NBER WORKING PAPER SERIES

WHY DOES FINANCIAL DEVELOPMENT MATTER? THE UNITED STATES FROM 1900 TO 1940

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Working Paper 9551
http://www.nber.org/papers/w9551

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
March 2003

The authors are grateful to Ben Bernanke, Charles Calomiris, William Collins, David Cutler, Angus Deaton, Esther Duflo, Claudia Goldin, Christina Paxson, Hélène Rey, and Cecilia Rouse for invaluable conversations and comments and to workshop participants at Columbia University, The World Bank, the Federal Reserve Bank of Philadelphia, the NEUDC Conference, the London School of Economics, University College London, and Princeton University for their suggestions. Dehejia thanks the National Bureau of Economic Research and the Industrial Relations Section, Princeton University, for their hospitality while working on this project. The views expressed herein are those of the authors and not necessarily those of the National Bureau of Economic Research.

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NBER Working Paper No. 9551
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JEL No. E5, J82, N1, N2, O16

ABSTRACT

There is a substantial literature arguing that financial development contributes to economic growth. In this paper, we contribute to this literature by examining the effect of state-level banking regulation on financial development and economic growth in the United States from 1900 to 1940. Specifically, we make three contributions. First, drawing on the banking history literature, we carefully control for factors that could confound a causal interpretation of the effect of financial development on growth. Second, drawing on available data for this period, we examine the pathways through which financial development can affect growth; in particular, we examine the impact of these laws on a range of farm, manufacturing, and human capital outcomes. Third, we document that not all forms of financial development have a positive effect on economic growth. In particular indiscriminate lending can negatively impact economic growth.

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1. Introduction

There is a substantial literature arguing that financial development contributes to economic growth. In this paper, we contribute to this literature by examining the effect of state-level banking regulation on financial development and economic growth in the United States from 1900 to 1940. Specifically, we make three contributions. First, drawing on the banking history literature, we carefully control for factors that could confound a causal interpretation of the effect of financial development on growth. Second, drawing on available data for this period, we examine the pathways through which financial development can affect growth; in particular, we examine the impact of these laws on a range of farm, manufacturing, and human capital outcomes. Third, we document that not all forms of financial development have a positive effect on economic growth. In particular indiscriminate lending can negatively impact economic growth.

The questions we address are important for three reasons. First, the literature on the link between financial development and growth is large and influential. It includes papers in economic history such as Cameron (1967), Rousseau and Wachtel (1998), and Sylla (1969, 1972, 2002).[1] It also includes papers in the more recent financial development literature such as King and Levine (1993), Levine and Zervos (1998), and Rajan and Zingales (1998). Yet much of this previous literature has been cross-country empirical work which lacked a strategy to control for selection and endogeneity. Second, the period 1900 to 1940 in the United States has received much attention from economic historians and labor economists (see inter alia Katz and Goldin [1997, 1998a,b, 1999a,b], Angrist and Krueger [1991], Acemoglu and Angrist [1999], and Lleras-Muney [2002]). This literature has focused on the expansion of education, in particular higher education, during this period, and the role of compulsory schooling laws in increasing school attendance. Our paper complements this literature by examining another dimension of policy in this formative period for the United States, and its impact on the components of growth. Third, the question we examine is relevant for policymaking. The United States from 1900 to 1940 faced policy questions which are similar to those faced by many less-

[1] Indeed, the literature linking financial development and growth includes many earlier contributions, such as Gurley and Shaw (1960), Goldsmith (1969), McKinnon (1973), and Shaw (1973); see the discussion in Mehrling (1997).

developed countries today. The impact of banking regulation on growth is a question of paramount importance.

The United States from 1900 to 1940 provides an ideal setting in which to examine the effect of financial development on growth. There were two significant sources of variation in banking regulation among states: state-bank branching and state deposit insurance. The banking literature has documented numerous changes in regulation over this period (54 changes in branching, and 16 changes in state deposit insurance; see Table 1) and has considered why these laws were adopted (Calomiris [1992, 2000], Wheelock [1992], Wheelock and Kumbhakar [1995], Wheelock and Wilson [1995], and White [1981, 1982, 1983]). Our strategy in this paper is first to examine the impact of changes in banking regulation on financial development, in particular the credit activity of state banks, and then to examine the impact of these regulations on economic growth. In particular, we examine whether the pattern of the effects of deposit insurance and branching is consistent with the effect of these laws on financial development. We extend the previous empirical findings of the banking literature by establishing the link between banking regulation and financial development in a broader time period and in a panel data (rather than state cross-sectional) setting and by linking these regulations to their impact on growth.

