Bank Concentration in the United States, 1800-1914

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Abstract: Concentration plays a key role in banking efficiency and systemic stability—and instability—yet little is known about the long-run evolution of the banking industry structure and how these factors may have contributed to systemic panics. This paper provides the first study of U.S. commercial banking concentration at the state-level from the early years of the republic through the establishment of the Federal Reserve in 1914. To undertake the analysis, we assemble a unique data set from archival and census records that provides individual bank data on deposits and assets for nearly every bank in existence during the period. The data show that bank concentration steadily declined over time with temporary interruptions by financial panics and war. However, much of this decline had to do with economic growth that increased the number of banks rather than economic regulation reigning in the largest banks.

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1. Introduction

Banking industry concentration has concerned bankers, economists and politicians for generations. How the banking industry is structured may affect how efficiently commercial banks perform their core functions of offering savings and lending facilities to their local communities, which in turn influences their effect on economic growth and development. At the same time, banking industry concentration plays a key role in systemic stability.[1] Yet, we know strikingly little about the structure of US banking markets prior to the founding of the Federal Reserve System. The Great Recession has peaked economists' interest in financial history; however, the majority of these backward glances have focused on financial panics rather than the broader evolution of the financial system that led to those panics. The few long-run studies have focused on specific financial regulations such as double liability (Grossman 2001, 2007), capital requirements (Grossman 2010), reserve requirements (Carlson 2014), and bank supervision (Mitchener and Jaremski 2015). These factors undoubtedly have an effect on the stability and growth of the financial system, but it is less clear how they affect its concentration. This paper studies bank concentration at the national, regional, and state-level using a comprehensive collection of balance sheet information from 1800-1914.

Disaggregated studies of commercial banking structure prior to the Great Depression have often focused on differences in interest and profit rates during the postbellum period.[2] Davis (1965) and Sylla (1969), for instance, hypothesize that lack of nationally-integrated financial markets and entry barriers for new banks allowed banks in the less populated areas in the South, Midwest, and West to charge rates higher than the rates charged in the mid-Atlantic and northeast areas. Building on these works, the subsequent literature has incorporated issues of risk, transactions costs, and capital structure in order to explain the differentials separate from banking concentration.[3] These studies suggest that concentration and bank regulation were a problem but lack the bank-level data necessary to examine the composition of the banking

[1] See the recent NBER volume on the topic, especially Beck (2007) on concentration and fragility.
[2] Bodenhorn (1992) and Bodenhorn and Rockoff (1992) are the two notable studies that focus on interest rate differentials in the antebellum period.
[3] Smiley (1975) and James (1976), for example, provided new estimates of regional rates and worked to distinguish between the market segmentation and market power explanations for interest rate differentials. Sushka and Barrett (1984), Binder and Brown (1991), Redenius (2006), and Sullivan (2009) also went on to lay out additional econometric tests of the partially competing hypotheses. A notable exception to the monopoly power school of thought, Peltzman (1965) took a long-term view and argued that the commercial banking industry was relatively competitive during the latter nineteenth century up until the depression-era regulations of 1935.

sector. Moreover, the focus on interest and profit rates provides only an indirect measure of industry concentration and monopoly power.

To address this gap in the literature, we assemble a unique data set spanning 1800-1914 from archival records that provides individual bank data on deposits and assets for nearly every bank in existence during the period. Using this novel data set, we provide the first study of concentration in U.S. commercial banking at the state-level from the early years of the republic through the establishment of the Federal Reserve in 1914.[4] Antebellum data come from Weber (2005, 2008), and consist of every bank from 1800 through 1860. Due to the establishment of national banks, the postbellum data come from two types of sources. First, we obtain the annual balance sheet of every national bank from 1865 through 1914 from the Comptroller of the Currency's *Annual Report*. Second, we obtain the annual balance sheet of state banks from their state's annual banking report. While we have nearly a complete collection of data for the years that were published, the start and frequency of the publications varied greatly across time with many states not publishing data until there was a sufficient number of state banks to necessitate their publication.

The data allow us to examine concentration using several measures. We calculate simple concentration ratios that look at the fraction of the financial system made up by the largest 5 banks. We also calculate concentration across the entire distribution of banks using a Herfindahl index.[5] We use two different base variables. Total assets provide a measure of overall bank size, whereas individual deposits (i.e., not including interbank deposits) provide a more specialized view of bank activities. Since large banks might have gained their size through stock market dealings or interbank deposits such as check clearing, the use of deposits allows for a better view of the concentration of traditional bank services.

Since concentration varies considerably across states and periods, we are able to exploit both cross-state and time differences to identify factors that drove the changes in concentration. We account for large changes in each state's legal environment that could have affected bank concentration (i.e., the establishment of formal bank supervision, free banking, intrastate branching, minimum capital requirements, double liability, and deposit insurance), while comparing them to nearby states that were likely to have experienced the same general shocks. In

[4] This paper supersedes the concentration analysis in Fohlin (2007), which provides similar measures but for a much shorter timespan and fewer points.
[5] The Herfindahl index is proportional to the average market share of banks weighted by that share.

addition, we account for each state's population and economic development using measures of population, urbanization, agriculture, and manufacturing.

The data show that bank concentration steadily declined over time with temporary interruptions by financial panics and war. Looking at the variation across states, we find that population growth seems to have been the main driver of the decline in bank concentration, while concentration of population and manufacturing growth actually increased concentration. These economic factors, however, most fully worked through the expansion or contraction of the number of banks rather than changes among the largest banks. Once we control for the number of banks in the state, only manufacturing output remains a significant positive determinant of bank concentration. Of the regulatory variables, only t double liability increased concentration when controlling for the number of banks.

2. Commercial Banking Regulation and Structure

The American banking system and its regulation has undergone dramatic change over its history. The first century and a half of U.S. banking development brought four regulatory approaches, each with its own missteps and growing pains and an ongoing concern over the concentration of banking. From the founding of the country through the mid-1830s, states required bank founders to obtain a unique charter granted by a special act of their state legislature. Some state legislatures, however, viewed with some trepidation their authority to bring banks into existence, fearing the accumulation of monopoly power within a moneyed elite. The bank chartering requirement also meant widespread opportunities for political corruption—paying off politicians to grant a charter or withholding charters from political competitors (Lu and Wallis 2015). The result was a relatively few number of banks concentrated in large cities.

The Federal government only chartered two banks before 1863. With branches in most major cities, these banks provided some stability to system, yet ultimately were discarded due to concern over their concentrated power over the banking system. Jackson's veto of the Second Bank of the United States charter in 1832 and the large-scale financial panic in 1837 ushered in the Free Banking Era (1837-1862), during which many state legislatures promulgated general bank incorporation acts. These Acts permitted groups of individuals to form banks without

legislative approval in an attempt to diffuse banking throughout the country.[6] By the start of the Civil War, over half of the states enacted free banking laws. While the laws generally lowered entry barriers and increased the number of banks, it led in a few cases to the phenomenon of "wildcat" banking, whereby unscrupulous founders set up banks and issued banknotes only to abscond with depositors' gold and silver (Rockoff 1974).

It took barely 25 years for another severe financial crisis to hit and spur federal regulatory response. In the midst of the Civil War, with prodigious funding burdens looming, establishment of a national currency and credit markets became a regulatory priority. The promulgation of the National Currency Act (1863) and its revision, the National Bank Act (1864) set up the National Banking System and started the 'Dual Banking Era' (1863-1914). The new acts for the first time established federally chartered national banks overseen by the Office of the Comptroller of the Currency (OCC). The laws were modeled after New York's free banking law, but in order to prevent the same instability, they increased reserve and minimum capital requirements as well as prohibited real estate-backed lending (Sylla 1969). The higher requirements restricted national banks to urban areas, and thus it was not until state banking rebounded in the 1890s that many rural and agricultural areas received banks.

As a result of the reserve requirements allowing interbank deposits to count as reserves, the dual banking system concentrated bank reserves in a handful of cities and banks and thereby allowed idiosyncratic or regional bank shocks to spread to the entire nation. Case in point was the Panic of 1907, which started with a run on a handful of New York City trusts and banks and ultimately grew into one of the worst financial crises of the 20th century (Sprague 1910). This episode, and the extended economic recession that followed, finally spurred the passage of the Federal Reserve Act in 1913. Attempting to avoid the financial panics of the previous decades, the Federal Reserve would operate a nation-wide and more efficient payments system, as well as create an elastic currency, a market for banks' eligible assets, a money supply that expanded at seasonal peaks, and a lender of last resort. The district structure of Fed also sought to eliminate the concentration of reserves in New York City by providing banks with a place for interbank funds that was not sensitive to market fluctuations.

[6] See the more extensive discussions of bank chartering and the free banking movement in Bodenhorn (2004) and Rockoff (1974).

2.1 Basic shape of the banking industry

The nation had a large and rapidly expanding banking system. The number of banks was 417 in 1830, 1,629 in 1860, 5,641 in 1890, and 26,210 in 1914. Therefore, while a bank serviced an average of 19 thousand people in 1860, each bank serviced under 5 thousand people on average by 1914. Since branching was often prohibited, banks remained extremely small and unit banks rather than branches were needed in each town. The small average size, lack of branching, and the great proliferation of banks might imply that the American banking industry was not at all concentrated. However, some U.S. banks grew quite large, taking advantage of their populous locations and correspondent relationships with rural banks. Chicago and, even more so, New York stand out, with several enormous banks owning total assets in the tens of millions of dollars even as early as 1860 and in the hundreds of millions of dollars by the start of World War I.[7]

Figure 1 shows the nation-wide 5-firm bank concentration ratios for assets and individual deposits from 1800 through 1914.[8] Between 1800 and 1914, the asset concentration fell from 70 to 4 percent and deposit concentration fell from 78 to 4 percent. Despite the general downward trend, concentration is dynamic over time with large changes often corresponding to financial panics. During the antebellum, deposit concentration suddenly rises during the financial panics in 1837 and 1839, and less dramatically for the Panic of 1857. During the postbellum, deposit concentration rises slightly during the Panic of 1873 and the Panic of 1884. The panics brought about bank failures which would reduce the overall size of the banking system.

