NATIONAL BANKING'S ROLE IN U.S. INDUSTRIALIZATION, 1850-1900

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ABSTRACT

The passage of the National Banking Acts stabilized the existing financial system and encouraged the entry of 729 banks between 1863 and 1866. The national banks not only attracted more deposits than previous state banks, but also concentrated in the area that would eventually become the Manufacturing Belt. Using a new bank census, the paper shows that these changes to the financial system were a major determinant of the geographic distribution of manufacturing. The sudden entry not only resulted in more manufacturing capital and output at the county-level, but also more steam engines and value added at the establishment-level.

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1. Introduction

Economists posit several reasons for a nation's industrialization: technological innovation (Goldin and Sokoloff 1982; Engerman and Sokoloff 2000), railroad development (Fishlow 1965; Williamson 1975), and a strong financial system (Gerschenkron 1962; McKinnon 1973). The first two factors have been studied at a local level, but the third has traditionally only been studied using cross-country panels (King and Levin 1994) or aggregated time-series for a single country (Rousseau and Sylla 2005). These approaches are informative but cannot examine the geographic distribution of production. This aspect is particularly important for the United States where industrial production was concentrated in certain counties within the Manufacturing Belt. Using the first nation-wide bank census spanning 1850 through 1900, this paper examines the effect of the National Banking Acts on the county-level distribution of U.S. manufacturing.

Agricultural production dominated in the U.S. before the Civil War. The early industrial sector was composed of small shops that hired one or two laborers to hand-craft the product. The few mechanized shops used water power which limited their location and prevented production throughout the winter months. During the 1840s and 1850s, however, workers in textile mills, iron foundries, and locomotive works laid the foundation for an industrial revolution by developing new production techniques and technology (Thomson 2009). Manufacturing still remained concentrated in the Northeast and focused on the production of primary products, but the acquired knowledge began to spread throughout the nation (Meyer 1989, 2006).

Drawing on preceding innovation, the nation experienced a shift of manufacturing after the Civil War. Most new establishments and industries located in the Midwest and Middle Atlantic portions of the Manufacturing Belt and mechanized their production processes. For instance, Atack et al. (2003, 2008) find that the ratio of capital to output in the Belt dramatically increased during the 1870's as a result of investment in steam engines. Firms during the postbellum also began to increase their value added (Niemi 1974).

Studies such as Perloff (1960), Meyer (1983, 1989), and Klein and Crafts (2010) argue that railroads and urbanization were responsible for the shift to the Manufacturing Belt. The traditional story is that urbanization increased demand for industrial goods and railroads enabled owners to take advantage of the new technology and scale up production rather than allowing

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others to serve the new markets. While necessary for mechanization, these elements cannot explain the geographic distribution of factories since most counties had a railroad by 1860.[2]

Recent work has suggested that the National Banking Acts of 1863 and 1864 can explain why entrepreneurs in certain areas were able to establish mechanized factories while others were not. Jaremski (2012) finds that 729 new banks entered locations along what would become the Manufacturing Belt within four years of the legislation. For instance, there was only one state bank operating in Chicago in 1861, but 15 national banks were created in the city by 1866. Bank entry was particularly important in the postbellum due to the relative primitive road network.[3] As few individuals could borrow from a bank in another county or state, Sylla (1969) and James (1976) argue that entry was necessary to reduce monopoly interest rates. The surge in banks thus should have increased the amount of loanable funds, lowered the cost of borrowing, and enabled entrepreneurs to invest in capital along the Manufacturing Belt.

The National Banking Acts could also have been responsible for the persistence of the Belt. The legislation greatly increased banking in certain areas and its high capital requirements limited expansion in rural and agricultural areas. As a result, banks remained concentrated in certain areas of the Manufacturing Belt until the return of state banks during the late 1880s. Ransom and Sutch (1972, 1977) highlight how the lack of banks in the South slowed industrial development. Bensel (2000) even goes so far as to argue that most economic policy during the period redistributed wealth from the West and South (the "peripheral" zones) to the Midwest and North (the "core" zone).[4] In this way, those counties that received a bank during the 1860s would have had a sizable head start and other counties would not have been able to quickly catch up.

While state banks would have continued to enter the market in absence of the National Banking Acts, the stability created by the Acts' high capital and reserve requirements might also have been necessary for the industrialization. Over a quarter of the 2,200 state banks created before 1863 defaulted on their notes, whereas less than 5 percent of the more than 5,500 national banks created before 1900 defaulted.[5] Therefore, while Jaremski and Rousseau (2012) show that the instability of state banks prevented them from having a consistent contribution to economic

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[2] Even when including those counties with boundary changes, fewer than 15% of Midwest counties did not have a railroad in 1860, and even fewer counties in the Northeast did not (Atack et al. 2010, 2011).
[3] See Baum-Snow (2006) and Ramcharan (2008).
[4] Bensel relates that a large portion of western credit was provided at high interest rates by eastern banks.
[5] State bank defaults are taken from Weber (2005) and the *Merchants and Bankers' Directory*, and national banks defaults are taken from the Comptroller's *Annual Report* in 1900.

growth, Sylla (1969, p. 685) argues that national banking "promoted industrial investment and growth with a ruthless efficiency".

The lack of bank-level data has prevented a comprehensive examination of banks and local economic growth. Seminal studies such as Davis (1965), Sylla (1969), and James (1976) focus on regional or state differences, whereas the few bank-level studies focus only on a couple of states (Keehn 1974; Redenius 2002) or only on national banks (Fulford 2010) after 1870. Therefore, no study has examined the sudden entry of banks during the 1860's or compared national banks to state banks. As these changes could have contributed to the pattern of industrialization, I construct a comprehensive bank census from 1850 to 1900 using annual editions of *Merchants and Bankers' Directory* and *Rand McNally Bankers' Directory* and Weber's antebellum bank census (2005). The data are then linked to manufacturing census records at the county-level (Haines 2004) and the establishment-level (Atack and Bateman 1999), allowing a test of whether the availability of finance altered production decisions.

The data indicate that the National Banking Acts were a major determinant of the geographic distribution of manufacturing. Counties that gained a bank immediately after the legislation experienced an increase of 3.1 percent manufacturing capital per capita and 1.3 percent output per capita relative to counties that did not gain a bank. At the establishment-level, a new bank not only increased capital by 5.2 percent and output by 3.0 percent, but also encouraged them to invest in steam power and increase their value added. Moreover, the gap between counties that gained a bank and those that had no change grew over time, indicating the legislation helped sustain the concentration of production within the Manufacturing Belt.

2. The Development of the Manufacturing Belt

Popularized by DeGreer (1927) and Garver et al. (1933), the Manufacturing Belt describes a geographic region that became the heart of American industrialization. Historians illustrate the Belt as a parallelogram with points at Milwaukee, St. Louis, Baltimore, and Boston. As seen in Figure 1, the description is a useful approximation, but ignores the large within-region variation. For example, the agricultural areas of western Indiana and southern Illinois are included in the region, yet the industrial areas south of Baltimore are not included. Pockets of manufacturing eventually developed in western North Carolina and California, yet the Belt still produced the vast majority of the country's industrial goods through 1970. Industrial production,

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therefore, remained concentrated in the Middle Atlantic and Midwest long after their natural resources were depleted and population had spread throughout the country.

Early manufacturing was often determined by the location and size of demand. Due to high transportation costs, establishments could not operate far from natural resources or produce significantly more than the local market was willing to consume. Most entrepreneurs, therefore, did not have the incentive (or need) to greatly expand or mechanize production.[6] Even the few shops that employed inanimate power had to rely on waterwheels which constrained their location and halted production during the summer and winter months (Hunter 1979).

The manufacturing sector began to innovate during the 1840s and 1850s. Entrepreneurs in key industries developed new production techniques, leading to a buildup of information. Meyer (2006) shows that machinists created a network to share technology, whereas Thomson (2009) describes how technological progress in one industry carried over to the machines of another. The last decades of the antebellum period, therefore, were a time of innovation that set the stage for the rise of factories.

The Manufacturing Belt fully took shape after the Civil War. First, while most manufacturing had been concentrated in Northeast, postbellum firms tended to locate in the Midwest. Second, firms across the Belt implemented the recent technological innovation. The real value of capital per dollar of output increased 10% in the 1850s, but over 18% in the 1860s and 30% in the 1870s. Atack et al. (2003, 2008) argue that the capital deepening was due to the adoption of steam engines. The engines allowed establishments to shift away from running water, operate year-round, and increase their total factor productivity.[7] Chandler (1977) also shows that establishments increased their scale of production after Civil War.

The Census data in Table 1 illustrate the shift of production into the Manufacturing Belt and the increasing importance of capital. The Middle Atlantic and New England states dominated early production, respectively producing 45% and 27% of all U.S. manufacturing goods in 1850.[8] However, by 1900, New England's share of output fell to 14%, while the Midwest's share doubled from 11 to 25%. The Middle Atlantic fared better (falling slightly to

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[6] North (1961) and Field (1978) describe early manufacturing.

[7] Atack, Bateman, and Weiss (1980), and Brown and Philips (1986) examine steam engine diffusion. Golden and Katz (1998) show that the adoption of electricity continued the technological revolution.

[8] As documented by Gallman (1956) and Davis (2004) among others, manufacturing is not consistently well-defined over time. Early manufacturing was largely focused on primary products while later manufacturing was characterized by secondary products.

38%), yet production within the region had also begun to shift to the southwest. The Midwest's rise and the Middle Atlantic's sustained importance seem to have been the result of higher investment. Indeed, manufacturing capital in both regions continued to expand even as population growth slowed.

Studies such as Perloff (1960), Meyer (1983, 1989), and Klein and Crafts (2010) explain that when travel costs were high it was only feasible to supply a small region, but as the railroad network and urban demand grew, manufacturers were able to build factories and supply a large region. However, while these factors explain why the scale of production and capital investment could expand, they cannot explain why factories were established in some counties but not in others. Because of the necessary scale of investment, I focus my attention on the nation's banking system. Bodenhorn and Cuberes (2010) and Fulford (2010) show that a bank's presence (or lack thereof) influenced the speed of local economic growth, but to date, no study has examined the effect of the National Banking Acts in 1863 and 1864. The rest of the paper tests whether the changes brought about by the legislation contributed to the postbellum's distribution of manufacturing.