A central issue is whether our results can be thought of as causal. We have two strategies for addressing this issue. First, we control (to the extent possible) for variables identified by the banking history literature as important for explaining the adoption of the laws. These include time and year fixed effects, but also a range of time-varying controls. Second, we exploit the interaction between the agricultural price crash of 1920 and the effect of deposit insurance to provide an additional source of variation in the effect of banking laws. As has been noted by Calomiris, White, and Wheelock, deposit insurance had a positive effect on the growth of credit in the booming agricultural economy prior to 1920, but had exactly the opposite effect subsequent to the agricultural price crash of 1920. To the extent that the adoption of the laws could not have anticipated this event, the causal nature of our results is more credible. In the absence of true randomization, selection bias and endogeneity cannot be categorically ruled out, but we try to control for as many sources of bias as possible.

A number of recent papers have used macroeconometric techniques to assess the relationship between financial development and growth (Beck, Levine, and Loyza [2000] using cross-country growth regressions and instrumenting for financial development with origin of the legal system; and Rousseau [2002] using Granger causality) and institutions and economic growth (Acemoglu, Johnson, and Robinson [2000]). Although these papers make valuable contributions, we believe that our strategy has its own merits, because we consider two sources of variation in financial development and allow them to have different effects on growth and also because our identification comes from a source of variation that has been widely studied both historically and theoretically. Our work is complementary to some recent papers in the literature. Jayaratne and Strahan (1996) examine the link between state bank-branching regulation (during the period 1972 - 1992) and economic growth. As in the present paper, they use state and year fixed effects to soak up many sources of selection, and argue that the timing of the adoption of the laws was not related to past growth. Our paper differs in examining two additional sources of variation (deposit insurance and its interaction with the agricultural price crash), by focusing on a time period in which state banks were a more important component of the banking system,[2] and by examining a more disaggregated set of outcomes. Burgess and Pande (2002) examine the effect of policy-induced variation in the location of banks in India from 1961 to 1999 on rural poverty and wages.

Overall our results show that these laws had a strong effect on financial development: credit grew more rapidly in states with deposit insurance prior to 1920 and in states with branching, and more slowly in states with deposit insurance after 1920. The laws in turn had large and significant effects on farms (the number and size of farms, the use of machinery, and the value of crops), on manufacturing (employment, wages, and value added), and on human capital (schooling and child labor). In particular, we show that financial development through deposit insurance and branching contributed to a consolidation of the farming sector (in terms of fewer and larger farms), an expansion in the use of machinery on farms, and an expansion of manufacturing activity. Our results also suggest that these two policies brought about a significant decrease in child labor,

[2] White (1997) documents that "In 1900 commercial banks held approximately two-thirds of the assets of all financial intermediaries (…) today commercial banks hold less than one third of these assets".

and (although more equivocally) an increase in schooling. Finally our results give us insights about how financial development matters. Regulation that lowers the cost of lending, such as branching, has an unequivocally positive effect on economic performance. On the other hand, our results for deposit insurance suggest that regulation that encourages lending without concern for quality of loans can have a detrimental effect on growth.

The paper is organized as follows. Section 2 describes the banking regulations that we will use in the analysis. Section 3 describes our empirical strategy and the data. Section 4 examines the political economy that resulted in the passage of these regulations. Section 5 presents our main fixed effects results. Section 6 presents a number of specification checks. Section 7 discusses the plausibility of our results, and Section 8 concludes.

2. State Banking Regulations

This section briefly describes the banking laws that we study, and the anticipated impact of these laws. Banking in the United States has been regulated at both the state and the federal level since the National Banking Act of 1864. Banks can choose to incorporate either as state or national banks and are therefore subject to different regulations governing, for example, their reserve ratios, minimum capital requirements, and portfolio of loans. In this paper we concentrate on two areas of state regulation: branching and deposit insurance.