While individual data do not exist, studies of the period suggest that concentration also rose over the 1860s. Over the decade, 832 national banks were created with new capital, 934 state banks converted to a national charter, and 640 other state banks were driven out of the market (Jaremski 2013b). Converted banks typically saw large increases in their assets and deposits, whereas the new banks often started with the bare minimum of capital, assets, and deposits (Jaremski and Rousseau 2015). The change thus temporarily reversed the general downward trend in bank size and concentration, and it was not until after the Civil War that the general decline continued.

Finally it is worth noting that assets were more concentrated than deposits for nearly all

[7] $100 million in 1914 equates to approximately $2 billion in 2015 (depending on choice of deflator). By comparison, today's largest banks own roughly 1,000 times that in assets.
[8] The calculation of the bank concentration measures are presented in the Appendix.

of the period. The lines touch briefly during the early 1870s, but it is only after 1900 that the concentration of deposits drops below that for assets. The difference is likely that a large portion of deposits were held by corporations and wealthy businessmen before the rise of individual deposits in the 1890s. As these firms and businessmen were more likely to do business in financial centers rather than rural communities, their deposits were concentrated in money center banks in New York City and Chicago.

The national patterns hide the significant regional variation in banking concentration. To explore these differences, we calculate the concentration ratios for the four major geographic regions: Northeast, South, Midwest, and West.[9] These ratios in Figure 2 show the Northeast and South experienced the most rapid and continuous decline in concentration ratios and, in similar fashion, reached ratios at or below 20 percent during the first half of the nineteenth century. Noting that most of the early gaps are due to lack of banks rather than lack of data, the ratios in the West and Midwest varied more and remained higher than the older sections of the country. Yet, by the 20th century, a clear convergence appears across all regions.[10] Only the West maintains a high concentration ratio through the 1890s due to the relatively unpopulated nature of the region.

The regional pictures provide two other important conclusions. First, we see the lack of a jump in bank concentration during the Civil War was the result of New York City's dominance. The concentration ratios of assets and deposits—outside of the Northeast—jump up during the Civil War, and do not come down until the mid-1870s. Second, we see that the concentration of assets is generally much closer to the concentration of deposits at the regional level. Again the presence of New York City banks leads to the differential result.

The aggregate and regional statistics raise several important questions: (1) did certain states lag behind in banking development, even within their regions, (2) to what extent can the changes in concentration be explained by regulatory factors rather than economic and demographic ones, and (3) was the decline in concentration due solely to increased numbers of

[9] Regions are defined as follows: *Northeast*: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, Maryland, Delaware; *Midwest*: Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota; *South*: West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Tennessee, Kentucky, Texas, Oklahoma; *West:* California, Colorado, Nevada, Oregon, Utah, Montana, Idaho, Arizona, New Mexico, Washington, Wyoming.

[10] Because of the lack of individual bank data during the early postbellum period, we are forced to interpolate the values for several years.

new banks rather than increasing competition from existing banks getting larger. The rest of the paper attempts to answer these questions by examining the determinants of bank concentration at the state-level.

3. Bank and Location Data (1830-1914)

Data for the antebellum period come from two databases collected by Weber (2005, 2008). The first is a census of banks that provides the location and dates of operation for each bank in existence before 1861. The second contains items from their annual balance sheets including information on size and portfolio composition. Despite being the most complete source of bank data for the period, several banks are missing a year or two of balance sheet data in some years, and a few banks have no balance sheet data available at all. As nearly all the gaps are for single years and other banks display no large jumps, we linearly interpolate missing observations in a single bank's time series without much concern. Because most banks without any balance sheet data operated for less than a year, they would likely have been small banks and would not bias the measurements in any large way. However, to provide a better measure of the total financial activity, we fill banks without balance sheet information using the average values of their closest geographic neighbors.[11] The resulting database spans all banks between 1830 and 1860.

The National Banking Acts of 1863 and 1864 create challenges for building a comprehensive bank-level dataset for the postbellum era. First, they established a dual banking system whereby some banks were chartered and supervised by the Comptroller of the Currency (called national banks) and others were chartered and supervised by their state legislature (called state banks or trust companies). This split means that information for different bank types was published by different sources throughout the period. Second, they dramatically reduced the viability of state banks. The number of state banks dropped from over 1,600 in 1860 to under 300 in 1870, and did not began to rise in any significant way until the late 1880s. The lack of state banks reduced the incentive for states to collect or publish data until relatively late. We thus collected all available information into two databases.

The first database contains information on every national bank in operation from 1863 through 1914. Culled from the *Annual Report of the Comptroller of the Currency* by Jaremski

[11] The process begins by matching banks in the same county. Banks without an immediate match are then matched with banks in the same state.

(2013a), the data contain each national bank's balance sheet in operation during the third quarter of each year. Data are missing for 1885 when balance sheets were not reported and for 1905 when certain balance sheet items are combined.

The second database contains information on state banks and trust companies from 1870 through 1914. Similar to the national bank data, we collected state bank balance sheets from each state's banking publication. While we have nearly a complete collection of data for the years that were published, the start and frequency of the publications varied greatly across time with many states not publishing data until the 1890s or later. Table 1 contains a list of years when each state published information. States with more urban population (e.g., New York and Massachusetts) began to publish data earlier whereas rural and new states (e.g., Arizona and Utah) began to publish much later. Our analysis of postbellum banking data is then confined to states and dates where both state and national bank data are available.

While the bank balance sheets exist for every year, the county-level Census database assembled by Haines (2004) only contains information each decade. This limitation is restrictive because concentration varied across years and most regulation was not passed at the beginning of a decade. A decennial regression model would tend to obscure the effect of regulation as it would pick up changes both before and after the legislation was passed. To obtain more precise estimates, we assume that the county-level census variables grew linearly over time and create estimates for the years in-between each decennial observation.[12]

Finally, we add information on the dates of regulatory changes. The dates of free banking laws come from Rockoff (1974). The dates and description of branching laws come from Carlson and Mitchener (2006). Because most states did not set down formal branching rules during the antebellum period, we focus on the postbellum dates. The dates of deposit insurance come from Deheji and Lleras-Muney (2007). The dates of double liability are obtained from Grossman (2005) and Mitchener and Richardson (2013). Finally, the dates of bank supervision come from Mitchener and Jaremski (2015).

4. Determinants of Bank Concentration at the State-Level

The very fact that banks could not build interstate branching networks means that the market for banking services was circumscribed at least by state boundaries. Even with high levels of capital

[12] Counties are aggregated to their 1880 boundaries to provide consistent measures across time.

mobility and the use of correspondent banks to move money to and from distant cities, most depositors and borrowers would have banked with a local institution. Moreover, most bank regulation was at the state-level. Thus, it makes sense to examine industry concentration at the level of states.

Figure 3 shows that there was considerable variation in bank concentration across states. Even in 1914, many states had concentration ratios above 40 percent or below 20 percent. The variation also is not immediately categorized in Table 2. While there was a convergence towards less concentration over time, several states actually saw increased concentration in the early 1900s. For instance, Rhode Island had a concentration of 23 percent in 1850 but saw its ratio rise to 68 percent by 1914. Moreover, the states with the largest banks did not always have more concentrated banking sectors than states with much smaller banks. For instance, New York had below-average five-firm ratios in 1900 and 1914.

Based on the existing literature, there are many potential reasons for the variation in state-level bank concentration. The most immediate determinant of bank concentration is the growth and development of an area. All else being equal this would imply that locations with more population and economic output—such as New York—should have more banks and likely a lower concentration of bank activity.

Banking would naturally be more concentrated when a state's population and industry are concentrated in geographically confined areas. For instance, Illinois has high population and economic activity, but since a large portion of it is focused in Chicago, its bank concentration is also high. The amount of population thus might help create more banks, but the geographic concentration of the state's population might also lead to banking concentration.

Different types of development might also lead to different levels of concentration. Manufacturing typically requires large long-term loans, whereas agriculture typically requires smaller seasonal lending. Moreover, agricultural communities tend to be more rural and less capital rich compared to manufacturing communities that tended to be more urban. As such, we would expect that manufacturing states might naturally produce more concentrated banking sectors as larger average loan values would be needed, whereas agricultural states might naturally produce less concentrated sectors since many small banks could survive in a location.

In addition to general economic conditions, bank regulation also could have played a role in the variation of bank concentration. Summarized in Table 1, there existed a large variation in

bank regulation across states.

First, the introduction of Free Banking Law lowered the requirements to starting a bank. Most states that passed legislation before 1860 were relatively rural and had few banks. As such, the quick entry of small free banks likely reduced bank concentration. For instance, Illinois' and Wisconsin's concentration went from 100 to about 20 percent between 1840 and 1860. Not all the laws, however, were equally effective. Most southern states (e.g., Louisiana, Georgia, and Tennessee) set their requirements too high to be effective and only a few free banks were created below the Mason Dixon Line. As such, the simple passage of a law might not necessitate a fall in concentration.

Second, bank concentration might also have been influenced by the type of supervision over the industry. Most states initially placed banks under the supervision of an existing state official (e.g., State Treasurer or State Auditor), and it took some time before they established a separate banking department that only focused on the banking system. The establishment of bank departments had several distinct effects on the structure of banking in a location.[13] The most immediate of these was the push towards more transparent operation and a closer inspection of regulations. Existing banks that did not have enough capital to operate or who were pushing the letter of the law would have been forced to either close or to shape up. The additional regulation and oversight might have encouraged fewer entrants and larger banks thus allowing concentration in the state to rise.

