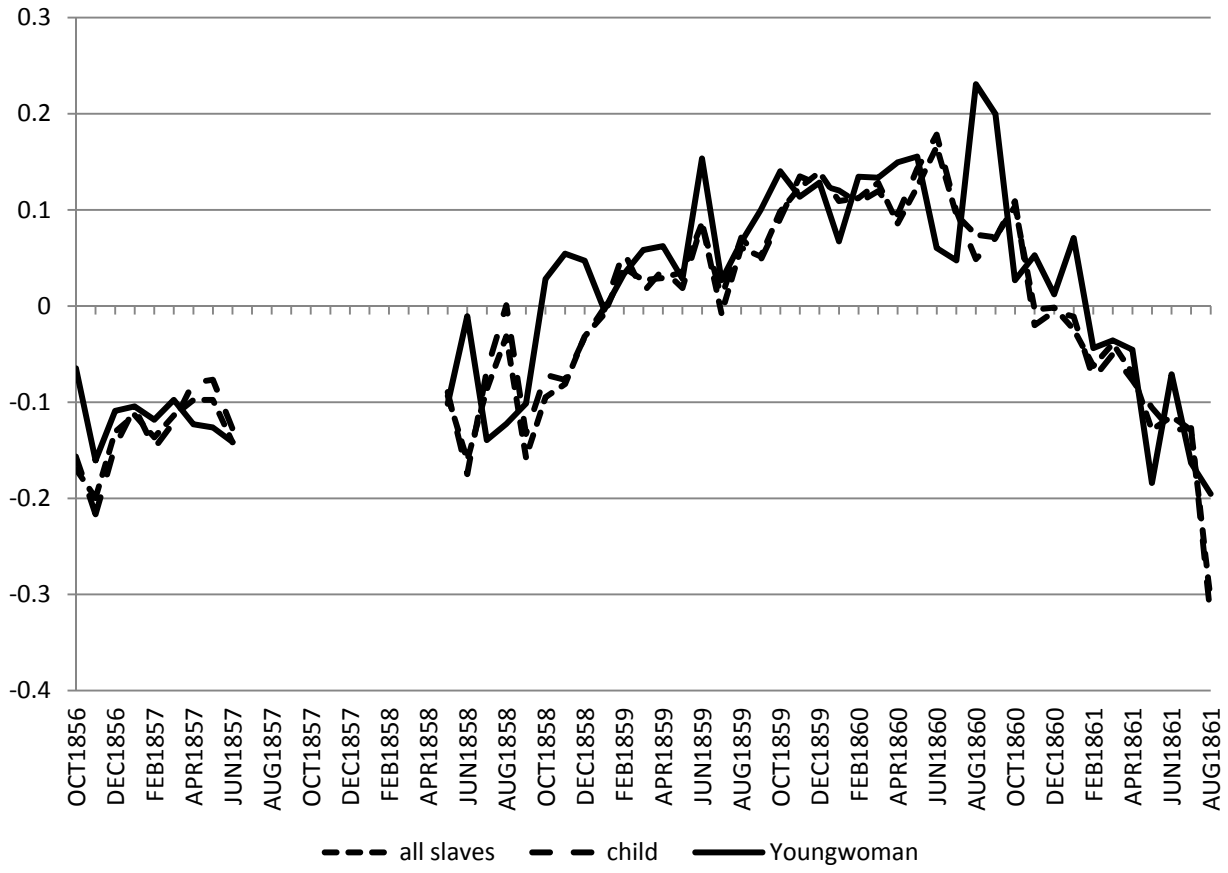


Figure 12 - Plot of monthly mean of residuals for Regression 1, Table 4.