Branching laws allow banks to establish multiple offices within a state. National banks were largely prohibited from branching until the Glass-Steagall Act of 1933: it permitted national banks to branch within states that allowed state banks to branch (Bradford [1940, p. 20]).[3] The states were free to set branching regulations for state banks. At the beginning of our sample period, branching was permitted in 17 states. Economists have long advocated the benefits of branching. Sprague (1902, cited in White

[3] This prohibition was weakened on three occasions. In 1918, the Consolidation Act allowed national banks that merged with state banks to retain their branches (Bradford [1940, p. 10]; White [1983, p. 161]). In 1923, national banks were allowed to establish "additional offices" for the purpose of receiving deposits and cashing checks (Westerfield [1931, p. 24]). In 1927 the McFadden Act allowed state banks to retain their branches if they joined the Federal Reserve system (Bradford [1940 p. 15]; White [1983 p. 164]). The

[1981]) argued that branching provides a form of insurance for banks; by operating across different geographic locations, a bank can diversify the risk from idiosyncratic local shocks. Calomiris (1992, p. 302) documents that state banking systems that allowed branching were effectively able to withstand a wide range of shocks. Branching also allows banks to exploit economies of scale in banking services. Finally, it can be argued that branching also increases the efficiency of banks by facilitating entry (see for example Jayaratne and Strahan [1998]). The predicted effect of branching therefore is that, all else equal, allowing banks to branch will result in increased credit availability, and that this in turn will contribute to economic growth.

Deposit insurance laws insure depositors in case of bank default. Banks contribute to a fund that protects deposits and also can extend credit to the bank. Whether deposit insurance is desirable is a subject of much debate in economics. Deposit insurance creates a strong moral hazard problem (see White [1983, pp. 194, 207], Wheelock [1992], Wheelock and Kumbhakar [1995] and Wheelock and Wilson [1995]). Evidence presented in Calomiris (1992) suggests that states with deposit insurance extended credit indiscriminately, therefore experiencing relatively large expansions in credit and economic activity in times of economic growth but a sharper decline in banking services and growth in times of recession. The agricultural crises of the 1920s allows us to test this prediction with respect to credit and its impact on economic growth.

Table 1 presents a summary of branching and deposit insurance laws from 1900 to 1940 in the 48 states. These laws were collected from several data sources. (See Appendix A for more details.) Importantly, note that there is a sufficient amount of variation over time that allows us to identify the effects of these laws, even after controlling for state and year fixed effects. Over the period we observe 16 changes in insurance laws (eight states – Iowa, Mississippi, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Washington – adopted and eventually repealed deposit insurance) and 54 changes in branching laws. As Figure 1 suggests, these changes were not always in the same direction.

McFadden Act also allowed national banks to open branches in their home-city offices if state regulations allowed branching.

3. Empirical Strategy and Data Description

In this section we outline our empirical strategy, in particular the specification we use and the outcomes we examine. Our overall objective is to examine the effect of financial development on economic growth. We pursue this objective by examining the effect of branching and deposit insurance regulation. We first confirm that these laws contributed to financial development in the state banking sector. We then investigate whether the laws had an impact on various components of economic growth. In particular, we estimate the following:

$$\text{Outcome}_{sy} = \beta_1 \text{ Insurance}_{sy} + \beta_2 \text{ Insurance*(year>1920)}_{sy} + \beta_3 \text{ Branching}_{sy} + \gamma X_{sy} + \varepsilon_{sy}$$

where s refers to state, y to year, and X is a set of controls. We weight these using state population. Since there is potentially serial correlation in these laws, particularly for branching, the errors in all estimations are clustered at the state level, as suggested by Bertrand, Duflo, and Mullainathan (2002).

Our coefficients of interest are β_1, β_2, and β_3. We predict that $\beta_1 > 0$, $\beta_2 < 0$, and $\beta_3 > 0$. Given the discussion in Section 2, we believe that branching leads to an increase in banking activity, as does deposit insurance in a growing economy, and that states with deposit insurance experience more rapid declines in bank activity during a downturn. Hence, the first outcome of interest is the growth rate of loans of state banks, which measures the credit activity of state banks.

If we can confirm this pattern of effects on bank activity, we then wish to examine whether these laws induce a similar pattern of effects for outcomes that measure components of growth. Thus, to the extent possible, we gather information on any economic activity and outcomes that could be affected by credit expansions. However, data are scarce for this period in the United States. For example, to our knowledge, no data exist on state-by-year GDP or income. We gather data from a variety of sources (for additional details see the data appendix, Appendix A) on agricultural activity (number of farms, size of farms, value of crops), manufacturing activity (employment, wages, and per capita value added), and human capital measures (school enrollment and child labor).