Third, as previously described, the lack of branching might also have decreased the amount of concentration that could exist. Unit banking prevented existing banks from opening additional offices and serving customers in other cities and left openings for other banks to enter. Due to economies of scale, branching would generally have increased concentration by forcing unit banks out of business and discouraging new bank entry. Looking at Table 2, we see that many of the states with the highest concentration ratios (e.g. Rhode Island, Louisiana, and Oregon) allowed branching of some sort, and very few of the states with low concentration ratios allowed it. That said like free banking, not all branching laws were used. In fact, only a little over 100 branches existed in 1900. Therefore, there might be variation based on the use of branching even among branching states.

[13] See Mitchener and Jaremski (2015) for a fuller description of bank supervision.

Fourth, some states attempted to protect depositors by establishing insurance funds. By promising that deposits would be repaid even after a bank's closure, state legislatures hoped to remove the incentives for individuals to run on their bank. However, insurance also reduced the incentive for depositors to monitor and allowed banks to take on more risk (Wheelock and Wilson 1995). Because national banks were not allowed to participate in state deposit insurance systems, the laws could have tipped depositors and growth towards small state banks and away from larger national banks, potentially narrowing bank concentration. Seen in Table 2, 5 of the 7 states with the lowest concentration ratios in 1914 had deposit insurance. Only Washington had a concentration ratio in above the median, but the state only instituted voluntary deposit insurance and allowed branching.

Fifth, double liability might have increased concentration. Double liability maintained that directors, chief executive officers, chief financial officers, and stockholders of banks would have to pay up to twice the par value of their shares in the event of bank failure. While Grossman (2007) has shown that double liability actually caused banks to increase their liability, Bodenhorn (2015) shows that it also led to more concentrated bank shareholding. In double liability states, it thus might have been harder to obtain large capital stocks as it had to be obtained for a smaller number of investors.

Finally, Sylla (1969) argues that minimum capital requirements were responsible for the slow bank growth. Rural areas felt most of the direct effects of these regulations because they were unlikely to be able to support a large bank and in many cases had little other than agricultural loans as a local use for their capital. National bank requirements were amongst the highest of the nation. Indeed, the Gold Standard Act's lowering of capital requirements in 1900 corresponded to a substantial growth in the number of small national banks. On the other hand, Barnett (1911) argues that the speed of state bank growth over national bank growth was driven by their low state minimum capital. Many states even lowered their capital requirements over the period in order to encourage bank growth. Along a similar line, reserve requirements on deposits could also have increased entry barriers and bank concentration.

Pulling the factors together, we can make some general predictions on how each could affect bank concentration. In general, theory would dictate that those factors that increased bank entry or lowered requirements would decrease concentration whereas those factors that slowed entry down or raised requirements would increase concentration. We summarize these

predictions in Table 3 along with the variable that will be used to test each prediction.

4.1. Empirical Analysis of Bank Concentration

The previous sections have shown the time-series and cross-sectional pattern of bank concentration. The rest of the paper attempts to measure the determinants of these patterns. In particular, we want to determine two things. First, was the downward pattern some broader movement across all states or just a steady development within individual states. Second, was the decline in concentration simply due to extensive growth or did regulatory changes also factor in. To put it another way, we seek to understand whether legislators and regulators had an indirect effect on bank concentration. Due to the lack of individual bank data after the Civil War, we conduct this test in two parts. We first examine bank concentration in the antebellum period from 1840-1860, and then examine it in the postbellum period from 1894-1914.

Due to the potential bias from outliers in samples with small numbers of observations, we estimate the determinants of bank concentration using quantile regressions and clustering the standard errors by state, focusing on the median values, rather than the averages. We estimate the regressions using both the 5-firm concentration ratios that we have used thus far, and a Herfindahl Index. The former captures the importance of the largest banks, whereas the latter approximates the average market share across all banks. As such, the ratios will pick up factors that make the largest banks relatively bigger, whereas the index will pick up factors that make all banks have less market share.

The models take the form:

$$Concentration_{s,t} = a + \beta_1 X_{s,t} + \beta_2 Regulation_{s,t} + \beta_3 Banks_{s,t} + t_t + Region_s + e_{s,t} \quad (1),$$

where $Concentration_{s,t}$ is either the 5-firm ratio or Herfindahl Index of assets or deposits. $X_{s,t}$ is a vector of demographic and economic information including the logarithm of population, the fraction of the population living in the largest 5 cities, fraction of the population living in urban areas, logarithm of manufacturing output per capita, logarithm of crop output per capita, and

whether the state had a clearinghouse in operation.[14] $Regulation_{s,t}$ is a vector of state-level regulatory factors including the logarithm of the minimum capital held by an active bank and separate dummies for whether the state had a separate banking authority, reserve requirements on deposits, double liability, free banking, deposit insurance, and any type of branching.[15] t_t is a vector of year fixed effects to capture years when all states saw a change in bank concentration. The time fixed effects thus are our measure of nation-wide changes in regulation or economic activity, whereas the other variables determine whether differences amongst states mattered. $Banks_{s,t}$ is the logarithm of the number of banks operating in the state during the year. The extra variable effectively controls for the growing size of the banking system (i.e., extensive growth), leaving only growth within the banking system (i.e., intensive growth) to be identified by the variables. Because entering banks were generally small, growth in the number of banks should increase the overall size of the banking system and decreases the average market share and therefore is negatively correlated with concentration. u_s is a vector of regions fixed effects that control for region that always have a high or low concentration ratio. $e_{s,t}$ is the error term that is clustered at the state-level.

It is important to keep in mind that these regressions fall short of proving that the various factors caused changes in bank concentration. Indeed, they do not account for the possibility that bank regulation or even economic growth was driven by concentration. For instance, state legislatures passed free banking laws when they were concerned over having too few banks. We thus can see what factors were correlated with different levels of concentration, but cannot say with certainty that the factors caused concentration.

4.1.1. Bank Concentration in the Antebellum Period

The antebellum presents a few problems when trying to examine the determinants of bank concentration. First, new states were being created throughout the period, meaning the estimated coefficients could be driven by the entry of a new state with little population or banks

[14] In the antebellum regressions, we are forced to use manufacturing capital instead of output because output was not reported in 1840. Alternatively, manufacturing capital is not reported after 1900 and thus we cannot use it for the entire period.

[15] Since there were no free banking laws in the postebellum sample and no branching or deposit insurance during the antebellum sample period, we do not include those dummies in their respective specifications. We also drop the dummy for reserve requirements on deposits in the antebellum because only two states passed it, and one installed it alongside other regulation.

rather than a true relationship. Second, the economic variables (e.g., crop output and manufacturing capital) were not reported until 1840. To mitigate these problems, we form a balanced panel of states from 1840 through 1860 by dropping any states that did not have banks or observations in 1840.

Table 4 provides the estimated coefficients for the antebellum period. Starting with the models with region-fixed effects, we see that the coefficients are sporadically significant and no one variable is consistently important. The level of population is negatively correlated with the Herfindahl index of assets and the 5-firm ratio of deposits. The fraction of population living in urban areas as well as the amount of crop output are positively correlated both variants of the 5-firm ratio. The indicator for whether a state had a separate banking authority is negatively correlated with the 5-firm ratios for assets but not for deposits, and manufacturing capital is negatively correlated with the 5-firm ratio for deposits but not for assets. That said, the presence of the number of banks eliminates nearly all of the significant coefficients. Only the level of minimum capital is significant for the deposit Herfindahl after the number of banks is added. Taken together, the results suggest that the overall decline in concentration during the antebellum period occurred across all states and idiosyncratic state-specific differences were largely due to faster/slower expansion of the banking system rather than changes amongst existing banks.

The lack of statistical significance in the antebellum period is not surprising. Banking was in its infancy in some states and some states were just beginning to be created, meaning that the 5-firm concentration ratios were large by default rather than by actual concentration. Moreover, banking had not developed much of a retail customer base. During the period, most banks held few deposits from individuals and catered to either businesses or wealthy individuals. Legislatures and regulators were also struggling to keep up with the new technology and find banking's place in the economy.

4.1.2. Bank Concentration in the Postbellum Period

Similar to the antebellum period, we wish to study a balanced sample of states during the postbellum in order to avoid identifying coefficients based on the entry of new states. We thus restrict the postbellum regressions to those 23 states that had available individual bank data

starting in 1894. Because many states began to report information after the Panic of 1893, the choice of year helps us maximize the number of states and years that we include.[16]

Table 5 provides the estimated coefficients for the postbellum period. Unlike the antebellum period, many of the demographic and economic variables are consistently significant. In line with expectations, the population is negatively correlated with concentration and fraction of population in the largest 5 cities is positively correlated. Several of the regulatory variables are also significant. Double liability is positively correlated with all the concentration measures. Deposit insurance is negatively correlated with the Herfindahl of assets, minimum capital is positively correlated with the Herfindahl index for assets and deposits, and reserve requirements is negatively correlated with the Herfindahl for deposits.

The introduction of the number of banks eliminates all the effect of population and fraction of population in the 5 largest states. These variables thus seem to influence the number of banks rather than decreasing the concentration amongst banks. Manufacturing output remains positively correlated with asset concentration, whereas double liability remains positively correlated with both asset and deposit concentration.

4.2. Empirical Determinants of the Components of Concentration

Building on the correlations found in the previous models, it is important to understand the potential mechanism behind how these factors affected concentration. Essentially, both concentration measures are based on the total amount of assets/deposits, the total amount of assets/deposits in the largest banks, and the average amount of assets/deposits per bank. We, therefore, examine the determinants of these factors using a linear regression model with state-fixed effects for the postbellum.[17] The focus on state-fixed effects is important because we want to test whether the change in the control variable leads to a change in the dependent variable within a specific state. Without these fixed effects, the coefficients could conflate differences across states with time series differences within a state.

