BANKS, FREE BANKS, AND U.S. ECONOMIC GROWTH

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ABSTRACT

The "Federalist financial revolution" may have jump-started the U.S. economy into modern growth, but the Free Banking System (1837-1862) did not play a direct role in sustaining it. Despite lowering entry barriers and extending banking into developing regions, we find in county-level data that free banks had little or no effect on growth. The result is not just a symptom of the era, as state-chartered banks seem to have strong and positive effects on manufacturing and urbanization.

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I. INTRODUCTION

A half century ago, Phillip Cagan (1963, 20) wrote that the United States "could not so easily have achieved its rapid industrial and commercial expansion during the second half of the nineteenth century with the fragmented currency system it had during the first half." Despite its assertiveness, the statement remains largely untested. Rousseau and Sylla (2005) implicitly cast doubt on its breadth by showing that the "Federalist financial revolution" of the 1790s and its system of state-chartered banks helped to set the nation on a path of modern economic growth, but Cagan's statement was more likely aimed at note issues associated with the later "free" banking system that operated in various states and times between 1837 and 1862. Free banking lowered entry barriers and extended capital into new areas, yet nearly a third of free banks ever created had closed by 1863. Did the diffusion of financial services facilitated by free banks compensate for their propensity to fail? Using a unique combination of county-level data from Haines (2004) and Weber (2005, 2008), we examine whether free banks had measurable effects on the growth of agriculture, manufacturing, and urbanization, and compare these with the effects of banks chartered by specific legislative acts over the same period.

A rich empirical literature now explores the paths of finance-led growth described by Goldsmith (1969) and McKinnon (1973). Cross-country and panel studies such as King and Levine (1993), among many others, tend to support a finance-growth nexus, while time series studies such as Demetriades and Hussein (1996) and Rousseau and Wachtel (1998) are more nuanced in their conclusions.[1] Rousseau and Wachtel (2011) even show that links found in early cross-country studies break down when estimated with post-1990 data, and attribute this to a decline in the quality of finance as economies pursue the expansion of credit. This leads one to question whether all finance is good finance, and whether weak finance lowers growth.

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[1] Levine (2005) provides a thorough survey of this literature.

The antebellum United States offers a fertile environment for addressing questions of this nature. Rousseau (2002), for example, focuses on the Panic of 1837 and President Jackson's monetary policies leading up to it as a case of weak finance. The free banking period, upon which we focus here, is also well suited to investigation because it did not involve large changes in financial regimes. Indeed, not only did charter and free banks operate together, but new charter banks continued to form after free banking laws were passed. The period thus offers the earliest side-by-side comparison of banks that provided similar credit allocating functions, albeit to possibly different clients, but were subject to different regulations.

Rockoff (1972, 1974), Rolnick and Weber (1983, 1984, 1986), and Jaremski (2010) investigate why free banks were prone to financial distress, but these as well as growth studies such as Bodenhorn (2000) and Rousseau and Sylla (2005) do not explicitly address the real effects of free banking. Here we make a first attempt to disentangle growth effects of free and charter banks by merging two micro-level bank databases collected by Weber (2005, 2008): the first provides the name, location, and dates of operation of each antebellum bank, and the second contains each bank's annual balance sheet items. When merged, these data allow us to examine the number and loans of both free and charter banks by county over time. We link financial factors to growth with Census data collected by Haines (2004), using two specific measures of growth—manufacturing capital and farm capital—and one indirect measure—urbanization—also at the county level. Together, these data allow us to address the extent to which banking could have affected the industrialization described by Cagan.

The empirical analysis indicates that free banking did not have a direct impact on economic growth. This does not seem to be just a symptom of the era, as charter banks had positive effects on manufacturing and urbanization. Even our most optimistic estimates indicate that a 10% increase in the number of free banks would have increased the growth of

manufacturing capital by less than 0.5% per decade, compared to a 3.3% increase in growth for a 10% increase in charter banks. The results lead one to ask if the National Banking Acts of 1863 and 1864 and the 10% tax on state bank notes that followed had significant impacts on economic development by encouraging the exit of banks that were not growth promoting and replacing them with new banks that were.[2] They also suggest that any positive effects of free banking must have operated indirectly and over the long term by establishing banks for the first time in areas that previously lacked access to financial services.

II. THE ANTEBELLUM DUAL BANKING SYSTEM

Under the Articles of Confederation, the young United States by 1785 was awash in debts from the Revolutionary War and lacked a stable currency. These conditions were consequences of systems of currencies issued by state legislatures and un-backed paper money issued by the Continental Congress at the start of the war that had depreciated to virtual worthlessness, requiring foreign and domestic debt issues to finance the struggle. The Federal Constitution, ratified in 1789, addressed these weaknesses by forbidding states legislatures from issuing notes and by implicitly authorizing Alexander Hamilton to establish the nation's first quasi-central bank.[3] Rousseau and Sylla (2005) point to this "Federalist financial revolution" as a pivotal event in the path of relative prosperity experienced over the next sixty years. As the label suggests, the "revolution" involved construction of the nation's banking and financial sectors.

While the system worked well when the population was concentrated in large cities, the Federalist system of bank incorporation did not fully anticipate the nation's growth potential and

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[2] Jaremski (2011) demonstrates that the tax on notes issued by state banks scheduled to take effect in 1866 led in the vast majority of cases to the exit of state banks rather than their conversion to national charters.

[3] Rousseau (2011, 146-147) describes the Constitutional basis used by Hamilton to obtain a federal charter for the Bank of the United States.

quickly became constrictive. Early banks needed to obtain unique charters from state legislatures to begin business rather than being free to enter under a fixed set of standards. The chartering process was tedious and approval depended on political influence as much as financial resources.[4] Hammond (1957, 574), for example, describes the situation in New York:

> "It had long been difficult to get new bank charters in New York, because the [Albany] Regency kept the number down conservatively. And whenever a new one was decided on . . . opportunities were afforded the public to purchase stock—provided of course that most of the stock went into the possession of Democrats."[5]

Seeking to advance their political and economic fortunes, legislatures protected existing banks and prevented the market from expanding to meet the rising demand for banking services. Together with the lack of a low denomination currency, the situation led to an intense need for liquidity in developing areas.[6]

State legislatures responded by passing acts that are now collectively known as Free Banking Laws. Starting with Michigan in 1837 and continuing through 1860 in Pennsylvania, these laws replaced legislative approval for starting banks with a defined set of capital, reserve, and note issue requirements that varied from state to state. Contrary to its name, however, free banking was far from laissez-faire; rather, the term "free" meant that any individual or group of

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[4] Bodenhorn (2006) provides a detailed description of the charter process.

[5] The Albany Regency was a group of politicians that held considerable power in New York during the 1820s and 1830s. They are most associated with the Jackson Democrats and Martin Van Buren. The state did not pass a free banking law until the Regency lost support.

[6] As quoted by Bodenhorn (2003a, 188), A. C. Flagg, a former comptroller of New York State, recalls that merchants, manufacturers, and bankers regularly appealed to politicians for more banks. Delegations were often led by powerful and well-respected individuals such as Albert Gallatin, the nation's longest-serving Secretary of the Treasury (1801-1814).

individuals that met the state's requirements was "free" to open a bank. Most laws permitted

rapid entry with relatively small sunk costs. Banks and liquidity could thus expand with

population and demand without political interference. In total, 18 states passed free banking

laws, but most were not passed until the early 1850s.[7]

The new laws did not eliminate existing banks or prevent new ones from obtaining a

legislative charter. Indeed, roughly the same number of new charter banks (858) started up after

1837 as free banks (861), with new charter banks locating more in the developed Northeast and

free banks more in the developing Midwest.[8] Even those charter banks outside of the Northeast

were typically found in major cities such as Atlanta, Detroit, and Nashville or on major trading

routes such as Louisville, Memphis, and St. Louis. This suggests that charter banks required

some level of economic development in their vicinities to operate effectively. The only example

where free and charter banks seemed to operate interchangeably was in New York State, where

most charter banks switched to a free bank charter after the Safety Fund collapse in the early

1840s.

The differences between free and charter bank locations were not only based on

geography. Looking at Census data for 1860 in Table 1, banking types seem related to the

population and industrial composition of a given location. Counties with charter banks tended to

be manufacturing areas, whereas those with free banks were more focused on agriculture. For

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[7] Rolnick and Weber (1983, 1082) date the passage of free banking laws as follows: Michigan 1837 (repealed 1839) and 1857; Georgia 1838; New York 1838; Alabama 1849; New Jersey 1850; Illinois 1851; Massachusetts 1851; Ohio 1851; Vermont 1851; Connecticut 1852; Indiana 1852; Tennessee 1852; Wisconsin 1852; Florida 1853; Louisiana 1853; Iowa 1858; Minnesota 1858; Pennsylvania 1860. Among these, very little free banking was actually done in Alabama, Florida, Georgia, Iowa, Massachusetts, Pennsylvania, Tennessee, and Vermont. The downturn of 1839-43 seems to have interrupted the passage of new free banking laws, as only 175 banks were created in the entire United States between 1840 and 1847.

