Capital Destruction and Economic Growth: The Effects of Sherman's March, 1850–1920

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Online Appendix

Appendix (For Online Publication)

A1. Additional Tables and Figures

[Table A.1 about here.]

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[Figure A.1 about here.]

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A2. Alternative Channels: Demographic Shifts and Infrastructure

The effects of capital destruction may be magnified if the shock also affected the demographic structure of the population; in the postbellum South, that could mean reducing the labor supply of whites or newly freed blacks. Ransom and Sutch (2001) argue that changes in labor supply help explain the postbellum decline in economic activity in the South as a whole compared with the North. For the enslaved populations of Georgia and the Carolinas, the arrival of Union troops signaled freedom. Catton (1988, vol. 3, p. 415-416) estimates that more than 10,000 slaves were freed during the march. Moreover, Sherman not only freed the slaves in his path, but he also signed Field Order No. 15, which allowed the freed slaves to settle outside the march path in abandoned coastal plantations (Trudeau, 2008, p. 521). Ransom and Sutch (2001) estimate high rates of out-migration among freed people throughout the South, but we will investigate whether that out-migration differed between march counties and non-march counties.

In addition to potentially divergent postwar demographic patterns, the rebuilding and development of new public infrastructure in the postbellum period

could have been different between march and non-march counties. We know that wartime destruction of infrastructure varied between the march and non-march counties because Sherman explicitly targeted the railroads and telegraph lines in his path. Prior to the march, Georgia, North Carolina, and South Carolina had more than 2,700 miles of railroad track. Sherman laid siege to this track by assigning a large share of his men to the specific job of destroying the tracks and nearby depots, warehouses, station buildings, and bridges (Carr, 2015, p. 69). His soldiers sent home vivid letters describing how they would lift up track in concert, soften the steel with bonfires, wrap the track around trees, and bend it into bows known as "Sherman's neckties" (Carr, 2015, p. 70).[49] Between Atlanta and Savannah alone, Sherman claimed to have destroyed 310 miles of track (Trudeau, 2008, p. 533). These claims may be exaggerations, as much of the destruction was incomplete and his men concentrated more on pulling up rails and breaking ties than on fully destroying rail paths and grounds. Postwar re-laying of track came fairly quickly (Trudeau, 2008, p. 92). Nevertheless, the potential for differential infrastructure across march and non-march counties following Sherman's march could also help explain the observed economic differences.

Using county-level data on demographic structure and infrastructure, we find that neither channel is particularly useful in explaining our results in either the medium term or the long term. Table A.5 shows the results of estimating equation 1 on the demographic and infrastructure outcomes. Columns 1 and 2 indicate that there were not systematically different postwar in- or out-migration rates overall; columns 3 and 4 indicate no differences for migration of newly freed African Americans across the march and non-march counties. Demographics do not appear to explain much of the economic effects of the march. Looking across both total population and the African American population, we find effects that are very small in size and highly insignificant. Our results echo many histories of the postbellum South: if newly freed slaves "showed a reluctance to leave the places where they had lived and worked" (Glass Campbell, 2006, p. 49), that reluctance was not differential across counties decimated by Sherman and not.

Similarly, the last two columns show that differences in infrastructure, as measured by county railroad miles, were also small. This is consistent with the historical record: Atack and Passell (1994, p. 378-379) note that while rail and telegraph lines were "destroyed with great vigor by the Union," the "repairs were immediate." According to Rubin (2014, p. 154), many travelers remarked on the speed with which the Georgia Central Railroad was rebuilt in the few years after the war. The telegraph repair was even more rapid: as soon as December 13, 1864, while Sherman was still sieging Savannah, the Southern Telegraph Company had already repaired many of the cut wires, quickly reestablishing communication between Macon and Augusta. Given these rapid repairs and the exaggerated re-

[49] Barrett (1956) describes in detail the Union army process of destroying a railroad, including the need to bend the wrap into a twisted doughnut shape known as a "Lincoln gimlet" (Barrett, 1956, p. 51).

ports of railroad destruction by Sherman, it is perhaps unsurprising that postwar infrastructure was not different across march and non-march counties.

[Table A.5 about here.]

These results suggest that differences in either demographic composition or infrastructure cannot explain the Sherman effects. Importantly, this is true both in the long and medium-run, since we do not find any significant effects on these outcomes even in 1870, six years after the starting of the events. In Appendix A.A3, we investigate whether or not our null results on overall migration are hiding selection in *who* leaves Sherman counties. Combined with the restuls of Table A.5, we are more confident that demographic changes are not a mechanism that can explain our estimated Sherman effects on agriculture or manufacturing.

A3. No Selected Out-Migration from Sherman Treated Counties: Evidence from Census-Linked Sample of Individuals

In Subsection A.A2, we presented evidence that the effects of Sherman's march on the treated counties were not driven—or magnified or dulled—by changes in county-level demographics. However, at the county-level, our analysis was focused on total population and the racial composition of counties. In this appendix section, we present more detailed evidence on selective migration, using a linked sample of people matched across censuses. In a differences in differences analysis, comparing Sherman treated counties with untreated counties and people linked from 1860 to 1870 (treated by the march and the Civil War) with people linked 1850 to 1860 (pre-treatment), we find no strong evidence that people fled the Sherman counties in general or that selected types of people—young or old, farmers or non-farmers, wealthy or not wealthy—were more or less likely to move out of the Sherman-treated counties.[50] We do see some evidence that farmers were slightly more likely to move out of the Sherman treated counties than their non-farming counterparts but these effects are relatively small (2 to 4 points on base out-migration rates of 25 to 50%, depending on the exact outcome and specification) and could be direct results of the finance-exacerbated declines in agriculture in the Sherman affected counties.

Linking the Sample. — To estimate the (differential) migration effects of Sherman's march, we link the 0 to 65 year-old white male population of Georgia, North Carolina, and South Carolina in 1860 ahead to 1870, as well as a pre-treatment linked sample of those same states in 1850 ahead to 1860. We construct these links using the links created by the Census Linking Project.[51] Our final sample

[50] Our goal in this paper is to understand location effects and so we do not analyze the effects of Sherman's march on the individuals we track in this section. We leave analysis of the effects on people exposed to Sherman or not on occupation scores, indvidual wealth measures, marriage, fertility, occupation choice, and other outcomes for future work. For discussion of the potential intergenerational wealth effects of the Civil War and the march, see Ager, Boustan and Eriksson (2019).

[51] For a more general review of automated linking procedures, see Abramitzky et al. (2019).

is 281,362 individuals.[52]

We focus on the white population for two reasons. First, linking rates are notoriously low for blacks in any period. Second, the enslaved population was not enumerated by name before the Civil War. So there are vastly more enumerated African Americans in 1870 than in 1860 or 1850 and the resulting samples would be tiny and potentially selected.

Empirical Strategy and Results. — With the linked sample, we implement a simple difference in difference, comparing migration choices of people in Sherman counties in 1850 to people in Sherman counties in 1860, thus differencing out any county-level fixed effects. We include control for state by year fixed effects, individual controls (specifically fixed effects in age in the base year), and (in some specifications) county controls in 1860 $\times$ year fixed effects, mirroring our main specfication in the paper. The migration choices are measures 10 years later in the linked censuses. We construct three primary migration outcomes: did an individual migrate out of their baseline county?; did an individual migrate out of their baseline state?; did an individual leave the three Sherman states (GA, NC, and SC)? Following Bailey et al. (2017), we generate inverse propensity weights (IPW) to reweight our sample and account for selection in linking rates. The weights are based on first and last name commonness, first and last name length, the presence of middle initials in the census record, and third-order polynomials in age and year of birth.

We have four main findings in our linked sample. First, overall, whites in the Sherman treated counties were no more or less likely to move along any of our migration outcomes, as we show in Table A.6. While the estimated coefficients on Sherman $\times$ Post are positive, indicating slightly higher rates of out-migration for individuals in the Sherman treated counties in 1860 (followed to 1870) relative to those counties 1850 to 1860, the estimates are all statistically insignificant and economically quite small. This accords with our previous results that overall net population flows out of Sherman counties are statistically similar to non Sherman counties.

[Table A.6 about here.]

Second, there are no dramatic patterns in selective migration by age, as we show in Figure A.8. To show this, we replace the one Sherman $\times$ Post coefficient with six Sherman $\times$ Post $\times$ Age Bin coefficients, saturating the age-space in the baseline year with 10 year age bins (people aged 50 to 65 are included all in the final bin). We include fixed effects for each age bin, as well as interactions of age bins with county fixed effects and with year fixed effects. People over the age of 50, though they out-migrate at lower rates overall, are a bit more likely to be pushed

[52]The regression samples are smaller as we restrict to our baseline Sherman treated and control counties, omitting the vertex cities and counties farther than 100 miles from Sherman's march.

to move by Sherman treatment but these relative differences are quite small and we find it unlikely that our main results are driven by more people over 50 (at baseline; they are over 60 in the following census) fleeing the Sherman-treated counties from 1860 to 1870.