For banking outcomes data exist for all years between 1900 and 1940 only. For all other outcomes, data only exist for some subset of years. No interpolation was made, except for population and percent urban. Table 2 presents descriptive statistics for our data. All values are expressed in 1947-1949 dollars.[4] For the sake of brevity, we present only means of the variables over the entire sample.

Before proceeding to the results of our estimation, we consider an important issue: under what circumstances can these coefficients be thought of as causal? There are two factors that could confound a causal interpretation: which states adopted these laws, and whether they would have performed equally well (or poorly) in the absence of the legislation. Both of these are related to the question of why these laws were adopted by states. In the next section, therefore, we investigate what is known about the historical and political context in which these regulations were adopted. We then devise several strategies for addressing issues of selection and endogeneity. In particular, the answer will determine which set of controls we should include, and which types of sensitivity analyses we can conduct in order to lend credence to a causal interpretation of our results.

4. What Do We Know about Branching and Deposit Insurance?

The banking history literature suggests that banks were divided into two camps – large and small banks – and, as we will explain below, the former opposed branching and promoted deposit insurance and the latter did the opposite. The balance between these two groups, it is argued, ultimately determined state regulation.

One of the weaknesses of a unit banking system, especially in the context of a predominantly agricultural economy, was its susceptibility to local shocks. Unit banks[5] in smaller towns responded to this by maintaining (reserve) deposits with correspondent banks in larger towns. These banks in turn would keep deposits in even larger towns. Banks in reserve cities (such as Boston, St. Louis, Chicago, and New York) were at the peak of this pyramid of interdependent deposits.

[4] We use the series on wholesales prices compiled by the Bureau of Labor Statistics and available in the Historical Statistics of the United States. We also experimented with using the CPI, which yielded very similar results but is only available starting in 1914 and would have to be interpolated for the earlier period.
[5] Unit banks refer to one-roof banks that do not have any branches or offices.

Small surges in the demand for liquidity that were anticipated, such as seasonal fluctuations, could be met readily through this system. However, large unanticipated shocks were harder to deal with. Shortages of liquidity in reserve centers or unanticipated demands for liquidity from country banks had effects that could cascade throughout the system (see White [1983, pp. 65ff.]). The 1907 bank panic was one such crisis.[6] The crisis of 1907 reinvigorated an ongoing debate on reforming the banking system. After the 1907 panic, deposit insurance and branching were proposed as means of preventing future crises. Indeed, Figure 1 suggests an upswing in both branching and deposit insurance regulation following the banking crisis. At the time, these two policies were effectively seen as mutually exclusive alternatives.

In this debate, unit bankers lobbied against branching as a reform. Country (unit) bankers portrayed city banks as would-be monopolists (see Chapman and Westerfield [1942, p. 74]). However, White (1982; 1983, pp.156ff) and Economides, Hubbard, and Palia (1996) argue that opposition to branching was in fact due to the rent-preserving behavior of small, country banks. These banks essentially functioned as local monopolists. Given the (small) size of the local market, entry by a new bank—which would have to meet state or federal capital requirements—was difficult. If branching were permitted, then a bank could enter the market and open a new branch without having to satisfy the capital requirements for that location.

Of course, branching had its proponents as well. In general, large urban banks favored branching, since it would allow them to expand beyond the urban centers in which they operated. Given their (larger) size, they could offer banking services to smaller communities, and compete with unit banks. Indeed, large banks – led by A. P. Giannini (see White [1982]) – actively lobbied for branching. However, state bankers' associations, which existed in many states (e.g. Kansas, Illinois, Iowa, Minnesota, Nebraska, and South Dakota) and were controlled by unit bankers, were able to convince the public that branching was undesirable because it would lead to a banking system dominated by a few large urban banks. The practice of branching was also often viewed

[6] In 1907 a seasonal upswing in the demand for liquidity was preceded by an increase in the discount rate of European central banks, and coincided with a downturn in the business cycle. The combination of the three events led to a sharp decrease in liquidity available in reserve cities and eventually led to a widespread bank panic (see White [1983, pp. 74-83]; Calomiris [1992]).

as suspect by the public, because it broke the geographic link between depositors and directors of a bank (see for example Chapman and Westerfield [1942, p. 8]), thereby making it more difficult for depositors to acquire information about a bank's operation. As a consequence, even though unit bankers constituted a small share of the banking industry in economic terms, their views were often supported by the public at large and by state legislators. For example, in a 1924 referendum, voters in Illinois rejected branching by a large majority (see White [1982]).

