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## **An In-depth Analysis of New England Mutual Savings Banks, 1870-1914**

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### **Abstract**

Scholars have studied the U.S. banking systems of the late 19<sup>th</sup> century, but the presence and influence of mutual savings banks has largely gone unexamined. A new annual database of New England banks shows that mutual savings banks had a significant presence in the postbellum banking system. Mutual savings banks accounted for about 75 percent of the region's total bank deposits and largely avoided financial panics. The banks seemed to have complemented rather than competed with national banks. Mutual savings bank growth was correlated with agriculture and urbanization, whereas national bank growth was correlated with manufacturing. Mutual savings banks also channeled significant funds to national banks through the interbank network.

*JEL* codes: N21, G21, G32

Keywords: Mutual Savings Banks, Bank Stability, National Banking Era, Bank Competition

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*“Some of the incidents pertaining to state banking were spectacular, even dramatic, while the growth of the savings banks has been slow but always sure...there have been failures of savings banks, some of them rather disastrous, but these institutions have proved their worth, and their place in the banking structure of the State [of Maine] is firmly established.” –Walter Chadbourne (1936, p. 117)*

## 1. Introduction

Postbellum banking in America is remembered for the establishment of the national banking system and the subsequent competition between national banks and state-chartered commercial banks (Friedman and Schwartz 1963, James 1978, White 1983). This narrative, however, often ignores a significant component of the banking system: mutual savings banks. Even though the nearly 650 mutual savings banks were concentrated in the Northeast, they serviced over 8 million depositors in 1914 (Manning 1917). The few authors that focus on disaggregated mutual savings bank data, however, examine either a single institution or city. These studies also tend to be historical descriptions that are restricted to the antebellum period. As a result, we do not have a full picture of the extent to which mutual savings banks competed with national banks. Using the individual balance sheets of every New England bank between 1870 and 1914, we examine the stability of mutual savings banks relative to national banks and the type of business that each bank was involved in.

Mutual savings banks were created to service the needs of the poor and immigrant populations.<sup>1</sup> The idea was to encourage the low to middle classes to save their funds by offering them a sizeable but safe interest rate.<sup>2</sup> To achieve this purpose, they had no capital stock, could not issue bank notes, and passed profit through to depositors in the form of interest earnings on

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<sup>1</sup> For instance, the *Banker's Magazine* stated that “[T]he comparative condition of these institutions, for a few years past, is a favorable index to the accumulating wealth of laboring classes, and illustrates fully the industry and thrift among minors as well as adults” (1873, p. 161).

<sup>2</sup> Olmstead (1976) finds that mutual savings banks provided returns that were higher than most government debt yields during the period.

savings accounts. Over time, state legislatures also put limits on insider lending, investment in risky securities, and individual deposit account values to protect small depositors.

Although mutual savings banks grew to attract depositors from all walks of life, state commercial banks that issued large amounts of bank notes made up the majority of the banking system before 1860. The circumstances of the Civil War changed this dynamic. Faced with the task of financing the Union war effort, Congress passed the National Banking Acts of 1863 and 1864 to create a market for government debt and introduce a more uniform bank currency. It also passed a 10 percent tax on state bank notes in 1865 to coerce the remaining state commercial banks to convert to a national charter. Mutual savings banks thrived in the new environment while state banks collapsed. The number of mutual savings banks doubled between 1860 and 1870 while the number of state banks fell from over 1,600 to under 250 through a mix of closures and conversions to national banks. New England thus came to be dominated by mutual savings banks and national banks, while states in other regions that created few mutual savings banks saw the sudden decline and later return of state commercial banks. Indeed, the number of state commercial banks in New England slowly dwindled from 501 in 1860 to 9 in 1914, yet it increased from around 1,100 to over 14,500 in the rest of the country.

The most comprehensive accounts of savings banks were written almost a century ago. The first is Keyes' two-volume *A History of Savings Banks in the United States* (1876, 1878) which covers savings banks before 1876. The second is Manning's *Century of American Savings Banks* which extends Keyes' analysis through 1917. These books cover the entire realm of savings banks using anecdotes on specific banks and regulations, but their narrative approach provides no consistent individual bank data outside of New York.<sup>3</sup> Gaining access to the individual archives of several of the now defunct New York City savings banks, Olmstead

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<sup>3</sup> Even Manning draws heavily from Keyes' work, sometimes taking whole passages from the older text verbatim.

(1976) provides the most detailed account of individual mutual savings banks before 1861. He finds that mutual savings banks were important drivers of local investment even amongst the city's many state banks. In fact, the Bank for Savings financed a sizable portion of the Erie Canal, holding 30 percent of its outstanding debt at times (p. 78). Outside of the descriptive overviews of individual states, the few other authors study individual mutual savings banks—Willcox (1916) examines the Philadelphia Savings Fund Society and Paine and Davis (1956) examine the Baltimore Savings Bank.<sup>4</sup>

The lack of consistent bank data for the postbellum period has left several important questions unanswered. First, how did mutual savings banks measure up to national banks? The aggregate statistics show that mutual savings banks were large, but it is important to know how they differed from national banks and whether they converged over time. Second, were mutual savings banks less susceptible to economic shocks than national banks? While national banks were relatively stable compared to other commercial institutions, the limits on mutual savings banks' investments might have allowed them to avoid the financial panics that otherwise plagued the commercial bank system. Indeed, Payne and Davis (1956) and O'Grada and White (2003) find that mutual savings banks in Baltimore and New York handled the antebellum panics quite well. Third, did mutual savings banks compete with national banks for business or did they service different sectors? State commercial banks, for instance, somewhat complemented national banks due to their low capital requirements and ability to provide real estate loans. Mutual savings banks had the same opportunity, but others have not examined the degree to which they achieved this same balance.

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<sup>4</sup> Alter, Goldin and Rotella (1994) and O'Grada and White (2003) have also studied the behavior and composition of depositors at the Philadelphia Savings Fund Society and the Emigrant Industrial Savings Bank respectively.

To answer these questions, we digitized the annual reports of the state bank commissioners in each of the New England states from 1870 to 1914.<sup>5</sup> The information contained in the reports allow us to observe the size, composition, and closure of each state and mutual savings bank. Combined with similar national bank information from the Comptroller of the Currency, the database covers all state, national, and mutual savings banks in New England.

Mutual savings banks stood up well to national banks. They made up around 75 percent of the region's individual deposits despite being outnumbered through most of the period, and the focus on individuals allowed their deposits and loans to significantly outgrow those at national banks. Mutual savings banks were also significantly less likely to close, though this stability was not the result of large cash reserves. Rather, mutual savings banks invested nearly all of their assets in mortgage loans which shielded them from seasonal demands for liquidity, and government debt which were easier to liquidate during panics.

The data suggest that national banks and mutual savings banks were complements. For instance, mutual savings bank growth was correlated with agriculture and urbanization, whereas national bank growth was correlated with manufacturing. Mutual savings banks also placed considerable funds in commercial banks. This allowed mutual savings banks to earn a relatively safe and high return while providing national banks with funds that were less sensitive to seasonal fluctuations. The relationship worked so well that some mutual savings banks were established within national bank buildings.

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<sup>5</sup> The restriction to New England was made because the majority of mutual savings banks were located in the region. New England states also published reports during the 1870s whereas many states did not until after 1890 (Mitchener and Jaremski 2015).

## 2. The Development of Savings Banks in the United States

Mutual savings banks were originally established as philanthropic institutions to provide working-class laborers and immigrants an opportunity to build a small surplus of funds.<sup>6</sup> The concept of the mutual savings bank was created in Europe during the eighteenth century, but the fear of bank power prevented it from quickly crossing the Atlantic.<sup>7</sup> Many bankers unsuccessfully tried to obtain official charters from their state legislature before the Philadelphia Savings Fund Society was granted the first charter in 1816. Even then, the founder of the Society argued that the name of the institution mattered, stating “the name of ‘Bank’ had become so unpopular with the Legislature, it would be expedient to call the institution by some other name in order to secure a Charter” (Willcox 1916, p.18).<sup>8</sup> The charter, however, was quickly followed by the Provident Institution for Savings in Boston (1817), the Savings Bank of Baltimore (1818), and the Bank for Savings in New York City (1819).

While the high interest rates of mutual savings bank also attracted wealthy depositors, the evidence shows that they often fulfilled their stated purpose. Depositors in mutual savings banks were more representative of the local population than those at commercial banks, whose clientele was skewed towards the business community (O’Grada and White 2003). For instance, mutual savings bank depositors were often illiterate, female, and servants (Alter, Goldin, and Rotella 1994; Wright 2011). Alter, Goldin, and Rotella (1994) also conclude that depositors were using targeted saving methods as withdrawals were rare and were for large amounts. The institutions

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<sup>6</sup> See Keys (1876) and Manning (1917) for the origin of mutual savings banks. The names of the banks often described the type of customers they intended to benefit (e.g. Emigrant Savings Banks, Seaman’s Savings Bank, etc).

<sup>7</sup> Bodenhorn (2003) describes the country’s initial concerns regarding bank power.

<sup>8</sup> The Bank for Savings in New York City also debated using the word “corporation” instead of bank in order to receive a charter (Olmstead 1972, p 9).

thus seem to have encouraged medium to long-run savings from the less affluent population rather than short-term commercial depositors.