[Figure A.7 about here.]

Third, we see farmers are more likely to leave Sherman treated counties than non-farmers, though the magnitude of the Sherman effect is only a few percentage points (Table A.7). We see this whether we measures farmers as people who reported farmer as an occupation in the or were coded by IPUMS in the agriculture industry or as living on a farm, all measured in the base year. This suggests that there was some selective migration and it is consistent with the negative effects on agricultural land value and investment we document. The increase in out-migration by farmers could be a direct result of the finance-exacerbated decline in agriculture in the Sherman treated counties.

[Table A.7 about here.]

Fourth and finally, we find little evidence of a differential Sherman effect when splitting our sample by two other important socio-economic measures in the base year: marital status and wealth status. Married and single men move at different rates (not surprisingly, single men move more) but not by Sherman treatment status, as we show in the top panel of Table A.8. We find similar and null results when we cut by occupation score among the non-farmer population: high and low SES men are not affected by Sherman differentially (not reported here). Finally, when we compare men with and without real estate wealth in the base year (we use real estate wealth because personal property was not recorded in the 1850 Census), there is no evidence of differential Sherman effects. We show this in the bottom panel of Table A.8 where we split at zero versus non-zero wealth because the median man in our sample has zero wealth.

[Table A.8 about here.]

A4. Robustness for the Role of Credit Markets in the Extent of Capital Devastation

This appendix subsection discusses additional robustness tests related to Section V.

One concern with the analysis presented in Table 5 is that antebellum bank location is clearly not random. Endogenous bank location would be a problem if locations with banks systematically experienced negative shocks in 1860s, independent of Sherman-caused capital destruction. We develop a placebo test to rule out this possibility. We draw on the the placebo marches described in Section IV.B and study whether the closeness to antebellum (1859) banks predicts any negative relative effects in counties that could be exposed to similar (non-Sherman

destruction) shocks as our Sherman counties, again studying counties located on the paths between southern cities. To do this, we collected data from the Census of Manufactures with industry by county level data for 1860, 1870 and 1880 for the non-Sherman southern states and created a set of placebo Marches, as previously described. In Figure A.9 (similar to Figure A.1), we plot the distribution of t-statistics on the bank and Sherman treatment interaction. For all four outcomes, we find placebo marches rarely yield as large and negative t-statistics as the true Sherman's march, doing so less than 5% of the time in all specifications and less than 1% of the time in four specifications.

[Figure A.8 about here.]

Our credit market mechanisms are generally robust to the main tests discussed in reference to the main agricultural and manufacturing results. First, we use our straight-line IV strategy in Table A.9, replicating the results in Table 5. Generally, the results are similar though statistically a bit weaker, as was the case when we applied the IV in to the main results. Second, we show that our manufacturing growth effects are robust to alternative treatment and control bandwidths, though we lose statistical precision as treatment grows too wide (and encompasses too many control counties). See Figure A.10a and A.10b for the application of this approach to the bank interaction.

[Table A.9 about here.]

[Figure A.9 about here.]

Finally, for the agricultural results, we find that using a more extreme definition of wealthy individual—top 2%—provides very similar results in the top panel of Table A.10. In the bottom panel of Table A.10, we show that the results are qualitatively identical if we define wealth density relative to the overall white population rather than only individuals with some wealth in the census. Furthermore, when looking at the effect by decades, it is clear that this effect is not driven by any differential trend in this group of high-wealth counties within Sherman, but it is the response of these counties to the economic shock.

[Table A.10 about here.]

A5. Spatially Adjusted Standard Errors

Spatial correlation is a key concern for analyses that exploit location-based heterogeneity in treatment. To deal with concern, we follow the recent empirical literature and we re-estimate our main results using Conley standard errors, which account for correlation across areas—counties in our setting—that are located close to each other (Conley, 1999, 2008). Following Kelly (2019)'s warning to make the geographical cutoff radius sufficiently large, we allow errors to be

correlated up to 100km in our setting.[53] In practice, for our standard model we implement Conley standard errors using the package that is developed by Thiemo Fetzer, which allows to allow for spatial correlation along a smooth running variable—in our case distance—and temporal correlation.[54] One caveat of this package is that we need to specify the lags of temporal correlation that are allowed in the model: to allow the maximum flexibility, we allow correlation of up to five lags in our time dimension across censuses. When we study the effects of Sherman's march on growth rates in manufacturing using our collapsed difference-in-difference, in which we only exploit cross-sectional variation, we use the standard code developed in Hsiang (2010).

The results are reported in Table A.11 for the main agriculture results and Table A.12 for manufacturing. To facilitate the comparison with the main analyses, we report in these tables both the original clustered standard errors from the main results and the new Conley-based standard errors. Our key conclusion is that the substantive interpretation does not change when we adjust for spatial correlation. Among all the coefficients, we find that the new and old standard errors are generally very close in magnitude. The standard errors are also not consistently smaller or larger in either calculation. Altogether, these tests confirm that our results are robust to concerns of spatial correlation in our setting.

[Table A.11 about here.]

[Table A.12 about here.]

[53] Our empirical setting is conceptually related to the cricism in Kelly (2019) but different in a key way. Kelly (2019) argues that many persistence papers are plagued by false-positives. If two independent random white noise variables over some xy-space are both spatially correlated, there is a good chance of finding incredibly strong correlations after sampling points (cities) in the plane. For papers investigating the effects in the very long run that compare some spatial independent variable historically to some spatial dependent variable today, this could generate spurious results that appear to be very statistically powerful and robust. However, the Kelly (2019) critique is not directly applied to a difference-in-difference strategy like we use. In our difference-in-difference, we have variation within units across time---we would not be identified if all we had was cross-sectional variation in treatment at some lagged period given our county fixed effects. Still, spatial autocorrelation is potentially an issue, and this is why we implement Conley's errors as discussed in this appendix section.

[54] We thank Professor Thiemo Fetzer for providing the code and documentation online. His files are accessible at: http://www.trfetzer.com/conley-spatial-hac-errors-with-fixed-effects/