3. Finance and Growth Data

The previous lack of county-level bank data has prevented a comprehensive examination of U.S. manufacturing and banking. I fill this gap by assembling a nation-wide bank database from 1850 to 1900. The majority of the data come from the *Merchants and Bankers' Directory* (1860- 1880) and *Rand McNally Bankers' Directory* (1890-1900). Similar to modern telephone books, the bank directories reportedly provide "A complete list of banks, bankers, savings banks, and principle trust companies". The directories include the name and location of each bank, as well as whether they were chartered by a state legislature (called a state bank), the Comptroller of the Currency (called a national bank), or had no formal charter (called a private banker). [9] I construct the county-level database by counting the number of all banks that were in operation from the directory containing information closest to the end of the specified year. [10] Because I

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[9] The *Merchants and Bankers Directory* separated bank types into different sections during the early years, while it lists national banks with their charter number and indented private bankers in other years. The *Rand McNally Directory* had special symbols that came after the bank's name.

[10] Due to the delay of publishing early during the period, the first directory of each year often had the list of banks for December of the previous year. 1861 is used for 1860, 1864 is used for 1863, 1867 is used for 1866, 1871 is used for 1870, 1880 is used for 1880, 1890 is used for 1890, and 1900 is used for 1900.

cannot consistently obtain directories before 1860, I link the census to Weber's antebellum database (2005) to measure the number of banks in 1850. The resulting database is the most extensive source of bank information available for the period. The few departures from previous estimates seem to be due to the timing of observation within the year and the difficulty of separating private bankers from state banks. Whenever possible, I check the data for errors by comparing the same bank in different years and across the two directories.

I link the banking census to two separate manufacturing databases. The first is the county-census database collected by Haines (2004). The database contains the number of manufacturing establishments as well as their aggregate capital and output. In order to construct a consistent panel from 1850 to 1900, I drop out counties that had significant boundary changes over the period.[11] I also restrict the sample to Midwest and Northeast states established prior to 1863 in order to avoid the South's destruction during the Civil War and the institutional changes in frontier states. As seen in Figure 2, the resulting panel contains decennial observations for 650 counties in 19 states.[12]

The second is the establishment-level database collected by Atack and Bateman (1999). The authors formed the database by drawing representative samples of establishments from the 1850, 1860, 1870, and 1880 Census of Manufacturing. The database contains the base information for the variables in the county-level data (i.e. manufacturing output and capital), as well as other characteristics that were not tabulated at the county-level, such as value of inputs, number of workers, and type of power. Due to self-reporting errors, I follow Atack, Bateman, and Margo (2008) and drop establishments with (1) no adult employees, (2) non-positive inputs, capital, or valued added, (3) mixed power sources, (4) extreme rates of return, or (5) a Standard Industrial Classification codes of 351 (Steam engines), 492 (Gas works), or 999 (Miscellaneous). In addition to restricting the sample to Midwest and Northeast states, I weight establishments in 1880 to account for industries that were under sampled due to lost data.[13] The resulting sample contains 5,879 establishments in 1850, 5,734 in 1860, 6,185 in 1870, and 8,009 in 1880.

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[11] I restrict the sample to counties whose boundaries did not change by more than 2.5 percent over the period (Minnesota Population Center 2004). The results are not sensitive to slightly tighter or looser cutoffs.
[12] The sample contains: *Midwest*: Michigan, Indiana, Illinois, Ohio, Wisconsin, Minnesota, Kentucky; *Great Plains*: Kansas, Iowa, Missouri; *Middle Atlantic*: Pennsylvania, New Jersey, Maryland, Delaware, New York; *New England*: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island
[13] The under sampling was the result of certain industries being surveyed separately and lost by Census officials.

4. Bank Growth and the National Banking Acts

The antebellum banking system was infamously unstable: nearly 25% of state banks closed and did not fully repay their noteholders before 1863. Despite the volatility, financial reform was only politically feasible after the Civil War removed Southern congressmen and drained the Union's resources. Secretary of the Treasury Salmon Chase initially raised war funds by issuing greenbacks and selling national debt through the state banking system. However, after the debt issues caused a specie suspension, Chase pushed for the National Banking Acts, first passed in 1863 and then revised in 1864. The legislation was crafted to raise revenue, mitigate the default risk of the previous system, and introduce a more uniform bank currency.

First, the Act's avoided land speculation by prohibiting loans secured by real estate. Second, they avoided free banking's attachment to risky state debt by requiring the use of U.S. Treasury bonds to back bank notes at 90 percent of their value. In this way, banks had to deposit $100 worth of Treasury bonds for every $90 of notes they issued. Third, they prevented the creation of rural banks by increasing capital requirements and mandating that it be submitted in Treasury bonds. The required use of Treasury bonds as capital and note collateral was intended to help raise funds from national banks, and Congress also passed a 10 percent tax on state bank notes in 1865 to raise revenue from them or force them to convert to a national charter.

Even though the new rules only applied to national banks, Congress naively believed that most state banks would willingly convert to the higher requirements and few new banks would enter the market. However, by the end of 1866, 729 national banks were created with new capital, 934 state banks converted to a national charter, and 364 other state banks were driven out of the market (Jaremski 2012). The banking system increased by over 350 banks and $40 million in capital, but the geographic changes brought about by the legislation were even more sizable. Figure 3 shows converted banks were typically in the Northeast, closed banks were in rural areas of the Midwest and South, and new national banks were spread across the center of the nation in states such as Indiana, Ohio, and Pennsylvania. The distribution of banks in the Northeast remained the same, whereas the distributions in other regions dramatically changed.

The pattern of bank entry was a significant deviation from the antebellum period. First, while bank growth had been quick during the early 1850s (i.e. 5% per year), it had slowed by 1860 as over 85 percent of counties had a railroad and most states had already liberalized their

bank entry requirements.[14] Second, the legislation altered the composition of banks. National banks were larger, held more reserves, and attracted more deposits than closed state banks. Subsequent state banks were also smaller and specialized in deposit banking. Finally, the growth did not correspond to bank closures or financial underdevelopment. Less than half of the 226 counties that had a bank close between 1856 and 1863 gained a new bank by 1866, and many of those that did receive another bank were in the Northeast. Banks also did not enter frontier areas where they would have been expected based on population growth.

The Civil War (1861-1865) is also not responsible for the change in banks. If the fighting and economic uncertainty influenced the banking system, then it would have caused banks to close during the War and new banks to have sprung up after the War. However, more than 175 northern banks closed after 1865, and more than 450 northern banks entered before 1865. Therefore, while the War was responsible for the southern bank closures during 1863 and 1864, it did not cause the geographic changes in and about the Manufacturing Belt.

Davis (1910) shows that the legislation as a whole was not intended to expand the banking system, and if anything, the high requirements were intended to prevent bankers from entering the market. Instead, the new banks seem to have been created by small note and security traders (i.e. private bankers) that had been operating without a state charter. Because the legislation reduced the need for discounting and trading bank notes, many private bankers had to start a national bank or close. Gische (1979) cites several prominent private bankers turned national bankers including Jay Cooke, who was the sole subscription agent of federal war bonds, and John Thompson of *Thompson Bank Note Detector*. Based on the *Merchant and Banker's Directory*, more than 150 (or 20%) of the president and cashiers of new national banks before 1868 can be uniquely matched to the private banker that had been operating in 1860.[15] The measure, however, is a lower bound. Banks had many investors yet only one president and cashier, and some private bankers were listed by their business' name rather than their personal name. Indeed, the fact that 63 percent of new national banks were created in locations with a private banker in 1860 suggests a close connection.[16]

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[14] Most often this was through the passage of a Free Banking Law which enabled banks to enter the market after meeting a fixed set of requirements rather than obtaining a unique charter from the legislature

[15] I have chosen not to use 1863 due to the possibility that private bankers were entering the market as a result of banks closing or in anticipation of the National Banking Acts. It is important to note that I cannot trace the other national bankers because the directories do not provide the full names for most presidents and cashiers.

[16] Barnett (1911) highlights that bank growth after 1890 was due to private bankers converting to formal charters.

Providing additional evidence that the rise in banks was a one-time response by existing private bankers to the new legislation, entry slowed after the initial surge and only a few hundred banks were created over the following decade. The slow growth was likely due to the ceiling on national bank notes during the early 1870s and the high price of Treasury bonds during the 1880s. The state note tax also prevented state banks from taking advantage of the opportunity. It was not until the growth in deposits and decline in state capital requirements during the mid-1880s that state banks returned en masse.[17] Because most new banks were created in frontier states such as Nebraska and Kansas, the bank distribution installed in the Manufacturing Belt by the National Banking Acts persisted for many decades.

5. National Banks and Economic Growth

Schumpeter (1912) posits that banking spurs innovation by funding entrepreneurs with the best chance of successfully implementing technology and production processes. However, picking projects is only half of a bank's job in a developing economy. Discussed by McKinnon (1973), banks are successful when they encourage individuals to lend by providing a safe place to deposit their funds. This leverage is the key to lowering the cost of capital to establishments, especially in developing countries. Therefore, while banks do not directly create physical capital, they facilitate progress by finding and allocating resources to their most productive use.

Unlike today, postbellum banks subscribed to the Real Bills Doctrine, issuing short-term and self-liquidating loans. Some banks provided de facto long-term funds to their regular customers by rolling over debt, but the majority of loans provided operational liquidity, bridged seasonal needs, and helped purchase small capital improvements. Banks thus were more likely to fund the purchase of steam engines rather than the construction of large factories. The availability of working capital loans might also have freed up an establishment's own funds for capital investment.

The National Banking Acts and state bank note tax would have influenced growth in a variety of ways. First, the bank entry during the mid-1860's expanded the size of loanable funds and lowered their cost.[18] Sylla (1969) and James (1976) argue that the entry of state and national banks was the main cause of the regional interest rates convergence during the period. Moreover,

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[17] White (1983) contains a summary of the changes to capital requirements late in the period.
[18] A comparison of antebellum studies such as Bodenhorn and Rockoff (1992) with postbellum studies such as Davis (1965) suggests that regions which gained banks during the 1860's experienced a decline in interest rates.

the private bankers behind the new national banks had information capital and relationships that would have allowed them to draw more customers and make better loan decisions.