Mutual savings banks were structured differently from traditional commercial banks. First, they functioned exclusively as institutions of deposit and were prohibited from issuing bank notes. For instance, Massachusetts did not permit them to “make use of or circulate any written or printed or partly written or partly printed paper whatever, having thereon any name, or other word or words, indicating that such business is the business of a savings bank” (*Annual Report of the [MA] Bank Commissioner* 1915, ix). Similarly, Maine held that “no person shall issue any drafts, bills, or notes or other evidences of debt payable to bearer or order, as a private banker, for the purpose of loaning them or putting them in circulation as money” (*Annual Report of the [ME] Bank Commissioner* 1915, 2).

Second, they did not have stockholders or a capital stock. Instead, depositors received the bank’s profits in the form of interest earnings on savings accounts.<sup>9</sup> For example, the charter of the Savings Bank of Newport in Rhode Island stated that profits were to be “divided among the depositors in just proportion, with such reasonable deductions as the management might require” (Keyes 1878, 612-613). Trustees were also prohibited from taking any of the banks’ surplus, and often managed the bank for free until the job became too large to handle alone (Olmstead 1976). Though trustees and managers still had some potential to usurp profits, this pass-through structure was intended to eliminate the typical conflict between depositors and owners.

State legislatures imposed relatively few restrictions on the earliest mutual savings banks. For example, the charter of the Provident Institution in Boston placed no explicit limitations on how deposits could be invested, merely stating that “all deposits of money received by the said

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<sup>9</sup> It is important to note that depositors did not have voting rights and could not appoint managers or trustees. Large depositors, therefore, might have held some sway with their ability to suddenly withdraw funds, but would have been unlikely to have dictated lending decisions at the bank.



Society shall be ... used and improved to the best advantage” (Manning 1917, 92). When requirements and limitations existed, they generally focused on the types of assets that a bank could hold. The Savings Bank of Newport could only invest its deposits “in public stocks, or other securities, to the best advantage” (Keyes 1878, 612-613). New York State originally only allowed mutual savings banks to purchase the debt of the US Treasury or New York State, but quickly allowed debt of other states and mortgage loans (Olmsted 1976, Table 13).

The initial lack of requirements and limitations was likely due to the reputation of the trustees who started the banks. As Keyes (1878, p. 42) describes:

[T]he discretion of the trustees in the matter of investments was almost entirely unlimited. It is presumed that the well-known character of the incorporators for integrity and worth, and their reputation for business sagacity and discernment, were regarded by the legislature as a sufficient guaranty that the trust reposed would be wisely and unselfishly administered.

Willcox (1916) and Olmstead (1976) also relate that the trustees of the original savings banks were generally respected individuals in the community. Contemporary accounts confirm these views: “So far the management may be considered unexceptionable. They are generally in the hands of responsible and able citizens, whose services are given to this important trust without charge...No institution in the world of similar magnitude, can, probably, show more economical or more intelligent control” (*Bankers Magazine* 1873, 161-162).

That is not to say that all the trustees were worthy of this esteem. For instance, the Knickerbocker Savings Bank, the only New York City mutual savings bank to fail before 1863, collapsed because of trustee manipulation as many of the trustees were directors at the Knickerbocker Bank. Keyes (1876, 110-111) concluded that the mutual was “little more than a side issue of the bank of discount” as it held so much of the commercial bank’s stock and deposited almost all of its reserves in the commercial bank. Trustees of other banks also were

found to have directed loans to their businesses and partners, though this was relatively common for banks during the period.<sup>10</sup> (Olmstead 1976)

Over time, states installed additional regulations on mutual savings banks in order to preserve their philanthropic design. First, some imposed restrictions on bank managers. For example, the charter for the Society for Savings in Hartford (Connecticut) prohibited trustees from borrowing money, and New York barred all mutual savings bank trustees established after 1853 from being directors of a commercial bank where deposits were being kept (Keyes 1878). Second, some restricted banks to a list of assets that were considered safe investments.<sup>11</sup> Finally, some states limited the maximum amount any single person could maintain in a deposit account.<sup>12</sup> For instance, Maine and Massachusetts limited depositors to \$2,000 (*Annual Report [ME] 1910, 7-8; Annual Report [MA] 1915, xx*). The restriction was an attempt to avoid large depositors potentially encouraging more risky borrowing and withdrawing deposits during panics (Olmstead 1976).<sup>13</sup> Though small investors also lined up to retrieve deposits, large investors were more likely to liquidate accounts during times of general business unrest and high interest rates given their access to other non-bank investments.<sup>14</sup> They also were less likely to need the semi-annual interest and thus might have been more likely to preemptively withdraw funds. Payne and Davis (1956), for instance, find that the Savings Bank of Baltimore provided extra dividends during panic years in order to discourage withdrawal.

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<sup>10</sup> Insider lending was less of an issue when usury rates were often binding as a bank did not receive a lower interest rate and had extra information on borrowers (Lamoreaux 1994).

<sup>11</sup> Rose (2015) contains a detailed discussion of these lists and how they were implemented.

<sup>12</sup> While there are also some banks that limited the amount of deposits that could be put in the bank on a given day, we do not find evidence that banks contractually limited withdrawals.

<sup>13</sup> Some banks even voluntarily discouraged large accounts. For instance, some New York banks paid 5 percent interest on accounts over \$500 and 6 percent on all other accounts (Olmstead 1976).

<sup>14</sup> Krost (1938) also shows that withdrawals during the Great Depression were disproportionately from large depositors.

Mutual savings banks were different from the stock savings banks that became popular after the note tax stripped state banks of their ability to issue notes in 1865. A hybrid of commercial banks and mutual savings banks, stock savings banks possessed capital stock and paid dividends to stockholders, yet had low minimum capital requirements and fewer restrictions on the types of assets they could hold. These attributes made it feasible for stock savings banks to be established in low population areas, but they never held the same attraction for depositors as mutual savings banks.<sup>15</sup> Although there were twice as many stock savings banks than mutual savings banks in 1914, stock savings banks only served one-fourth the number of depositors and held one-fifth the amount of deposits (Manning 1917, p. 65).

Mutual savings banks were clearly the backbone of the savings bank system, yet they were not homogeneously distributed across the United States. Instead, their creation seems to have been popular with early states as a safe alternative to banks of circulation during the antebellum period, compared to the creation of stock savings banks that were prevalent in newer states after the passage of the state bank note tax.<sup>16</sup> Mutual savings banks thus existed almost entirely in the Northeast whereas stock savings banks propagated throughout the Midwest and Great Plains. Of the 628 mutual savings banks operating in 1914, 410 were in the six New England states; 140 were in New York; 24 were in New Jersey; 20 were in Maryland; and 10 were in Pennsylvania (*All Bank Statistics* 1959). The remaining few banks were thinly spread across the other states.

At the same time, mutual savings banks were not isolated in any particular area within New England. Looking at Figure 1, they only seem to be absent in Northern Maine where there

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<sup>15</sup> The best evidence of this is seen in the Rand McNally Bankers Directory.

<sup>16</sup> Payne and Davis (1956) also suggest that the regional distribution might be due to the higher degree of inequality and the popularity of philanthropy in the Northeast.

was little population and economic activity. Mutual savings banks and national banks thus did not specialize in a particular region within New England, and thus were located side by side.

### *2.1. The Growth and Composition of Mutual Savings Banks*

Mutual savings banks were not a large part of the antebellum banking system as note-issuing state commercial banks dominated the market. In general, they were concentrated in large financial centers such as Boston, New York City, and Philadelphia. This pattern changed with the passage of the National Banking Acts of 1863 and 1864 and the subsequent tax on state bank notes. While antebellum data do not exist for every state, Figure 2 shows the number of state, national, and mutual savings banks from 1849 through 1878 for Connecticut, Massachusetts, and New Hampshire.<sup>17</sup> The growth of mutual savings banks in all three states was slow before the Civil War then ramped up after 1866, whereas state banks grew quickly during the late 1840s and early 1850s then collapsed to nothing after the passage of the National Banking Acts. Conversely, national banks took off at the same time as state banks declined. The timing is not a coincidence as the region had a high number of state banks convert to national charters (Jaremski 2013a, Figure 2). When state and national bank numbers are combined, the number of commercial banks remains stable before and after the Civil War.

Expanding the sample to encompass all of New England, Figure 3 shows that national banks and mutual savings banks dominated the market after 1870, while the number of state banks dropped from 501 in 1860 to 15 in 1870 and to 8 in 1914. State banks thus never experienced the rapid recovery seen in other states, suggesting that mutual savings banks might

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<sup>17</sup> New York displays a similar pattern albeit with more state banks surviving.

have been substitutes for state commercial banks that had lost their ability to issue notes.<sup>18</sup> The number of mutual savings banks, on the other hand, grew relatively quickly from 1870 through 1879 before leveling out for the rest of the period. The number of national banks increased through 1890 but then began to dwindle slowly. There were thus fewer mutual savings banks than national banks in 1870, but nearly the same number by 1914.