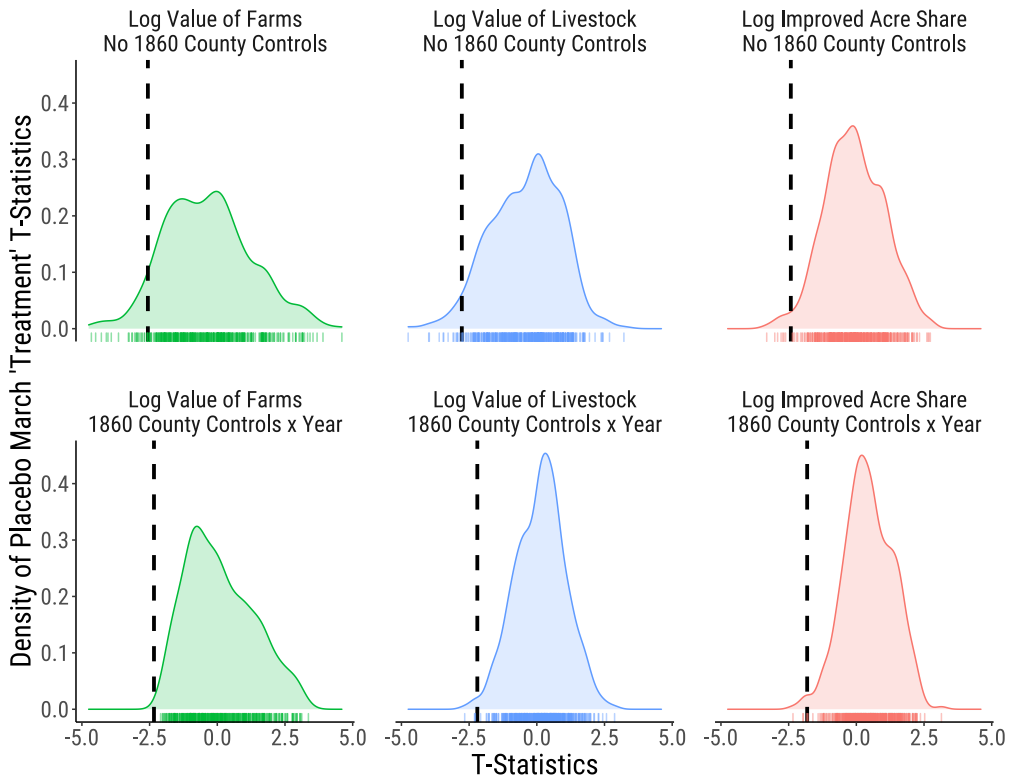
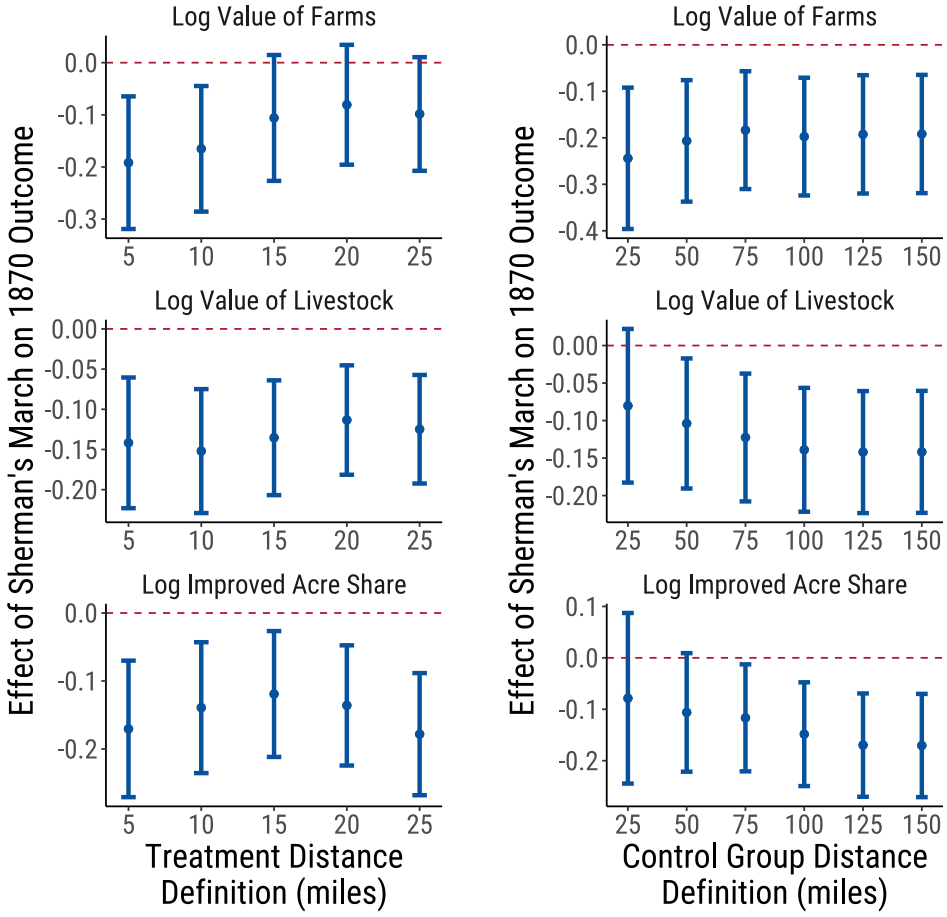


FIGURE A.1. ESTIMATED EFFECTS OF 852 PLACEBO MARCH PATHS BETWEEN TRIPLES OF SOUTHERN CITIES ON 1870 OUTCOMES

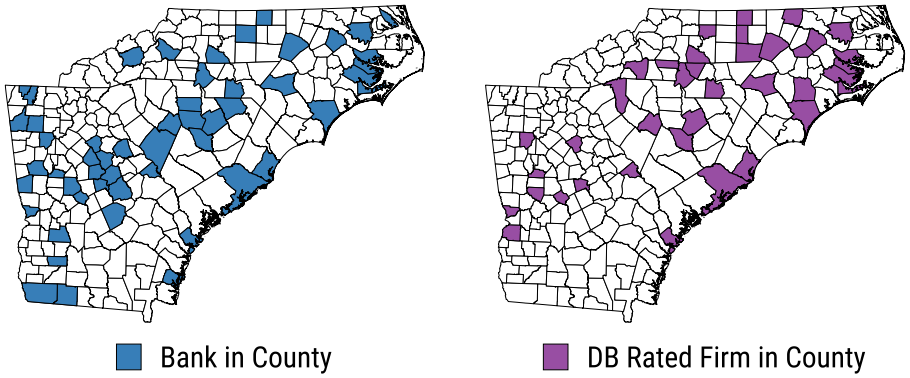
Note: The t-statistics from Sherman's March are indicated with the dashed vertical line. In five of six specifications, fewer than 5% of the t-statistics from the placebo marches are as negative as the estimated Sherman effects. Placebo marches are built by connecting three Southern cities (defined as counties with more than 2000 urban residents in 1860) by paths between 100 and 300 miles, mimicking the sizes and distances between Atlanta, Savannah, and Columbia where Sherman actually marched. The t-statistics presented are from a regression replicating Equation 1 for each placebo march.



(a) Alternative treatment definitions (b) Alternative control definitions

FIGURE A.2. SHERMAN'S EFFECT ACROSS ALTERNATIVE TREATMENT AND CONTROL DEFINITIONS FOR AGRICULTURAL OUTCOMES

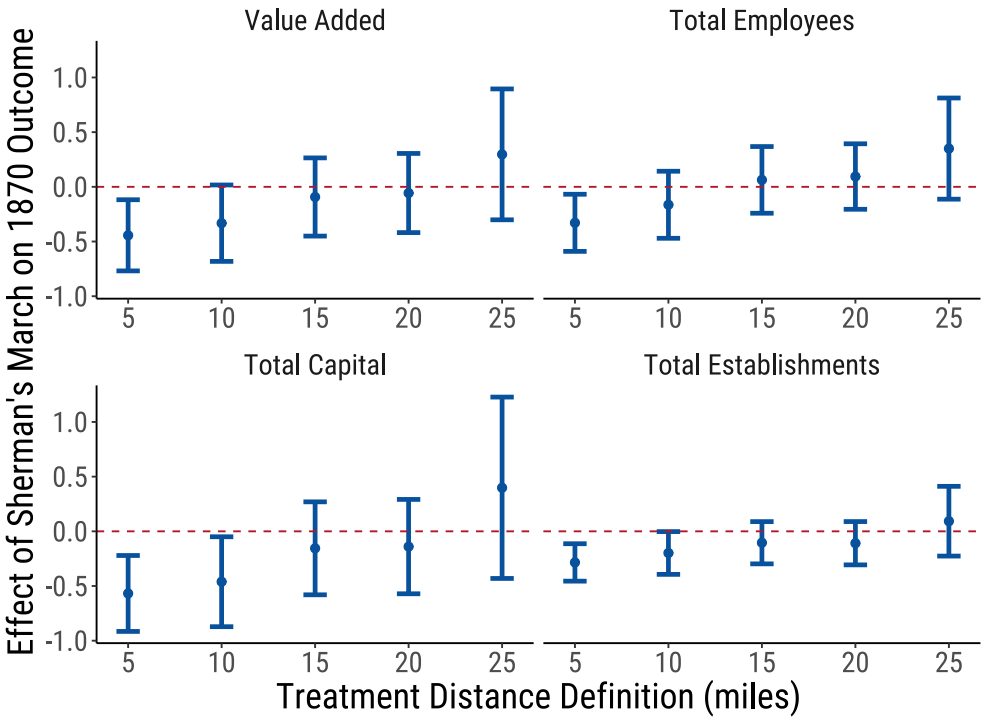
Note: Plotted with 90% confidence intervals



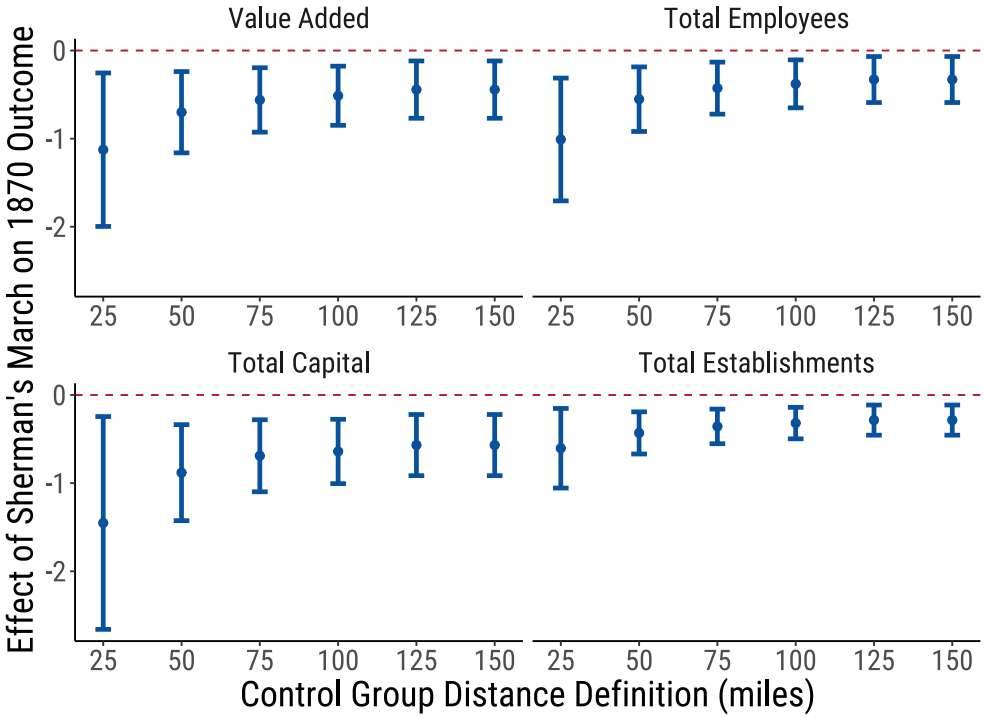
(a) Banks (b) High Demand for Credit

FIGURE A.3. COUNTIES WITH BANKS IN 1859 OR WITH HIGH DEMAND FOR CREDIT IN GEORGIA, SOUTH CAROLINA, AND NORTH CAROLINA

Note: Credit demand based on Dun, Boyd, & Company data from 1860.