Table 6 shows that the negative effect of population on concentration is due to its positive correlation with the number of banks. Population has no significant effect on the top banks and

[16] Starting earlier would restrict the sample to 16 states mostly in the Northeast and Midwest. The regression results for these states are relatively similar to those of the shorter sample, and are available in the Data Appendix.

[17] Because we found no consistently significant determinants of concentration during the antebellum period, we only report the results for the postbellum period. Indeed, none of the variables are statistically significant for the antebellum period. Since we are including state fixed effects the data is already corrected for outliers.

generally has a negative effect on the average size of banks. While not always statistically significant, the effect of population in the largest 5 cities seems to positively affect the largest banks and have no effect on the number of banks or average bank size.

The regulatory variables never have a statistically significant effect on the number of banks, and thus their effects come through the expansion of assets or deposits within existing institutions. The introduction of a separate banking authority is correlated with more assets for all banks and with more assets for the largest banks, thus leading to the overall no effect on concentration. The installation of reserve requirements increase the total amount of assets and deposits but do not affect the largest banks or the average.

The negative effect of double liability deserves a discussion. The data indicate that when double liability is instituted it reduces the assets of the largest 5 banks. This seems to go against the results we found in Table 5 where double liability is positively correlated with concentration in the region-fixed effects. However, the difference is the result of having a large number of states in the sample with double liability installed before 1894. New Hampshire's 1911 law is the only state in the sample that installed double liability between 1894 and 1914. The coefficient is thus based on a couple of observations towards the end of the sample. Indeed, when we use a longer sample with fewer states, double liability's coefficients on total assets and assets per bank are also negative and large suggesting that the laws affected small to medium sized banks as well as larger ones.[18]

4.3. Controlling for State-Fixed Effects

There are benefits and drawbacks from the region-fixed effects specifications. On the positive side, it allows us to study the variation in concentration across states. On the negative side, it prevents us from controlling for constant differences among states. For instance, comparing Illinois and Iowa is not necessarily straight-forward despite their geographic proximity, but neither is comparing Illinois and New York despite the importance of banking in their states. In order to prove that each factor actually caused the change in concentration, we would ideally want to control for state-fixed effects in a difference-in-difference style framework. However, when state fixed effects are present, we can only identify the coefficients off the effect of changes in the variables over time. This would be fine if we observed all states

[18] See the data appendix for these specifications.

from their starting point, but states in 1894 were very different and those differences could have had an effect on bank concentration. This is particularly problematic for the measures of bank regulation as many of the laws were in place before the sample starts and thus would be pulled into the fixed effects. Therefore, the relatively short time-series of either sample would tend to bias the results towards zero. Keeping this small-sample bias in mind, we estimate equation (1) using state-fixed effects for the postbellum sample in Table 7. The amount of population generally remains correlated with concentration when we do not control for the number of banks, and now crop output becomes negative and significantly correlated with concentration and deposit insurance reduces asset concentration. The few other significant effects are sporadic.

5. Conclusion

The historical structure of the U.S. banking system has been touted for stimulating economic growth while also being blamed for promoting financial fragility and panics. Until now, most studies have examined the role that specific legislation have had on bank activity or stability, but have not examined the structure of the banking system as a whole. We have shown that concentration of the financial system was dynamic over time, reacting to financial panics, economic growth, and national-level financial regulation.

At the state-level, we find that economic activity and growth were the primary mechanisms by which some states experienced differential concentration growth. However, economic activity typically worked through the addition or subtraction of banks rather than changing the size of the largest banks. Indeed, many of the variables increased the number of banks but reduced the average size of banks. Only manufacturing output seems to have had any effect on concentration once controlling for the number of banks. As for regulation, only double liability was robustly correlated with idiosyncratic changes in state-level concentration.

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Appendix A: Calculation of Nation-Wide and Regional Concentration Measures

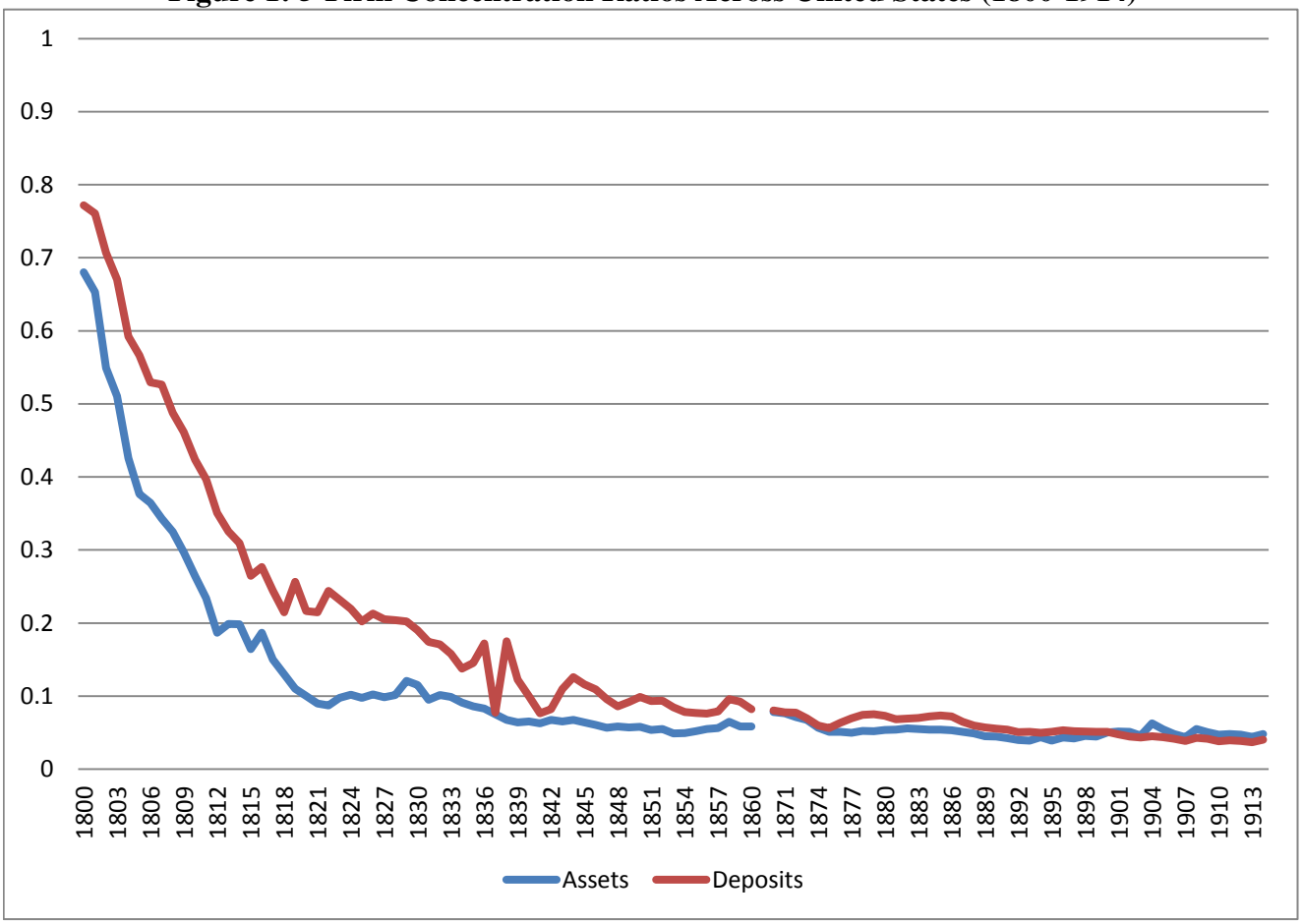
While individual data do not exist for many state banks during the postbellum period, the top 5 banks were seemingly always in states that published data during the period. For instance, Table A1 shows that New York banks dominated the top 10 banks even in 1890 when data is available for those states that had the largest financial centers (e.g., California, Illinois, Massachusetts, and Pennsylvania). Illinois was the only state that ever had a bank within the top 10, and even that bank did not become sufficiently large until after 1890. Therefore to calculate the nation-wide market share of the top 5 or 10 banks, we only need to have to two pieces of information. First, we need the assets and deposits of the top New York banks before 1890 and the top New York and Illinois banks after 1890 to form the numerator of the concentration ratio. Second, we need the total assets and deposits in banks in each year to form the dominator of the concentration ratio.

Strangely, the aggregate statistics are the piece of information that causes some issue. We begin by taking data on national banks and state banks for all years when data is available. Therefore, we only need to find data on state banks in years before their state began to publically publish balance sheet data. Because state banks did not have to report to the Comptroller of the Currency, the data on state banks before 1896 (when *All-Bank Statistics* picks up) is spotty at best. The Comptroller presents aggregate statistics that were reported to his office, but they severely understate the number of state banks. For instance, the numbers of banks in 1896 from the Comptroller are dramatically lower than numbers from *All-Bank Statistics*. That said, bank averages by state are similar across the two sources. We therefore apply the average amount of assets and deposits in the years provided by the Comptroller to the total number of banks obtained from the bankers' directories of the time. We also use the bank averages from the closest year to estimate total assets and deposits in years when the Comptroller did not report any state bank data. After aggregating with the complete national bank data, we obtain an estimate of total assets and liabilities. The measures are realistic because the available individual national and state bank data make up the vast majority of the entire system.[19] The assumptions underlying the remaining data thus make relatively little difference.

[19] Even in 1914, the combination of national banks in every state with just state banks in the northeast that are available for every year make up more than 80 percent of all bank assets and deposits.