Second, the Acts and state bank note tax seem to have led to a sudden rise in deposits across all banks, and by extension, an increase the amount of loanable funds. Figure 4 illustrates individual deposits per bank rose from $180,000 to $335,000 and the ratio of deposits to capital rose from 55 to 140 percent between 1862 and 1865. Some of the increase is the result of the slow growth in deposits after 1845, but the sudden discontinuous jump suggests that the legislation directly encouraged deposit growth.[19] With the exception of the declines around the U.S.' specie resumption in 1879, the rate of deposit growth also increased after 1862.

Finally, the high capital and reserve requirements of the Acts might have strengthened the connection between finance and growth. Despite the large financial system established before 1863, Jaremski and Rousseau (2012) show that many of its banks did not have a significant impact on economic growth. Similar to Rousseau and Wachtel (2011), they argue that the *quality* not the *quantity* of banking is important for development, as individuals are not likely to place deposits in risky banks and those banks are not likely to properly invest funds. Therefore even though state banking would have continued to expand in the absence of national banking, the resulting financial system might not have been able to affect the same level of investment.

5.1 Identification of Banking's Effect on Manufacturing

The challenge encountered when testing the impact of financial development on manufacturing growth is that the relationship is bi-directional. Economic growth is accelerated through bank lending, and additional banks are needed to support locations that have experienced growth. Therefore to identify the causal effect of banks on manufacturing growth, one must examine an exogenous source of variation in banking that does not independently effect growth.

A common way to control for this identification problem is to use an instrumental variable.[20] The variable would need to explain bank growth but not affect manufacturing in any other way. While feasible in some contexts, the need for excludability and the occurrence of the Civil War eliminates all strong county-level instruments for the period. Instead, I have chosen to identify the effect of the National Banking Acts based on the geographic changes that they

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[19] When regressed alongside a polynomial time trend, the break is statistically significant for either deposit measure.
[20] See for instance studies by Guiso, Sapienza, and Zingales (2004) and Burgess and Pande (2005).

caused. Similar to an instrumental variable approach, the dose response approach plausibly identifies the causal effect of the legislation on manufacturing as long as the timing of the Acts and their resulting changes were exogeneous.[21]

The Acts were intended to raise funds for the Civil War and the geographic changes to the banking system seem to have been unintended. Legislators took steps to prevent new banks from entering the market (e.g., installing a ceiling on national bank notes and higher capital requirements), and voiced their concerns over the sudden changes in the banking system. On the other hand, the resulting geographic changes were likely influenced by county-level characteristics, such as population and urbanization. Because these could also have caused subsequent manufacturing growth, I start by testing whether there was any factor that influenced the change in the number of banks between the 1863 and 1866 (Figure 5).

The narrow window was chosen to capture the immediate effect of the legislation and limit the effect of other factors such as economic growth.[22] Beginning in December of 1862 starts just prior to the passage of the first act and avoids those banks that closed in the Midwest during 1860 and 1861. Ending in December 1866 gives banks time to convert to a national charter after the note tax and avoids any economic recovery after the war. The model is:

$$\Delta Banks_{i,1863-66} = a + \beta_1 State_{i,1860} + \beta_2 Priv_{i,1860} + \beta_3 X_{i,1860} + \beta_4 \Delta X_{i,1850-60} + S_s + e_i \quad (1)$$

where S_s denotes state fixed effects (controlling for differential laws and regulations), and e_i denotes the error term. $X_{i,1860}$ is the vector of county characteristics: The logarithm of county population and the percentage of population living in an urban area account for the demand for banking services, the percentage of non-white residents proxies for education, manufacturing capital and output per capita account for industrial composition. [23] The logarithm of the initial number of private bankers ($Priv_{i,1860}$) measures the extent that the new national banks were formed by private banks, and logarithm of the state banks ($State_{i,1860}$) measures crowding out.

The change in banks caused by the legislation seems to have had little to do with manufacturing (Table 2). Neither the coefficients on manufacturing in 1860 nor the coefficients on growth during the 1850s are statistically or economically significant. For instance, 10 percent

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[21] Unlike a difference-in-difference, the Acts applied to all counties but affected them in different ways (i.e. doses).
[22] The results grow slightly larger if I extend the window to 1868, but begin to decline as I extend the measure any earlier or later. In this way, the initial effects of the legislation rather than other changes over the entire decade seem to be most important to the geographic distribution of industrialization.
[23] All variables are deflated to 1860 using Officer (2008). I add one to all values before taking the logarithm in order to avoid negative and undefined values.

more manufacturing capital per capita in 1860 would only lead to 0.0035 additional banks, and 10 percent higher growth during the 1850s would actually lead to 0.006 fewer banks. The shock to the banking system caused by the legislation thus was plausibly exogenous to manufacturing after controlling for the other county-level factors.

On the other hand, the number of private bankers in 1860 was a key factor for the sudden change in the number of banks. The more private bankers within a county the more new banks were established there during the mid-1860s. On the other hand, the coefficient on the number of state banks is generally not statistically significant, and changes sign depending on the variables in the regression. The rise in new national banks thus seems to have been driven by private bankers, and was a significant deviation from the previous banking system.[24]

Counties that started with densely populated areas gained banks, but not those counties that were growing fastest during the 1850s. For instance, a 10 percent higher population in 1860 led to about 0.062 more banks, but a 10 percent higher population growth only led to about 0.017 more banks. The difference is likely driven by the restrictive national bank capital requirements, as new banks could only be established in areas that had reached some population threshold.

5.2 National Banking and County-Level Growth – 1860-1900

Table 2 indicates that the change in the number of banks was not correlated with manufacturing after controlling for the observable county-level characteristics. In the models that follow, I not only control for the previously tested characteristics, but also for unobservable but constant factors (e.g., mineral deposits, climate, and topography) using county-fixed effects and county-specific time linear trends. The causal effect thus will be plausibly identified as long as there was not some omitted factor that was correlated with the change in banks during the mid-1860s, but was not correlated with any other county-level characteristic, was not constant, and did not affect growth in a linear way.

To be clear, the approach controls for the endogeneity of banks entering during the 1860s, but not for the endogeneity of banks entering thereafter. Following studies such as King and Levine (1993), I attempt to reduce the problem by using the initial number of banks rather than the contemporaneous value. The approach will reduce endogeneity, and any remaining bias

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[24]Jaremski (2012, Table 4) shows the change in banks outside of the South are also not correlated with closed banks.

should affect both bank types. In this way, the model can examine whether the effect of the two bank types differed but cannot measure the exact size of their effect on manufacturing.

While the lack of data in 1850 restricted the previous analysis to per capita measures of manufacturing, the Census tabulated the number of manufacturing establishments starting in 1860. I, therefore, normalize manufacturing capital and output by population and separately by the number of establishments. Each measure is modeled from 1860 to 1900 as a linear function of financial development and other county-level characteristics.[25] The full model is as follows:

$$Y_{i,t} = a + \beta_1 \Delta Banks_{i,1863-66} * Post1860_t + \beta_2 Nat_{i,t-1} + \beta_3 State_{i,t-1} + \beta_4 X_{i,t-1} + \tau_t + u_i \quad (2)$$
$$+ Trend_{i,t} + e_{i,t}$$

where $Post1860_t$ is an indicator variable that takes the value one when t is greater than 1860, u_i denotes county-level fixed effects, τ_t denotes decade fixed effects, $Trend_{i,t}$ is a county-level linear trend, and $e_{i,t}$ denotes the error term. $X_{i,t-1}$ contains the control variables in equation (1) plus an indicator variable that denotes whether the county had a reserve city. Note that in this case, the values of the control variables after 1860 will most likely be endogenous to the change in banks during the mid-1860s. The fixed effects will control for some of the endogeneity, and if anything, the bias should negatively affect the coefficient on $\Delta Banks_{i,1863-66}$.

The lack of data prevents me from directly controlling for railroads, but their exclusion should not dramatically bias the results. Atack et al. (2010) finds that more than 85% of Manufacturing Belt counties had a railroad in 1860. Railroad growth after 1860, therefore, would not be correlated with the change in banks during the 1860s, and should be controlled for by the county-fixed effects. Moreover, studies such as Jaremski and Rousseau (2012) show that banks influenced manufacturing growth even after controlling for the presence of a railroad.

The regression results in Table 3 indicate that the legislation had a significant effect on manufacturing growth. The coefficient on $\Delta Banks_{i,1863-66}$ is statistically significant for most of the manufacturing variables, but more so for the per establishment measures.[26] A county gaining a national bank immediately after the Acts is expected to have gained 3.1 percent more capital per capita, but 5.2 percent more capital per establishment. Alternatively, an extra initial bank would lead to an (insignificant) 1.3 percent more output per capita, but 3.0 percent more output per establishment. Putting these effects into the context of the average growth between 1860 and

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[25] While the panel extends through 1850, the use of lagged variables drops out one decade.
[26] The per capita measures are negatively biased due to the positive effect that banking has on population.

1900, the effect of gaining one bank during the period represented 8% of per establishment growth and about 2%of per capita growth. Therefore, even without controlling for the indirect effect that banking had through population and urbanization, the legislation accounts for a non-trivial portion of the period's growth.

While likely positively biased by endogeneity, the entry of national banks after 1870 seems to have affected manufacturing differently than new national banks in the 1860s. National banks have a positive and significant relationship with manufacturing, but only the relationship with capital and output per capita is significant alongside the county-level trend. The difference from the coefficient on $\Delta Banks_{i,1863-66}$ is due to the limited number of new banks between 1866 and 1890. The high capital requirements prevented national bank entry in rural areas, whereas the tax prevented state bank growth. The legislation thus gave certain counties a head start, and counties that gained banks later in the period could not catch up.