The figure suggests that mutual savings banks were relatively stable. Only 28 percent of savings banks closed over the 44 year period, compared to 42 percent of national banks and 76 percent of state banks.<sup>19</sup> Graphed in the bottom panel of Figure 3, mutual savings banks were not involved in the period's financial panics. Only 4 of 481 or mutual savings banks closed during the Panic of 1893 and 1 of 453 closed during the Panic of 1907, compared to 8 of 593 and 11 of 486 national banks respectively.<sup>20</sup> Moreover, only two years—1879 and 1897—had more than 10 mutual savings bank closures, yet 15 years had more than 10 national bank closures.

The pattern in Figure 2 matches the conclusions in the literature. For instance, O'Grada and White (2003) show that most mutual savings banks handled the panics of 1854 and 1857 quite well. The only mutual savings banks that seemed to have larger problems than others were those that were tightly connected to commercial banks that were in trouble. For instance, the Knickerbocker Savings Bank and the Bowery Savings Bank experienced runs soon after the commercial banks of similar names experienced runs. Mutual savings banks seemed to have

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<sup>18</sup> The total number of state banks in the nation went from 592 in 1877 to 14,011 in 1914. The fact that mutual savings banks did not have the same expansion suggests that mutual savings banks filled a similar need as commercial banks.

<sup>19</sup> It is worth noting that New England is known for a relatively low closure rate of all banks which makes the lower rate of mutual savings bank closure all the more meaningful. The failure data reported by the Comptroller of the Currency's *Annual Reports* after 1892 show a closer match. 3 national banks and 4 mutual saving banks failed in New England during the Panic of 1893, and 2 national banks and no mutual saving banks failed during the Panic of 1907. Between 1892 and 1914, 25 national banks failed compared to 24 mutual savings banks. That said, mutual savings banks voluntary liquidations were more spread out across time than national banks, as the later tended to concentrate around panics.

<sup>20</sup> Note that the Panic of 1907 had its largest and most immediate effect on trust companies and only later spread to national banks (Moen and Tallman 1992). National banks are thus typically recognized as the most stable institutions during the period, further emphasizing the low closure rate of mutual savings banks.

avoided panics and seasonal fluctuations because their loans were often mortgages instead of seasonal lending and most of their depositors were saving for the medium or long-run. When pushed to meet withdraws, the banks also could quickly sell off Federal debt at little discount (Willcox 1914; Davis and Payne 1956; Olmstead 1976). They thus were able to conserve reserves during expansions and meet demand during stringency.

Excluding state banks because there were so few, Figure 4 shows that mutual savings banks generally had more assets (top panel) and deposits (middle panel) than national banks despite having fewer banks. Mutual savings banks held less than half of all New England bank assets in 1870, but surpassed national banks by 1883. Indeed, their assets grew at nearly double the rate of national banks, and the growth did not experience as much variation. Mutual savings banks also held between 69 and 79 percent of all deposits between 1870 and 1914.<sup>21</sup> The deposit gap between national and mutual savings banks, however, was not made up for by the former's ability to issue notes. Even at its height in 1881, national bank circulation in New England was only \$124 million, yet the difference in deposits was \$520 million on average.

The next question is what mutual savings banks did with their deposits.<sup>22</sup> Figure 5 plots the proportions of cash (top panel), loans (middle panel), and securities (bottom panel) relative to assets. Mutual savings banks held lower proportions of vault cash and invested much more than national banks. Their ratio of cash to assets was usually below 1 percent, compared to national banks that held over 5 percent. National and mutual savings banks invested just over half of their assets in loans, but national banks slightly surpassed mutual savings banks during the 1880s. The decline in bonds at national banks during the 1880s seems to be driven by the relative

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<sup>21</sup> Deposits at mutual savings banks grew by \$1,299 million between 1870 and 1914 (about 450 percent) whereas national bank deposits only grew by \$402 million (about 385 percent).

<sup>22</sup> Payne and Davis (1956) provide a detailed analysis of the specific assets and loans of the Savings Bank of Baltimore before 1870. They also posit that most other mutual savings banks were similar.

profitability of note issue (Cagan 1963; Friedman and Schwartz 1963). National banks were the only type of bank that could profitably issue notes after the state bank note tax; however, in order to do so, they had to back them fully by government debt at 110 percent before 1900 and 100 percent thereafter. When bond prices were low, national banks thus expanded their portfolios and used them to issue bank notes. Yet when bond prices rose during the 1880s, national banks sold their bonds and reduced their circulation, explaining the drop in circulation seen in Figure 4. On the other hand, mutual savings banks used government debt not only as safe investments but also as secondary reserves. US debt could be quickly sold at relatively small discounts even during panics, allowing banks to meet depositor demand with minimal losses.

It is important to note that though the amount of loans in national and state banks was similar, the composition was different. Because they could not make mortgage loans, national banks tended to focus on commercial and call loans, whereas mutual savings banks were focused on mortgage and real estate loans. As described in the previous section, there were also differences among depositors: mutual savings banks served individual depositors while national banks were more devoted to commercial depositors. The two thus were more likely to have been complements rather than competitors. Indeed, Olmstead (1976) describes that several mutual savings banks had offices within the buildings of national banks, and mutual savings banks often deposited cash reserves in commercial banks.

Mutual savings banks attracted more deposits than national banks. However, questions remain as to whether they were better equipped to handle economic shocks and the extent to which they competed with national banks. The rest of the paper attempts to answer these questions using individual bank data.

### 3. Data

We combine annual balance sheet information of mutual savings banks, state banks, and national banks to address their relative importance in New England. The national bank information comes from Jaremski (2013b). Drawn from the Comptroller of the Currency's *Annual Report*, the data contain the balance sheet of every national bank 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 non-national bank information comes from the state banking reports of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont summarized in Table 1. A few years of data are missing when volumes were not published or have not survived, but as most of the missing information is idiosyncratic, the gaps should not bias the results.<sup>23</sup> The resulting database contains 44,230 observations for 773 national banks, 632 mutual savings banks, and 28 state commercial banks from 1870 through 1914.

To create consistent balance sheet measures, we make some adjustments when combining the various sources. First, we aggregate unique balance sheet items into more common items. For instance, time deposits, checking deposits, demand deposits, savings deposits, and certificates of deposits are merged into a single individual deposits measure. Second, we fill missing balance sheet observations using a linear trend to avoid years when only one type of bank was observed in a state. Third, closure is defined as the year after a bank's final balance sheet was published. Unfortunately, the state bank reports do not provide data on failures relative to voluntary liquidations and we thus cannot explicitly separate the two events. However, we do not believe this biases the sample in any significant way. A large portion of both national bank and mutual

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<sup>23</sup> Only Vermont's "missing reports" could be labeled as systematic, and even then it is only because the state did not publish information between 1870 and 1876.



savings bank closures were voluntary liquidations. Also, the majority of the voluntarily liquidations occurred during panics and periods of distress, suggesting they might have been close to failure.

While the bank data are annual, the county-level Census database assembled by Haines (2004) contains information each for decade. We assume that the census variables grew linearly over time in order to create annual estimates in-between each decennial observation, allowing us to match the frequency of the balance sheet data.<sup>24</sup>

## 4. Empirical Results

The historical narrative and aggregate data suggest that mutual savings banks were less likely to close and focused on different types of l than national banks. In order to test these hypotheses, we must control for a variety of other factors. This section, therefore, examines the closure rate of banks and the growth of deposits and loans using multivariate regression models.

### 4.1 Determinants of Bank Closure

We study bank closure using a multivariate proportional-hazard model with time varying covariates proposed by Cox (1972) and Cox and Oakes (1984).<sup>25</sup> The model takes account of a bank's specific entry and exit dates and models the probability of closure of bank  $i$  given survival to the period  $t$  as:

$$Closure_{i,t} = \lambda_0 \exp(a + \beta_1 Mutual_i + \beta_3 X_{i,t} + t_t + s_s) \quad (1)$$

where  $\lambda_0$  is the baseline hazard function common to all banks, and the exponential function captures the effects of the explanatory variables.  $Mutual_i$  is a dummy variable indicating

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<sup>24</sup> Since county boundaries did not significantly change in New England after 1860, no corrections need to be made before interpolating the values across time. The linear assumption also allows us to fill in manufacturing data for 1910 when it was not reported.

<sup>25</sup> Similar results are found when using a linear probability model.

whether the bank was a mutual savings bank. This captures whether a mutual savings bank with the same characteristics as a national bank would be significantly less likely to close in a given year.  $X_{i,t}$  is a vector of county-level variables including the number of national banks, number of state banks, whether the county had a clearinghouse<sup>26</sup>, logarithm of population, logarithm of farm value per person, logarithm of manufacturing capital per person, and fraction of the population living in an area of 2,500 people or more.<sup>27</sup> These variables control for environmental factors that could lead to bank closures and thus control for any differences in the locations of mutual savings banks and national banks. We also include fixed effects for each year ( $t_t$ ) to control for panics that placed all banks at risk and either state or county-fixed effects ( $s_s$ ) to control for local economic conditions that were constant across time.  $e_{i,t}$  is the error term.

While the model avoids the problem of specifying a specific hazard distribution, additional assumptions regarding the distribution would be necessary in order to calculate the marginal effect of each variable. Absent additional information, we are reluctant to make assumptions and instead report the raw coefficients. These provide information on the direction and relative size of an explanatory variable's effect on the probability of failure but not on its marginal effect.