(a) Alternative treatment definitions



(b) Alternative control definitions

FIGURE A.4. SHERMAN'S EFFECT ACROSS ALTERNATIVE TREATMENT AND CONTROL DEFINITIONS FOR MANUFACTURING OUTCOMES

Note: Plotted with 90% confidence intervals

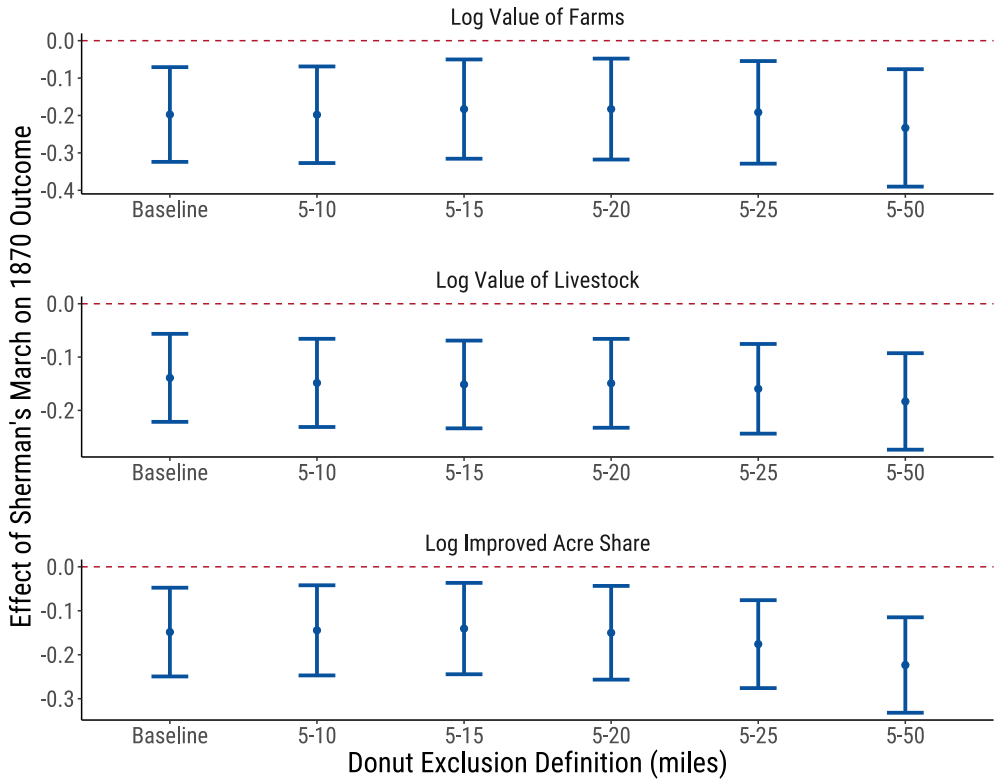


FIGURE A.5. SHERMAN'S EFFECT ON AGRICULTURE ACROSS DONUT DESIGNS EXCLUDING COUNTIES NEIGHBORING SHERMAN COUNTIES

Note: Plotted with 90% confidence intervals

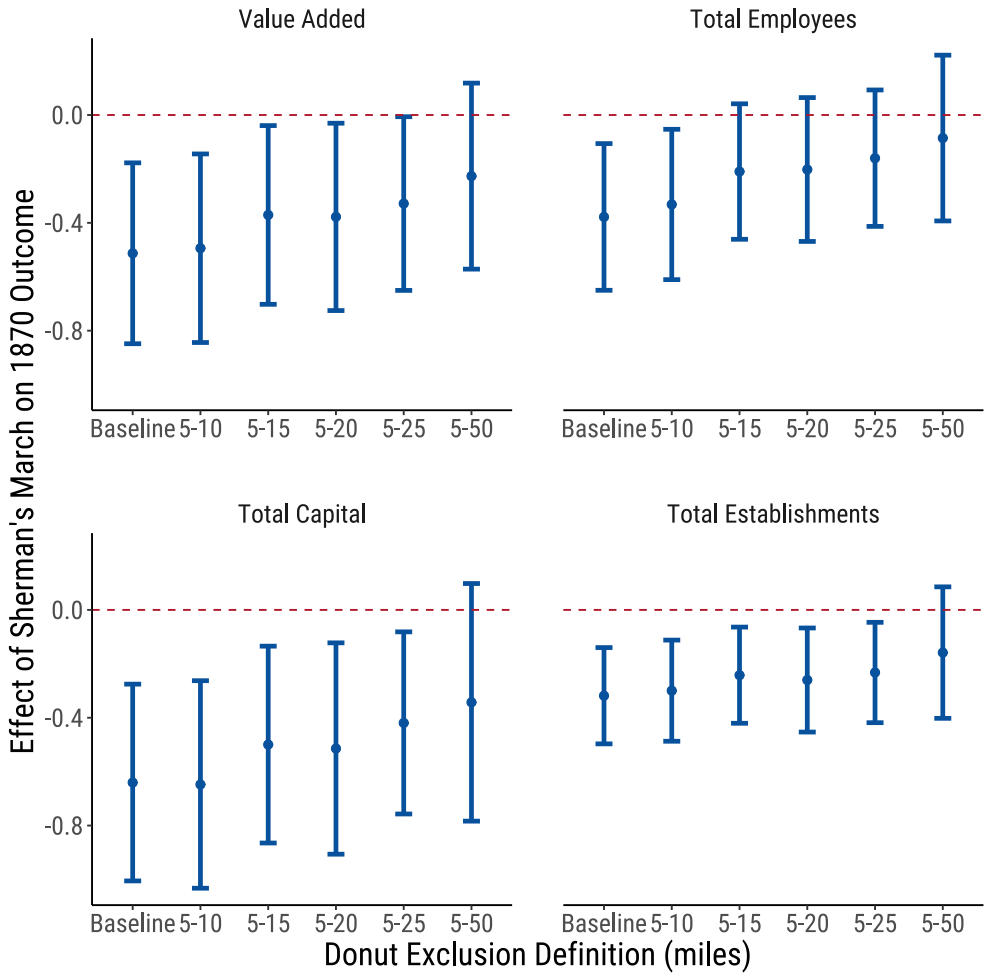


FIGURE A.6. SHERMAN'S EFFECT ON MANUFACTURING ACROSS DONUT DESIGNS EXCLUDING COUNTIES NEIGHBORING SHERMAN COUNTIES

Note: Plotted with 90% confidence intervals

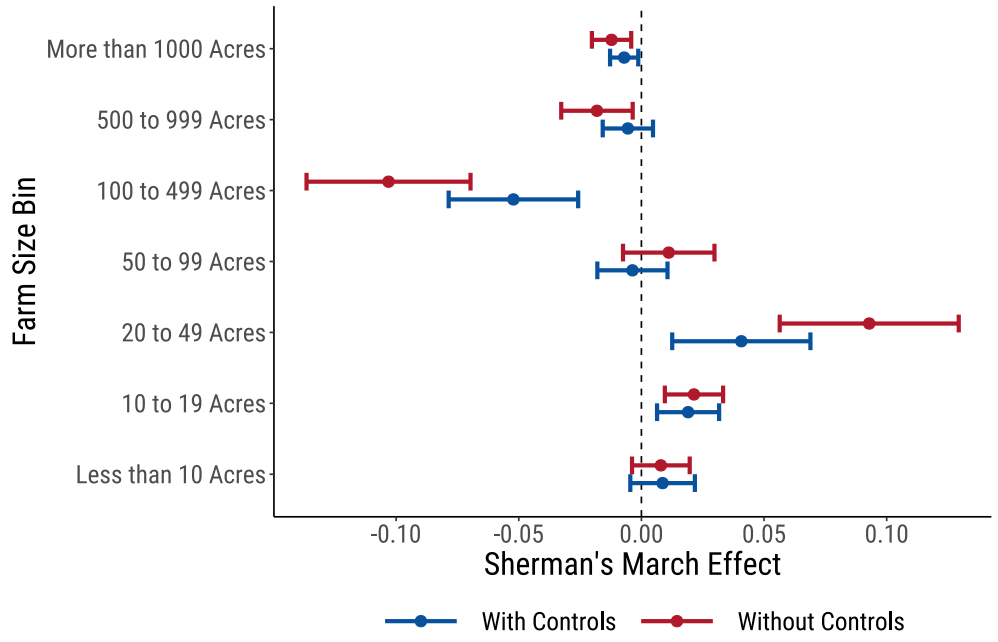


FIGURE A.7. SHERMAN'S MARCH CHANGED THE DISTRIBUTION OF EFFECTIVE FARM SIZES IN THE COUNTIES SHERMAN DESTROYED

Note: In Figure 6, we showed effects on the number of farms, here we show the share of farms. Counties treated by Sherman had more small farms in the