The results indicate that the switch from state to national banks also increased manufacturing growth. The coefficient on national banks is larger than that on state banks for the per capita measures of growth. A 10 percent increase in banks at the beginning of the decade would have led to a 0.005 percent rise in manufacturing capital per capita if they were national banks, but only an (insignificant) 0.003 percent rise if they were state banks.

Table 4 presents four robustness checks. The top panel replaces the number of banks with bank capital per capita to control for the differences in bank size.[27] The second panel aggregates state and national banks to test whether postbellum banks had a larger effect than antebellum ones. The third panel regresses only Midwest counties, testing whether the Northeast's developed financial system biased the coefficients. The final panel uses dummy variables to test whether bank losses during the 1860s hurt a county as much as gains helped it.

The results hold in all specifications. Counties that gained banks during the early 1860's had more growth than other counties, and postbellum banks have a statistically significant connection with manufacturing growth per capita. The final panel presents a more nuanced result: initial bank losses were not statistically or economically important. If anything, counties were actually better off without the banks. A county gaining a bank immediately after the Acts

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[27] The capital for 1860 through 1900 comes from the *Merchants and Bankers' Directory* and *Rand McNally Bankers' Directory*, whereas capital in 1850 comes from Weber (2008).

had 15 percent more manufacturing capital per capita than those that did not gain a bank, but a county losing a bank had (an insignificant) 1 percent more capital.

5.2.1 Decomposing the County-Level Effect By Decade

The panel approach is helpful to control for unobserved heterogeneity, but the model only estimates the average effect of the change in the number of banks over the entire period. As the effect most likely changed over time, it is informative to run separate regressions for each decade. The repeated cross-section approach, however, cannot include county-fixed effects or county-level trends to control for the initial value of manufacturing or the endogeneity of population and urbanization to bank growth. I, therefore, have chosen to use the values of manufacturing, population, urbanization, and banks in 1860, effectively testing which initial characteristics best predicted manufacturing in each subsequent decade. Estimated separately for each decade, the regressions have the form:

$$Y_{i,t} = a + \beta_1 \Delta Banks_{i,1863-66} + \beta_2 State_{i,1860} + \beta_4 X_{i,1860} + \beta_5 Y_{i,1860} + s_s + e_{i,t} \quad (3)$$

where the variables retain their previous definitions.

Table 5 illustrates that the effect of the change in the number of banks between 1863 and 1866 had a significant and increasing effect on manufacturing starting in 1870. For instance, a new bank gained during the mid-1860s increased manufacturing capital per capita 5.1% in 1870, 3.4% in 1880, 7.5% in 1890, and 7.4% in 1900.[28] Alternatively, the number of state banks in 1860 was not significantly correlated with any measure of manufacturing after 1870. The data thus indicate that the initial changes brought about by the National Banking Acts had a larger and more persistent effect than the initial antebellum banking system.

5.3 National Banking and Establishment-Level Growth – 1850-1880

The previous regressions suggest that the National Banking Acts fueled manufacturing growth, but the county-level data only include certain aggregate measures. For instance, they contain the value of manufacturing capital, but not what type of capital it was or what industry it was employed in. They also do not contain measures of mechanization or valued added. I, therefore, use Atack and Bateman's establishment-level manufacturing sample (1999) to pinpoint

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[28] The effects for 1880 are generally smaller than those in other decades, suggesting that the price fluctuations around nation's specie resumption in 1879 negatively affected the previous results.

banking's effect on those characteristics (physical capital, steam power, and value added) and industries (chemicals, textiles, steel products) that are associated with modern manufacturing.

There are two drawbacks with the establishment-level data. First, the data do not contain the same establishments or counties each year and a fixed effects estimator cannot be used. I thus include the level of $\Delta Banks_{i,1863-66}$ in the regression to capture initial differences between areas.[29] Second, the data do not contain each establishment's city, meaning establishments and banks must be matched by county. While the model cannot account for this type of measurement error, it should bias against finding a significant relationship between banks and manufacturing.

The full model is:

$$Y_{j,i,t} = a + \beta_1 \Delta Banks_{i,1863-66} + \beta_2 \Delta Banks_{i,1863-66} * Post1860_t + \beta_3 Nat_{i,t-1} + \beta_4 State_{i,t-1} \quad (4)$$
$$+ \beta_5 X_{i,t-1} + \beta_6 Z_{j,i,t} + \tau_t + S_s + I_j + S_s \times \tau_t + I_j \times \tau_t + e_{j,i,t}$$

where j denotes establishment, I_j is fixed effects for three-digit industry codes, and all other variables retain their previous meanings. The control vector $X_{i,t-1}$ contains the previous county-level variables, whereas the vector $Z_{j,i,t}$ contains a dummy if the establishment is in a city and dummy variables for its number of employees. The interaction of state-fixed effects with decade effects capture location-specific institutional development, and the interaction of the industry-fixed effects with decade effects capture industrial development.

It is helpful to point out that the model should only provide a lower bound estimate of the effect of the National Banking Acts. First, some establishments might have been far away for the bank in their county. Second, any impact the legislation had on whole industries will be captured by the industry-year fixed effects. Third, the legislation's effect seems to have grown over time, but the establishment-level sample only contains two observations after 1863.

The sudden growth of banks during the 1860s seems to have fueled the structural and technological shifts associated with the establishment of the Manufacturing Belt (Table 6). The change is positively and significantly correlated with capital per worker. In particular, the new banks enabled establishments to purchase steam engines. For instance, an extra bank during the mid-1860's increased an establishment's capital to labor ratio by 1.3% and the probability of having steam power by 0.7%. The change is also positively correlated with value added, indicating that the new banks helped establishments shift into the production of secondary goods.

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[29] The sample contains too few observations from the same county in all years to include county fixed effects.

The coefficients might seem small, but they correspond to large proportions of the actual growth rates. For instance, the percent of firms with steam engines in the sample only grew from 15% to 18% between 1860 and 1880. Therefore, despite being negatively biased, the estimated effect of a new bank represented 23% of steam engine growth, 21% of the growth in value added, and all of the growth in the capital to labor ratio over the period.

The change in banks was not correlated with the number of workers. The result, however, seems to be the caused by sampling error, as the average number of workers actually declines in 1880 relative to the 1870 values. When 1880 is removed, the coefficient on the change in banks becomes positive for the number of workers but does not change for the other outcome variables.

The insignificant and often negative coefficients on the number of national banks are the result of the limited number of postbellum observations. National banks do not enter the regression specification until 1880 and even then they enter at their 1870 values. The correlation between $NatBanks_{i,1870}$ and $\Delta Banks_{i,1863-66}$ thus obscures any measurable effect between national banks and manufacturing.[30]

5.3.1 Alternative Establishment-Level Specifications

The initial change in banks seems to have encouraged establishments to invest in capital goods such as steam engines. However, we also want to know if the influx of banks specifically helped those industries associated with the Manufacturing Belt. This section examines this question by creating a dummy variable for establishments in key industries: Textiles (SIC code 220), Chemicals (SIC code 280), Rubber and Plastic Products (SIC code 300), Metal Products (SIC codes 330 and 340), Industrial Equipment (SIC codes 350 and 360), and Instruments (SIC code 370).[31] By interacting $\Delta Banks_{i,1863-66}$ with this dummy variable (Mfg_j), the model tests whether bank entry affected these industries over others. The model is:

$$Y_{j,i,t} = a + \beta_1 \Delta Banks_{i,63-66} + \beta_2 \Delta Banks_{i,63-66} * Post1860_t + \beta_3 \Delta Banks_{i,63-66} * Post1860_t * Mfg_j \ (5)$$
$$+ \ \beta_4 Nat_{i,t-1} + \beta_5 State_{i,t-1} + \beta_6 X_{i,t-1} + \beta_7 Z_{j,i,t} + \tau_t + S_s + Mfg_j + S_s \times \tau_t + Mfg_j$$
$$\times \tau_t + e_{j,i,t}$$

where β_2 measures the effect of the change in the number of banks on all industries, β_3 measures the additional effect on the specified industries.

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[30] The results are similar if state and national banks are aggregated.
[31] Automobile production has become synonymous with the Manufacturing Belt, but it did not begin until after 1880.

Despite the additional interaction term, the change still has a positive and significant relationship with steam power, value added, and the capital to labor ratio and no relationship with the number of workers employed across all establishments in Table 7. The interaction with $\Delta Banks_{i,1863-66}$ and Mfg_j is also statistically significant for steam power and the capital to labor ratio. For every new bank gained during the 1860s, an establishment would be 1.0% more likely to adopt steam power and their capital to labor ratio would rise by 1.7%. The statistically insignificant effect on value added is likely the result of the key industries being high value added by definition. The new banks thus might have increased the number of these establishments, but the regression model would be unable to capture the effect. Taken together, the pattern suggests that the National Banking Legislation helped manufacturing in general, and particularly those industries associated with Manufacturing Belt production after 1870.

6. Conclusion

The United States was dependent on agriculture in 1860, yet established itself as the world's leading producer of manufacturing goods by 1900. The most significant growth in manufacturing after the Civil War was located in certain areas of the Manufacturing Belt. This paper shows that the National Banking Acts could be partially responsible for this geographic distribution. The legislation stabilized the existing banking system and increased the number of banks in the Belt immediately prior to the adoption of mechanized factories.

Two conclusions emerge from a new bank census. First, the initial influx of banks accelerated manufacturing. At the county-level, the change was correlated with the increase of output and capital per capita. In fact, the effect of gaining a bank due to the legislation was large and increasing over time, amounting to at least 5.9% more manufacturing capital and 3.9% more manufacturing output in 1900. At the establishment-level, new banks allowed entrepreneurs to invest in steam power, raise their value added, and increase the amount of capital per worker. The effect influenced all manufacturers but had its greatest effect on those industries that would come to make up the Manufacturing Belt. Second, the national banking regulation indirectly contributed to the nation's industrialization. While both effects are likely positively biased by endogeneity, a national bank had a larger effect on growth than a state bank after 1870, suggesting that the legislation strengthened the connection between finance and growth.