[8] As such, the majority of free banks (51%) were in the Midwest, whereas 74% of charter banks were in the Northeast.

example, the average county in the Northeast with a charter bank had $56 of manufacturing capital per person and $39 of farm capital, compared to the average free bank county that had $28 and $52 respectively. Counties with a charter bank also had a higher percentage of their populations in urban areas than counties with no banks or only free banks. Differences in total population are most pronounced in the Midwest, where counties with a charter bank had 64% more residents than counties with only free banks.

Despite establishing liquidity on the frontier, it is not clear that free banks promoted development in their immediate locations. A lack of available high-return investments in rural free banking locations might partly explain this. But free banks also had a greater unconditional propensity to close than charter banks, and sometimes before they could have had any positive effect on their communities. In total, 58% of the 861 free banks ever started had closed by 1863, and 15.6% of free banks operated for less than a year. This stands in stark contrast to the 27% of the 857 charter banks created during the free banking era (1837-1862) that closed. Rolnick and Weber (1983, 1984, 1986) and Dwyer and Hasan (2007) show that this was not because free banking was an inherently unstable institutional arrangement, but rather a result of fluctuations in the value of collateral bonds required by individual states for securing notes.[9] Because the quality of bonds acceptable for securing notes varied across states, with some even allowing non-government bonds such as railroad securities to secure notes, free banks in states with looser collateral standards were more vulnerable to negative business cycle fluctuations or particular industry-specific shocks.

Statements by contemporaries also suggest that at least some free banks did not promote local development because they were insufficiently engaged in traditional banking services. For example, a Michigan state bank commissioner in 1837 reported that individuals sought to

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[9] Jaremski (2010) shows that free banks which issued loans often survived declines in the prices of collateral bonds.

establish free banks "in situations the most inaccessible and remote from trade."[10] Despite the polemic nature of such statements, however, the importance of so-called "wildcat banking" is surely overstated. Most telling is that even though many free banks did close, a typical free bank note was really quite safe and the recovery rate on the notes of the few free banks that actually failed, with the exception of those in Minnesota, averaged between 75 and 90 cents on the dollar depending on the state.[11]

The fact remains, however, that free banks did not make as many loans per capita, even in rural areas, as charter banks did. Figure 2 shows that charter banks in 1860 not only issued more loans per person in counties with smaller populations, but also loaned a much larger proportion of their assets. For example, in a county with a population of 8,000, an average free bank held $134 in assets per capita but only loaned out $7 while an average charter bank held $146 assets per capita and loaned out $51. Figure 2 also shows free banks in 1860 lent less per capita in low population areas than in high population areas.

The data and anecdotal evidence suggest that the effects of free banks on county-level growth may have been limited. Because there are no direct empirical studies of free banking and growth, we proceed to investigate the role of free banks in growth and compare their effects to those attributable to charter banks.

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[10] Cited by Hammond (1957, 601). Knox (1900, 748) describes how Chicago merchants in 1858 refused to receive notes from 27 Wisconsin free banks because they "had no local habitation, but had simply the name of some winter lumber-camping place" and were "owned by non-residents and officered by straw men." A contributor in the January 1861 edition of *Banker's Magazine* even suggests that the majority of Illinois free banks were "merely banks of circulation without capital and doing no business at their normal locations."

[11] Figures are from Rolnick and Weber (1983, 1088-9).

III. DATA

A number of studies document the connection between finance and growth in early U.S. history. Rousseau and Sylla (2005) show that nation-wide financial development increased domestic investment and non-financial business incorporations before 1850. Bodenhorn (2000) shows that states with more financial development in 1850 grew faster than those with less financial development. Bodenhorn and Cuberes (2010) relate cities with a bank in 1837 to higher subsequent population growth. Rousseau and Wachtel (1998) and Fulford (2010) show that finance had a positive impact on growth after the Civil War. At the same time, a lack of disaggregated data for banks has prevented studies of whether free banks affected growth separately from charter banks.[12] We address this question by constructing a county-level dataset that differentiates between the two bank types.

We begin with two antebellum databases collected by Weber (2005, 2008). The first contains a census of banks prior to the Civil War and the second contains items from their annual balance sheets. The census provides the type (i.e., free or charter), location, and dates of operation for each bank and the balance sheets provide information on size and portfolio composition. We can therefore aggregate banks based on their incorporation type.

Because the balance sheet database is missing information for 215 banks that we know existed in either 1850 and 1860, we fill in their missing decadal observations using the average balance sheet values of the lower quartile of their closest geographic neighbors.[13] The process begins by matching banks in the same county. Those banks without an immediate match are then

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[12] Rousseau and Sylla (2005) end their study at 1850. Bodenhorn (2000) uses initial values of banking in 1850 which eliminates most free banks from the sample, and Bodenhorn and Cuberes (2010) focus on bank measures before 1840.

[13] Because banks in a given area often had similar compositions, the matching process minimizes measurement errors.

matched with banks in the same state. We then aggregate the balance sheets to obtain the number of banks and the total value of loans per person in each county.[14] These variables reflect the presence of banks and the intensity of banking intermediation.

We obtain three county-level measures of economic growth from Haines (2004). Urbanization, defined as the percentage of a county's population that lives in an area with more than 2,500 residents, is a rough measure of economic development.[15] Manufacturing capital per person reflects the development of factories and mechanization as described in Sokoloff (1984). Farm capital per person, which is defined as the value of tools and livestock, accounts for expansion of productive agricultural resources such as the purchase of a mechanical reaper.[16] The range of variables thus covers the broad sectors through which banking could have influenced the real economy.

We modify the panel in two ways for the regression analysis. First, we exclude observations for counties that were not present in the Census for 1850, 1860, and 1870. This ensures that any estimated empirical relationship between banks and economic growth is not a result of added or subtracted counties. Second, we eliminate observations from states established after 1860 and the early western states of California, Oregon, and Texas. This avoids logarithmic biases associated with newly established or soon to be established states. The resulting balanced panel contains decadal observations from 1,481 counties in 30 states between 1850 and 1870. [17]

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[14] Bank capital or assets could also proxy for the spread of banking, and we find that they perform similarly to the number of banks in our analysis, so we do not report the results here.

[15] As described by DeLong and Shleifer (1993), urban areas are likely to be centers of industry, and the number of people living therein proxies for their level of development.

[16] David (1971) illustrates the importance of the reaper's diffusion to agricultural production.

[17] The sample contains:
  Midwest: Michigan, Indiana, Illinois, Ohio, Wisconsin, Minnesota, Kentucky, Iowa, Missouri.
  Middle Atlantic: Pennsylvania, New Jersey, Maryland, Delaware, New York.

IV. EMPIRICAL ANALYSIS

The main challenge encountered when testing for an effect of financial development on growth is the possibility that banks opened in areas that were already growing. There is also the possibility that banks only moved into areas that were about to grow.[18] These simultaneity issues mean that part of the correlation that we find between measures of banking and growth could be due to reverse causation, thereby overstating support found for a hypothesis of finance-led growth. Following King and Levine (1993) and Bodenhorn (2000), we reduce simultaneity bias by using initial values of the banking variables, which are at least predetermined, in our growth regressions whenever possible rather than contemporaneous ones.

The county-level data themselves also lend some support for identification. Indeed, the coefficient of autocorrelation for decadal county-level growth in manufacturing capital across the 1840s and 1850s is -0.38, and the autocorrelation is -0.41 for growth across the 1850s and 1860s. Similarly, the autocorrelation for growth in farm capital is -0.20 across the 1850s and 1860s.[19] These negative correlations suggest that if banks tended to spring up in areas that were already growing, their benefits would need to overcome a negative tendency for subsequent growth to show a positive relation with it. Moreover, banks formed in locations that were growing slowly may well have contributed to the negative autocorrelation in growth that we observe by promoting real activity.

New England: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island.
South: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia.

[18] While the growth regressions that we consider try to control for the preemptive entry of banks by including variables for urbanization and access to railroads and waterways, we recognize that this unobservable source of reverse causation probably leads to overstatement of banks' effects on growth. It is striking, however, that even with this potential positive bias we find that free banks were largely unrelated to growth.

[19] Growth rates of farm capital by county are not available for the 1840s.