The estimated coefficients in Table 2 indicate that mutual savings banks were significantly less likely to close than national banks regardless of whether state or county fixed effects are included in the model. Banks in urban counties are also significantly less likely to close, but the other county-level variables are not significant across the two specifications.

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<sup>26</sup> We also obtain whether a county had a clearinghouse in operation from Jaremski (2014). There is some variation in the presence of a clearinghouse. In the 66 New England counties, there were 5 clearinghouses in 1870, 9 in 1880, 10 in 1890, 13 in 1900, and 14 in 1900.

<sup>27</sup> All dollar values are deflated to a 1900 basis using Officer (2008).

The regressions show that mutual savings banks were less likely to close than national banks, but do not include balance sheet variables due to the composition differences between the types of banks. As previously described, the different requirements and limitations of mutual savings banks and national banks meant that they held different assets and served different clienteles. For instance, even if they had the same proportion of loans, mutual savings banks issued mortgages whereas national banks issued short-term term loans. This means that each bank type might have been more sensitive to particular characteristics despite having the same proportion.

We address this question by adding balance sheet data to the regression model and interacting them with the mutual savings bank dummy.<sup>28</sup> We have chosen several balance sheet variables based on historical studies of banking and the CAMELS measures used by modern bank regulators.<sup>29</sup>  $\ln(\text{Assets})$  measures bank size. The ratio of Cash to Assets is an index of bank liquidity, measuring the bank's capacity to meet bank runs in specie. The ratio of Loans to Assets measures asset diversity. The ratios of Due from Banks to Assets and Due to Banks to Assets measure the size of interbank relationships and the bank's sensitivity to the actions of other market participants. The model is now:

$$\text{Closure}_{i,t} = \lambda_0 \exp(a + \beta_1 \text{Mutual}_i + \beta_2 X_{i,t} + \beta_3 \text{Mutual}_i * X_{i,t} + \beta_4 Z_{i,t} + \beta_5 \text{Mutual}_i * Z_{i,t} + t_t + s_s) \quad (3)$$

where  $Z_{i,t}$  is the vector of balance sheet items and the rest of the variables retain their definitions.

In this case, the effect of the variable on a national bank will be through the coefficient on the level of that variable, while the effect of the variable on a mutual savings bank will be through

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<sup>28</sup> While we could yield similar results by separately regressing national banks and mutual savings banks, this process keeps location and year fixed effects constant across both bank types and allows for a clear reference to the charter bank coefficients.

<sup>29</sup> The structural differences in banks prevent common ratios such as capital to assets and circulation to assets, from being used in the regression as they would take values of zero for all mutual savings banks. The ratio of deposits to assets is also unusable as nearly all of a mutual savings bank's liabilities were individual deposits.

the sum of the coefficients on the level and on the interaction. For instance, the effect of urbanization on national bank closure would be  $\beta_2$  while the effect on mutual savings bank closure would be  $\beta_2 + \beta_3$ . For simplicity, the mutual savings bank coefficients on Table 3 already reflect this calculation.<sup>30</sup> The first two columns report the results from a single regression model with state-fixed effects, while the last two columns report the results from a single regression model with county-fixed effects.

The table suggests that national bank and mutual savings bank closure were similar in some ways and different in others. More assets stabilized both bank types whereas a larger proportion of Due to Banks or population generally increased the probability of closure. On the other hand, the main difference between national banks and mutual savings bank seems to be the effect of the ratio of loans to assets. The coefficient for mutual savings banks is always negative and significant while the coefficient for national banks is always positive and significant. The pattern is consistent with the type of loans banks were making. Mutual savings banks tended to make mortgage loans which were long-term and were backed by a tangible asset. Alternatively, national banks made commercial and call loans that while shorter term were tied to the securities market and were uncollateralized. The loan portfolios of mutual savings banks were thus less sensitive to panics whereas national banks were more sensitive.

The particularly large effect of Due to Banks to Assets shows the importance of the interbank network in propagating shocks during the period (Calomiris and Gorton 1991). The National Banking Acts required national banks to have correspondents in either a reserve city or a central reserve city, and mutual savings banks also placed a large amount of funds in

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<sup>30</sup> Table A1 in the Appendix provides the full model so that specific coefficients can be seen.

surrounding commercial banks.<sup>31</sup> In most years, the transfer allowed country banks to earn a high return and correspondents to have additional investment funds. However, during panics, banks need liquidity at the exact same time, which meant country banks were trying to withdraw from correspondents at the same time that correspondents themselves needed cash to meet deposit demand. While statistically insignificant, the coefficients on the ratio of Due from Banks to Assets also weakly indicate this problem as mutual savings bank closures have a positive correlation with the ratio and national bank closures have a negative response. Mutual savings bank's deposits in national banks also often received higher interest rates than regular individual deposits, but the mutual savings banks would still be on the hook for the risky behavior of national banks.

The remaining factors differ across the two bank types, but are only statistically significant for one type or one specification. Mutual savings banks are more likely to close when competing with additional mutual savings banks, but national banks are not sensitive to either bank type. Urbanization seemed to have benefitted national banks but not mutual savings banks. National banks in counties with more farm output are less likely to close when controlling for state fixed effects, whereas mutual savings banks in counties with more farm output are more likely to close when controlling for county-fixed effects. National banks are also more sensitive to holding cash, while the positive coefficient is not significant for mutual savings banks.

#### *4.2 Determinants of Bank Growth*

The previous literature has argued that mutual savings banks were more heavily involved in agriculture and real estate lending while national banks were more heavily involved in

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<sup>31</sup> It is important to note that only a handful of mutual savings banks ever acted as correspondents. As such, it is likely that these banks were somewhat different from others thus explaining the particularly large coefficient.

manufacturing and commercial lending. However, does this bear out in the data? To put it another way, were mutual savings banks and national banks competing for different depositors and making different investments? We address this question by examining the determinants of the changes in the logarithms of deposits and loans (called  $\Delta Y_{i,t}$ ). The full specification is:

$$\Delta Y_{i,t} = a + \beta_1 \text{Mutual}_i + \beta_2 X_{i,t} + \beta_3 Y_{i,t-1} + \gamma \text{Age}_{i,t} + t_t + s_s + e_{i,t} \quad (4)$$

where  $\text{Age}_{i,t}$  is a vector of dummy variables for a bank's age, and the variables retain their previous definitions. We include the lagged value of the dependent variable ( $Y_{i,t-1}$ ) in order to account for larger banks having smaller percentage growth rates by construction.<sup>32</sup>

The results in Table 4 confirm that loans and deposits grew much faster in mutual savings banks than in national banks. After controlling for location and age, the growth of mutual savings banks was about 31 percent higher for deposits and about 5.5 percent higher for loans. If anything, the county-fixed effects make the results even stronger.

There does not seem to have been any evidence of crowding out. The number of surrounding national banks and mutual savings banks were positively and significantly correlated with deposit growth. The number of savings banks is significantly and positively correlated with loan growth, but the coefficient on the number of national banks loses its statistical significance when county-fixed effects are added. The presence of banks in an area thus opened up opportunities for other banks.

Population is also significantly correlated with both deposit and loan growth. A 1 percent increase in population increased deposit growth between 0.038 and 0.124 percent and loan growth between 0.035 and 0.129 percent. The large coefficient increase when county-fixed effects are included suggests that population growth is particularly important. The remaining

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<sup>32</sup> It is also likely that smaller banks would work harder and have more flexibility to attract business away from the larger banks.

county-level variables are not consistently significant. When county-fixed effects are included, farm and manufacturing output are positively correlated with both deposit and loan growth, and the clearinghouse dummy is negatively correlated with deposit growth.

Mutual savings banks grew faster than national banks, but the results do not shed light on the causes of that differential growth. To test whether mutual savings banks received funds from and distributed funds to different individuals, we again interact the mutual savings bank dummy with the county-level variables. The model is now:

$$\Delta Y_{i,t} = a + \beta_1 Mutual_{i,t} + \beta_2 X_{i,t} + \beta_3 Mutual_{i,t} * X_{i,t} + \beta_4 Y_{i,t-1} + \gamma_t Age_{i,t} + t_t + s_s + e_{i,t} \quad (5)$$

where the variables retain the previous definitions.

As before, Table 5 lists the separate coefficients for national banks and mutual savings banks where each pair of columns is from a single regression.<sup>33</sup> There are many similarities amongst the results. Deposit and loan growth at both bank types are positively correlated with population and the number of savings banks. The number of national banks is also correlated with deposit growth for both bank types.

Most of the coefficient differences between national bank and mutual savings bank deposit growth are inconsistent. The coefficient on manufacturing output is the only variable that retains its sign and significance across both specifications. Manufacturing increases national bank deposit growth but not mutual savings banks. Urbanization increases mutual savings bank deposit growth in the state fixed effects regressions, but reduces deposit growth for national banks in the county fixed effects regressions.

On the other hand, the coefficient differences for loan growth are quite stark. Mutual savings bank growth was reliant upon agriculture and urban populations, whereas national bank growth was reliant upon manufacturing output. The fraction urban is positively correlated with

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<sup>33</sup> Table A2 in the Appendix provides the full set of coefficients for the models.

mutual savings bank loan growth and negatively correlated with national bank loan growth. The amount of farm output is positively correlated with mutual saving bank loan growth, whereas the manufacturing output is positively correlated with national bank loan growth. The results thus reflect the type of business reportedly done by each bank.