The same lobby that opposed branching favored the adoption of deposit insurance, which offered unit banks protection against short-term, local shocks in the demand for liquidity. Thus, in relatively agricultural states where the economy was dependent on one or two commodities, there was a strong lobby for state deposit insurance schemes. Iowa, Mississippi, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Washington eventually adopted such schemes. On the other hand, city bankers were strongly opposed to deposit insurance: they believed that deposit insurance would establish a system whereby large banks would subsidize small banks in economic downturns (see White [1981], [1982]). Thus in more urban states, branching, not deposit insurance, was eventually favored by legislators. Ultimately, unit bankers' support for deposit insurance was shortsighted. Indeed, the combination of moral hazard and the agricultural crisis ultimately led to the failure of these state deposit insurance schemes.[7]

In Table 3, we present evidence of the political economy process described above. This table presents multinomial logit estimates of the probability of branching or deposit insurance, relative to the default of neither law, for the entire period 1900-1940.[8] The previous discussion suggests that larger, more urban states would favor branching; we

[7] The second incarnation of deposit insurance came in 1935, through the Federal Deposit Insurance Corporation, a creation of the Banking Act. Though it is of great importance to the post-war history of banking, federal deposit insurance is of limited importance to this paper: it was established late in the sample period, and it was a "treatment" applied to the entire country. Thus, its effects are washed out in between-state comparisons. Non-member (i.e., state) banks were reluctant to join the Temporary Deposit Insurance Fund, because they could receive insurance only if they agreed to join the Federal Reserve system. Under the Banking Act of 1935, this provision was reversed, with non-members permitted to join subject to the approval of the FDIC. In 1935, 91 percent of commercials banks joined the system. See White (1983).

examine this through population and percent urban population. The discussion also suggests that states with smaller, more fragmented banks would oppose branching and favor deposit insurance, which we examine through the initial (1900) average deposits per bank and initial (1900) number of banks per square mile.

When only percent urban and population are included, as expected, we find that more urban states were more likely to pass branching and less likely to pass deposit insurance. Population is not significant. In the next two columns, we add two variables to account for the composition of the banking industry. We find that states with larger banks were more likely to adopt branching and less likely to adopt deposit insurance. States with a greater density of banks, that is states with many small country banks, were less likely to adopt branching and more likely to adopt insurance. These coefficients confirm the theory of regulatory competition outlined above: states with fewer, larger banks will have a stronger lobby in favor of branching and against insurance.[9]

Finally, we examine whether banking performance as measured through lagged shocks to state banks loans predicts the adoption of regulation, as might be suggested from the discussion above. Columns 5 and 6 show that lagged changes in state loans do not significantly predict the passage of deposit insurance or branching regulation.[10] Furthermore the magnitude of these effects is much smaller than the effect of initial bank size.[11] Also, percent urban and population are no longer significant. We discuss the results of the last 4 columns in Section 6 below.

5. Main Results

5.1 Fixed Effects

The findings in the previous section suggest that in estimating the effects of the laws on economic outcomes the inclusion of state fixed effects (to soak up the initial conditions),

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[8] With the exception of a few years of overlap in Mississippi and Washington, deposit insurance and branching were mutually exclusive options. These years of overlap do not materially affect our multinomial logit estimates.

[9] See White [1981], who finds that branching is a negative predictor of deposit insurance

[10] Indeed, looking specifically at the 1907 banking crisis, there were states that adopted branching (Kentucky) and states that prohibited it (Arkansas, Michigan, Nevada, North Carolina, Wisconsin).

[11] For example, a one standard deviation increase in the size of lagged bank shocks leads to a one percent increase in the predicted probability of branching, whereas a one standard deviation increase in the initial size of banks leads to a more than 30 percent increase in the predicted probability of branching.

time fixed effects, and controls for percent urban and population should address the primary issue of selection into the laws. Hence, we estimate effects using variation within states over time, which controls for non-time varying unobservable differences across states. We present these results next, and in Section 6 we examine the sensitivity of our results to many other possible sources of bias.