years after the Civil War, with growth in the share and number of farms under 50 acres. We plot coefficients from separate regressions with the share of farms of each size as the outcomes as in equation 1. We observe the distribution of farms in 1860, 1870, 1880, and 1890. The coefficient plotted is $Sherman \times Post$. All specifications include county fixed effects and state by year fixed effects. The estimates from the models with controls include the same controls as the main specification in the paper. Standard errors are clustered at county-level and we plot 90% confidence intervals around the point estimates.

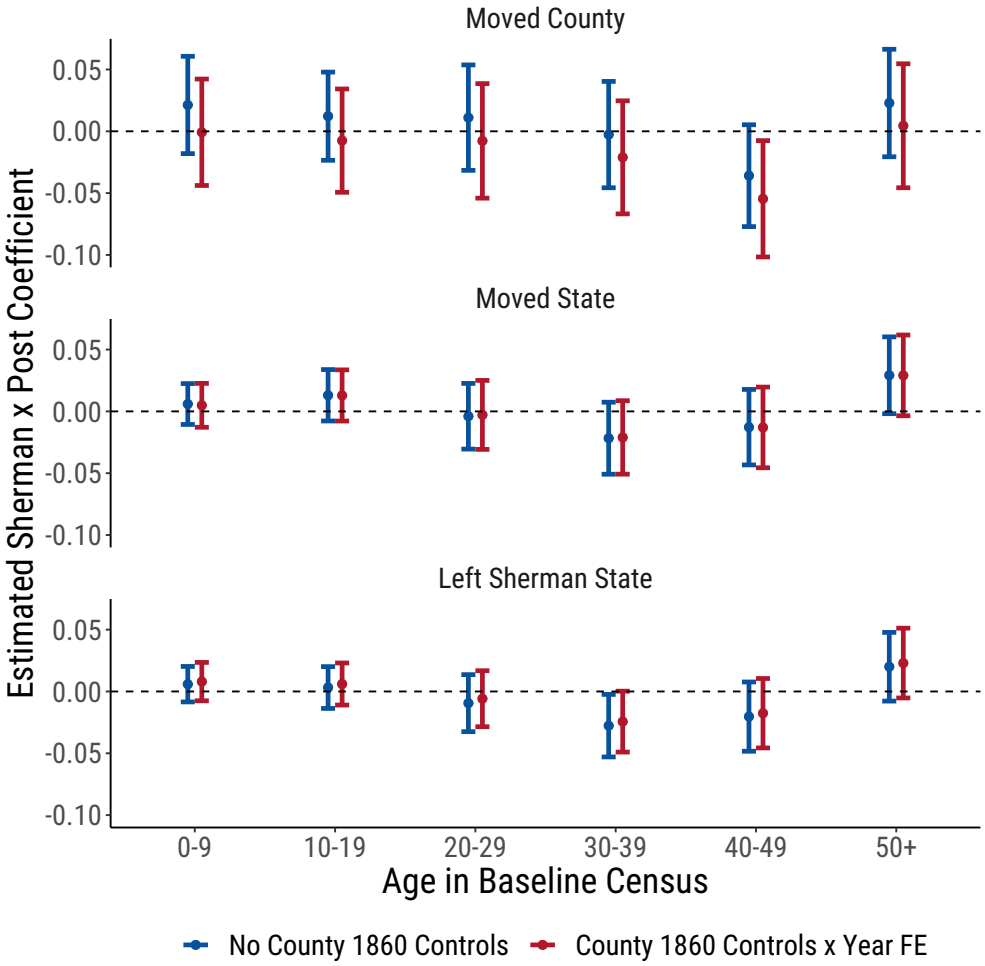


FIGURE A.8. ESTIMATED EFFECTS OF SHERMANS MARCH × POST × AGE BIN IN INDIVIDUAL CENSUS LINKED ANALYSIS.

Note: Plotted with 90% confidence intervals

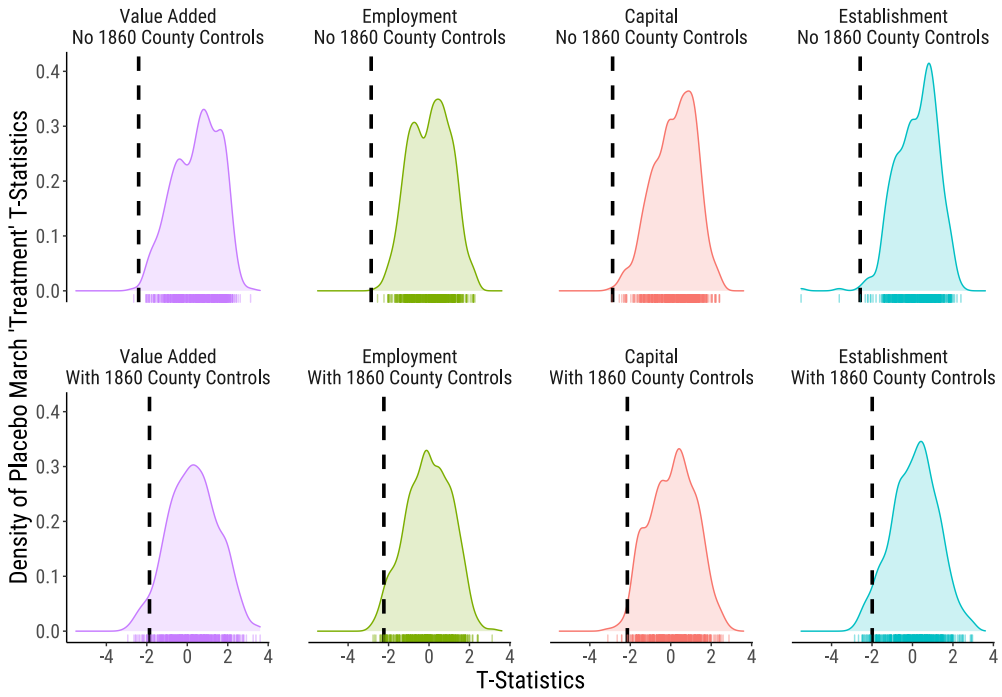
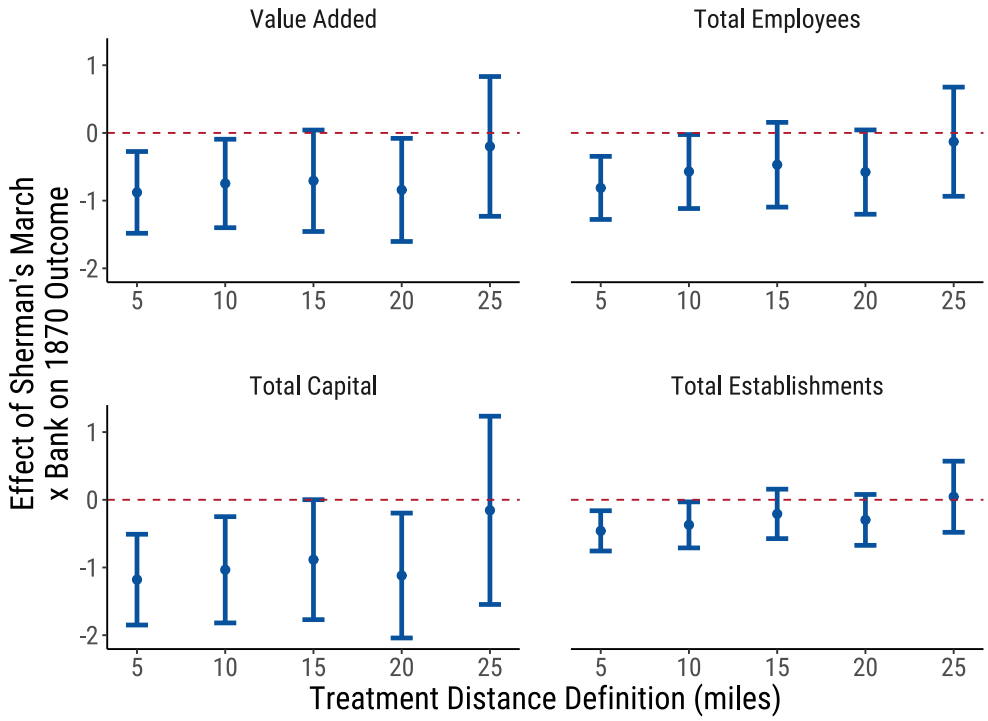
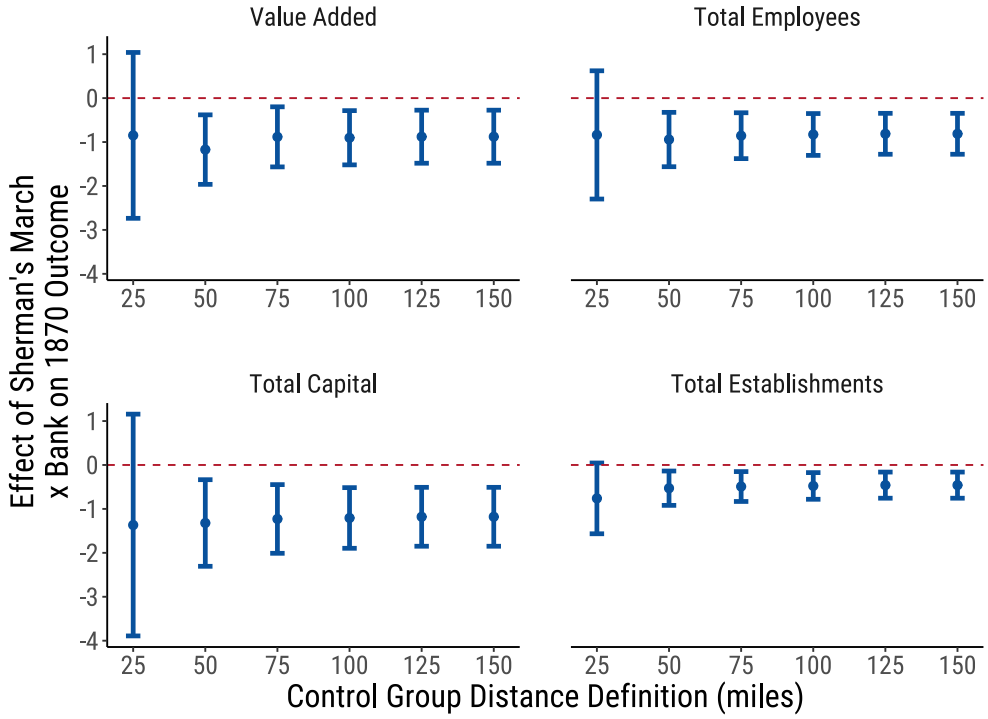