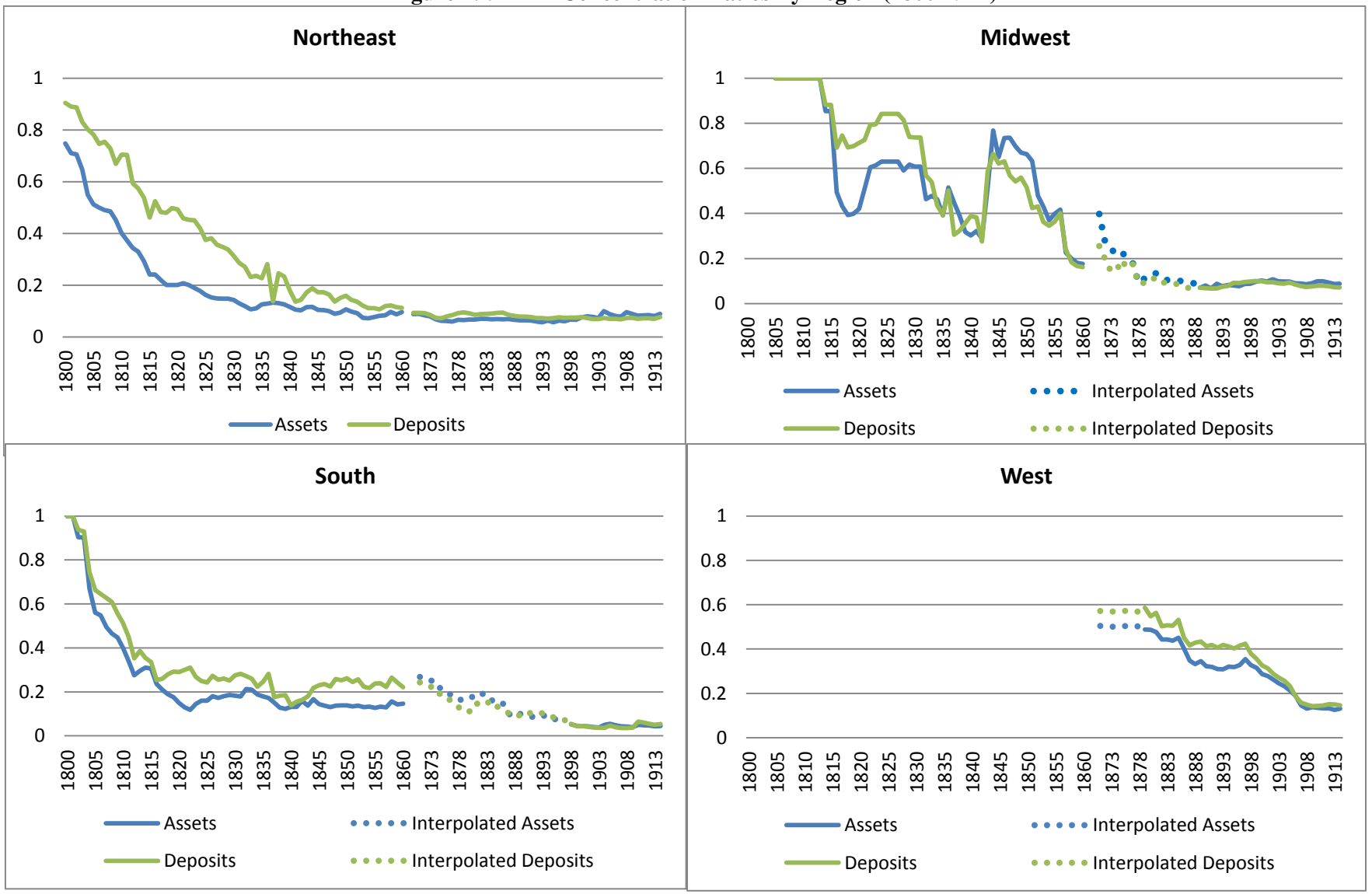
The regional aggregates use a similar approach. Because certain states consistently had the largest 5 banks, we can reliably report the concentration measures once that dominant state began to report information. The reporting thus varies by region with the Northeast being always available, the Midwest being available once Illinois starts reporting in 1889, the South being available once Louisiana starts reporting in 1898, and the West being available once California starts reporting in 1878. To provide an estimate of the regional 5-firm ratios before these key states began to report, we interpolate the measures back to 1871 using existing data. The interpolation is based on the assumption that the largest banks in the earliest available year were the largest available banks from the date that they entered. We then deflate the value of those banks based on the state's aggregate banking growth during each period. Finally, we drop out the bank before it entered and fill it with the next largest banks.

Figure 1: 5-Firm Concentration Ratios Across United States (1800-1914)



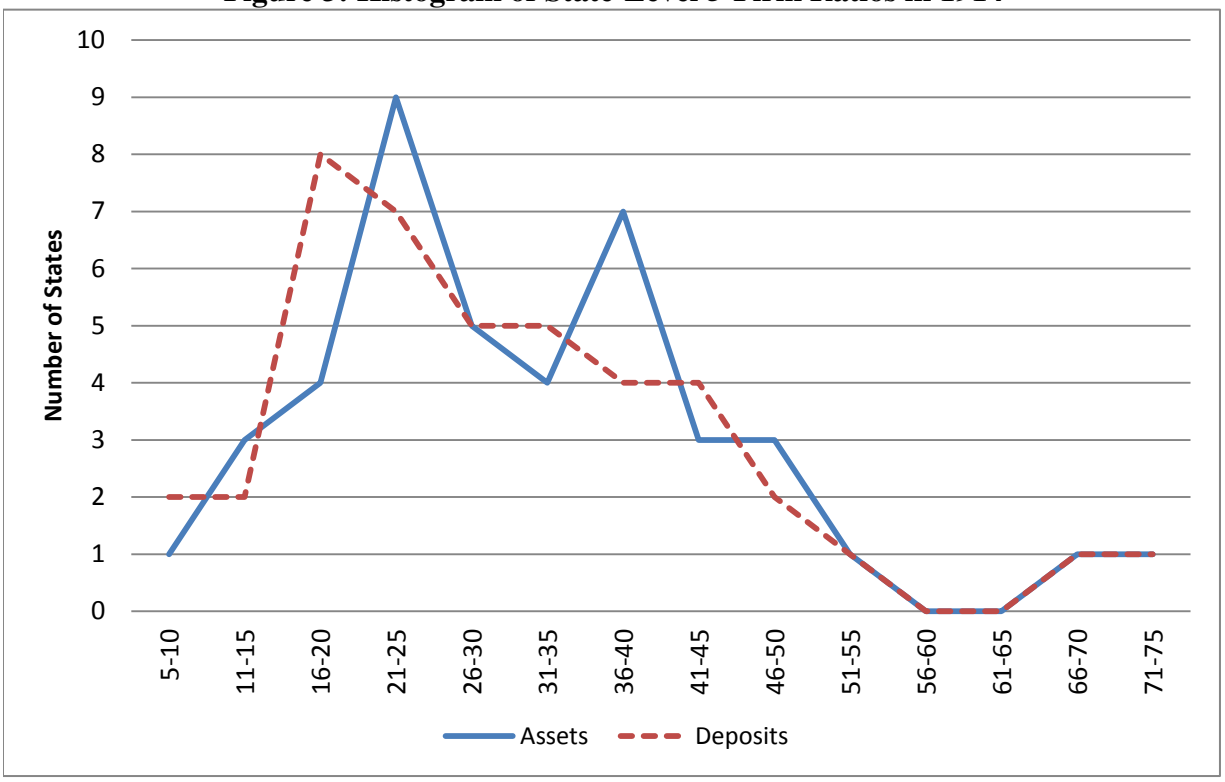
Notes: Figure displays the ratio of either assets or deposits at the largest 5 banks to the total at all other banks. See Appendix A for a description of the data sources.

Figure 2: 5-Firm Concentration Ratios By Region (1800-1914)



Notes: Figure displays the ratio of either assets or deposits at the largest 5 banks to the total at all other banks in the region. Early gaps are due to regions that did not have any banks. Gaps after 1870 are due to the lack of individual bank data in those years that prevent us from calculating the numerator. The dotted lines are interpolations starting in 1871 and are based on the earliest available state bank data and the national bank data for each year. See Appendix A for a description of the data sources and construction.

Figure 3: Histogram of State-Level 5-Firm Ratios in 1914



Notes: Figure displays the number of states that had the specified level of the concentration ratios in 1914.

Table 1: Year When State Bank Regulation Was Put into Place

State	Published Report	Free Bank Law	Bank Superv.	RR Requ. On Deposits	Double Liability	Deposit Insurance	Unlimited Branching	Limited Branching
Alabama	1911	1849	1911	1903				
Arizona	-		1913	1901	1912		1901	
Arkansas	1914		1913	1913	1912			
California	1879		1878	1909	1849		1909	
Colorado	1901		1907	1913	1885			
Connecticut	1871	1852	1837	1872				
Delaware	-		1919	1909			1895	
Florida	1900	1853	1845	1889	1829			
Georgia	1893	1838	1839	1890	1893		1890	
Idaho	1906		1905	1905	1905			
Illinois	1889	1851	1853		1848			
Indiana	1878	1852	1919	1933	1851			
Iowa	1877	1858	1858	1897	1857			
Kansas	1893		1891	1891	1800	1909		
Kentucky	1913		1912	1893	1897		1895	
Louisiana	1898	1853	1842	1842	1800			1902
Maine	Pre-1870		1837	1893	1831			1895
Maryland	1910		1910		1851		1910	
Massachusetts	Pre-1870	1851	1813	1858	1811			1928
Michigan	1871	1837	1837	1871	1850			1895
Minnesota	1878	1858	1909	1878	1857			
Mississippi	1909		1913		1914	1914		1924
Missouri	1896	1858	1857	1899				
Montana	1898		1894	1903	1887			
Nebraska	1893		1891	1889	1875	1909		
Nevada	1908		1908	1909	1911			
New Hampshire	Pre-1870		1837	1874	1911			
New Jersey	1878	1850	1853	1899				1895
New Mexico	-		1912	1903	1884			
New York	Pre-1870	1838	1829	1882	1846			1911
North Carolina	1898		1902	1903	1897		1921	
North Dakota	1890		1890	1890	1889	1917		
Ohio	1878	1851	1839	1909	1800			1923
Oklahoma	1908		1897	1907	1897	1908		
Oregon	1908		1908	1907	1912		1907	
Pennsylvania	1876	1860	1891	1907	1874			1927
Rhode Island	Pre-1870		1836	1908	1800		1908	
South Carolina	1906		1906		1868		1895	
South Dakota	1892		1909	1909	1886	1916		
Tennessee	-	1852	1913	1913			1895	1925
Texas	1905		1905	1905	1904	1910		
Utah	1914		1907	1911	1895			
Vermont	1877	1851	1831	1910				1929
Virginia	1910		1910				1922	
Washington	1907		1907	1907	1889	1917	1907	
West Virginia	1891		1891	1901	1872			
Wisconsin	Pre-1870	1852	1853	1903	1800			
Wyoming	-			1903	1888		1921	

Notes: Table contains the years when various legislation was put into place. See text for list of sources.