There is one caveat that must be kept in mind when interpreting the results. The concentration of banks in the Midwest and Northeast helped fuel the nation's industrialization but it might have been at the expense of growth in frontier states. The high capital requirements slowed financial development in the West and South, and it was not until the 1890s or later that the regions gained a larger number of banks. This financial underdevelopment of other regions thus might be one reason why the Manufacturing Belt was so persistent.

Over and above presenting a reason for the pattern of the United States' industrialization, the analysis provides several implications for developing nations. Studies have shown that financial liberalization can be a catalyst for growth, but this paper shows that the U.S. needed a stronger banking system in order to achieve its potential. To put it another way, more banks are not always better. The analysis also provides a reason why Rousseau and Wachtel (2011) find that the connection between finance and growth has been obscured in the past 20 years. If a country's liberalization was premature, then the resulting financial system may not have been strong enough to affect real change in the economy. The paper, therefore, suggests deregulation is not always the key to growth, as a slow growing but stable financial system achieved what a fast growing but unstable one could not.

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Figure 1: Evolution of the Manufacturing Output Per Capita (1860-1920)
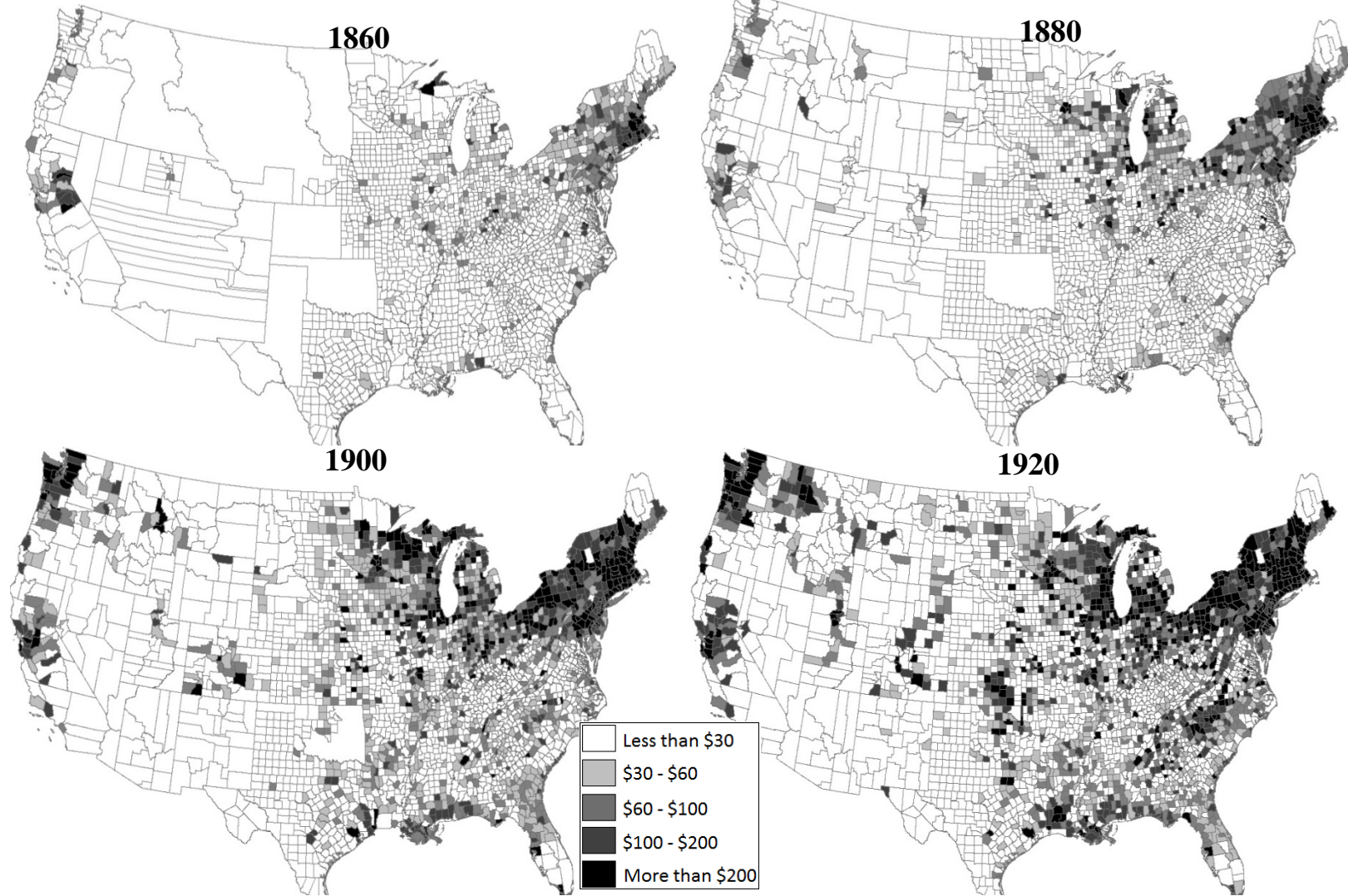
Notes: Displays county-level value of output per capita. County boundaries obtained from Minnesota Population Center (2004), and output per capita from Haines (2004). Counties with less than 1000 people or more than 3000 acres are given zero values to provide a better comparison.

Figure 2: Counties in Regression Analysis
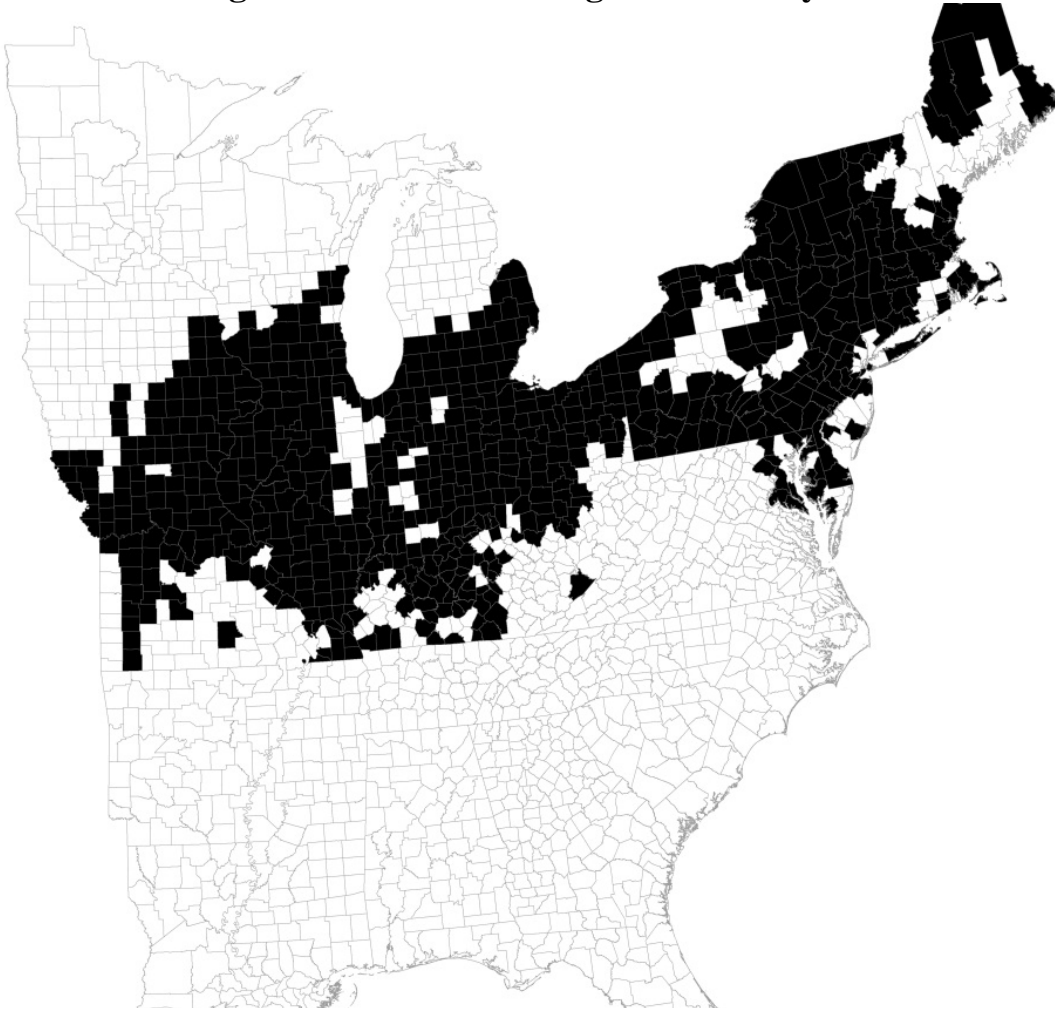
Notes: Figure shades those counties that are included in the regression analysis. County boundaries obtained from Minnesota Population Center (2004).