A. Banking and Growth

We begin by aggregating both free and charter banks to determine whether the overall relation between banking and growth is positive. The dependent variables are the growth rates of real manufacturing capital and real agricultural capital per person, and the percentage point change in urbanization in county *i* over the 1850s or the 1860s. The natural logarithms of the number of banks and the real value of bank loans per capita alternate as the variables of interest on the right hand side.[20] The baseline regression specification is

$$\%\Delta Y_{i,t} = a + \beta_1 Banks_{i,t-1} + \beta_2 Y_{i,t-1} + \beta_3 X_{i,t-1} + \eta_s + e_{i,t}, \qquad (1)$$

where $Y_{i,t}$ is the economic outcome of interest, $Banks_{i,t-1}$ is one of our aggregate banking measures, η_s is a vector of state dummies, and $e_{i,t}$ is the error term. We include the initial log level of the dependent variable $Y_{i,t-1}$ on the right hand side to account for the possibility of convergence across counties. The vector $X_{i,t-1}$ contains the initial values of the non-financial county variables that could have influenced growth. The literacy rate, defined as the proportion of a county's population that can read, proxies for education and human capital.[21] The fraction of black persons in a county's population controls for racial composition. Separate dummy variables for rails and waterways control somewhat for reverse causation associated with access to distant markets, and the log of total population controls for overall county size.

We estimate Equation (1) separately for the 1850s and 1860s and report the results in Table 2. The initial number of banks, which reflects the extent of banking, is related to growth in manufacturing capital and urbanization in both decades, with coefficients that are statistically significant. The coefficients associate 10% more banks in 1850 with 1.89% faster growth in a

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[20] We express all money values in 1860 dollars using the deflator in Officer (2008), and add unity before computing logarithms where appropriate.

[21] Because literacy was not reported in 1860, we impute it using the average of 1850 and 1870.

county's manufacturing capital and a rise of 0.28 percentage points in its urban population share over the decade. For the 1860s the coefficients relate 10% more banks with 1.1% higher capital growth and an urban share that is 0.3 percentage points higher. Loans per capita, which reflect the intensity of banking, are also statistically significant for growth in manufacturing capital and urbanization across both decades. On the other hand, neither banking variable is statistically significant for growth with farm capital as the dependent variable. Consistent with convergence across counties, the coefficients on the levels of the dependent variables are negative throughout and statistically significant in all but two regressions. Banks thus have their strongest and most persistent effects on manufacturing during the height of the free banking era.

B. Baseline Regression Models for Charter Banks, Free Banks, and Growth

We now estimate our baseline regressions with variables for free and charter banks entering separately on the right hand side, reserving variations on the baseline specifications for Sections IV.C and IV.D. The timing of free banking presents a challenge when we disaggregate by bank type because there were very few free banks in 1850 and free banking was virtually extinct by 1870. With only two decadal observations from the Census for measuring outcomes, this means that the initial value of free banking would be zero for nearly every county in the regression for the 1850s, and that survivorship bias could affect the regressions for the 1860s. For the 1850s regressions, we must therefore use percent changes in the banking variables over the 1850s on the right hand side. This opens the door for reverse causation to influence the coefficient estimates but at least allows us to examine whether free banking was correlated with growth before the Civil War. For the 1860s regressions, we accept the possibility of survivorship bias and continue to use 1860 values for the banking variables on the right hand side just as we did with the aggregated data. The combination of the two approaches provides upper and lower bounds on the relationships between free banks, charter banks and growth in sense that will

become clear as we describe the findings.

For each approach, we estimate regressions with all available counties in the full sample of states and with a sample restricted to the 17 states that passed free banking laws before 1860 (see fn. 7). The restricted sample is important for comparing the effects of free and charter banks in the same state because it controls for state-specific factors that could have affected both banks and growth. Because the passage of a free banking law was itself a consequence of limited charter bank development, however, the within-state comparison underestimates the benefits of charter banks more generally.

Disaggregated banks and growth, 1850-1860. We first estimate the relationship between changes in banking variables and economic growth between 1850 and 1860 to obtain an upper bound on the effects of charter and free banking on real activity.[22] The regression equation is:

$$\%\Delta Y_{i,1850-60} = a + \beta_1 \%\Delta Charter_{i,1850-60} + \beta_2 \%\Delta Free_{i,1850-60} + \beta_3 Y_{i,1850} \quad (2)$$

$$+ \beta_4 X_{i,1850} + \eta_s + e_{i,1850-60}$$

where $Charter_{i,1850-60}$ and $Free_{i,1850-60}$ are measures for each bank type, and the other variables are defined as before.

Table 3 shows that only charter banks had statistically significant effects on growth in manufacturing capital during the 1850s. For example, a 10% increase in the number of charter banks relates to growth in manufacturing capital of about 3.3% for all states (upper panel), 4.6% for free bank states (center panel), and 4.4% for counties without a bank in 1850 (lower panel).[23]

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[22] We do not pool these data with those from the Civil War decade because of the large number of the Midwest free bank and Southern charter bank closures after 1860.

[23] The regressions in the lower panel of Table 3 restrict the sample to counties without a bank before 1850 to compare counties with similar initial conditions. We do this because our finding that free banks had little effect on county-level economic growth relative to charter banks could be the result of pre-existing charter banks and the limited time frame that free banks were

At the same time, the number of free banks and their loans are negatively related to growth in farm capital in these regressions including all states or only states that passed free banking laws.[24] Charter banks are unrelated to growth in farm capital in all but one regression with a negative relation that is statistically significant at the 10% level. There is also evidence that both charter and free banks are positively related to urbanization, though the possibility of reverse causation seems strongest here. The finding that the free bank coefficients on loans are not statistically significant for growth in manufacturing and farm capital suggests that even free banks that were active in their communities struggled to influence growth in their communities during the 1850s.

Table 4 presents regressions for the 1850s with two alternative measures of charter and free bank activity. The first is the number of cumulative bank-years by county for each banking type. For example, if a county established its first free bank in 1853 and another in 1855, than the county's cumulative years for free banks in the 1850s would be 12. The second is the total number of new free banks and new charter banks established in a given county over the 1850s, which is meant to capture the effects of entry and account for banks that closed before the end of the decade. The upper panel of Table 4, which includes all states in our sample, shows that new charter banks and their cumulative years have positive effects on manufacturing capital that are statistically significant at the 1% level, but neither free banking measure has a significant

present. Because it takes time to establish information capital and lending relationships, a bank that existed before 1850 could have a greater effect than one established later. The restriction also reduces observations from developed areas where other types of financial institutions could exist.

[24] The standard deviation of the number of free banks by county across the decade also seems to explain poor performance in raising farm capital, though we do not report the results here. The sample standard deviation, however, is mostly attributable to the extent of the rise in the number of free banks from zero at the start of the decade, and a few closings near the end of the 1850s does little to mute the high correlation between the two. In Section IV.D below we find that free bank defaults and closures perform more reliably as measures of bank quality.

positive effect on manufacturing. At the same time, the cumulative years of free and charter banks have no effects on farm capital, whereas the effects of new banks of either type are strongly *negative*. Again, both charter and free banks have positive and statistically significant effects on urbanization, and the restricted estimates for free bank states in the lower panel are qualitatively similar to those for the full sample.[25]

The findings for the 1850s send a clear message: banking in general did not help grow farm capital whereas only charter banks relate to growth in manufacturing capital. Further, banks may have encouraged new and old residents to locate in urban areas.

Disaggregated banks and growth, 1860-1870. We now return to the model of banking and growth for the 1860s that reduces simultaneity bias by using initial values of the measures of banks by type as explanatory variables rather than contemporaneous changes. Because free banks were an important part of the financial landscape by 1860, the pre-determinedness of the right hand side variables renders causal inferences somewhat better grounded. It also allows us to investigate whether the lack of a relation between free banking and growth that we found for the 1850s was just a symptom of the period. The estimation equation is:

$$\%\Delta Y_{i,1860-70} = a + \beta_1 Charter_{i,1860} + \beta_2 Free_{i,1860} + \beta_3 Y_{i,1860} + \beta_4 X_{i,1860} + \eta_s \quad (3)$$
$$+ e_{i,1860-70}$$

The upper panel of Table 5 presents the results for all states in the sample. The initial number and loans of charter banks have positive and statistically significant relationships with subsequent growth in manufacturing capital and urbanization, but free banks do not. The estimates suggest that a typical county with 10% more charter banks in 1860 would see

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[25] The results are qualitatively similar when we use the numbers of years since a county established its first bank of each type as explanatory variables rather than cumulative years.

manufacturing capital grow 1.4% faster and see the urban population share rise by 0.4 percentage points. Neither free banks nor charter banks affect growth in farm capital except for a negative coefficient for charter banks that is statistically significant at the 10% level. The results change very little when we restrict the sample to free bank states in the center panel or exclude the Confederate states in the lower panel.[26] So while the number of free banks no longer shows the strongly negative association with growth in farm capital present for the 1850s, it is fair to say that their effects on growth were at best neutral for the 1860s.