Table 2: State-Level 5-Firm Concentration Ratios

	5-Firm Asset Concentration Ratio					5-Firm Deposit Concentration Ratio				
	1840	**1860**	**1880**	**1900**	**1914**	**1840**	**1860**	**1880**	**1900**	**1914**
AL	100.0%	89.4%			35.3%	90.9%	96.9%			39.7%
AR	100.0%				19.2%	100.0%				17.8%
AZ										
CA			61.5%	45.7%	31.2%			67.4%	49.3%	33.3%
CO					45.9%					43.3%
CT	41.8%	21.5%	24.0%	26.8%	24.2%	45.9%	27.0%	35.2%	31.9%	27.9%
DE	76.1%	76.9%				81.6%	82.1%			
FL	98.0%	100.0%		55.6%	37.2%	96.7%	100.0%		55.8%	35.0%
GA	39.6%	55.5%		29.6%	24.7%	30.5%	49.3%		34.5%	30.5%
IA	100.0%	100.0%	19.5%	14.3%	9.2%	100.0%	100.0%	24.3%	17.3%	8.0%
ID					26.0%					24.6%
IL	100.0%	21.1%		47.7%	43.5%	100.0%	48.9%		46.0%	37.5%
IN	95.1%	65.0%	27.6%	27.5%	20.6%	91.8%	47.1%	23.6%	23.0%	16.0%
KS		100.0%		17.9%	10.2%		100.0%		14.1%	8.0%
KY	70.5%	56.7%			23.9%	68.2%	62.1%			19.5%
LA	54.5%	74.2%		59.2%	53.1%	62.2%	74.8%		60.5%	54.2%
MA	23.9%	15.6%	16.8%	20.4%	30.2%	32.2%	19.0%	24.6%	22.6%	25.6%
MD	53.8%	44.0%			38.5%	52.6%	46.1%			40.7%
ME	26.2%	26.7%	35.6%	38.0%	40.7%	31.9%	33.7%	48.9%	45.3%	44.3%
MI	100.0%	100.0%	41.2%	27.3%	35.1%	100.0%	100.0%	48.1%	26.2%	33.9%
MN		79.0%	62.6%	38.2%	37.3%		100.0%	62.0%	36.4%	30.8%
MO	100.0%	30.3%		41.5%	36.6%	100.0%	29.4%		32.8%	28.1%
MS	78.4%	100.0%			18.3%	65.4%	100.0%			18.5%
MT				51.5%	25.5%				50.5%	26.7%
NC	72.9%	48.4%		30.8%	22.3%	69.0%	63.6%		31.1%	19.8%
ND				24.9%					24.4%	
NE		100.0%		34.5%	23.3%		100.0%		23.7%	17.0%
NH	30.6%	17.5%	33.4%	39.6%	42.6%	44.6%	29.0%	46.7%	48.4%	49.1%
NJ	66.8%	30.3%	31.7%	32.0%	28.0%	38.7%	36.1%	40.9%	36.6%	28.6%
NM										
NV					70.8%					68.6%
NY	21.8%	20.1%	20.4%	20.5%	23.4%	34.7%	18.8%	24.4%	21.9%	20.3%
OH	39.2%	18.9%	33.6%	20.8%	25.6%	44.9%	36.6%	38.4%	23.5%	24.8%
OK					13.1%					13.1%
OR					46.1%					43.3%
PA	45.0%	28.6%	21.8%	22.3%	21.0%	47.6%	38.3%	23.7%	21.4%	20.8%
RI	26.0%	25.1%	38.8%	53.3%	68.2%	31.8%	29.5%	59.6%	62.5%	72.6%
SC	63.4%	48.4%			21.9%	75.6%	53.7%			22.6%
SD				24.8%	13.4%				26.3%	11.1%
TN	95.7%	75.5%				36.2%	81.9%			
TX					16.5%					17.1%
UT					46.7%					48.1%
VA	57.0%	51.1%			30.4%	66.4%	70.0%			25.0%
VT	42.1%	22.5%	33.0%	37.2%	34.1%	63.1%	34.1%	48.6%	45.3%	38.0%
WA					36.6%					35.6%
WI	100.0%	20.6%	52.5%	34.9%	26.6%	100.0%	40.4%	53.8%	33.4%	22.7%
WV				25.4%	16.8%				25.8%	15.8%
WY										

Notes: Table contains the ratio of either assets or deposits at the largest 5 banks to the total at all other banks in the state. Gaps in the data are due to the lack of individual bank data in those years that prevent us from calculating the numerator.

Table 3: Predicted Effects of Factors on Bank Concentration

Factor	Predicted Effect on Concentration	Tested in Regression Model By:
Population and City Expansion	-	Ln(Population) and Fraction Living in Location of 2,500+
Population Concentration	+	Fraction of Population Living In Largest 5 Cities
Agricultural Development	-	Ln(Crop Output P.C.)
Manufacturing Development	+	Ln(Mfg. Capital P.C.) or Ln(Mfg. Output P.C.)
Financial Development	-	Dummy for whether a state had an active clearinghouse
Separate Banking Authority	+	Dummy for whether a state had a separate banking authority
Branching Allowed	+	Dummy for whether a state allowed branching of any type
Double Liability	+	Dummy for whether a state had double liability in effect
Deposit Insurance	-	Dummy for whether a state had deposit insurance fund in operation
Free Banking Law	-	Dummy for whether a state had a free banking law in effect
Minimum Capital Requirements	+	Logarithm of lowest capital level in state in given year

Notes: Tables presents the predicted effects of the various factors on bank concentration as well as the variables that will eventually be used to test each factor.

Table 4: Quantile Panel Regression of Concentration for Antebellum (1840-1860)

	Assets				Deposits			
	5-Firm Ratio		Herfindahl Index		5-Firm Ratio		Herfindahl Index	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Population)	-0.226	0.035	-0.075*	0.073	-0.289**	-0.057	-0.053	0.097
	[0.229]	[0.109]	[0.042]	[0.067]	[0.133]	[0.102]	[0.059]	[0.073]
Fraction of Pop In Largest 5 Cities	-0.649	0.263	-0.374	-0.363	-0.571*	-0.001	-0.353	-0.297
	[0.436]	[0.234]	[0.328]	[0.456]	[0.292]	[0.312]	[0.397]	[0.296]
% Urban	1.007***	-0.019	0.452	0.418	0.897***	0.165	0.523	0.261
	[0.299]	[0.246]	[0.436]	[0.497]	[0.187]	[0.283]	[0.534]	[0.303]
Ln(Crop Output P.C.)	0.255*	-0.022	0.078*	-0.045	0.292***	0.061	0.081	-0.076
	[0.133]	[0.051]	[0.046]	[0.031]	[0.072]	[0.068]	[0.074]	[0.049]
Ln(Mfg. Capital P.C.)	-0.140	0.034	-0.057	-0.018	-0.100*	0.022	-0.070	0.012
	[0.101]	[0.067]	[0.059]	[0.057]	[0.055]	[0.032]	[0.065]	[0.025]
Clearinghouse In Place	0.024	0.005	-0.003	-0.016	0.037	0.032	0.010	-0.016
	[0.061]	[0.051]	[0.024]	[0.094]	[0.060]	[0.035]	[0.030]	[0.062]
Has Separate Banking	-0.126*	-0.048	-0.041	-0.012	-0.068	-0.019	-0.007	0.020
Authority	[0.072]	[0.072]	[0.028]	[0.034]	[0.078]	[0.053]	[0.026]	[0.028]
Double Liability	-0.029	0.009	0.008	0.006	-0.035	-0.011	-0.023	0.014
	[0.086]	[0.035]	[0.026]	[0.025]	[0.072]	[0.033]	[0.028]	[0.029]
Free Banking Law	0.002	0.046	0.017	0.013	-0.050	0.009	-0.018	0.016
	[0.060]	[0.059]	[0.043]	[0.046]	[0.058]	[0.036]	[0.040]	[0.034]
Ln(Minimum Capital)	0.018	-0.007	-0.003	-0.025	0.021	-0.011	0.001	-0.030**
	[0.023]	[0.014]	[0.011]	[0.018]	[0.022]	[0.017]	[0.012]	[0.015]
Ln(Number of Banks)		-0.194***		-0.125***		-0.167***		-0.166***
		[0.039]		[0.041]		[0.044]		[0.057]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	Region	Region	Region	Region	Region	Region	Region	Region
Observations	515	515	515	515	515	515	515	515

Notes: Table presents the results of a median quantile regression. The dependent variable is provided in the column titles. Each observation is a state-year. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 5: Quantile Panel Regression of Concentration for Postbellum Using Sample of States With Available Data 1894-1914