FIGURE A.9. ESTIMATED EFFECTS OF SHERMANS MARCH × BANK COUNTY IN 852 PLACEBO MARCH PATHS BETWEEN TRIPLES OF SOUTHERN CITIES ON GROWTH RATES IN CENSUS OF MANUFACTURING DATA FROM 1860 TO 1870.

Note: The t-statistics from Sherman's March are indicated with the dashed vertical line. For all four outcomes, fewer than 5% of the t-statistics from the placebo marches are as negative as the estimated Sherman effects. Placebo marches are built by connecting three Southern cities (defined as counties with more than 2000 urban residents in 1860) by paths between 100 and 300 miles, mimicking the sizes and distances between Atlanta, Savannah, and Columbia where Sherman actually marched. The t-statistics presented are from a regression replicating Equation 2 for each placebo march.



(a) Alternative treatment definitions



(b) Alternative control definitions

FIGURE A.10. ALTERNATIVE TREATMENT AND CONTROL DEFINITIONS FOR MANUFACTURING OUTCOMES, BANK INTERACTION

Note: Here, we plot the coefficient on the interaction of Sherman's March with the Bank County indicator, the main coefficient of interest in Panel A of Table 5 with 90% confidence intervals.

TABLE A.1—LINK RATE FROM MARRIAGES TO 1870 CENSUS (%)

	March Counties	Non March Counties	Difference
Georgia	39.28	38.90	0.38
			(1.72)
North Carolina	38.91	38.49	0.43
			(9.96)
Total	39.25	38.84	0.41
			(1.87)

Notes: Lists of the names of grooms in Georgia and North Carolina were collected from state marriage records between 1868 and 1872. The grooms were then matched by first and last name to the complete 1870 census schedule. The link rate reports the share of grooms successfully matched using a variant of the automated linking procedure described in Feigenbaum (2016). Match rates are comparable to other linking projects using census data in this era. The Georgia and North Carolina Marriage Records are from FamilySearch.org.

TABLE A.2—CHANGE IN LUMBER MANUFACTURING OUTCOMES FROM 1860 TO 1870, BY SHERMAN MARCH EXPOSURE

	Lumber Industry							
	Value Added		Employment		Capital		Establishments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sherman	-0.360	-0.609	-0.414	-0.746	-0.490	-0.781	-0.398	-0.726
	(0.682)	(0.869)	(0.339)	(0.451)	(0.282)	(0.394)	(0.204)	(0.331)
1860 County Controls	No	Yes	No	Yes	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	181	181	181	181	181	181	181	181
Adjusted R^2	0.024	0.068	0.020	0.062	0.017	0.066	0.024	0.051
Clusters	181	181	181	181	181	181	181	181

Each column is a separate county level regression of the percentage change between 1860 and 1870 in the column indicated lumber manufacturing outcome on an indicator equal to one if the county is within five miles of Sherman's march plus the noted fixed effects and controls. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. More information on variables is in the text where we discuss the main specification. The sample is all lumber industries in counties within 100 miles of the march. Standard errors are clustered at the county level.

TABLE A.3—INSTRUMENTAL VARIABLES ROBUSTNESS: DIFFERENCES IN AGRICULTURAL OUTCOMES RELATIVE TO 1860, BY SHERMAN MARCH EXPOSURE, 1850-1890

	Outcomes in Logs					
	Value of Farms		Value of Livestock		Improved Acre Share	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × 1850	-0.033	-0.076	-0.019	-0.038	0.004	-0.034
	(0.073)	(0.111)	(0.040)	(0.055)	(0.053)	(0.078)
Sherman × 1870	-0.193	-0.186	-0.134	-0.145	-0.150	-0.157
	(0.099)	(0.106)	(0.064)	(0.082)	(0.074)	(0.090)
Sherman × 1880	-0.030	0.042	0.018	0.052	-0.104	-0.076
	(0.076)	(0.077)	(0.047)	(0.044)	(0.058)	(0.063)
Sherman × 1890	-0.025	0.081	-0.057	-0.010	-0.118	-0.113
	(0.100)	(0.096)	(0.052)	(0.054)	(0.059)	(0.056)
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year	No	Yes	No	Yes	No	Yes
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,125	1,125	1,125	1,125	1,125	1,125

Each column is a separate county-year level regression of the indicated agricultural outcome on an indicator equal to one if the county is within five miles of Sherman's march interacted with decadal indicators, plus the noted fixed effects and controls, where the Sherman's march indicator is instrumented with an indicator for within 15 miles of a straight-line path between the four march vertices: Atlanta, GA, Savannah, GA, Columbia, SC, and Goldsboro, NC. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. In general, to flexibly control for these characteristics of the county in 1860, we divide the sample in four quartiles along each of these characteristics and then add them in the regression interacted with time dummies. More information on variables is in the text where we discuss the main specification. The sample is all counties within 100 miles of the march. Standard errors are clustered at the county level.