C. Identifying Local Effects

The bank comparisons presented in Tables 3-5 would not capture purely local effects to the extent that free and charter banks tended to select into different communities. For example, if free banks located primarily in rural areas and charter banks located in urban ones, as seems to be the case, differences that we find between the two types in promoting growth could partly reflect unobserved rural and urban characteristics. In the presence of population-based non-linearities in the relation between free banks and growth, our regressions could also understate the absolute effects of free banks. To address these possibilities, Table 6 includes regressions that disaggregate banks by type and whether they are located in rural or urban counties, with rural counties defined as those with less than 24.1 inhabitants per square mile.[27] Our sampling on population density leaves too little variation in urbanization to use it on the left-hand side, so the regressions focus on growth in manufacturing and farm capital only.

The upper panel of Table 6 reports results for the 1850s. For rural counties, the positive

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[26] We exclude the Confederate states in the lower panel of Table 5 to ensure that the economic disturbances related to the Civil War are not affecting our results.

[27] The cutoff point was defined by the population density that divided the sample roughly in half. Adjusting the cutoff slightly up or down does not affect the findings in any significant way.

relation between charter banks and growth in manufacturing capital and the negative relation

between the number of free banks and growth in farm capital are stronger than those reported for

the sample with counties aggregated (see upper panel of Table 3). For urban counties, the

positive relation between charter banks and manufacturing capital and the negative relation

between the number of free banks and farm capital are only somewhat stronger than in the

aggregated sample (see lower panel of Table 3), whereas the negative relation between free bank

loans and farm capital is no longer statistically significant.

The results for the 1860s reported in the lower panel of Table 6 are similar to those found

in the aggregated sample (see upper panel of Table 5). In particular, charter banks in both rural

and urban counties retain their positive and statistically significant effects on manufacturing

capital, whereas free banks continue to have small and statistically insignificant effects on

growth in either type of capital.

Overall, the regressions in Table 6 suggest that our main results are not driven by the

pooling of rural and urban counties.

Table 7 restricts the growth regressions to a region where both charter and free banks

were prevalent, which includes the states of New York, New Jersey, and Connecticut. Because

all three are in the Northeast, we would expect the regressions to capture local effects while

reducing unobserved regional variation.[28] For the 1850s (upper panel) we find that neither free

nor charter banks relate to growth in manufacturing or farm capital, whereas only free banks

relate positively to urbanization at the 10% level. This suggests that the links between charter

banks and manufacturing capital found in the full sample for the 1850s did not emanate from the

Northeast. For the 1860s (lower panel), however, both free and charter bank variables have

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[28] Of course free and charter banks may have operated differently in the Northeast than in other
parts of the country, but we believe that the check is still worthwhile.

positive and statistically significant effects on manufacturing capital, and the number of free

banks even have a positive effect on farm capital that is statistically significant at nearly the 5%

level. The latter suggests that free banks in these states did ultimately succeed in mobilizing

agricultural capital.

D. Banking Quality and Growth

Our findings in Table 7 for New York, New Jersey, and Connecticut, all locations where

free banking is believed to have operated reasonably well, leads us to consider further whether

the quality of intermediation by free and charter banks affected growth. We do this by

differentiating free banks based on whether they ended up defaulting (i.e., with losses to note

holders) at some time before 1863, and then estimating our baseline models for both the 1850s

and 1860s.[29] The underlying hypothesis is that non-defaulting banks provided higher quality

intermediation than those that defaulted.

Table 8 presents the results. For the 1850s, the number and loans of charter banks as well

as the number of non-defaulting free banks have a positive and statistically significant relation

with growth in manufacturing capital. On the other hand, only the numbers of charter banks and

defaulting free banks have a negative relation with growth in farm capital. In other words, only

"good" free banks are positively related to manufacturing capital while only "bad" free banks are

responsible for the negative relation with agricultural capital. For the 1860s, we find similar

effects for charter banks as those found for the 1850s, but free banks do not have any statistically

significant effect on growth. We note, however, that the number and loans of non-defaulting free

banks, at least, have a positive coefficient for growth in manufacturing capital.

In addition to the regressions in Table 8, we estimated models for the 1860s that

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[29] We consider defaults through 1862 because the causes for individual free bank closings (i.e., default or not) are known clearly up to this time.

disaggregate 1860 banks by type and by survival through 1868 (i.e., controlling for banks that would eventually close but not necessarily default).[30] We are able to extend the event window in this case because we know the number of once-free banks that closed through 1868 but not whether they fully redeemed their notes. Regardless, the results with closures as the explanatory variable rather than default, not reported here, are similar to those in the lower panel of Table 8.

V. CONCLUSION

The data indicate that free banking had little or no positive relation with U.S. economic growth before 1870. And while the estimates from our econometric models cannot be taken as causal, their emphasis on local effects shed some light on the likely effects of endogeneity. Indeed, even when positively biased by simultaneity and endogenous entry, free banks are not robustly correlated with cross-county growth in agricultural or manufacturing capital, though there are some signals that free banks promoted growth in areas where they were less prone to failure. The lack of a relation does not seem to be a function of banking in general, as non-free banks continued to have significant and positive effects on capital formation. The results raise an important question: why did the innovation of free banking – an early form of what we might today call financial liberalization – fail to have a measurable effect on growth?

Standardizing entry requirements may have encouraged new banks, but those established as a result were often small and located in rural areas. Bodenhorn (2003b) illustrates that antebellum loan portfolios represented the underlying composition of the bank's surrounding area. Rural free banks thus would have invested in agriculture rather than manufacturing. As farmers used loans to bridge growing seasons, any additional liquidity might only have sustained small family farms rather than expanding their capital stock and productive capacity.

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[30] State banks that converted to national charters were considered to have survived the period.

The liberalization itself was also problematic as some states did not ensure that the notes issued by their free banks were backed by stable collateral. This led many free banks to close over the period, with many closures occurring shortly after opening. And because the potential costs of recovering claims made individuals less likely to place deposits or hold notes in banks that were more likely to close, this may have dampened the effect of free banks on growth.

Our findings cast new light on the National Banking Acts of 1863 and 1864. While Davis (1965), Sylla (1969), and James (1978) focus on the restrictiveness of their regulations late in the National Banking period, we find that these banks may have been initially growth promoting. This may have occurred because the new legislation retained the enabling aspects of free banks, but took steps to improve the quality of required collateral and create a uniform currency.[31] In response to the legislation, more charter banks that existed in 1860 (almost 60%) converted to a national charter than free banks (only 42%). Maybe more importantly, nearly half of free banks ended up closing, relative to less than a third of charter banks. Table 9 shows that the legislation closed only certain types of banks. Even across charter banks, banks that closed typically had small capital stocks, held few deposits, issued few loans, and were located in rural areas. In this way, the legislation seemed to have ended those banks that were unlikely to have a large effect on their communities regardless of whether they were free or charter banks.

On the other hand, free banks did form in many areas of the country that had previously gone without banks, and though we find that they did not have much of an immediate and direct impact on growth, they left a footprint of banking in rural areas that would eventually be filled by the national banks that followed. Perhaps this is the true legacy of free banking and it is in this sense that free banks did affect long-run growth.

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[31] Jaremski (2010, 2011) discusses the nature of the National Banking Acts in more detail.

Figure 3 illustrates that the majority of closed banks were in rural areas in the Midwest and South. The National Banking Acts therefore emulated the spirit of free banking but closed the very banks that the system had established. Our results suggest that these losses were not economically relevant in the short term as the closed banks were not growth promoting, whereas the gains by new national banks provided the impetus necessary to affect local growth. Cagan's (1963) argument thus seems to be sound: the National Banking legislation spread liquidity along the Manufacturing Belt and created banks capable of influencing the extraordinary rise in manufacturing and urbanization that was to come.

REFERENCES

The Bankers' Magazine, and State Financial Register. Edited by J. Smith Homans. Baltimore, MD.

Bodenhorn, H. *A History of Banking in Antebellum America*. New York: Cambridge University Press, 2000.

Bodenhorn, H. *State Banking in Early America: A New Economic History*. New York: Oxford University Press, 2003a.

Bodenhorn, H. "Short-Term Loans and Long-Term Relationships: Relationship Lending in Early America." *Journal of Money, Credit and Banking*, 35, 2003b, 485–506.

Bodenhorn, H. "Bank Chartering and Political Corruption in Antebellum New York: Free Banking as Reform," in *Corruption and Reform: Lessons from America's History*, edited by E. L. Glaeser and C. Goldin. Chicago: University of Chicago Press, 2006, 231–57.