Figure 3: Changes In Banks (1863-1866)
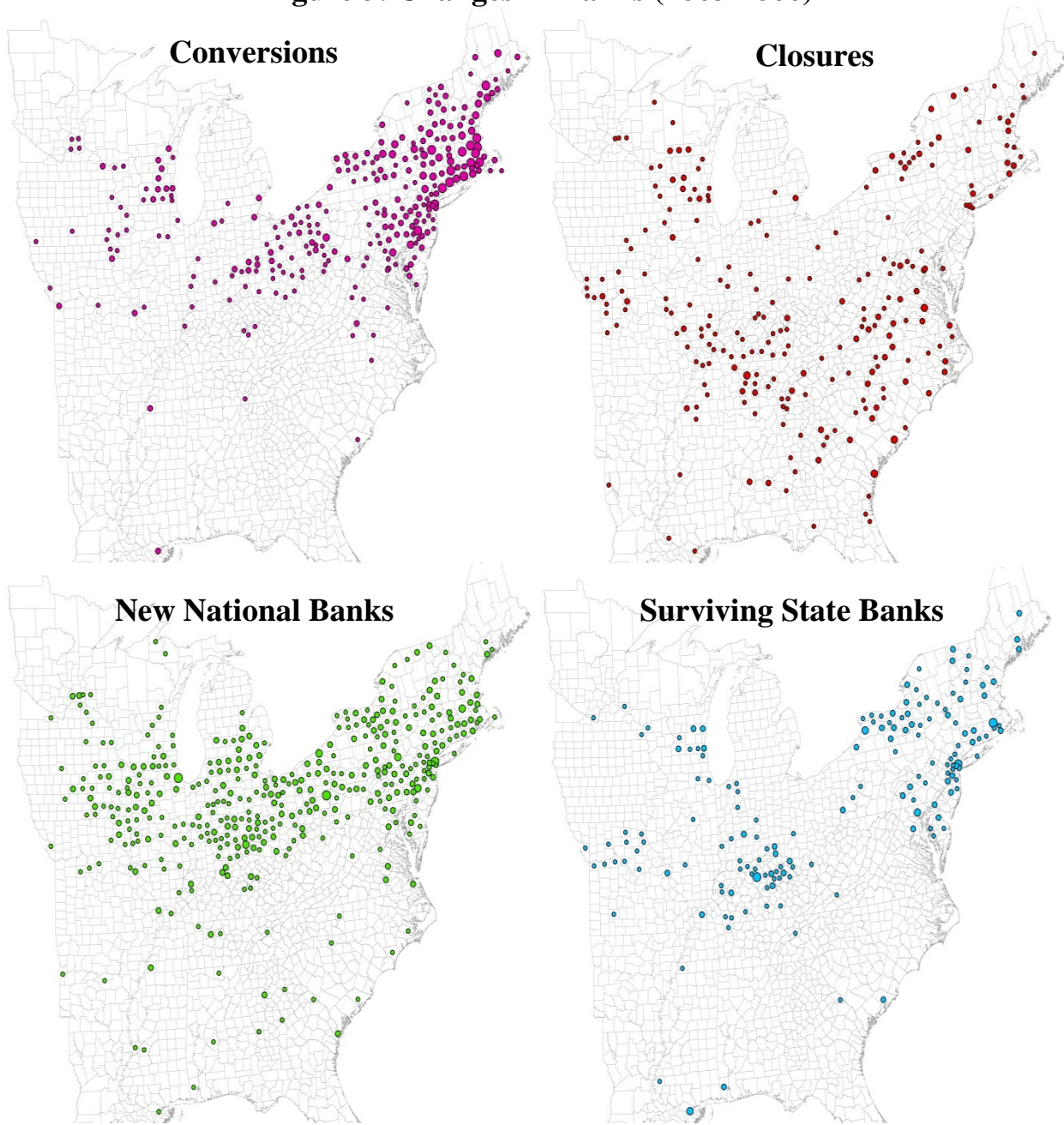
Notes: Displays the county-level changes in banks across the period. County boundaries obtained from Minnesota Population Center (2004).

Figure 4: Individual Deposits (1820-1900)
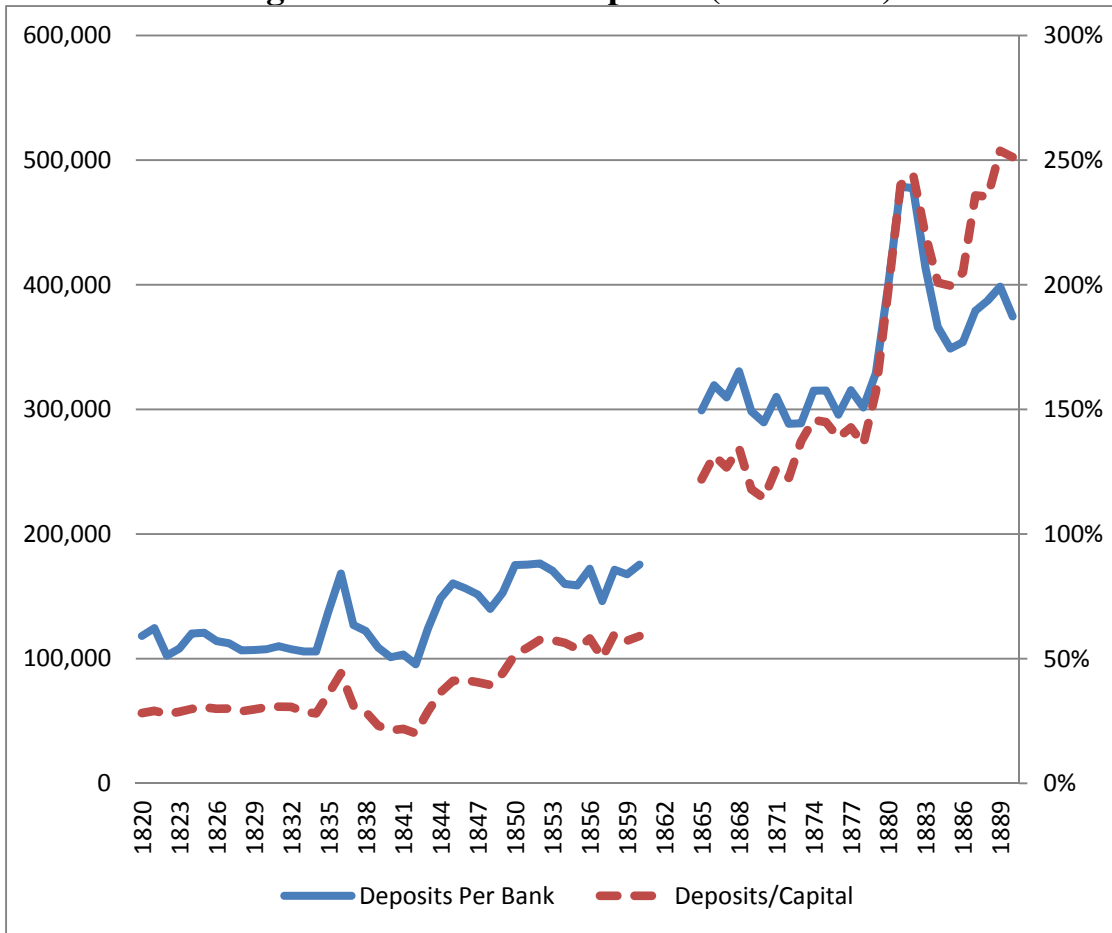
Notes: Contains deposits and capital of state banks before 1860 come from Weber (2005), and afterwards for both state and national banks from the Comptroller of the Currency. Due to the Civil War, records between 1861 and 1864 are not available.

Figure 5: Aggregate Change In Number of Banks (1863-1866)
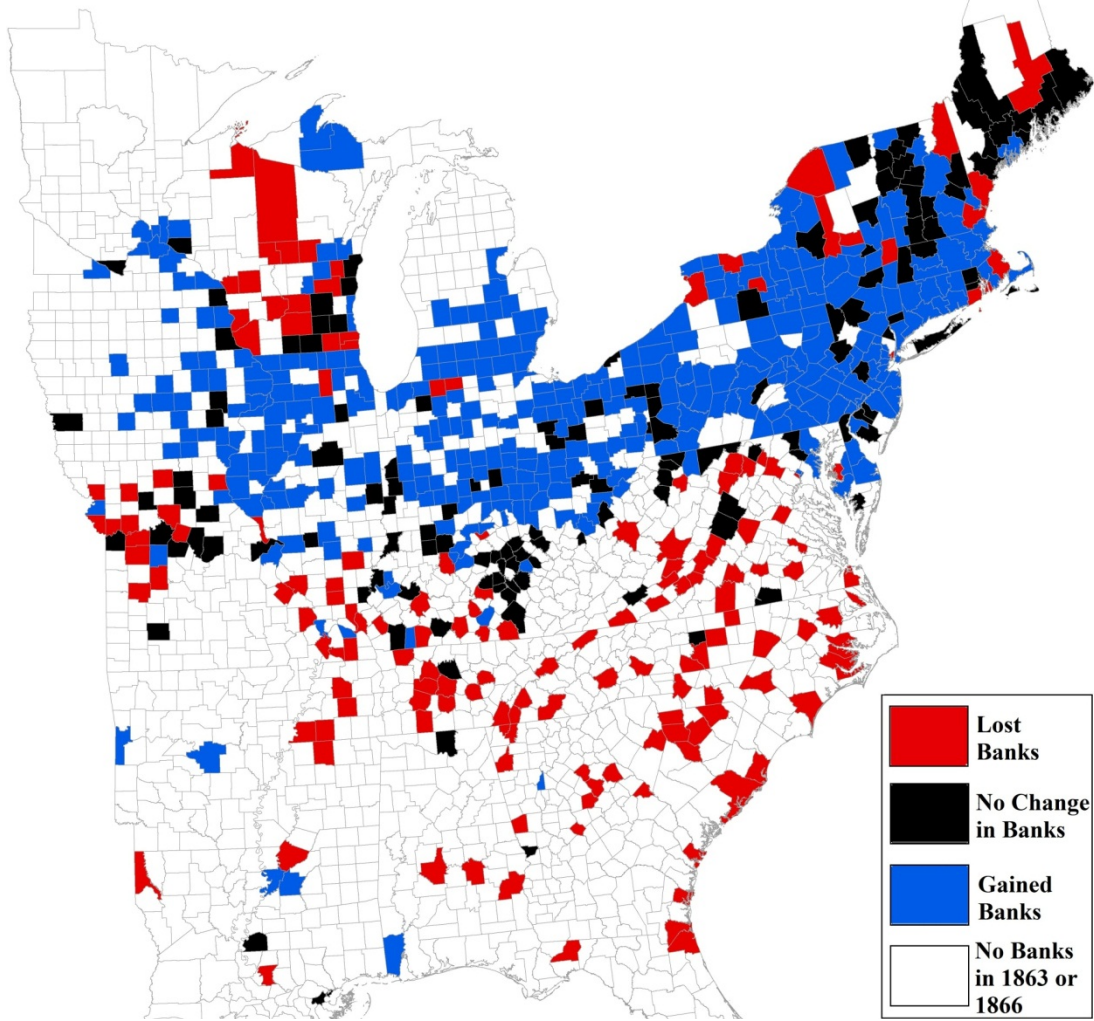
Notes: Figure contains the aggregate change in the number of banks between December 1862 and December 1866. County boundaries obtained from Minnesota Population Center (2004).