The response to clearinghouses is one constant difference between the bank types for both deposits and loans growth. Clearinghouses increase growth in the state fixed effects regressions and reduce mutual savings bank deposit growth in the county-fixed effect regressions. Because mutual savings banks did not become clearinghouse members, they would not have greatly benefited from their growth. For national banks, clearinghouse membership would have reduced the amount of reserves needed to clear debt every day and made checking accounts more attractive (Jaremski 2014).

The results indicate mutual savings banks and national banks extended loans to different types of customers. Mutual savings banks helped families and farmers buy land and build homes, whereas national banks focused on manufacturers and businesses. At the same time, deposit growth in both bank types seems to be driven by similar local economic and population growth.

## **5. Conclusion**

The paper traces out the path of mutual savings banks in New England during the National Banking System. While the foundational accounts of the period by Friedman and Schwartz (1963), James (1978), and White (1983) focus on the competition between state and national banks, we show that mutual savings banks made up a sizable portion of the New England financial system. Looking at the individual balances sheets of all banks in the region, we show that mutual savings banks grew faster and better avoided the period's panics than



national banks. However, the two bank types do not seem to have been in direct competition. Rather, mutual savings bank growth was correlated with agriculture and urbanization whereas national bank growth was correlated with manufacturing. Moreover, the mutual savings bank system funneled significant funds into national banks in the form of interbank deposits.

The results suggest that mutual savings banks might have offered a more stable alternative to state commercial banks that competed with national banks in other regions. The low requirements and restrictions of state commercial banks allowed them to fill the need for mortgage providers in rural and agricultural areas, but they also led to a significantly higher closure rate than national banks. The fact that state commercial banks did not return to New England after the state bank note tax also suggests that mutual savings banks might have offered similar services and filled the void. While the mutual savings bank structure might have allowed it to withstand panics, more detailed data is needed to untangle whether they could have effectively replaced state commercial banks. First, the data are not able to separate between the types of loans and deposits at banks. We thus are only able to comment on the correlations of loan and deposit growth with the various sectors of the economy and cannot measure the extent that the two types of institutions were similar. Second, as New England had very few state banks we cannot test whether having a mutual savings bank would induce the same level of economic growth as having a state commercial bank. In general, bank closures retard growth, but there is still a tradeoff between growth and risk. For instance, the restrictions on the types of assets held by mutual savings banks allowed them to avoid panics, but might also have slowed economic development on the western frontier. These types of questions are thus best left to more targeted studies of mutual savings banks and state commercial bank records.

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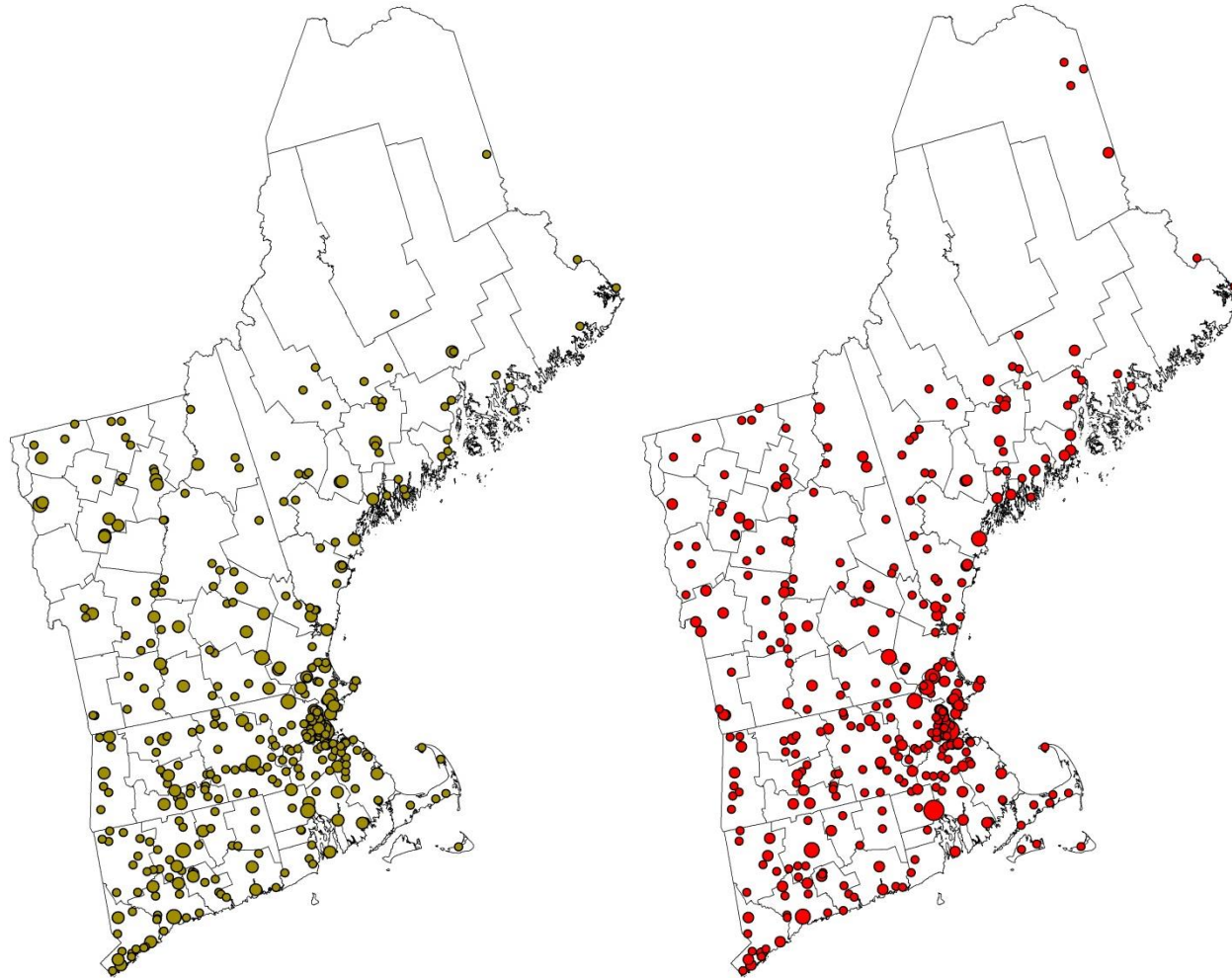
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**Figure 1: Location of Banks in 1914**