	Assets				Deposits			
	5-Firm Ratio		Herfindahl Index		5-Firm Ratio		Herfindahl Index	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Population)	-0.072***	-0.004	-0.009***	0.001	-0.087***	0.016	-0.011***	-0.001
	[0.019]	[0.051]	[0.001]	[0.005]	[0.031]	[0.065]	[0.002]	[0.014]
Fraction of Pop In Largest 5 Cities	0.606*	0.499	0.071***	0.060	0.542***	0.397	0.074*	0.054
	[0.322]	[0.380]	[0.018]	[0.043]	[0.179]	[0.602]	[0.041]	[0.069]
% Urban	-0.317	-0.169	-0.045	-0.008	-0.351	-0.005	-0.040	-0.003
	[0.385]	[0.313]	[0.033]	[0.033]	[0.725]	[0.379]	[0.054]	[0.061]
Ln(Crop Output P.C.)	0.004	0.067	-0.004	0.011	-0.059	0.102	-0.005	0.011
	[0.161]	[0.142]	[0.013]	[0.013]	[0.269]	[0.118]	[0.016]	[0.024]
Ln(Mfg. Output P.C.)	0.109***	0.100***	0.009**	0.008*	0.073	0.079	0.007	0.008
	[0.036]	[0.037]	[0.004]	[0.005]	[0.067]	[0.063]	[0.006]	[0.007]
Clearinghouse In Place	-0.073	-0.050	-0.008	-0.005	-0.057	-0.031	-0.007	-0.004
	[0.048]	[0.059]	[0.006]	[0.004]	[0.073]	[0.041]	[0.006]	[0.005]
Has Separate Banking Authority	-0.021	0.015	-0.000	0.004	0.035	0.024	0.007	0.009
	[0.033]	[0.029]	[0.004]	[0.003]	[0.054]	[0.060]	[0.006]	[0.015]
Reserve Requirement on Deposits	-0.042	-0.011	-0.005	-0.002	-0.067	-0.023	-0.012***	-0.008
	[0.051]	[0.025]	[0.004]	[0.003]	[0.099]	[0.051]	[0.004]	[0.012]
Double Liability	0.108**	0.108*	0.011**	0.012***	0.076***	0.075**	0.011***	0.011***
	[0.046]	[0.061]	[0.005]	[0.004]	[0.020]	[0.030]	[0.003]	[0.004]
Branching Allowed	0.064	0.012	0.007	0.000	0.093	0.020	0.011**	0.002
	[0.056]	[0.043]	[0.007]	[0.004]	[0.089]	[0.043]	[0.005]	[0.008]
Deposit Insurance	-0.071	-0.032	-0.007**	-0.004	-0.056	-0.030	-0.006	-0.002
	[0.092]	[0.126]	[0.003]	[0.002]	[0.083]	[0.039]	[0.005]	[0.006]
Ln(Minimum Capital)	0.006	-0.003	0.001*	0.000	0.008	0.003	0.002**	0.001
	[0.010]	[0.007]	[0.001]	[0.001]	[0.008]	[0.010]	[0.001]	[0.001]
Ln(Number of Banks)		-0.090**		-0.013***		-0.124***		-0.016
		[0.037]		[0.003]		[0.046]		[0.011]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	Region	Region	Region	Region	Region	Region	Region	Region
Observations	481	481	481	481	481	481	481	481

Notes: Table presents the results of a median quantile regression. The dependent variable is provided in the column titles. Each observation is a state-year. Only states that reported balance sheet data before 1895 are included in the sample. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 6: Linear Panel Regression for Postbellum Using Sample of States With Available Data 1894-1914

	Ln(# of Banks)	Ln(Total Assets)	Ln(Assets in Top 5 Banks)	Ln(Average Assets Per Bank)	Ln(Total Deposits)	Ln(Deposits s in Top 5 Banks)	Ln(Average Deposits Per Bank)
Ln(Population)	1.484***	1.121***	0.050	-0.370**	1.126***	0.333	-0.366*
	[0.363]	[0.294]	[0.319]	[0.161]	[0.302]	[0.258]	[0.200]
Fraction of Pop In Largest 5 Cities	-2.407	-0.343	2.561	2.078	0.947	4.157*	3.368
	[4.084]	[2.739]	[2.787]	[2.312]	[2.484]	[2.179]	[2.603]
% Urban	8.716***	3.279	-0.212	-5.478***	1.328	-1.485	-7.429***
	[3.345]	[2.330]	[2.582]	[1.973]	[2.260]	[2.452]	[2.304]
Ln(Crop Output P.C.)	1.434***	0.922***	0.137	-0.519***	0.989***	0.244	-0.452***
	[0.195]	[0.150]	[0.194]	[0.131]	[0.164]	[0.174]	[0.166]
Ln(Mfg. Output P.C.)	0.317	0.326	0.405	0.009	0.407	0.385	0.089
	[0.423]	[0.298]	[0.289]	[0.178]	[0.311]	[0.245]	[0.204]
Clearinghouse In Place	0.126	0.174	0.089	0.045	0.205*	0.157	0.077
	[0.130]	[0.123]	[0.113]	[0.046]	[0.112]	[0.103]	[0.062]
Has Separate Banking Authority	0.206	0.185***	0.204**	-0.021	0.222***	0.122	0.016
	[0.177]	[0.052]	[0.096]	[0.147]	[0.065]	[0.143]	[0.133]
Reserve Requirement on Deposits	0.153	0.129***	-0.002	-0.025	0.115***	0.029	-0.039
	[0.098]	[0.037]	[0.052]	[0.086]	[0.035]	[0.062]	[0.094]
Double Liability	-0.068	-0.036	-0.133*	0.031	-0.038	-0.041	0.028
	[0.075]	[0.059]	[0.068]	[0.035]	[0.064]	[0.057]	[0.043]
Branching Allowed	-0.093	-0.050	-0.004	0.044	-0.029	0.003	0.065
	[0.081]	[0.056]	[0.071]	[0.055]	[0.061]	[0.078]	[0.069]
Deposit Insurance	0.064	0.130**	-0.073	0.067	0.151**	0.016	0.088
	[0.075]	[0.062]	[0.137]	[0.050]	[0.070]	[0.141]	[0.064]
Ln(Minimum Capital)	-0.014	0.013	-0.004	0.028*	0.013	-0.014	0.027
	[0.017]	[0.015]	[0.016]	[0.016]	[0.015]	[0.016]	[0.018]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	State	State	State	State	State	State	State
Observations	481	481	481	481	481	481	481

Notes: Table presents the results of an OLS regression. The dependent variable is provided in the column titles. Each observation is a state-year. Only states that reported balance sheet data before 1895 are included in the sample. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table 7: Controlling for State-Fixed Effects in Quantile Panel Regression for Postbellum Using Sample of States With Available Data 1894-1914

	Assets				Deposits			
	5-Firm Ratio		Herfindahl Index		5-Firm Ratio		Herfindahl Index	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Population)	-0.157**	-0.032	-0.025**	-0.008	-0.099**	-0.012	-0.020**	-0.007
	[0.064]	[0.108]	[0.011]	[0.007]	[0.047]	[0.060]	[0.009]	[0.010]
Fraction of Pop In Largest 5 Cities	0.527	0.497	0.040	0.011	0.461	0.145	0.006	-0.008
	[0.768]	[0.700]	[0.138]	[0.036]	[0.530]	[0.513]	[0.096]	[0.077]
% Urban	-1.274	-0.556	-0.108	-0.010	-0.891	-0.298	-0.075	0.002
	[0.807]	[1.034]	[0.142]	[0.057]	[0.611]	[0.643]	[0.103]	[0.077]
Ln(Crop Output P.C.)	-0.161**	-0.072	-0.017**	-0.004	-0.153***	-0.079*	-0.016***	-0.003
	[0.081]	[0.130]	[0.008]	[0.007]	[0.041]	[0.046]	[0.005]	[0.006]
Ln(Mfg. Output P.C.)	0.038	0.049	-0.001	0.003	0.033	0.047**	-0.000	0.004
	[0.065]	[0.049]	[0.010]	[0.004]	[0.033]	[0.023]	[0.009]	[0.006]
Clearinghouse In Place	-0.027	-0.017	-0.003	-0.003	-0.038*	-0.032	-0.005*	-0.004
	[0.024]	[0.029]	[0.003]	[0.002]	[0.021]	[0.020]	[0.003]	[0.005]
Has Separate Banking Authority	0.007	0.017	0.001	0.002	-0.012	0.000	0.001	0.001
	[0.018]	[0.024]	[0.004]	[0.001]	[0.013]	[0.014]	[0.005]	[0.003]
Reserve Requirement on Deposits	-0.022	-0.009	-0.002	-0.001	-0.005	0.001	-0.001	-0.000
	[0.016]	[0.013]	[0.004]	[0.001]	[0.012]	[0.013]	[0.002]	[0.002]
Double Liability	-0.014	-0.009	-0.000	-0.000	-0.004	-0.002	0.001	0.000
	[0.014]	[0.025]	[0.002]	[0.001]	[0.011]	[0.007]	[0.001]	[0.002]
Branching Allowed	0.000	-0.002	0.000	-0.000	0.001	0.000	0.002	0.001
	[0.026]	[0.029]	[0.003]	[0.001]	[0.021]	[0.013]	[0.003]	[0.004]
Deposit Insurance	-0.035***	-0.025*	-0.003*	-0.003***	0.001	0.003	0.000	0.001
	[0.008]	[0.014]	[0.002]	[0.001]	[0.012]	[0.010]	[0.001]	[0.002]
Ln(Minimum Capital)	-0.001	-0.003	-0.000	-0.000	-0.006**	-0.005*	0.000	0.000
	[0.004]	[0.004]	[0.000]	[0.000]	[0.002]	[0.003]	[0.001]	[0.000]
Ln(Number of Banks)		-0.061***		-0.009***		-0.053***		-0.009***
		[0.022]		[0.002]		[0.020]		[0.003]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	State	State	State	State	State	State	State	State
Observations	481	481	481	481	481	481	481	481

Notes: Table presents the results of a median quantile regression. The dependent variable is provided in the column titles. Each observation is a state-year. Only states that reported balance sheet data before 1895 are included in the sample. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table A1: Quantile Panel Regression of Concentration for Postbellum Using Sample of States With Available Data 1880-1914