Table 1: Regional Development of Manufacturing (1840-1900)

	Manufacturing Output						
	Total Production (in millions)				Share of National Production		
	New Eng.	Mid. Atl.	Midwest	Total	New Eng.	Mid. Atl.	Midwest
1840	-	-	-	-	-	-	-
1850	282	481	122	1,048	26.9%	45.9%	11.6%
1860	469	781	283	1,847	25.4%	42.3%	15.3%
1870	775	1,358	599	3,257	23.8%	41.7%	18.4%
1880	1,084	2,174	1,166	5,272	20.6%	41.2%	22.1%
1890	1,676	4,078	2,576	10,523	15.9%	38.8%	24.5%
1900	2,042	5,397	3,470	14,207	14.4%	38.0%	24.4%

	Manufacturing Capital						
	Total Capital (in millions)				Share of National Capital		
	New Eng.	Mid. Atl.	Midwest	Total	New Eng.	Mid. Atl.	Midwest
1840	93	115	30	286	32.4%	40.0%	10.4%
1850	162	240	54	379	42.8%	63.4%	14.4%
1860	257	426	143	740	34.8%	57.6%	19.3%
1870	376	695	309	1,254	30.0%	55.5%	24.6%
1880	612	1,151	551	2,127	28.7%	54.1%	25.9%
1890	1,315	2,857	1,728	6,010	21.9%	47.5%	28.8%
1900	1,735	4,302	2,429	9,008	19.3%	47.8%	27.0%

Notes: Manufacturing output and capital taken from Haines (2004). Output is not available in the 1840 Census. The regions are defined as Midwest: Michigan, Indiana, Illinois, Ohio, Wisconsin, Minnesota, Kentucky; Middle Atlantic: Pennsylvania, New Jersey, Maryland, Delaware, District of Columbia, New York; New England: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island.

Table 2: County-Level Determinants of Bank Growth (1863-1866)

Characteristic in 1860	Change in Banks 1863-1866			
	(1)	(2)	(3)	(4)
Ln(State Banks)	-0.174	-0.186	0.305	0.308
	[0.159]	[0.162]	[0.193]	[0.192]
Ln(Private Banks)	0.746***	0.744***	1.162***	1.159***
	[0.218]	[0.220]	[0.271]	[0.271]
Ln(County Area)	0.155	0.161	0.258*	0.260*
	[0.113]	[0.111]	[0.140]	[0.143]
% Urban	1.395	1.329		
	[0.844]	[0.833]		
Ln(Population)	0.627***	0.618***		
	[0.139]	[0.133]		
% Black	-1.422*	-1.454*		
	[0.732]	[0.762]		
Ln(Mfg. Capital P.C.)	0.035			
	[0.084]			
Ln(Mfg. Output P.C.)		0.080		
		[0.071]		
Change in Characteristic (1850-60)				
% Urban			-0.042	-0.061
			[0.825]	[0.802]
Ln(Population)			0.172	0.175
			[0.126]	[0.128]
% Black			-5.380	-5.434
			[4.152]	[4.097]
Ln(Mfg. Capital P.C.)			-0.060	
			[0.045]	
Ln(Mfg. Output P.C.)				-0.037
				[0.034]
Location Effects?	State	State	State	State
Observations	637	637	637	637
R-squared	0.456	0.457	0.407	0.406

Notes: The table presents the results of an ordinary least squares regression. The dependent variable is the change in the number of banks between 1863 and 1868. Dollar values are deflated to 1860 using Officer (2008). Standard are provided in brackets and clustered by state. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 3: Measuring National Banking's Effect on County-Level Manufacturing (1860-1900)

	Ln(Mfg. Capital Per Capita)		Ln(Mfg. Capital Per Firm)		Ln(Mfg. Output Per Capita)		Ln(Mfg. Output Per Firm)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔBanks (63-66) & Yr>1860	0.035**	0.031*	0.041***	0.052***	0.020	0.013	0.026*	0.030*
	[0.015]	[0.018]	[0.014]	[0.017]	[0.015]	[0.018]	[0.014]	[0.017]
L. Ln(National Banks)	0.125***	0.055**	0.046	-0.012	0.100***	0.037	0.029	-0.030
	[0.025]	[0.027]	[0.029]	[0.031]	[0.026]	[0.029]	[0.027]	[0.028]
L. Ln(State Banks)	0.072***	0.034	0.025	0.012	0.048**	0.005	0.003	-0.018
	[0.019]	[0.022]	[0.022]	[0.025]	[0.020]	[0.023]	[0.021]	[0.024]
L.% Urban	1.337***	-0.269	1.122***	-0.207	1.292***	-0.113	1.104***	-0.012
	[0.142]	[0.202]	[0.175]	[0.200]	[0.143]	[0.193]	[0.162]	[0.205]
L.Ln(Population)	0.075*	0.097*	0.042	0.113**	0.111***	0.129**	0.061*	0.126**
	[0.043]	[0.053]	[0.037]	[0.048]	[0.041]	[0.057]	[0.035]	[0.049]
L.%Black	-0.663	-1.050	-0.101	-0.366	-0.857	-1.199	-0.384	-0.552
	[0.713]	[0.981]	[0.609]	[1.031]	[0.594]	[1.042]	[0.608]	[0.916]
Reserve City & Yr>1860	-0.122	0.047	-0.019	0.282**	-0.110	0.032	0.006	0.271*
	[0.127]	[0.152]	[0.139]	[0.114]	[0.141]	[0.155]	[0.152]	[0.140]
Location Fixed Effect?	County	County	County	County	County	County	County	County
Location Trend?	State	County	State	County	State	County	State	County
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235
R-squared	0.633	0.805	0.563	0.765	0.482	0.720	0.411	0.677

Notes: The table presents the results of an OLS regression. The dependent variable is the per capita value of the defined variables. The sample consists of decadal county-level observations from 1860 through 1900. Dollar values are deflated to 1860 using Officer (2008). Robust standard errors are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 4: County-Level Robustness Checks

	Controlling for Bank Capital							
	Ln(Mfg. Capital Per Capita)		Ln(Mfg. Capital Per Firm)		Ln(Mfg. Output Per Capita)		Ln(Mfg. Output Per Firm)	
ΔCapital P.C. (63-66) & Yr>1860	0.008** [0.003]	0.009** [0.004]	0.008** [0.003]	0.013*** [0.004]	0.006* [0.003]	0.003 [0.004]	0.005 [0.003]	0.007* [0.004]
L. Ln(Nat. Bank Cap. P.C.)	0.062*** [0.017]	0.010 [0.019]	0.033* [0.018]	-0.015 [0.020]	0.041** [0.018]	0.005 [0.020]	0.017 [0.017]	-0.019 [0.019]
L. Ln(State Bank Cap. P.C.)	0.035*** [0.013]	-0.001 [0.016]	0.025* [0.014]	0.013 [0.018]	0.021 [0.013]	-0.014 [0.017]	0.010 [0.013]	0.001 [0.017]
Location Time Trend?	State	County	State	County	State	County	State	County
	Merge All Banks Into One Variable							
	Ln(Mfg. Capital Per Capita)		Ln(Mfg. Capital Per Firm)		Ln(Mfg. Output Per Capita)		Ln(Mfg. Output Per Firm)	
ΔBanks (63-66) & Yr>1860	0.034** [0.015]	0.028 [0.018]	0.040*** [0.014]	0.052*** [0.017]	0.020 [0.015]	0.010 [0.018]	0.025* [0.014]	0.031* [0.017]
L. Ln(Banks)	0.055* [0.029]	-0.014 [0.035]	0.081** [0.034]	0.050 [0.041]	0.033 [0.029]	-0.042 [0.036]	0.057* [0.031]	0.022 [0.037]
L. Ln(Banks) & Yr>1860	0.079*** [0.026]	0.079*** [0.027]	0.001 [0.033]	-0.017 [0.033]	0.064** [0.028]	0.080** [0.031]	-0.007 [0.032]	-0.018 [0.031]
Location Time Trend?	State	County	State	County	State	County	State	County
	Only Midwest Counties							
	Ln(Mfg. Capital Per Capita)		Ln(Mfg. Capital Per Firm)		Ln(Mfg. Output Per Capita)		Ln(Mfg. Output Per Firm)	
ΔBanks (63-66) & Yr>1860	0.084*** [0.026]	0.065** [0.031]	0.052** [0.022]	0.066** [0.028]	0.051** [0.023]	0.011 [0.031]	0.018 [0.021]	0.005 [0.029]
L. Ln(National Banks)	0.111*** [0.033]	-0.001 [0.040]	0.033 [0.037]	-0.054 [0.045]	0.088*** [0.033]	0.018 [0.044]	0.019 [0.032]	-0.034 [0.041]
L. Ln(State Banks)	0.074*** [0.025]	0.051 [0.033]	0.043 [0.029]	0.056 [0.036]	0.032 [0.027]	-0.005 [0.035]	0.001 [0.027]	-0.004 [0.035]
Location Time Trend?	State	County	State	County	State	County	State	County
	Dummy Variables for Change in Banks (63-66)							
	Ln(Mfg. Capital Per Capita)		Ln(Mfg. Capital Per Firm)		Ln(Mfg. Output Per Capita)		Ln(Mfg. Output Per Firm)	
Gained Bank (63-66) & Yr>1860	0.184*** [0.051]	0.120* [0.063]	0.156*** [0.052]	0.159** [0.064]	0.109** [0.055]	0.011 [0.065]	0.070 [0.051]	0.028 [0.061]
Lost Bank (63-66) & Yr>1860	0.010 [0.095]	0.045 [0.105]	0.132 [0.082]	0.207** [0.104]	-0.069 [0.085]	-0.037 [0.105]	0.036 [0.079]	0.106 [0.105]
L. Ln(National Banks)	0.115*** [0.024]	0.046* [0.027]	0.051* [0.029]	-0.004 [0.031]	0.094*** [0.025]	0.033 [0.029]	0.038 [0.027]	-0.017 [0.028]
L. Ln(State Banks)	0.072*** [0.020]	0.018 [0.025]	0.054** [0.023]	0.036 [0.028]	0.049** [0.021]	-0.004 [0.026]	0.032 [0.021]	0.012 [0.026]
Location Time Trend?	State	County	State	County	State	County	State	County