TABLE A.4—INSTRUMENTAL VARIABLES ROBUSTNESS: CHANGE IN MANUFACTURING OUTCOMES, BY SHERMAN MARCH EXPOSURE, 1860-1870

	Change in Manufacturing Outcomes from 1860 to 1870							
	Value Added		Employment		Capital		Establishments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sherman	-0.655	-0.819	-0.412	-0.577	-0.655	-1.095	-0.338	-0.434
	(0.239)	(0.341)	(0.198)	(0.262)	(0.254)	(0.391)	(0.123)	(0.171)
1860 County Controls	No	Yes	No	Yes	No	Yes	No	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Group FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,404	1,404	1,404	1,404	1,404	1,404	1,404	1,404
Clusters	201	201	201	201	201	201	201	201

Each column is a separate county-industry level regression of the indicated manufacturing outcome on an indicator equal to one if the county is within five miles of Sherman's march plus the noted fixed effects, where the Sherman's march indicator is instrumented with an indicator for within 15 miles of a straight-line path between four march vertices: Atlanta, GA, Savannah, GA, Columbia, SC, and Goldsboro, NC. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. In general, to flexibly control for these characteristics of the county in 1860, we divide the sample in four quartiles along each of these characteristics and then add them in the regression. More information on variables is in the text where we discuss the main specification. The sample is all counties within 100 miles of the march. Standard errors are clustered at the county level.

TABLE A.5—DEMOGRAPHIC AND INFRASTRUCTURE OUTCOMES, BY SHERMAN MARCH EXPOSURE, 1850-19890

	Log Population		Log Black Population		IHS Railroad Miles	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × 1850	0.054	0.050	0.049	0.068	0.003	0.005
	(0.028)	(0.038)	(0.045)	(0.059)	(0.002)	(0.003)
Sherman × 1870	-0.024	-0.030	-0.003	0.011	-0.002	-0.002
	(0.019)	(0.022)	(0.032)	(0.037)	(0.001)	(0.002)
Sherman × 1880	0.021	0.016	0.057	0.044	-0.004	-0.005
	(0.023)	(0.025)	(0.040)	(0.045)	(0.003)	(0.004)
Sherman × 1890	-0.027	-0.018	-0.006	-0.019	-0.002	-0.003
	(0.039)	(0.037)	(0.059)	(0.058)	(0.005)	(0.005)
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 RR Controls × Year	No	Yes	No	Yes	No	No
1860 Population Control × Year	No	No	No	Yes	No	Yes
1860 County Controls × Year	No	Yes	No	Yes	No	Yes
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,125	1,125	1,125	1,125	1,125	1,125
Adjusted R^2	0.936	0.943	0.937	0.939	0.700	0.704
Clusters	225	225	225	225	225	225

Each column is a separate county-year level regression of the indicated demographic or infrastructure outcome on an indicator equal to one if the county is within five miles of Sherman's march interacted with decadal indicators plus the noted fixed effects and controls. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; and railroad miles. We avoid including the 1860 control that corresponds to the outcome in columns 2 and 6. To flexibly control for these characteristics of the county in 1860, we divide the sample in four quartiles along each of these characteristics and then add them in the regression interacted with time dummies. More information on variables is in the text where we discuss the main specification. The sample is all counties within 100 miles of the march. Standard errors are clustered at the county level. Railroad miles are measured as miles of track per county square mile with railroad data from Atack (2016); we use the inverse hyperbolic sine transformation to avoid excluding counties with no railroad track.

TABLE A.6—NO DIFFERENTIAL OUT-MIGRATION FROM SHERMAN'S MARCH COUNTIES, CENSUS-LINKED SAMPLES FROM 1850-1860 AND 1860-1870

	All Whites, 0-65 in Base Year					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	0.010	-0.010	0.003	0.003	-0.002	0.001
	(0.021)	(0.024)	(0.011)	(0.011)	(0.009)	(0.009)
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	261,786	261,786	261,786	261,786	261,786	261,786
Adjusted R^2	0.087	0.089	0.064	0.065	0.059	0.061
Clusters	225	225	225	225	225	225
	All Whites, 20-50 in Base Year					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.003	-0.024	-0.012	-0.010	-0.019	-0.014
	(0.022)	(0.025)	(0.015)	(0.017)	(0.012)	(0.012)
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	88,545	88,545	88,545	88,545	88,545	88,545
Adjusted R^2	0.085	0.088	0.061	0.063	0.058	0.059
Clusters	225	225	225	225	225	225

Note: Standard errors clustered by county. Sample includes only white men. Following Bailey et al. (2017), we generate inverse propensity weights to reweight our sample and account for selection in linking rates.

TABLE A.7—SMALL DIFFERENTIAL OUT-MIGRATION BY FARMERS FROM SHERMAN'S MARCH COUNTIES, CENSUS-LINKED SAMPLES FROM 1850-1860 AND 1860-1870

	Farmers by Occupation					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.032	-0.053	-0.035	-0.032	-0.039	-0.032
	(0.024)	(0.026)	(0.018)	(0.019)	(0.016)	(0.014)
Sherman × Post × Farmer Occupation	0.039	0.034	0.042	0.036	0.038	0.033
	(0.020)	(0.019)	(0.017)	(0.016)	(0.016)	(0.016)
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
Observations	103,017	103,017	103,017	103,017	103,017	103,017
Adjusted R^2	0.103	0.106	0.069	0.071	0.065	0.066
Clusters	225	225	225	225	225	225
	Agriculture by Industry					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.030	-0.054	-0.029	-0.027	-0.031	-0.024
	(0.024)	(0.027)	(0.017)	(0.019)	(0.015)	(0.014)
Sherman × Post × Agriculture Industry	0.040	0.037	0.033	0.028	0.026	0.022
	(0.019)	(0.018)	(0.016)	(0.015)	(0.015)	(0.015)
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
Observations	103,017	103,017	103,017	103,017	103,017	103,017
Adjusted R^2	0.102	0.105	0.068	0.070	0.064	0.066
Clusters	225	225	225	225	225	225
	Lives on Farm by Residence Status					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.033	-0.056	-0.039	-0.035	-0.040	-0.031
	(0.025)	(0.028)	(0.019)	(0.021)	(0.017)	(0.016)
Sherman × Post × Lives on Farm	0.041	0.037	0.043	0.037	0.036	0.030
	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
Observations	103,017	103,017	103,017	103,017	103,017	103,017
Adjusted R^2	0.103	0.105	0.070	0.071	0.065	0.067
Clusters	225	225	225	225	225	225

Note: Standard errors clustered by county. Sample includes only white men, aged 20 or more in the base year. Following Bailey et al. (2017), we generate inverse propensity weights to reweight our sample and account for selection in linking rates. All columns include county fixed effects, state by year fixed effects, and individual controls.

TABLE A.8—NO DIFFERENTIAL OUT-MIGRATION FROM SHERMAN'S MARCH COUNTIES, CENSUS-LINKED SAMPLES FROM 1850-1860 AND 1860-1870

	Individuals with Non-Zero Real Estate Wealth in Base Year					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.002	-0.022	-0.013	-0.010	-0.019	-0.011
	(0.022)	(0.026)	(0.017)	(0.019)	(0.014)	(0.015)
Sherman × Post × Non-0 Wealth	0.001	-0.003	0.010	0.005	0.009	0.004
	(0.016)	(0.016)	(0.014)	(0.014)	(0.012)	(0.012)
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	103,017	103,017	103,017	103,017	103,017	103,017
Adjusted R^2	0.111	0.114	0.072	0.074	0.066	0.068
Clusters	225	225	225	225	225	225
	By Marital Status in Base Year					
	Moved County		Moved State		Left Sherman State	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.012	-0.032	-0.025	-0.024	-0.025	-0.020
	(0.026)	(0.030)	(0.019)	(0.022)	(0.017)	(0.017)
Sherman × Post × Married	0.017	0.011	0.027	0.025	0.018	0.016
	(0.020)	(0.020)	(0.016)	(0.017)	(0.015)	(0.015)
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year FE	No	Yes	No	Yes	No	Yes
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	103,017	103,017	103,017	103,017	103,017	103,017
Adjusted R^2	0.093	0.096	0.063	0.064	0.060	0.061
Clusters	225	225	225	225	225	225

Note: Standard errors clustered by county. Sample includes only white men, aged 20 or more in the base year. Following Bailey et al. (2017), we generate inverse propensity weights to reweight our sample and account for selection in linking rates.