The fixed effects results are shown in Table 4. For the growth of state bank loans, the insurance and branching effects are significant and have the expected signs: loans in states with deposit insurance grew more in the 1910s and less in the 1920s, and credit expanded more rapidly in states with branching. The magnitude of the effects is large. Relative to an average growth rate of 3 percent and a standard deviation of 17 percent, the effect of branching is about 2 percentage points. The main effect of insurance has a similar magnitude, and the insurance-in-the-1920s effect is even larger, 13 percentage points. This suggests that the results of Calomiris (1992) and White (1983) regarding the impact of these laws are robust to the extended sample period and to the inclusion of state and year fixed effects.

Next we examine the effect of regulation on various components of growth, starting with the agricultural sector. For the number of farms, the main effect of deposit insurance is negative, the interaction effect is positive, and the effect of branching is negative. Although large in magnitude (ranging from 5 to 14 percent), none of the coefficients is statistically significant, which is not surprising given the small sample size and the use of state and year fixed effects. Since deposit insurance and branching represent increases in credit (and insurance in the 1920s represents a reduction in credit), these results suggest that increased credit led to a reduction in the number of farms. The next row reveals that the size of farms also increased more rapidly in states with greater banking activity; the magnitude of the effects ranges from 3 to 7 percent, with the effect of branching significant at the 1 percent level. In the next row, the value of machines and implements used per acre increased in states with greater bank credit activity (the magnitudes of the effects range from 7 to 23 percent, with the effect of deposit insurance significant at the 10 percent level). In this sense, although there were fewer and larger farms, land was farmed more intensively in states with greater access to credit.

On the output side of the farming sector, our results are more mixed. In the next row, we see that increased access to credit through deposit insurance led to a decline in the value of crops produced per farm: both the main effect of insurance and the interaction effect are negative. Although the coefficients are not significant, the magnitudes range from 4 to 9 percent relative to the mean. Based on the banking literature (White [1983] and Calomiris [1992]) the negative effect of deposit insurance is not surprising. The expansion of credit associated with deposit insurance was indiscriminate, with banks making risky loans. To the extent that banks were not necessarily financing the best projects in this period, the negative effect of credit reflects the fact that indiscriminate access to credit can have negative effects. In contrast, the effect of branching is positive, although not significant. However, when confining our attention to the period after the demise of deposit insurance (1930 on), we do find that farm receipts significantly increased with branching (the effect is 30 percent of the mean, and is significant at the 1 percent level).

Next we examine the effect of the laws on manufacturing employment, wages and value added. We find that branching leads to a significant increase in employment, but the effect of deposit insurance is negative both pre- and post-1920, although neither is statistically significant. The effect of the laws on the log of real annual manufacturing wages per worker is as expected: insurance is positive, insurance in the 1920s is negative, and branching is positive, but again only significant for branching. The magnitude of the effect is large, on the order of a 3 to 4 percent increase in wages due to branching. For branching, the effects on wages per worker and on employment have the same sign: this is consistent with an increase in the demand for manufacturing workers. Finally, we confirm that the value added per capita in manufacturing increases with banking activity. All three effects are in the expected direction, large in magnitude, and statistically significant. For example, relative to the mean of value added per capita, the effect of branching is on the order of 18 percent, and is significant at the one percent level. Hence our results in this section suggest that an expansion of banking activities through branching unambiguously accelerated the expansion of the manufacturing sector. The effect of deposit insurance is more equivocal; we return to this issue below.

Finally, we consider whether there is an additional channel through which financial development could affect long run growth, namely human capital acquisition. In 1910, 72% of children 10-15 years of age engaged in gainful occupations were employed in agriculture (Bureau of the Census, 1924). Therefore, changes in the availability of credit that resulted in a transition away from agriculture should result in a permanently reduced demand for child labor and increased schooling. Access to credit also allows individuals efficiently to trade off the current costs of education with its future returns. Even though credit constraints may not be the most important factor determining school attendance, this line of reasoning suggests that they should be a contributing factor to the great high school expansion documented by Katz and Goldin (1997) and Katz and Goldin (1998). Finally, there are theoretical reasons why increased access to credit at the household level should lead to a reduction in child labor for families that are poor (see Baland and Robinson [2000]).