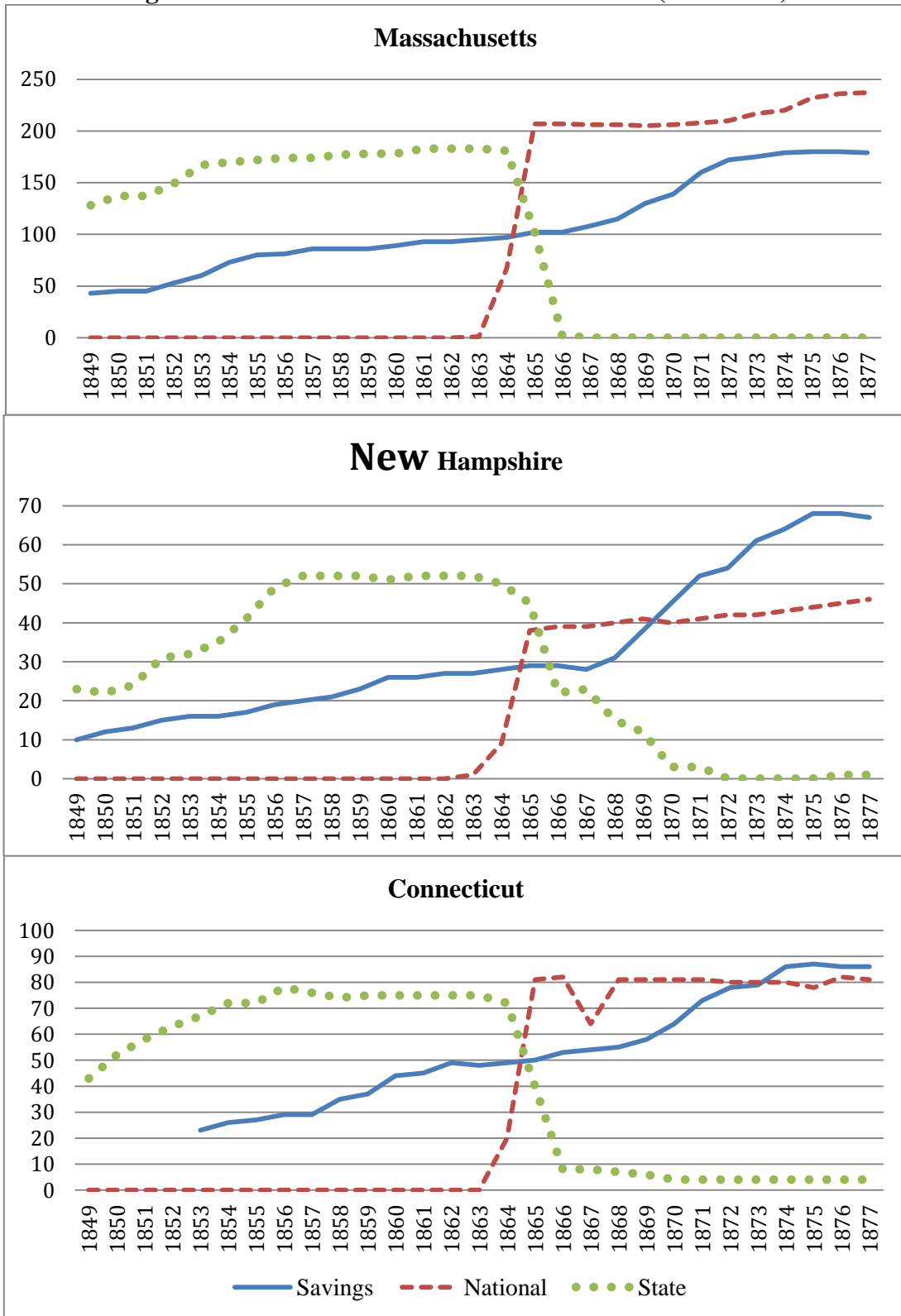
**Mutual Savings Banks**

**National Banks**



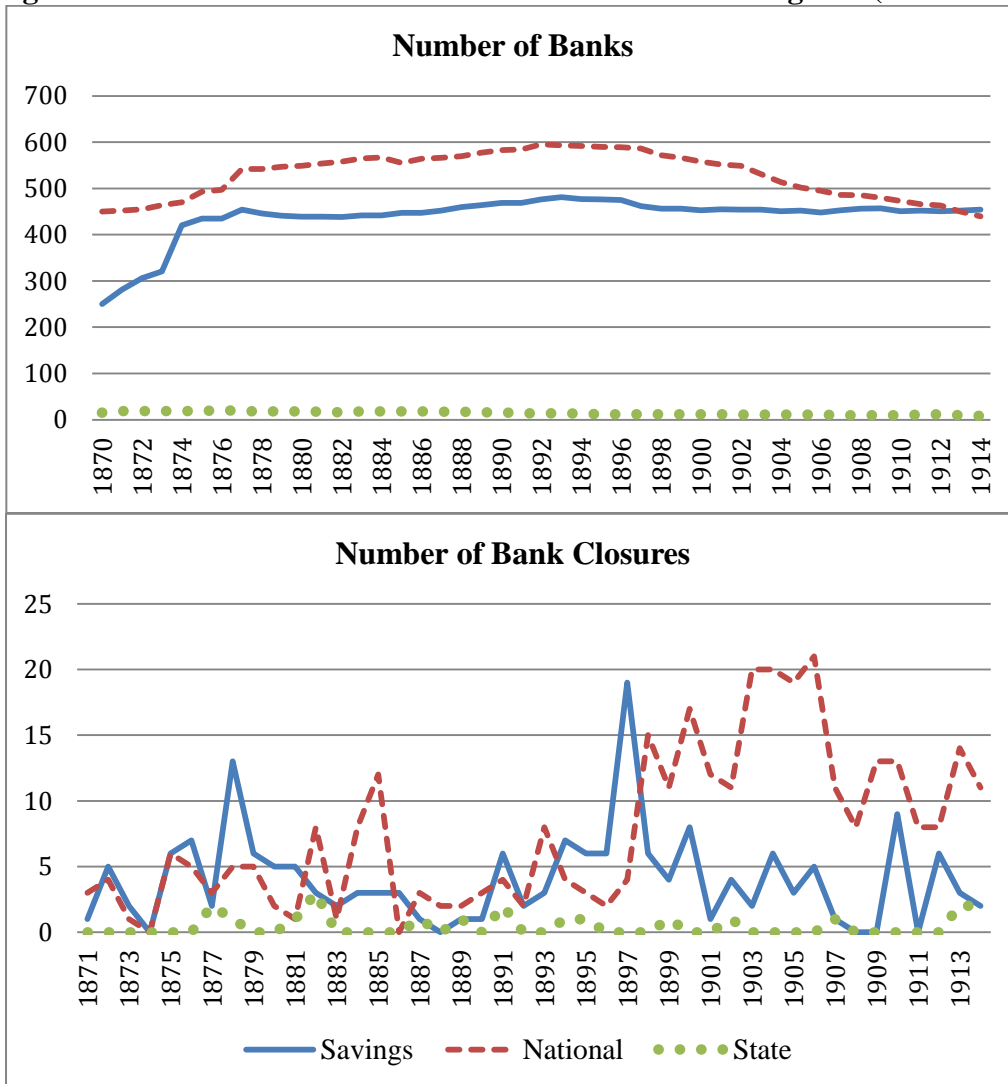
Notes: Maps provide the location of all mutual savings banks and national banks by city. County boundaries are obtained from Minnesota Population Center (2004).

**Figure 2: Number of Banks over the Civil War (1849-1877)**



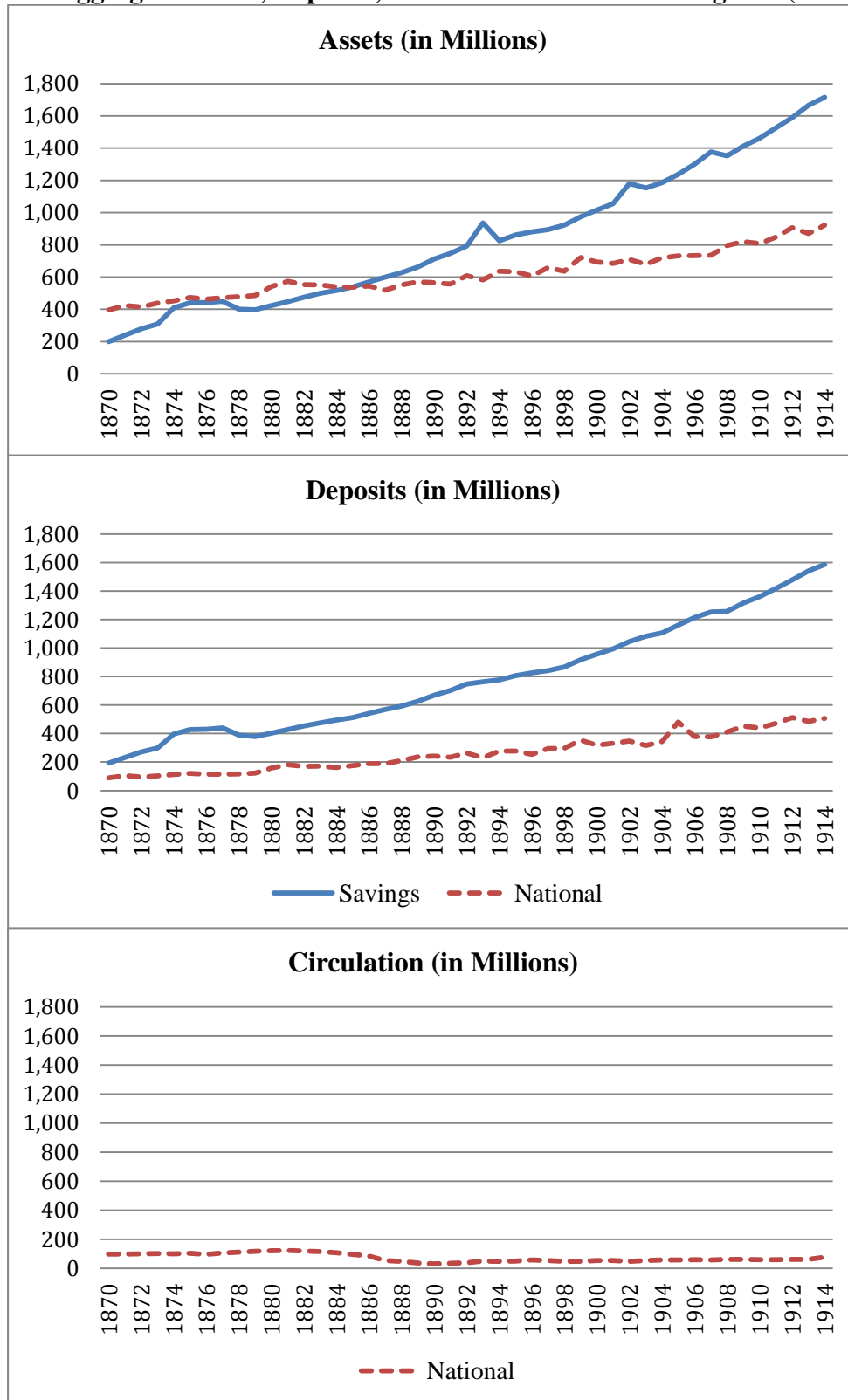
Notes: Figures provide the number of mutual savings banks, state banks, and national banks in each year.

**Figure 3: Number of Banks and Bank Closures in New England (1870-1914)**



Notes: Figures provide the number of banks and number of bank closures by bank type in each year.