TABLE A.9—INSTRUMENTAL VARIABLES ROBUSTNESS: CHANGE IN MANUFACTURING OUTCOMES FROM 1860 TO 1870, BY SHERMAN MARCH EXPOSURE AND FINANCE ACCESS

	Bank Status							
	Value Added		Employment		Capital		Establishments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sherman	0.147	0.097	0.215	0.093	0.233	-0.023	-0.022	-0.092
	(0.309)	(0.442)	(0.252)	(0.360)	(0.307)	(0.509)	(0.108)	(0.213)
Sherman × Bank	-1.416	-1.442	-1.110	-1.083	-1.573	-1.747	-0.545	-0.503
	(0.451)	(0.615)	(0.362)	(0.454)	(0.510)	(0.714)	(0.220)	(0.279)
Bank County	1.068	0.893	0.801	0.536	1.100	0.805	0.662	0.476
	(0.352)	(0.311)	(0.270)	(0.219)	(0.467)	(0.390)	(0.178)	(0.142)
1860 County Controls	No	Yes	No	Yes	No	Yes	No	Yes
	Dun, Boyd, and Company Status							
	Value Added		Employment		Capital		Establishments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sherman	-0.285	-0.531	-0.086	-0.342	-0.145	-0.687	-0.137	-0.293
	(0.260)	(0.325)	(0.200)	(0.239)	(0.285)	(0.352)	(0.117)	(0.150)
Sherman × DB	-5.643	-5.709	-4.925	-4.615	-7.726	-8.049	-2.992	-2.750
	(4.266)	(3.547)	(3.412)	(2.577)	(5.614)	(4.788)	(2.013)	(1.707)
DB County	3.574	2.932	3.280	2.533	5.076	4.315	2.150	1.602
	(1.716)	(1.374)	(1.273)	(1.007)	(2.424)	(1.926)	(0.869)	(0.724)
1860 County Controls	No	Yes	No	Yes	No	Yes	No	Yes
	External Finance Dependence by Industry							
	Value Added		Employment		Capital		Establishments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sherman	-0.455	-0.610	-0.202	-0.365	-0.376	-0.803	-0.276	-0.376
	(0.285)	(0.365)	(0.228)	(0.285)	(0.272)	(0.393)	(0.126)	(0.179)
Sherman × High Financial Dependence	-0.748	-0.781	-0.786	-0.790	-1.045	-1.089	-0.234	-0.215
	(0.404)	(0.425)	(0.320)	(0.329)	(0.463)	(0.490)	(0.192)	(0.197)
1860 County Controls	No	Yes	No	Yes	No	Yes	No	Yes

Each column is a separate county-industry-year level regression of the change from 1860 to 1870 in the indicated manufacturing outcome on the displayed interaction terms, fixed effects, and controls. Each column includes state fixed effects and industry group fixed effects. The sample size in all specifications is 1404 with 201 clusters. We instrument for Shermans's march exposure with an indicator for counties within 15 miles of a straight-line path between four march vertices: Atlanta, GA, Savannah, GA, Columbia, SC, and Goldsboro, NC. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. More information on variables is in the text where we discuss the main specification. DB firms refers to the number of Dun, Boyd, and Company-tracked firms in the county as of 1860. The sample is all counties within 100 miles of the march. Standard errors are clustered at the county level.

TABLE A.10—ROBUSTNESS TO ALTERNATIVE WEALTH MEASURES: AGRICULTURAL OUTCOMES, BY HIGH WEALTH AND SHERMAN MARCH EXPOSURE, 1850-1890

	Antebellum Local Wealth Density: Share in Top 2%					
	Outcomes in Logs					
	Farm Value		Livestock Value		Improved Acre Share	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.133	-0.086	-0.135	-0.124	-0.159	-0.138
	(0.070)	(0.068)	(0.045)	(0.043)	(0.046)	(0.048)
Sherman × Post × High Wealth 2%	0.154	0.129	0.202	0.192	0.116	0.090
	(0.095)	(0.105)	(0.071)	(0.067)	(0.090)	(0.093)
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
High Wealth × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year	No	Yes	No	Yes	No	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,125	1,125	1,125	1,125	1,125	1,125
Adjusted R^2	0.861	0.881	0.877	0.885	0.830	0.833
Clusters	225	225	225	225	225	225
	Antebellum Local Wealth Density: Share of Whites in Top 5%					
	Outcomes in Logs					
	Farm Value		Livestock Value		Improved Acre Share	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × Post	-0.152	-0.052	-0.174	-0.105	-0.257	-0.175
	(0.062)	(0.059)	(0.043)	(0.039)	(0.057)	(0.051)
Sherman × Post × High Wealth 5% (White)	0.117	0.027	0.262	0.183	0.313	0.222
	(0.138)	(0.134)	(0.076)	(0.075)	(0.089)	(0.088)
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
High Wealth × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year	No	Yes	No	Yes	No	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,125	1,125	1,125	1,125	1,125	1,125
Adjusted R^2	0.852	0.878	0.866	0.882	0.813	0.825
Clusters	225	225	225	225	225	225

Robustness to Table 6. Each column is a separate county-year level regression of the indicated agricultural outcome on an indicator equal to one if the county is within five miles of Sherman's march, interacted with an indicators for post 1860 decades and a dummy for high density of High Wealth Individuals in 1850, plus the noted fixed effects and controls. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. In general, to flexibly control for these characteristics of the county in 1860, we divide the sample in four quartiles along each of these characteristics and then add them in the regression interacted with time dummies. More information on variables is in the text where we discuss the main specification. The sample is all counties within 100 miles of the march and all decades, 1850-1890, as discussed in the paper. Standard errors are clustered at the county level.

TABLE A.11—CONLEY SPATIAL STANDARD ERRORS ROBUSTNESS: DIFFERENCES IN AGRICULTURAL OUTCOMES RELATIVE TO 1860, BY SHERMAN MARCH EXPOSURE, 1850-1890

	Outcomes in Logs					
	Value of Farms		Value of Livestock		Improved Acre Share	
	(1)	(2)	(3)	(4)	(5)	(6)
Sherman × 1850	0.044	0.013	0.037	0.020	0.067	0.027
	(0.059)	(0.085)	(0.033)	(0.042)	(0.044)	(0.062)
	[0.079]	[0.080]	[0.051]	[0.043]	[0.061]	[0.061]
Sherman × 1870	−0.197	−0.188	−0.139	−0.131	−0.148	−0.122
	(0.077)	(0.081)	(0.050)	(0.060)	(0.061)	(0.067)
	[0.097]	[0.079]	[0.068]	[0.062]	[0.066]	[0.062]
Sherman × 1880	−0.040	0.037	−0.033	0.015	−0.135	−0.094
	(0.059)	(0.055)	(0.037)	(0.032)	(0.046)	(0.044)
	[0.077]	[0.055]	[0.048]	[0.035]	[0.048]	[0.042]
Sherman × 1890	−0.060	0.037	−0.086	−0.031	−0.139	−0.100
	(0.075)	(0.070)	(0.043)	(0.041)	(0.048)	(0.044)
	[0.089]	[0.059]	[0.052]	[0.040]	[0.053]	[0.041]
State × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
1860 County Controls × Year	No	Yes	No	Yes	No	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,125	1,125	1,125	1,125	1,125	1,125
Adjusted R^2	0.853	0.880	0.865	0.883	0.811	0.824
Clusters	225	225	225	225	225	225

Each column is a separate county-year level regression of the indicated agricultural outcome on an indicator equal to one if the county is within five miles of Sherman's march, interacted with the displayed decade indicators, plus the noted fixed effects and controls. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. In general, to flexibly control for these characteristics of the county in 1860, we divide the sample in four quartiles along each of these characteristics and then add them in the regression interacted with time dummies. More info on variables are in the text where we discuss the main specification. The sample is all counties within 100 miles of the march and all decades, 1850-1890. Standard errors clustered at the county level reported in parentheses. Conley (1999) spatially adjusted standard errors reported in brackets with a geographical cutoff radius of 100km.

Table A.12—Conley Spatial Standard Errors Robustness: Change in Manufacturing Outcomes, by Sherman March Exposure, 1860-1870

	Change in Manufacturing Outcomes from 1860 to 1870							
	Value Added		Employment		Capital		Establishments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sherman	-0.513	-0.516	-0.378	-0.459	-0.640	-0.905	-0.318	-0.379
	(0.204)	(0.257)	(0.165)	(0.203)	(0.222)	(0.302)	(0.109)	(0.132)
	[0.202]	[0.242]	[0.156]	[0.187]	[0.184]	[0.248]	[0.089]	[0.108]
1860 County Controls	No	Yes	No	Yes	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Group FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,404	1,404	1,404	1,404	1,404	1,404	1,404	1,404
Adjusted R^2	0.008	0.042	0.008	0.060	0.008	0.070	0.011	0.063
Clusters	201	201	201	201	201	201	201	201

Each column is a separate county-industry level regression of the percentage change between 1860 and 1870 in the column indicated manufacturing outcome on an indicator equal to one if the county is within five miles of Sherman's march plus the noted fixed effects and controls. The 1860 county controls include size of the county, measured in squared miles; population; size of the agricultural output; and intensity in cotton production; average slave ownership per farm; share of manufacturing employment; plantation county; and railroad miles. In general, to flexibly control for these characteristics of the county in 1860, we divide the sample in four quartiles along each of these characteristics and then add them in the regression. More information on variables is in the text where we discuss the main specification. The sample is all reported industries in all counties within 100 miles of the march. The sample is unbalanced because not all industries are present in all counties. Standard errors clustered at the county level reported in parentheses. Conley (1999) spatially adjusted standard errors reported in brackets with a geographical cutoff radius of 100km.