As shown in Table 4, our results consistently suggest that credit contributes positively to elementary enrollment. The magnitude of the effect is large (between 5 and 17 percent for deposit insurance and on the order of 1 percent for branching), but it must be noted that the effects are statistically significant only for pre- and post-1920 deposit insurance for male elementary schooling.[12] Interestingly, we find that branching has a negative effect on male secondary enrollment. This estimate is not significant, but it might reflect an offsetting effect of wages on enrollment. In the previous estimates we found that credit led to an expansion of manufacturing and to an increase in manufacturing wages. To the extent that the upper age range of secondary schooling represents a potential labor force for manufacturing, the increased wage could account for reduced enrollment.

Finally, we turn our attention to child labor. We define child labor as the percentage of children aged 10-15 who are not in school and are at work.[13] The results uniformly suggest that increased financial sector activity leads to reduced male child

[12] Note that these results control for a wide range of state-by-year variables relating to education, including educational expenditure and also child labor laws.

[13] This is a similar definition to the one that is used by the ILO to measure child labor for developing countries today (see Dehejia and Gatti [2002]). This definition also captures the majority of working children. The ILO estimates that there are 78.5 million children under 15 years of age working today (estimated using data from 124 countries), 70.9 of them are between 10 and 14 years old.

labor. The magnitude of the branching effect is small: 0.2 percentage points on a base prevalence of child labor ranging from 5 to 6 percent for boys. The effect of deposit insurance, however, is much larger. The magnitude of these effects is 1.4 percentage points on male child labor for the main effect and a similar magnitude for the 1920s interaction. Hence for the period prior to the 1920s, deposit insurance is associated with a reduction in male child labor on the order of 15 percent. The magnitude of the effect is smaller, and not statistically significant, for female child labor except for branching.

5.2 Additional time-varying controls

One possible concern with these results is that the only state-level time varying covariates that we include are percent urban and population, but no other measures of economic changes. In order to control for the effect of time-varying macroeconomic conditions within a state, we use a comparison group: national banks within the same state. As Figure 2 suggests, the time series trends in state bank assets and national bank assets are very similar, lending credence to the argument that the growth rate of assets of national banks can provide a good control for macroeconomic trends at the state level.[14] An additional advantage of controlling for the growth rate of assets of national banks is that they provide a scale: indeed what we are interested in is the size of the financial sector relative to the size of the economy. Although we do not have state GNP, we can control for the performance of national banks in the same state.

In controlling for the performance of national banks, the main issue is that these banks could have been affected by state-level regulations. To the extent that these laws applied only to state banks, there is no direct effect on national banks. But there could be indirect effects due to competition and to the interdependence of banks. The empirical evidence suggests, however, that these effects were not important: in the first row of Table 5, we show the estimated effect of the laws on the growth rate of national bank assets. The coefficients are not only insignificant, but are relatively small in magnitude. Thus, we opt to control for national banks in all of our subsequent estimations: even though we might be "over controlling", we are more confident that our coefficients on the

[14] We also used the growth rate of national banks loans as a control, with similar results. We chose to use assets since we feel this variable better controls for economic conditions.

laws are not upwards biased. The results controlling for national banks are in the subsequent rows of Table 5.

Our results are unchanged in terms of the sign and order of magnitude of the coefficients, but for a number of outcomes, such as the number of farms and the value of machines per acre, the coefficients are larger in absolute value and have lower standard errors. Instead, the magnitude of the male child labor effect is slightly diminished. Overall, though, we find the results to be very robust to the inclusion of national banks as a control. We will, therefore, continue to include the growth rate of national banks' assets as a control. We consider these to be a reasonable baseline, so we will compare alternative specifications with the results in this table.

5.3 Results pre-1930

Finally, in this section, we re-estimate our results excluding all years after 1930. There are several reasons for considering this specification. The regulatory environment changed greatly in the 1930s. First, no state had state-level deposit insurance after 1930, but federal deposit insurance was implemented in 1932. At one level, federal deposit insurance was a "treatment" applied to the entire country. Thus, its effects are in principle washed out in between-state comparisons. However after 1935, state banks were allowed to join federal insurance without giving up their state charters. Furthermore, the Glass-Steagall Act of 1933 allowed national banks to branch within states that allowed branching (Bradford [1940, p. 20]). Finally, economic conditions changed drastically. Our confidence in our ability to control for omitted variable bias in this environment is therefore diminished.