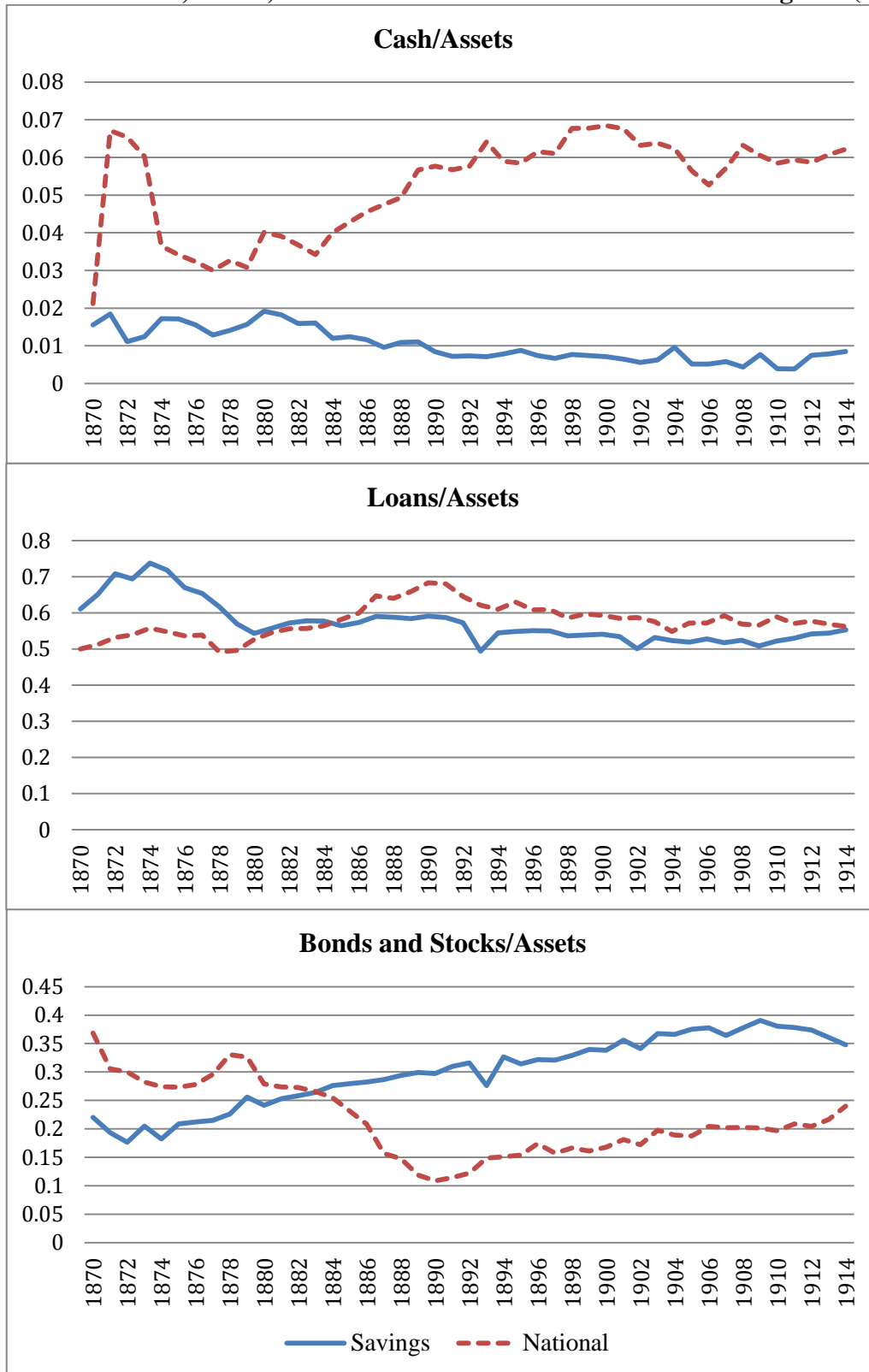
**Figure 4: Aggregate Assets, Deposits, and Circulation In New England (1870-1914)**



Notes: Figures provide the aggregate number of assets, deposits, and circulation broken down by bank type.



**Figure 5: Ratios of Cash, Loans, and Bonds and Stocks to Assets In New England (1870-1914)**



Notes: Figures provide the ratios of cash, loans, and bonds and stocks to assets broken down by bank type.

**Table 1: Sources and Years of Available Data**

<b>State</b>	<b>Start Date</b>	<b>Missing Year(s)</b>	<b>Source</b>
Connecticut	1870	None	<i>Report of the Bank Commissioners to the Governor</i>
Maine	1870	1910*	<i>Annual Report of the Bank Examiner of the State of Maine</i>
Massachusetts	1870	1873	<i>Annual Report of the Bank Commissioner</i>
New Hampshire	1870	None	<i>Annual Report of the Board of Bank Commissioners of the State of New Hampshire</i>
Rhode Island	1870	1871, 1882, 1887, 1889	<i>Annual Statement Exhibiting the Condition of the State Banks of Rhode Island</i>
Vermont	1877**	None	<i>Annual Report of the Inspector of Finance Showing the Condition of Savings Banks and Trust Companies in the State of Vermont</i>

Notes: Table contains the years and sources of state bank and mutual savings bank data. \*Maine's report in 1910 does not contain individual balance sheets. \*\*Vermont did not publish a report between 1870 and 1877.

**Table 2: Determinants of Bank Closure (1870-1914)**

	<b>Probability of Closing</b>	
	(1)	(2)
Mutual Savings Bank	-0.389*** [0.100]	-0.409*** [0.101]
# of National Banks	-0.007 [0.008]	0.011 [0.009]
# of Savings Banks	0.032 [0.029]	0.022 [0.032]
Clearinghouse in County	-0.091 [0.158]	-0.700 [0.482]
Ln(Population)	0.064 [0.103]	1.882*** [0.538]
Fraction Urban	-0.901** [0.386]	-1.953* [1.004]
Ln(Farm Output PC)	-0.363*** [0.089]	0.289 [0.389]
Ln(Mfg. Output PC)	0.028 [0.138]	-0.142 [0.314]
Location Fixed Effects	State	County
Year Fixed Effects	Yes	Yes
Observations	42,580	42,580
R-squared	0.0386	0.0567

Notes: Table presents the results of a Cox proportional Hazard model. The dependent variable is whether or not the bank closed in the following year. Each observation is a bank-year. Dollar values are deflated to 1900 using Officer (2008). Robust standard errors are provided in brackets. \* denotes significance at 10%; \*\* at 5% level and \*\*\* at 1% level.

**Table 3: Determinants of Bank Closure By Bank Type (1870-1914)**

	Probability of Closing			
	With State Fixed Effects		With County Fixed Effects	
	National	Savings	National	Savings
# of National Banks	-0.009 [0.008]	0.012 [0.02]	0.011 [0.010]	0.037* [0.021]
# of Savings Banks	0.022 [0.036]	0.15** [0.064]	0.019 [0.040]	0.163** [0.065]
Clearinghouse in County	0.089 [0.187]	-0.146 [0.292]	-0.708 [0.501]	-0.927* [0.547]
Ln(Population)	0.224* [0.129]	-0.165 [0.155]	2.091*** [0.561]	1.78*** [0.574]
Fraction Urban	-1.500*** [0.516]	0.601 [0.53]	-3.362*** [1.081]	-1.277 [1.122]
Ln(Farm Output PC)	-0.447*** [0.112]	0.107 [0.179]	0.125 [0.406]	0.813* [0.425]
Ln(Mfg. Output PC)	0.218 [0.182]	0.107 [0.179]	0.045 [0.335]	0.813 [0.425]
Ln(Assets)	-0.429*** [0.088]	-0.467*** [0.049]	-0.463*** [0.091]	-0.517*** [0.052]
Due to Banks/Assets	2.546*** [0.790]	17.812*** [7.011]	2.428*** [0.816]	15.38** [7.136]
Loans/Assets	0.876* [0.472]	-1.624*** [0.363]	0.859* [0.483]	-1.712*** [0.372]
Due from Banks/Assets	-0.173 [1.035]	0.843 [0.614]	-0.179 [1.050]	0.75 [0.642]
Cash/Assets	5.628** [2.531]	0.863 [0.683]	4.949* [2.620]	0.829 [0.722]
Location Fixed Effects		State		County
Year Fixed Effects		Yes		Yes
Observations		42,580		42,580
R-squared		0.0771		0.0973

Notes: Table presents the results of a Cox proportional Hazard model. The dependent variable is whether or not the bank closed in the following year. Each observation is a bank-year. Each two column set is a single regression. The national bank values are coefficient on the level of the variable, while the mutual savings bank values are the summation of the coefficients on the level and interaction of the variable. Dollar values are deflated to 1900 using Officer (2008). Robust standard errors are provided in brackets. \* denotes significance at 10%; \*\* at 5% level and \*\*\* at 1% level.