	Assets				Deposits			
	5-Firm Ratio		Herfindahl Index		5-Firm Ratio		Herfindahl Index	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Population)	-0.058***	-0.005	-0.009***	-0.000	-0.081***	-0.037*	-0.013***	-0.006***
	[0.014]	[0.012]	[0.001]	[0.001]	[0.009]	[0.022]	[0.001]	[0.002]
Fraction of Pop In Largest 5 Cities	0.514***	0.306*	0.075***	0.036**	0.562***	0.278	0.084***	0.054***
	[0.069]	[0.170]	[0.006]	[0.016]	[0.200]	[0.210]	[0.016]	[0.016]
% Urban	-0.695***	-0.392*	-0.071***	-0.027*	-0.677**	-0.279	-0.084***	-0.035
	[0.251]	[0.214]	[0.012]	[0.014]	[0.273]	[0.292]	[0.022]	[0.024]
Ln(Crop Output P.C.)	-0.190	-0.065	-0.020***	0.000	-0.187***	-0.044	-0.021***	-0.001
	[0.128]	[0.074]	[0.005]	[0.005]	[0.071]	[0.097]	[0.007]	[0.008]
Ln(Mfg. Output P.C.)	0.032	0.065*	-0.001	0.006**	0.009	0.050	-0.001	0.005
	[0.069]	[0.036]	[0.004]	[0.003]	[0.065]	[0.039]	[0.007]	[0.004]
Clearinghouse In Place	-0.087***	-0.037*	-0.009***	-0.004*	-0.095	-0.033	-0.012***	-0.004
	[0.024]	[0.021]	[0.003]	[0.002]	[0.067]	[0.046]	[0.004]	[0.005]
Has Separate Banking Authority	-0.010	0.031	0.000	0.006*	0.045	0.085*	0.004	0.011*
	[0.025]	[0.046]	[0.002]	[0.003]	[0.062]	[0.051]	[0.005]	[0.006]
Reserve Requirement on Deposits	0.003	0.001	-0.001	-0.000	-0.002	-0.019	-0.002	-0.004
	[0.021]	[0.023]	[0.001]	[0.002]	[0.045]	[0.027]	[0.002]	[0.004]
Double Liability	0.081*	0.084***	0.010**	0.010***	0.090*	0.087***	0.014***	0.014***
	[0.043]	[0.025]	[0.004]	[0.002]	[0.053]	[0.023]	[0.005]	[0.003]
Branching Allowed	0.012	-0.022	0.002	-0.002	0.030	0.004	0.001	-0.001
	[0.017]	[0.033]	[0.002]	[0.003]	[0.030]	[0.032]	[0.003]	[0.003]
Ln(Minimum Capital)	0.002	-0.001	0.000	-0.000	0.001	-0.005	-0.000	-0.000
	[0.009]	[0.005]	[0.000]	[0.001]	[0.008]	[0.006]	[0.001]	[0.001]
Ln(Number of Banks)		-0.091***		-0.013***		-0.082**		-0.012***
		[0.022]		[0.002]		[0.039]		[0.003]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	Region	State	Region	State	Region	State	Region	State
Observations	560	560	560	560	560	560	560	560

Notes: Table presents the results of a median quantile regression. The dependent variable is provided in the column titles. Each observation is a state-year. Only states that reported balance sheet data before 1880 are included in the sample. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table A2: Linear Panel Regression for Postbellum Using Sample of States With Available Data 1880-1914

	Ln(# of Banks)	Ln(Total Assets)	Ln(Assets in Top 5 Banks)	Ln(Average Assets Per Bank)	Ln(Total Deposits)	Ln(Deposits s in Top 5 Banks)	Ln(Average Deposits Per Bank)
Ln(Population)	2.311***	1.116***	0.064	-1.208***	0.907***	0.006	-1.417***
	[0.234]	[0.199]	[0.205]	[0.186]	[0.240]	[0.160]	[0.182]
Fraction of Pop In Largest 5 Cities	-1.485	1.228	1.164	2.737**	1.640	1.232	3.149**
	[2.146]	[1.563]	[1.621]	[1.123]	[1.232]	[1.252]	[1.437]
% Urban	5.098**	1.896	-0.461	-3.254*	0.741	-0.030	-4.409**
	[2.451]	[1.438]	[1.418]	[1.694]	[1.477]	[1.655]	[1.942]
Ln(Crop Output P.C.)	1.855***	0.688***	-0.192	-1.178***	0.658***	-0.146	-1.208***
	[0.241]	[0.182]	[0.175]	[0.211]	[0.180]	[0.170]	[0.192]
Ln(Mfg. Output P.C.)	0.674*	0.551**	0.540***	-0.124	0.697***	0.687***	0.021
	[0.359]	[0.230]	[0.189]	[0.176]	[0.243]	[0.161]	[0.162]
Clearinghouse In Place	0.131	0.191**	0.063	0.060	0.182**	0.086	0.051
	[0.138]	[0.093]	[0.107]	[0.068]	[0.074]	[0.093]	[0.078]
Has Separate Banking Authority	0.407***	0.409***	0.534***	0.002	0.398***	0.619***	-0.010
	[0.053]	[0.102]	[0.099]	[0.085]	[0.060]	[0.121]	[0.051]
Reserve Requirement on Deposits	0.208***	0.197***	0.038	-0.010	0.159***	0.082	-0.048
	[0.071]	[0.044]	[0.054]	[0.069]	[0.047]	[0.065]	[0.074]
Double Liability	0.007	-0.146**	-0.213***	-0.154***	-0.245***	-0.150**	-0.252***
	[0.079]	[0.073]	[0.076]	[0.038]	[0.084]	[0.066]	[0.050]
Branching Allowed	-0.261**	-0.155*	-0.117	0.107*	-0.147*	-0.127	0.115*
	[0.125]	[0.082]	[0.075]	[0.061]	[0.087]	[0.082]	[0.062]
Ln(Minimum Capital)	0.003	-0.001	-0.018	-0.004	0.001	-0.029**	-0.002
	[0.018]	[0.014]	[0.017]	[0.012]	[0.012]	[0.014]	[0.013]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	State	State	State	State	State	State	State
Observations	560	560	560	560	560	560	560

Notes: Table presents the results of an OLS regression. The dependent variable is provided in the column titles. Each observation is a state-year. Only states that reported balance sheet data before 1880 are included in the sample. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table A3: Controlling for State-Fixed Effects in Quantile Panel Regression for Postbellum Using Sample of States With Available Data 1880-1914

	Assets				Deposits			
	5-Firm Ratio		Herfindahl Index		5-Firm Ratio		Herfindahl Index	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Population)	-0.317***	-0.091	-0.045***	-0.017**	-0.277	-0.113	-0.051*	-0.027
	[0.084]	[0.059]	[0.009]	[0.008]	[0.170]	[0.161]	[0.027]	[0.020]
Fraction of Pop In Largest 5 Cities	-0.109	-0.196	-0.002	-0.002	-0.357	-0.504	-0.021	-0.038
	[0.765]	[0.783]	[0.093]	[0.078]	[0.597]	[0.523]	[0.095]	[0.066]
% Urban	-0.702	-0.189	-0.104	-0.042	-0.171	0.294	-0.055	-0.001
	[1.289]	[0.682]	[0.161]	[0.105]	[0.826]	[0.595]	[0.149]	[0.105]
Ln(Crop Output P.C.)	-0.210**	-0.053	-0.028**	-0.008	-0.202***	-0.080	-0.031*	-0.012
	[0.106]	[0.102]	[0.013]	[0.012]	[0.077]	[0.069]	[0.017]	[0.015]
Ln(Mfg. Output P.C.)	0.002	0.070*	-0.001	0.007	0.018	0.064*	-0.000	0.008
	[0.102]	[0.040]	[0.012]	[0.005]	[0.084]	[0.035]	[0.012]	[0.006]
Clearinghouse In Place	0.012	-0.006	0.001	-0.001	-0.014	-0.013	0.002	-0.001
	[0.025]	[0.039]	[0.002]	[0.003]	[0.101]	[0.052]	[0.005]	[0.005]
Has Separate Banking Authority	0.030*	0.054**	0.002	0.006**	0.042**	0.078***	0.003	0.010
	[0.016]	[0.025]	[0.002]	[0.003]	[0.020]	[0.022]	[0.003]	[0.007]
Reserve Requirement on Deposits	-0.040*	-0.015	-0.002	0.000	-0.016	-0.007	-0.003	-0.001
	[0.022]	[0.023]	[0.003]	[0.002]	[0.030]	[0.027]	[0.004]	[0.004]
Double Liability	0.002	-0.006	0.000	-0.001	0.050	0.048	0.002	0.001
	[0.024]	[0.025]	[0.002]	[0.002]	[0.064]	[0.065]	[0.006]	[0.004]
Branching Allowed	0.009	-0.020	0.001	-0.002	-0.006	-0.022	-0.002	-0.003
	[0.015]	[0.026]	[0.001]	[0.003]	[0.020]	[0.027]	[0.003]	[0.004]
Ln(Minimum Capital)	-0.002	-0.006*	-0.000	-0.000	-0.005*	-0.005*	-0.000	-0.000
	[0.003]	[0.003]	[0.001]	[0.000]	[0.002]	[0.003]	[0.001]	[0.001]
Ln(Number of Banks)		-0.088**		-0.011**		-0.072**		-0.012
		[0.036]		[0.005]		[0.034]		[0.009]
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Fixed Effects	State	State	State	State	State	State	State	State
Observations	560	560	560	560	560	560	560	560

Notes: Table presents the results of a median quantile regression. The dependent variable is provided in the column titles. Each observation is a state-year. Only states that reported balance sheet data before 1880 are included in the sample. Dollar values are deflated to 1860 using Officer (2008). Standard errors are clustered by state and provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.