Bodenhorn, H., and D. Cuberes. "Financial Development and City Growth: Evidence from Northeastern American Cities, 1790-1870." National Bureau of Economic Research Working Paper 15997, 2010.

Cagan, P. "The First Fifty Years of the National Banking System: A Historical Appraisal," in *Banking and Monetary Studies,* edited by D. Carson. Homewood, IL: Richard D. Irwin, 1963, 15–42.

David, P. A. "The Mechanization of Reaping in the Ante-Bellum Midwest," in *The Reinterpretation of American Economic History*, edited by R. W. Fogel and S. L. Engerman. New York: Harper and Row, 1971, 217–25.

Davis, L. E. "The Investment Market, 1870-1914: The Evolution of a National Market." *Journal of Economic History*, 25, 1965, 355–99.

DeLong, J. B., and A. Shleifer. "Merchants and Princes. City Growth before the Industrial Revolution." *Journal of Law and Economics*, 36, 1993, 671–702.

Demetriades, P. O., and K. A. Hussein. "Does Financial Development Cause Economic Growth? Time Series Evidence from Sixteen Countries." *Journal of Development Economics*, 51, 1996, 387–411.

Dwyer, G. P., Jr., and I. Hasan. "Suspension of Payments, Bank Failures, and the Nonbank Public's Losses." *Journal of Monetary Economics*, 54, 2007, 565–80.

Fulford, S. "If Financial Development Matters, Then How? National Banks in the United States 1870–1900." Mimeo, Boston College, 2010.

Goldsmith, R. *Financial Structure and Development*. New Haven, CT: Yale Univ. Press, 1969.

Haines, M. R. "Historical, Demographic, Economic, and Social Data: The United States, 1790-2000" [computer file]. ICPSR Study 2896. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2004.

Hammond, B. *Banks and Politics in America: From the Revolution to the Civil War*. Princeton: Princeton University Press, 1957.

James, J. A. *Money and Capital Markets in Postbellum America*. Princeton: Princeton University Press, 1978.

Jaremski, M. "Free Bank Failures: Risky Bonds vs. Undiversified Portfolios." *Journal of Money, Credit and Banking*, 42, 2010, 1565–87.

Jaremski, M. "State Banks and the National Banking Acts: A Tale of Creative Destruction." Mimeo, Colgate University, 2011.

King, R., and R. Levine. "Finance and Growth: Schumpeter Might be Right." *Quarterly Journal of Economics*, 108, 1993, 717–37.

Knox, J. J. *A History of Banking in the United States*. New York: Bradford, Rhodes, & Co., 1900.

Levine, R. "Finance and Growth: Theory and Evidence," in *Handbook of Economic Growth*, Vol. 1A, edited by P. Aghion and S. N. Durlauf. Amsterdam: North Holland, 2005, 865–934.

McKinnon, R. I. *Money and Capital in Economic Development*. Washington, DC: The Brookings Institution, 1973.

Minnesota Population Center. *National Historical Geographic Information System: Pre-release Version 0.1*. Minneapolis, MN: University of Minnesota, 2004. http://www.nhgis.org.

Officer, L. H. "What Was the Value of the US Consumer Bundle Then?" MeasuringWorth, 2008. URL: http://www.measuringworth.org/consumer/

Rockoff, H. *The Free Banking Era: A Reexamination*. Dissertations in American History. New York: Arno Press, 1972.

Rockoff, H. "The Free Banking Era: A Reexamination." *Journal of Money, Credit and Banking*, 6, 1974, 141–67.

Rolnick, A. J., and W. E. Weber. "New Evidence on the Free Banking Era." *American Economic Review*, 73, 1983, 1080–91.

Rolnick, A. J., and W. E. Weber. "The Causes of Free Bank Failures: A Detailed Examination." *Journal of Monetary Economics,* 14, 1984, 269–91.

Rolnick, A. J., and W. E. Weber. "Inherent Instability in Banking: The Free Banking Experience." *Cato Journal*, 5, 1986, 877–90.

Rousseau, P. L. "Jacksonian Monetary Polcy, Specie Flows, and the Panic of 1837." *Journal of Economic History*, 62, 2002, 457–88.

Rousseau, P. L. "Monetary Policy and the Dollar," in *Founding Choices: American Economic Policy in the 1790s*, edited by D. A. Irwin and R. Sylla. Chicago: University of Chicago Press, 2011, 121–49.

Rousseau, P. L., and R. Sylla. "Emerging Financial Markets and Early US Growth." *Explorations in Economic History*, 42, 2005, 1–26.

Rousseau, P. L., and P. Wachtel. "Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries." *Journal of Money, Credit and Banking*, 30, 1998, 657–78.

Rousseau, P. L., and P. Wachtel. "What is Happening to the Impact of Financial Deepening on Economic Growth." *Economic Inquiry*, 49, 2011, 276–88.

Sokoloff, K. L. "Investment in Fixed and Working Capital during Early Industrialization: Evidence from U.S. Manufacturing Firms." *Journal of Economic History* 44, 1984, 545-56.

Sylla, R. "Federal Policy, Banking Market Structure, and Capital Mobilization in the United States, 1863-1913." *Journal of Economic History* 29, 1969, 657-86.

Weber, W. E. "Listing of all State Banks with Beginning and Ending Dates." Research Department, Federal Reserve Bank of Minneapolis, 2005. http://research.mpls.frb.fed.us/research/economists/wewproj.html.

Weber, W. E. "Balance sheets for U.S. Antebellum State Banks." Research Department, Federal Reserve Bank of Minneapolis, 2008. http://research.mpls.frb.fed.us/research/economists/wewproj.html

FIGURE 1

Distribution of Free and Charter Banks

Panel A: 1836   Panel B: 1859
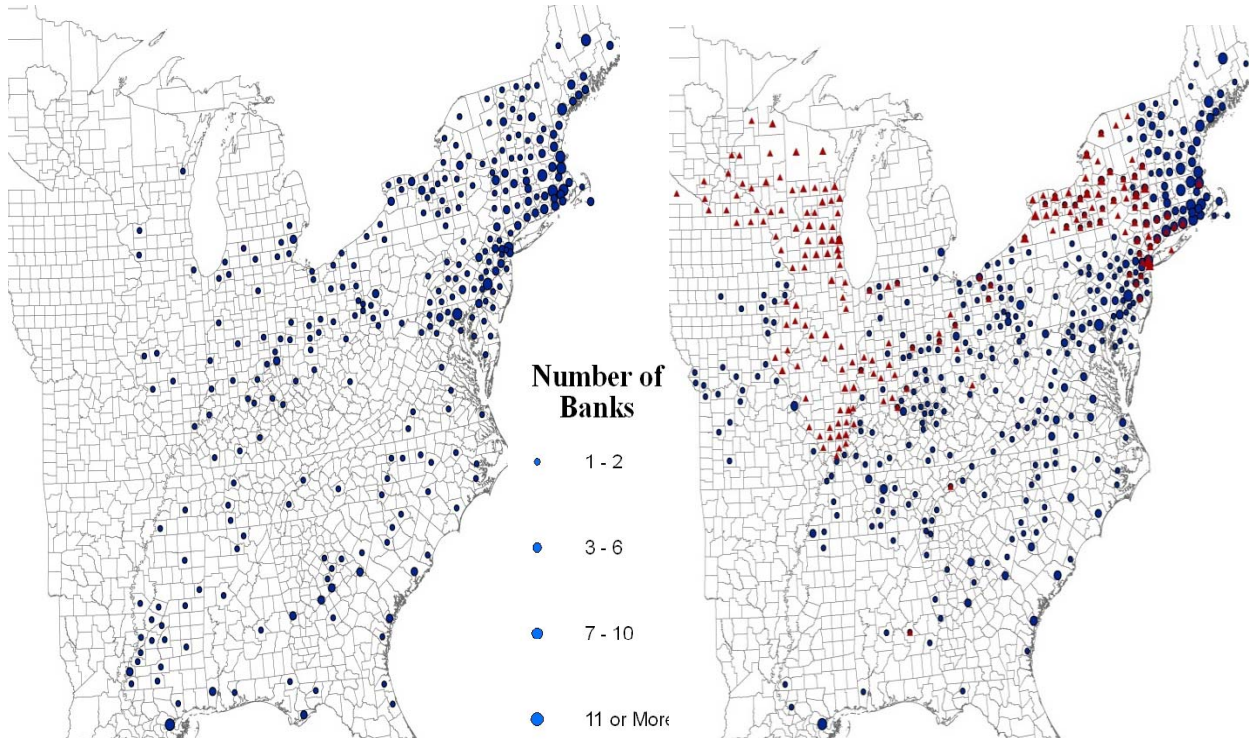
Note: The figure maps the location of each charter and free bank in 1836 and 1859. The blue dots represent charter banks and red triangles represent free banks. The size of the shape denotes the number of banks in the county. Due to the few banks west of the Mississippi River, we censored the map at that point. County boundaries obtained from NHGIS (2004), and bank numbers were obtained from Weber (2005).