**Table 4: Determinants of Balance Sheet Growth (1870-1914)**

	Change in Ln(Deposits)		Change in Ln(Loans)	
	(1)	(2)	(3)	(4)
Mutual Savings Bank	0.303*** [0.044]	0.318*** [0.043]	0.053*** [0.010]	0.056*** [0.010]
# of National Banks	0.002*** [0.001]	0.003*** [0.001]	0.001 [0.001]	0.001 [0.001]
# of Savings Banks	0.032*** [0.006]	0.035*** [0.006]	0.012*** [0.002]	0.013*** [0.002]
Clearinghouse in County	0.011 [0.015]	-0.042*** [0.014]	0.005 [0.008]	-0.010 [0.009]
Ln(Population)	0.038*** [0.011]	0.124*** [0.029]	0.035*** [0.008]	0.129*** [0.021]
Fraction Urban	0.055 [0.045]	-0.196*** [0.055]	0.033 [0.021]	0.002 [0.026]
Ln(Farm Output PC)	0.022* [0.012]	0.011 [0.020]	-0.006 [0.006]	0.022** [0.011]
Ln(Mfg. Output PC)	0.012 [0.011]	0.049*** [0.016]	0.005 [0.008]	0.030** [0.012]
Location Fixed Effects	State	County	State	County
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	42,173	42,173	42,173	42,173
R-squared	0.0809	0.0852	0.0828	0.087

Notes: Table presents the results of an OLS regression. The dependent variable is defined at the top of the column. Each observation is a bank-year. The lag of the dependent variable is also included in each model. Dollar values are deflated to 1900 using Officer (2008). Robust standard errors are provided in brackets. \* denotes significance at 10%; \*\* at 5% level and \*\*\* at 1% level.

**Table 5: Determinants of Balance Sheet Growth By Bank Type (1870-1914)**

	Change in Ln(Deposits)				Change in Ln(Loans)			
	With State Fixed Effects		With County Fixed Effects		With State Fixed Effects		With County Fixed Effects	
	National	Savings	National	Savings	National	Savings	National	Savings
# of National Banks	0.002** [0.001]	0.003* [0.002]	0.002** [0.001]	0.003* [0.002]	0.001 [0.001]	-0.001 [0.001]	0.001 [0.001]	-0.001 [0.001]
# of Savings Banks	0.032*** [0.005]	0.033*** [0.011]	0.035*** [0.005]	0.037*** [0.01]	0.010*** [0.002]	0.019*** [0.004]	0.010*** [0.002]	0.020*** [0.004]
Clearinghouse in County	0.027 [0.017]	-0.009 [0.025]	-0.025 [0.020]	-0.063*** [0.023]	0.024*** [0.008]	-0.019 [0.014]	0.010 [0.010]	-0.036** [0.014]
Ln(Population)	0.040*** [0.012]	0.034** [0.016]	0.129*** [0.030]	0.117*** [0.031]	0.027*** [0.008]	0.047*** [0.011]	0.120*** [0.021]	0.143*** [0.024]
Fraction Urban	-0.037 [0.047]	0.154** [0.071]	-0.292*** [0.069]	-0.079 [0.06]	-0.052** [0.022]	0.129*** [0.034]	-0.087*** [0.032]	0.104*** [0.035]
Ln(Farm Output PC)	0.015 [0.013]	0.028 [0.018]	0.006 [0.023]	0.016 [0.023]	-0.022*** [0.007]	0.018* [0.01]	0.005 [0.011]	0.046*** [0.014]
Ln(Mfg. Output PC)	0.035** [0.014]	-0.015 [0.016]	0.073*** [0.018]	0.02 [0.019]	0.018** [0.008]	-0.009 [0.011]	0.044*** [0.011]	0.015 [0.015]
Location Fixed Effects	State		County		State		County	
Year Fixed Effects	Yes		Yes		Yes		Yes	
Observations	42,173		42,173		42,173		42,173	
R-squared	0.0812		0.0855		0.0834		0.0879	

Notes: Table presents the results of an OLS regression. The dependent variable is defined at the top of the column. Each observation is a bank-year. Each two column set is a single regression. The national bank values are coefficient on the level of the variable, while the mutual savings bank values are the summation of the coefficients on the level and interaction of the variable. The lag of the dependent variable is also included in each model. Dollar values are deflated to 1900 using Officer (2008). Robust standard errors are provided in brackets. \* denotes significance at 10%; \*\* at 5% level and \*\*\* at 1% level.

**Table A1: Determinants of Bank Closure By Bank Type (1870-1914)**

	Probability of Closing	
	(1)	(2)
Mutual Savings Bank	4.889* [2.514]	3.174 [2.677]
# of National Banks	-0.009 [0.008]	0.011 [0.010]
# of Savings Banks	0.022 [0.036]	0.019 [0.040]
Clearinghouse in County	0.089 [0.187]	-0.708 [0.501]
Ln(Population)	0.224* [0.129]	2.091*** [0.561]
Fraction Urban	-1.500*** [0.516]	-3.362*** [1.081]
Ln(Farm Output PC)	-0.447*** [0.112]	0.125 [0.406]
Ln(Mfg. Output PC)	0.218 [0.182]	0.045 [0.335]
Ln(Assets)	-0.429*** [0.088]	-0.463*** [0.091]
Due to Banks/Assets	2.546*** [0.790]	2.428*** [0.816]
Loans/Assets	0.876* [0.472]	0.859* [0.483]
Due from Banks/Assets	-0.173 [1.035]	-0.179 [1.050]
Cash/Assets	5.628** [2.531]	4.949* [2.620]
# of National Banks*Saving Bank	0.021 [0.021]	0.027 [0.021]
# of Savings Banks*Saving Bank	0.128* [0.072]	0.144** [0.073]
Clearinghouse in County*Saving Bank	-0.234 [0.340]	-0.220 [0.365]
Ln(Population)*Saving Bank	-0.390** [0.188]	-0.311* [0.187]
Fraction Urban*Saving Bank	2.101*** [0.696]	2.086*** [0.748]
Ln(Farm Output PC)*Saving Bank	0.554*** [0.203]	0.689*** [0.221]
Ln(Mfg. Output PC)*Saving Bank	-0.311 [0.226]	-0.208 [0.249]
Ln(Assets)*Saving Bank	-0.038 [0.098]	-0.053 [0.102]
Due to Banks/Assets*Saving Bank	1.017 [1.203]	0.929 [1.230]
Loans/Assets*Saving Bank	-2.500*** [0.597]	-2.570*** [0.609]
Due from Banks/Assets*Saving Bank	15.266** [7.058]	12.952* [7.184]
Cash/Assets*Saving Bank	-4.764* [2.634]	-4.121 [2.719]

Location Fixed Effects	State	County
Year Fixed Effects	Yes	Yes
Observations	42,580	42,580
R-squared	0.0386	0.0567

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Notes: Table presents the results of an OLS regression. The dependent variable is whether or not the bank closed in the following year. Each observation is a bank-year. Dollar values are deflated to 1900 using Officer (2008). Robust standard errors are provided in brackets. \* denotes significance at 10%; \*\* at 5% level and \*\*\* at 1% level.



**Table A2: Determinants of Balance Sheet Growth By Bank Type (1870-1914)**

	Change in Ln(Deposits)		Change in Ln(Loans)	
	(1)	(2)	(3)	(4)
Mutual Savings Bank	0.512** [0.237]	0.610** [0.250]	-0.253* [0.141]	-0.281* [0.144]
# of National Banks	0.002** [0.001]	0.002** [0.001]	0.001 [0.001]	0.001 [0.001]
# of Savings Banks	0.032*** [0.005]	0.035*** [0.005]	0.010*** [0.002]	0.010*** [0.002]
Clearinghouse in County	0.027 [0.017]	-0.025 [0.020]	0.024*** [0.008]	0.010 [0.010]
Ln(Population)	0.040*** [0.012]	0.129*** [0.030]	0.027*** [0.008]	0.120*** [0.021]
Fraction Urban	-0.037 [0.047]	-0.292*** [0.069]	-0.052** [0.022]	-0.087*** [0.032]
Ln(Farm Output PC)	0.015 [0.013]	0.006 [0.023]	-0.022*** [0.007]	0.005 [0.011]
Ln(Mfg. Output PC)	0.035** [0.014]	0.073*** [0.018]	0.018** [0.008]	0.044*** [0.011]
# of National Banks*Savings Bank	0.001 [0.002]	0.001 [0.002]	-0.001 [0.001]	-0.001 [0.001]
# of Savings Banks*Savings Bank	0.002 [0.009]	0.003 [0.008]	0.009*** [0.003]	0.009*** [0.004]
Clearinghouse in County*Savings Bank	-0.036 [0.030]	-0.038 [0.031]	-0.043*** [0.016]	-0.046*** [0.016]
Ln(Population)*Savings Bank	-0.006 [0.018]	-0.012 [0.018]	0.021** [0.010]	0.024** [0.010]
Fraction Urban*Savings Bank	0.191** [0.075]	0.213*** [0.071]	0.181*** [0.039]	0.191*** [0.039]
Ln(Farm Output PC)*Savings Bank	0.013 [0.021]	0.011 [0.021]	0.041*** [0.011]	0.041*** [0.011]
Ln(Mfg. Output PC)*Savings Bank	-0.050*** [0.017]	-0.053*** [0.017]	-0.027** [0.011]	-0.029*** [0.011]
Location Fixed Effects	State	County	State	County
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	42,173	42,173	42,173	42,173
R-squared	0.0812	0.0855	0.0834	0.0879

Notes: Table presents the results of an OLS regression. The dependent variable is defined at the top of the column. Each observation is a bank-year. The lag of the dependent variable is also included in each model. Dollar values are deflated to 1900 using Officer (2008). Robust standard errors are provided in brackets. \* denotes significance at 10%; \*\* at 5% level and \*\*\* at 1% level.