Notes: The table presents the results of an OLS regression. The sample consists of decadal county-level observations from 1860 through 1900. Every regression includes county and decade fixed effects as well as the defined location trend and the county-level characteristics in all previous regression. Dollar values are deflated to 1860 using Officer (2008). Robust standard errors are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 5: Examining the Effect of the Change in Banking By Decade

	Ln(Mfg. Capital Per Capita)				
	1860	**1870**	**1880**	**1890**	**1900**
ΔBanks (63-66)	0.018	0.051***	0.034*	0.075***	0.074***
	[0.019]	[0.017]	[0.017]	[0.023]	[0.023]
Ln(State Banks) in 1860	0.161**	0.077	0.015	-0.025	0.014
	[0.068]	[0.057]	[0.057]	[0.076]	[0.071]
Location Fixed Effect?	State	State	State	State	State
	Ln(Mfg. Capital Per Firm)				
	1860	**1870**	**1880**	**1890**	**1900**
ΔBanks (63-66)	-0.010	0.055***	0.028*	0.052**	0.059***
	[0.017]	[0.015]	[0.016]	[0.020]	[0.023]
Ln(State Banks) in 1860	0.024	0.115*	0.069	0.049	0.063
	[0.070]	[0.064]	[0.054]	[0.062]	[0.062]
Location Fixed Effect?	State	State	State	State	State
	Ln(Mfg. Output Per Capita)				
	1860	**1870**	**1880**	**1890**	**1900**
ΔBanks (63-66)	0.030	0.034**	0.028	0.054**	0.056**
	[0.019]	[0.017]	[0.017]	[0.023]	[0.022]
Ln(State Banks) in 1860	0.227***	0.077	0.019	-0.056	0.034
	[0.066]	[0.052]	[0.056]	[0.078]	[0.067]
Location Fixed Effect?	State	State	State	State	State
	Ln(Mfg. Output Per Firm)				
	1860	**1870**	**1880**	**1890**	**1900**
ΔBanks (63-66)	0.001	0.036**	0.022	0.032	0.039*
	[0.016]	[0.014]	[0.016]	[0.020]	[0.020]
Ln(State Banks) in 1860	0.088	0.106*	0.070	0.030	0.081
	[0.063]	[0.056]	[0.051]	[0.061]	[0.057]
Location Fixed Effect?	State	State	State	State	State

Notes: The table presents the results of an OLS regression. The sample consists of county-level observations for the year specified by the column. The regression also contains the value of population, urbanization, and percent black in 1860. Starting in 1870 the model also controls for manufacturing in 1860 and whether the county contained a reserve city. Dollar values are deflated to 1860 using Officer (2008). Robust standard errors are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 6: Measuring National Banking's Effect on Firm-Level Manufacturing (1850-1880)

	Total Adult Workers		Steam Power		Ln(Value Added)		Ln(Capital/Adult Workers)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔBanks (63-68)	-0.038	0.042	0.001	-0.000	0.006	0.005	-0.009**	-0.006
	[0.249]	[0.250]	[0.001]	[0.001]	[0.004]	[0.004]	[0.004]	[0.004]
ΔBanks (63-68) & Yr>1860	-0.243	-0.018	0.006***	0.007***	0.021***	0.021***	0.013**	0.011*
	[0.611]	[0.582]	[0.002]	[0.002]	[0.006]	[0.006]	[0.007]	[0.006]
L. Ln(National Banks)	1.114	1.321	-0.019***	-0.012**	-0.129***	-0.109***	-0.036*	-0.026
	[2.270]	[2.167]	[0.006]	[0.006]	[0.019]	[0.019]	[0.021]	[0.021]
L. Ln(State Banks)	-1.344	-1.010	0.011**	0.008*	0.027*	0.027*	0.021	0.027
	[1.408]	[1.275]	[0.005]	[0.005]	[0.016]	[0.016]	[0.018]	[0.017]
L.% Urban	14.841***	14.275***	0.027*	0.033**	0.644***	0.654***	0.012	-0.013
	[3.464]	[3.306]	[0.015]	[0.015]	[0.050]	[0.049]	[0.053]	[0.053]
L.Ln(Population)	-0.628	-0.761	0.000	-0.001	-0.018	-0.014	-0.003	0.004
	[0.623]	[0.568]	[0.004]	[0.004]	[0.013]	[0.012]	[0.014]	[0.014]
L.%Black	4.262	2.406	0.041	0.046	0.351**	0.331**	-0.084	-0.135
	[4.618]	[6.182]	[0.053]	[0.051]	[0.157]	[0.157]	[0.181]	[0.182]
Reserve City & Yr>1860	-3.793	-2.903	-0.086***	-0.079***	-0.061	-0.012	-0.053	-0.004
	[3.856]	[3.163]	[0.015]	[0.014]	[0.052]	[0.047]	[0.059]	[0.050]
In Town of 2,500+ People	5.231***	5.204***	0.035***	0.033***	0.361***	0.358***	0.061***	0.067***
	[1.299]	[1.356]	[0.006]	[0.006]	[0.018]	[0.019]	[0.020]	[0.020]
6<=Adult Workers<16			0.149***	0.138***	1.207***	1.206***	0.020	0.038*
			[0.007]	[0.008]	[0.018]	[0.018]	[0.020]	[0.020]
16<=Adult Workers<100			0.288***	0.278***	2.300***	2.306***	0.065**	0.074**
			[0.011]	[0.012]	[0.027]	[0.027]	[0.030]	[0.030]
More than 100 Adult Workers			0.078***	0.080***	0.654***	0.659***	-0.008	0.036
			[0.008]	[0.008]	[0.035]	[0.036]	[0.094]	[0.080]
Three-Digit SIC Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SIC Specific Time Trend	Yes	No	Yes	No	Yes	No	Yes	No
Industry X Yr Effects	No	Yes	No	Yes	No	Yes	No	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yr Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,971	17,971	25,196	25,196	25,196	25,196	18,439	18,439
R-squared	0.153	0.145	0.276	0.300	0.493	0.501	0.372	0.385

Notes: The table presents the results of an OLS regression. The sample consists of decadal firm-level observations from 1850 through 1880. The dependent variable is defined by the column heading. Dollar values are deflated to 1860 using Officer (2008). Robust standard errors are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

	Total Adult Workers		Steam Power		Ln(Value Added)		Ln(Capital/Adult Workers)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔBanks (63-68)	0.212	0.201	0.001	0.001	0.011***	0.011***	0.003	0.001
	[0.276]	[0.284]	[0.001]	[0.001]	[0.004]	[0.004]	[0.005]	[0.005]
ΔBanks (63-68) & Yr>1860	-0.232	-0.172	0.004**	0.003*	0.018***	0.018***	0.011	0.012*
	[0.569]	[0.539]	[0.002]	[0.002]	[0.006]	[0.006]	[0.008]	[0.007]
Mfg Dum. & ΔBanks & Yr>1860	0.770	0.496	0.006*	0.011***	-0.008	-0.011	0.014	0.017**
	[1.168]	[0.965]	[0.003]	[0.003]	[0.010]	[0.008]	[0.010]	[0.007]
L. Ln(National Banks)	-0.014	0.077	0.001	0.000	-0.006***	-0.006***	-0.007***	-0.004**
	[0.168]	[0.174]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]
L. Ln(State Banks)	-0.188	-0.152	0.002***	0.001***	-0.000	-0.000	-0.006***	-0.005**
	[0.161]	[0.157]	[0.001]	[0.000]	[0.002]	[0.002]	[0.002]	[0.002]
L.% Urban	14.541***	14.906***	0.000	-0.002	0.642***	0.643***	-0.099	-0.084
	[3.668]	[3.699]	[0.017]	[0.017]	[0.054]	[0.055]	[0.060]	[0.060]
L.Ln(Population)	-1.670**	-1.242**	-0.021***	-0.022***	-0.033**	-0.030**	-0.071***	-0.057***
	[0.693]	[0.583]	[0.005]	[0.004]	[0.013]	[0.012]	[0.017]	[0.017]
L.%Black	-3.534	-4.262	-0.080	-0.075	0.198	0.195	-0.394*	-0.422*
	[7.905]	[8.179]	[0.063]	[0.063]	[0.163]	[0.163]	[0.222]	[0.221]
Reserve City & Yr>1860	-1.619	-0.320	-0.070***	-0.076***	0.001	0.012	0.100	0.141**
	[4.249]	[3.796]	[0.017]	[0.016]	[0.055]	[0.052]	[0.062]	[0.059]
In Town of 2,500+ People	6.859***	6.998***	-0.005	-0.004	0.360***	0.364***	-0.107***	-0.102***
	[1.904]	[1.957]	[0.006]	[0.006]	[0.021]	[0.021]	[0.024]	[0.024]
6<=Adult Workers<16			0.163***	0.162***	1.259***	1.260***	-0.024	-0.026
			[0.008]	[0.008]	[0.018]	[0.018]	[0.023]	[0.023]
16<=Adult Workers<100			0.312***	0.312***	2.425***	2.422***	0.031	0.028
			[0.012]	[0.012]	[0.025]	[0.025]	[0.032]	[0.032]
More than 100 Adult Workers			0.102***	0.103***	0.716***	0.721***	-0.025	-0.023
			[0.010]	[0.010]	[0.044]	[0.044]	[0.088]	[0.089]
Manufacturing Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manufacturing Time Trend	Yes	No	Yes	No	Yes	No	Yes	No
Manufacturing X Yr Effects	No	Yes	No	Yes	No	Yes	No	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yr Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,971	17,971	25,196	25,196	25,196	25,196	18,439	18,439
R-squared	0.040	0.042	0.118	0.118	0.430	0.431	0.068	0.069

Notes: The table presents the results of an OLS regression. The sample consists of decadal firm-level observations from 1850 through 1880. Manufacturing Dummy denotes establishments in certain key industries (Textile Mills, Chemicals, Rubber Products, Metal Products, Industrial Machinery, Electronic Equipment, and Instruments). The dependent variable is defined by the column heading. Dollar values are deflated to 1860 using Officer (2008). Robust standard errors are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.