FIGURE 2

Bank Intermediation By County Population in 1860
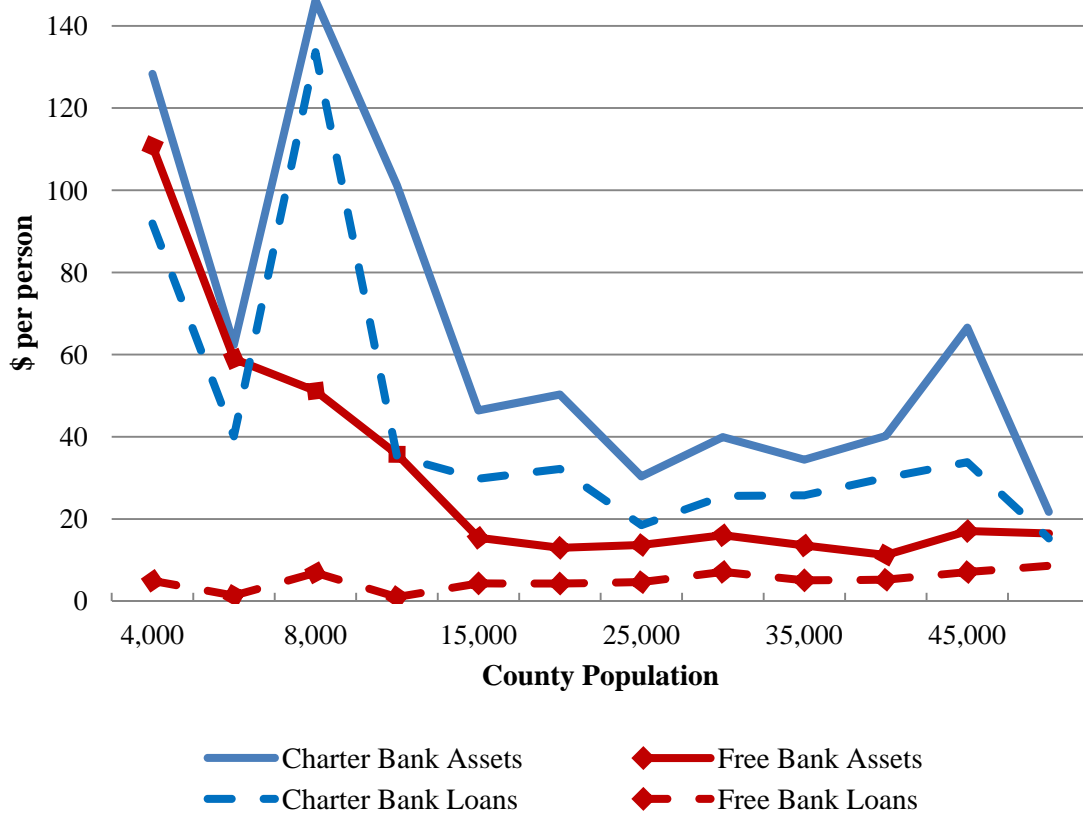
Note: The figure illustrates the average number of assets and loans per person as a function of a county's population. The balance sheet information is from Weber (2008), and county populations are from Haines (2004). Because there were few free banks in areas with more than 50,000 people, we censor the figure at that point.

FIGURE 3
Bank Closures (1860-1868)
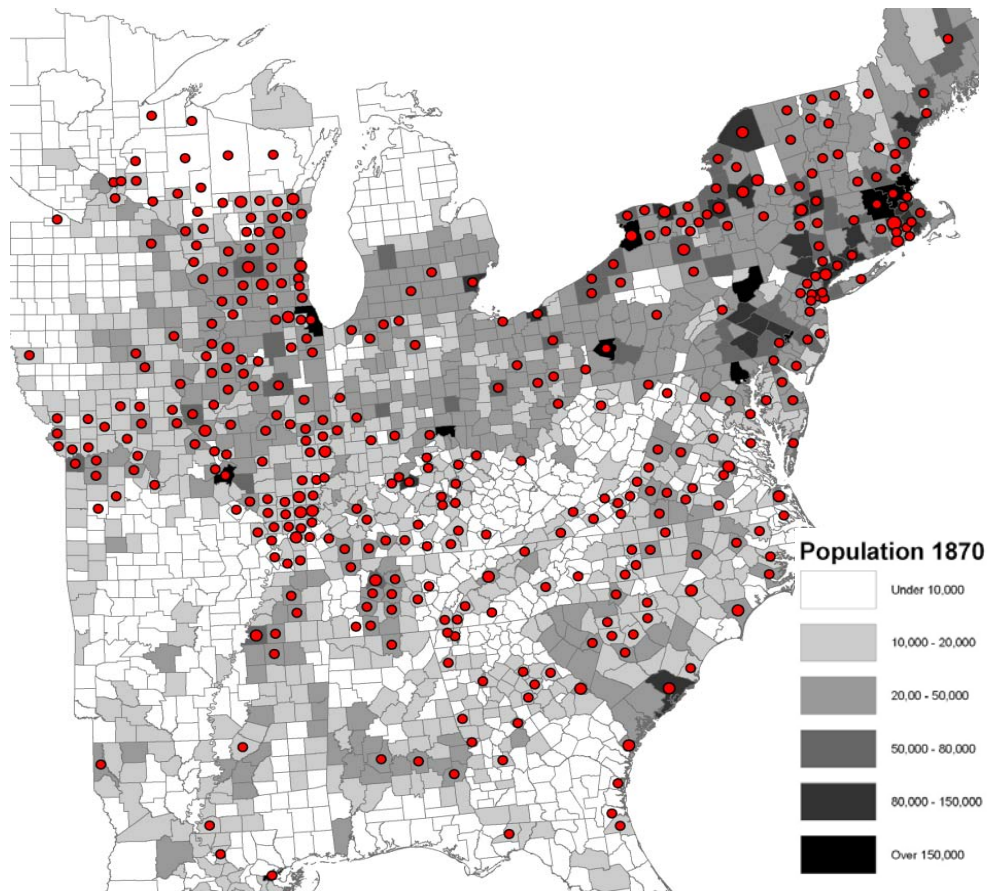
Note: The figure maps the location of each state bank that closed between 1860 and 1868. The size of the dot denotes the number of banks in the county, whereas the underlying shading displays the population of that county in 1870. County-level population was taken from Haines (2004). Due to the few banks west of the Mississippi River, we censored the map at that point. County boundaries obtained from National Historical Geographic Information System (2004).

TABLE 1

County-Level Statistics by Region in 1860

Location	Population	% Urban Population	Mfg. Capital (p.c. $)	Mfg. Output (p.c. $)	Number of Farms (p.c.)	Farm Capital (p.c. $)
Midwest						
No bank	12,351	2	13	20	0.091	53
Free banking only	19,126	8	16	29	0.088	46
Charter banking only	31,337	22	22	45	0.070	42
Both free and charter	33,236	31	30	67	0.067	39
Northeast						
No bank	22,681	1	24	34	0.077	40
Free banking only	41,982	10	28	55	0.081	52
Charter banking only	47,858	18	56	89	0.068	39
Both free and charter	84,184	25	52	96	0.059	42
South						
No banks	11,255	1	9	12	0.063	52
Free banking only	-	-	-	-	-	-
Charter banking only	24,416	21	19	35	0.039	36
Both free and charter	35,904	25	10	8	0.022	58

Note: Region definitions are given in the text. There were no counties in the South region in 1860 that had only free banks in 1860.

TABLE 2

OLS Growth Regressions Using Full Sample of Banks from All States

	All States - 1850-1860					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in % Urban	
Number of banks in 1850	0.189** (0.089)		-0.004 (0.037)		0.028* (0.015)	
Bank loans in 1850		0.067*** (0.022)		0.006 (0.010)		0.011** (0.004)
Level of dependent variable in 1850	-0.539*** (0.040)	-0.544*** (0.040)	-0.467*** (0.110)	-0.466*** (0.110)	-0.117 (0.079)	-0.118 (0.076)
Number of Observations	1,476	1,476	1,473	1,473	1,476	1,476
R-Squared	0.307	0.309	0.459	0.459	0.134	0.141
	All States - 1860-1870					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in % Urban	
Number of banks in 1860	0.106** (0.050)		-0.037 (0.032)		0.029** (0.011)	
Bank loans in 1860		0.060*** (0.014)		-0.002 (0.009)		0.011*** (0.003)
Level of dependent variable in 1860	-0.621*** (0.027)	-0.627*** (0.027)	-0.210*** (0.056)	-0.209*** (0.055)	-0.079** (0.035)	-0.076** (0.033)
Number of Observations	1,478	1,478	1,477	1,477	1,478	1,478
R-Squared	0.486	0.489	0.665	0.664	0.164	0.164

Note: The dependent variables for each decade are percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization, which is defined as the share of a county's population residing in an area with more than 2,500 inhabitants. Explanatory variables are measured at the start of each decade. The number of banks enters in logs and bank loans in log per capita terms. Money values are deflated to 1860 dollars using Officer (2008). In addition to dummy variables for states, each regression also contains the following county-level variables measured in the first year of each decade: literacy rate (%), black population (%), log of total population, and dummy variables for access to rails and waterways. The equations for manufacturing and farm capital also control for urbanization (%). Standard errors clustered at the state level appear in brackets beneath the coefficient estimates. *, **, and *** denote statistical significance at 10%, 5% percent, and 1% levels respectively.

TABLE 3
OLS Growth Regressions With Banking by Incorporation Type, 1850-1860

	All States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Change in number of charter banks	0.332**		-0.086**		0.027**	
	(0.121)		(0.038)		(0.012)	
Change in number of free banks	0.041		-0.062***		0.033**	
	(0.069)		(0.022)		(0.015)	
Change in charter bank loans		0.060**		-0.010		0.002
		(0.023)		(0.007)		(0.003)
Change in free bank loans		0.026		-0.013		0.025*
		(0.062)		(0.023)		(0.013)
Level of dependent variable	-0.535***	-0.531***	-0.470***	-0.467***	-0.086	-0.085
in 1850	(0.039)	(0.039)	(0.110)	(0.110)	(0.069)	(0.069)
Number of Observations	1,476	1,476	1,473	1,473	1,476	1,476
R-Squared	0.311	0.307	0.463	0.460	0.140	0.138
	Free Bank States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Change in number of charter banks	0.458***		-0.170***		0.041**	
	(0.124)		(0.056)		(0.018)	
Change in number of free banks	0.046		-0.060**		0.032**	
	(0.052)		(0.024)		(0.015)	
Change in charter bank loans		0.086***		-0.023		0.001
		(0.025)		(0.014)		(0.004)
Change in free bank loans		0.028		-0.011		0.024*
		(0.057)		(0.024)		(0.013)
Level of dependent variable	-0.578***	-0.573***	-0.504***	-0.498***	-0.104	-0.104
in 1850	(0.055)	(0.054)	(0.120)	(0.120)	(0.089)	(0.088)
Number of Observations	926	926	923	923	926	926
R-Squared	0.363	0.357	0.512	0.506	0.166	0.162
	Counties Without a Bank in 1850					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Change in number of charter banks	0.438***		-0.068		0.055***	
	(0.151)		(0.049)		(0.020)	
Change in number of free banks	0.058		-0.050*		0.041*	
	(0.084)		(0.028)		(0.021)	
Change in charter bank loans		0.105**		-0.012		0.011**
		(0.049)		(0.011)		(0.004)
Change in free bank loans		0.006		0.005		0.035*
		(0.100)		(0.033)		(0.019)
Level of dependent variable	-0.580***	-0.580***	-0.532***	-0.530***	-0.325	-0.325
in 1850	(0.042)	(0.041)	(0.114)	(0.114)	(0.208)	(0.207)
Number of Observations	1,183	1,183	1,180	1,180	1,183	1,183
R-Squared	0.339	0.337	0.501	0.500	0.207	0.202

Note: The dependent variables are the percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization across the 1850s. The regressions in the upper panel include counties from all states in our sample, those in the center panel exclude states that never passed a free bank law, and those in the lower panel exclude counties that already had a bank in 1850. Other control variables enter the regressions as described in the note to Table 2. Standard errors clustered by state appear in brackets beneath the coefficients. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels respectively.

TABLE 4
OLS Growth Regressions With Alternative Banking Variables, 1850-1860

	All States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Cumulative years of charter banks	0.089***		0.001		0.010**	
	(0.028)		(0.009)		(0.005)	
Cumulative years of free banks	0.014		-0.016		0.021**	
	(0.041)		(0.010)		(0.008)	
Number of new charter banks during 1850s		0.249***		-0.085**		0.023
		(0.078)		(0.038)		(0.015)
Number of new free banks during 1850s		0.076		-0.068***		0.046***
		(0.076)		(0.018)		(0.014)
Level of dependent variable in 1850	-0.544***	-0.535***	-0.467***	-0.475***	-0.120	-0.114
	(0.040)	(0.039)	(0.111)	(0.111)	(0.076)	(0.072)
Number of Observations	1,476	1,476	1,473	1,473	1,476	1,476
R-Squared	0.311	0.309	0.460	0.464	0.153	0.155
	Free Bank States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Cumulative years of charter banks	0.086**		-0.019		0.016*	
	(0.040)		(0.019)		(0.009)	
Cumulative years of free banks	0.018		-0.009		0.019**	
	(0.036)		(0.012)		(0.008)	
Number of new charter banks during 1850s		0.235**		-0.148**		0.037
		(0.091)		(0.058)		(0.022)
Number of new free banks during 1850s		0.093		-0.062***		0.045***
		(0.064)		(0.021)		(0.014)
Level of dependent variable in 1850	-0.584***	-0.577***	-0.500***	-0.510***	-0.155	-0.146
	(0.056)	(0.054)	(0.121)	(0.122)	(0.101)	(0.096)
Number of Observations	926	926	923	923	926	926
R-Squared	0.358	0.357	0.506	0.512	0.186	0.185

Note: The dependent variables are the percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization across the 1850s. The cumulative years variable denotes the total number of years each type of bank operated in the county, whereas the number of new banks is log total of all bank entries in the county during the decade. The regressions in the upper panel include counties from all states in our sample, those in the bottom panel exclude observations from states that never passed a free bank law. Other control variables enter the regressions as described in the note to Table 2. Standard errors clustered by state appear in brackets beneath the coefficients. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels respectively.

TABLE 5
OLS Growth Regressions With Banking by Incorporation Type, 1860-1870

	All States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Number of charter banks	0.136***		-0.062*		0.042***	
in 1860	(0.043)		(0.036)		(0.012)	
Number of free banks	-0.036		-0.007		-0.004	
in 1860	(0.042)		(0.048)		(0.010)	
Charter bank loans		0.059***		-0.007		0.012***
in 1860		(0.013)		(0.009)		(0.003)
Free bank loans		0.003		0.012		-0.001
in 1860		(0.021)		(0.024)		(0.009)
Level of dependent variable	-0.623***	-0.626***	-0.212***	-0.209***	-0.092***	-0.079**
in 1860	(0.027)	(0.027)	(0.055)	(0.055)	(0.033)	(0.034)
Number of observations	1,478	1,478	1,477	1,477	1,478	1,478
R-squared	0.487	0.489	0.666	0.664	0.177	0.170
	Free Bank States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Number of charter banks	0.150**		-0.069		0.038***	
in 1860	(0.065)		(0.044)		(0.012)	
Number of free banks	-0.046		-0.003		-0.003	
in 1860	(0.046)		(0.047)		(0.009)	
Charter bank loans		0.065**		-0.017		0.014**
in 1860		(0.028)		(0.014)		(0.005)
Free bank loans		0.003		0.014		-0.000
in 1860		(0.023)		(0.025)		(0.009)
Level of dependent variable	-0.616***	-0.618***	-0.227***	-0.223***	-0.073*	-0.067
in 1860	(0.040)	(0.041)	(0.064)	(0.063)	(0.042)	(0.047)
Number of observations	927	927	926	926	927	927
R-Squared	0.459	0.459	0.658	0.657	0.148	0.148
	Excluding Confederate States					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Number of charter banks	0.125**		-0.051		0.050**	
in 1860	(0.058)		(0.042)		(0.018)	
Number of free banks	-0.009		0.017		-0.007	
in 1860	(0.049)		(0.043)		(0.008)	
Charter bank loans		0.038**		-0.006		0.016***
in 1860		(0.013)		(0.011)		(0.005)
Free bank loans		0.015		0.026		-0.003
in 1860		(0.024)		(0.024)		(0.009)
Level of dependent variable	-0.566***	-0.565***	-0.149***	-0.144**	-0.062	-0.049
in 1860	(0.034)	(0.036)	(0.052)	(0.051)	(0.045)	(0.050)
Number of observations	832	832	832	832	832	832
R-Squared	0.447	0.447	0.406	0.405	0.127	0.124

Note: The dependent variables are the percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization across the 1860s. Explanatory variables are measured in 1860. The regressions in the upper panel include counties from all states in our sample, those in the center exclude observations from states that never passed a free bank law, and those in the lower panel exclude Confederate States. Other control variables enter the regressions as described in the note to Table 2. Standard errors clustered by state appear in brackets beneath the coefficients. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels respectively.

TABLE 6

OLS Growth Regressions by Incorporation Type: Rural vs. Urban Banks

	All States - 1850-1860							
	Only Rural Counties				Only Urban Counties			
	Growth in Mfg. Capital		Growth in Farm Capital		Growth in Mfg. Capital		Growth in Farm Capital	
Change in number of charter banks	0.426** (0.183)		-0.124 (0.079)		0.227* (0.111)		-0.035 (0.033)	
Change in number of free banks	0.014 (0.085)		-0.080*** (0.029)		0.066 (0.077)		-0.056** (0.025)	
Change in charter bank loans		0.085* (0.047)		-0.016 (0.015)		0.048 (0.030)		-0.001 (0.010)
Change in free bank loans		0.019 (0.169)		-0.039 (0.038)		0.044 (0.039)		-0.026 (0.017)
Level of dependent variable in 1850	-0.609*** (0.059)	-0.607*** (0.058)	-0.617*** (0.122)	-0.616*** (0.123)	-0.458*** (0.039)	-0.456*** (0.039)	-0.073 (0.069)	-0.069 (0.070)
Number of Observations	825	825	822	822	606	606	606	606
R-Squared	0.355	0.353	0.544	0.542	0.313	0.310	0.381	0.379
	All States - 1860-1870							
	Only Rural Counties				Only Urban Counties			
	Growth in Mfg. Capital		Growth in Farm Capital		Growth in Mfg. Capital		Growth in Farm Capital	
Number of charter banks in 1860	0.203* (0.118)		-0.097* (0.048)		0.088** (0.040)		-0.048 (0.031)	
Number of free banks in 1860	-0.168 (0.204)		0.081 (0.166)		0.036 (0.033)		-0.023 (0.041)	
Charter bank loans in 1860		0.060 (0.040)		-0.022 (0.014)		0.046*** (0.013)		-0.004 (0.009)
Free bank loans in 1860		-0.030 (0.061)		0.081 (0.094)		0.026 (0.035)		0.004 (0.016)
Level of dependent variable in 1860	-0.669*** (0.032)	-0.669*** (0.033)	-0.328*** (0.070)	-0.330*** (0.070)	-0.623*** (0.051)	-0.630*** (0.050)	-0.116 (0.071)	-0.116 (0.070)
Number of observations	609	609	608	608	827	827	827	827
R-Squared	0.510	0.510	0.650	0.651	0.519	0.521	0.721	0.719

Note: The dependent variables are the percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization over the reported decade. The sample is divided into rural and urban counties based on median population density (24.1) across the two decades. The right-hand side variables are measured either at the change in each variable across the 1850s or the level in 1860. Other control variables enter the regressions as described in the note to Table 2. Standard errors clustered by state appear in brackets beneath the coefficients. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels respectively.

TABLE 7

OLS Growth Regressions by Incorporation Type: New York, New Jersey, and Connecticut

	NY, NJ, and CT - 1850-1860					
	Growth in Mfg. Capital		**Growth in Farm Capital**		**Change in %Urban**	
Change in number of charter banks	0.257		-0.133		0.052	
	(0.155)		(0.087)		(0.041)	
Change in number of free banks	0.028		0.020		0.009	
	(0.098)		(0.034)		(0.014)	
Change in charter bank loans		0.065		-0.048		0.014
		(0.075)		(0.036)		(0.015)
Change in free bank loans		0.059		-0.000		0.026**
		(0.045)		(0.022)		(0.011)
Level of dependent variable in 1850	-0.422***	-0.405***	0.205***	0.211***	0.067	0.069
	(0.124)	(0.126)	(0.065)	(0.067)	(0.050)	(0.051)
Number of Observations	87	87	87	87	87	87
R-Squared	0.313	0.308	0.482	0.476	0.191	0.239

	NY, NJ, and CT - 1860-1870					
	Growth in Mfg. Capital		**Growth in Farm Capital**		**Change in %Urban**	
Number of charter banks in 1860	0.136**		-0.043		-0.003	
	(0.060)		(0.034)		(0.017)	
Number of free banks in 1860	0.175**		0.093*		0.034	
	(0.073)		(0.048)		(0.021)	
Charter bank loans in 1860		0.074**		-0.017		0.011
		(0.031)		(0.015)		(0.010)
Free bank loans in 1860		0.103**		0.038		0.025**
		(0.044)		(0.023)		(0.012)
Level of dependent variable in 1860	-0.358***	-0.381***	0.046	0.053	-0.118**	-0.155***
	(0.075)	(0.076)	(0.055)	(0.057)	(0.050)	(0.054)
Number of observations	87	87	87	87	87	87
R-squared	0.398	0.414	0.506	0.481	0.119	0.147

Notes: The dependent variables are the percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization over the reported decade. The sample only contains counties in states that had a large number of both charter and free banks (i.e., New York, New Jersey, and Connecticut). The right-hand side variables are measured either as the change in each variable across the 1850s or the level in 1860. Due to the small number of counties, we exclude state fixed effects, but all other county-level control variables enter the regressions as described in the note to Table 2. We report robust standard errors in brackets beneath the coefficients. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels respectively.

TABLE 8
OLS Growth Regressions With Banks by Incorporation Type and Default Status

| | All States - 1850-1860 | | | | | |
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Change in number of charter banks	0.329**		-0.087**		0.027**	
	(0.121)		(0.038)		(0.012)	
Change in number of non-defaulting free banks	0.140***		-0.025		0.029	
	(0.044)		(0.031)		(0.019)	
Change in number of defaulting free banks	-0.036		-0.076**		0.030*	
	(0.077)		(0.029)		(0.017)	
Change in charter bank loans		0.060**		-0.010		0.002
		(0.023)		(0.007)		(0.003)
Change in non-defaulting free bank loans		0.114		0.051		0.054
		(0.176)		(0.082)		(0.033)
Change in defaulting free bank loans		0.008		-0.032		0.018
		(0.042)		(0.024)		(0.011)
Level of dependent variable in 1850	-0.536***	-0.532***	-0.469***	-0.464***	-0.085	-0.081
	(0.039)	(0.039)	(0.111)	(0.111)	(0.070)	(0.069)
Number of Observations	1476	1476	1473	1473	1476	1476
R-Squared	0.311	0.308	0.463	0.461	0.140	0.145
	All States - 1860-1870					
	Growth in Mfg. Capital		Growth in Farm Capital		Change in %Urban	
Number of charter banks in 1860	0.135***		-0.061*		0.042***	
	(0.043)		(0.035)		(0.012)	
Number of non-defaulting free banks in 1860	0.028		-0.062		-0.011	
	(0.114)		(0.087)		(0.009)	
Number of defaulting free banks in 1860	-0.044		0.035		-0.003	
	(0.043)		(0.025)		(0.011)	
Charter bank loans in 1860		0.059***		-0.007		0.012***
		(0.013)		(0.009)		(0.003)
Loans by non-defaulting free banks in 1860		0.090		0.004		-0.016
		(0.067)		(0.066)		(0.014)
Loans by defaulting free banks in 1860		-0.013		0.014		0.002
		(0.021)		(0.018)		(0.008)
Level of dependent variable in 1860	-0.624***	-0.627***	-0.212***	-0.209***	-0.092***	-0.079**
	(0.027)	(0.027)	(0.056)	(0.055)	(0.033)	(0.034)
Number of Observations	1478	1478	1477	1477	1478	1478
R-Squared	0.487	0.489	0.666	0.664	0.177	0.171

Note: The dependent variables are the percentage growth rates for manufacturing capital and farm capital and percentage point changes for urbanization across the 1850s and 1860s. Bank defaults are as determined by Weber (2005) or as listed in the *Merchants and Bankers Directory*. The standard set of control variables enter the regressions as described in the note to Table 2. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels respectively.

TABLE 9

Outcomes of Banks Present in 1860 by 1869

Bank Type	Number of Banks	Avg. Deposits/ Assets	Avg. Loans/ Assets	Capital ($)	County Population in 1860
Free Banks (N=512 in 1860)					
Closed	254	7.4%	47.9%	89,551	50,581
Open in 1869	44	12.2%	56.1%	178,218	170,264
Converted to National Bank	214	3.8%	68.6%	329,216	157,056
Charter Banks (N=1,144 in 1860)					
Closed	341	0.8%	71.8%	437,242	54,568
Open in 1869	144	4.2%	89.6%	551,044	107,468
Converted to National Bank	659	2.4%	94.5%	314,697	117,486

Note: Numbers obtained from *Merchants and Bankers' Directory*.