Table 6 presents our results, controlling for the growth rate of national banks' assets and restricting the sample to 1900-1930. The overall pattern of coefficients, their sign, and magnitude is very similar to Table 5, but there are some changes. For farming, specifically the number and size of farms, the post-1920-deposit-insurance and branching coefficients are larger. The notable sign reversals are for the effect of deposit insurance on manufacturing outcomes: post-1920 deposit insurance now has a positive effect on employment, and pre-1920 deposit insurance has a negative effect on wages. Our results here reinforce our previous finding that the effect of deposit insurance on manufacturing

employment and wages is not clear cut. For employment, the signs of both effects for deposit insurance now suggest that the expansion in credit associated with deposit insurance had a negative effect on employment (hence the post-1920 deposit insurance effect corresponds to the positive effect of the unwinding of deposit insurance). In contrast, the effect of deposit insurance on manufacturing value added remains robust in sign, magnitude, and significance, as does the effect of branching on all manufacturing outcomes.

6. Further Sensitivity Checks

Since we do not have access to a valid instrumental variable to cleanse our estimates of all possible endogeneity bias, our strategy consists of controlling for additional factors that might confound a causal interpretation of our findings. To the extent that our results remain robust when we include these additional controls, we will have added confidence in a causal interpretation of our results.

All of the hypotheses we investigate are motivated by the same concern, namely that our results are also consistent with the idea that these laws were passed as a result of changes in the demand for credit. One response to this concern is to note that our results already control for the growth of national bank assets. To the extent that the growth in the demand for credit is correlated across state and national banks, we are already controlling for this. However, we may still wish to consider additional controls. In particular, for this period, there are two theories regarding the demand for banking regulation (see Calomiris and Ramirez [2002]).

One theory suggests that in states where manufacturing was expanding, manufacturing firms pushed for branching laws. Branching would allow banks to access a larger deposit base and thus provide credit to manufacturing firms. Indeed, Figure 3 shows that manufacturing was expanding greatly during this period and that firms were growing larger. If this were the case, then perhaps the effect of branching on manufacturing outcomes that we are measuring is really explained by reverse causality, where manufacturing is driving the passage of the laws and not vice-versa. To address this concern, we add a control for the lagged growth rate of value added per firm in

manufacturing.[15] This is a good control if manufacturing firms are forecasting their future growth using past growth or if growth rates are highly correlated over time. It is not a good control if the anticipation of growth alone, even in the absence of past growth is driving the demand for branching. Our results are shown in Table 7. The pattern of results is very similar to that of Table 5. Some of the coefficients, especially for farm outcomes, are larger. The standard errors are also somewhat larger for farm and child labor outcomes, but this is not surprising given that we lose observations by controlling for a lagged variable. The only sign reversal is for the effect of branching on the value of crops. It is notable that for manufacturing the effect of branching remains robust in size, magnitude, and significance, because it is precisely these coefficients that one is most concerned about with respect to manufacturing-induced selection into the laws. But the robustness of the pattern of results leads us to conclude that demand from the manufacturing sector is not likely to explain away our results.

We now turn to another explanation for the passage of the laws. A paper by Calomiris and Ramirez (2002) argues that certain classes of consumers, in particular large landowners, might have benefited from dealing with a local unit bank rather than the branch of a larger bank. Using a cross-section of 48 states, they provide support for this hypothesis. For our data, we use the average size of farms to capture these effects. We first include average size of farms in 1900 in our multinomial regressions to check if it can predict the passage of the laws, Table 3, columns (5) and (6). Like Calomiris and Ramirez, we find that the effect is significant: states with larger farms were less likely to pass branching laws. We then control for the lagged average size of farms in our fixed effects regression (Table 8). Since we are losing sample size by controlling for a lagged variable, it is not surprising that standard errors increase. However, the pattern of the coefficients is unchanged, and indeed for the farming outcomes the magnitudes are somewhat larger. The coefficients for the manufacturing and child labor outcomes are virtually unchanged.

[15] Note that by controlling for a function of a lagged dependent variable in a panel data setting we are potentially exposing ourselves to a well-known source of bias. However given the length of the panel we are working with, this should not be a significant concern. We also used the lagged growth rate of value added, the lagged growth rate of number of firms in manufacturing, and the lagged growth rate of employment per firm, and obtained very similar results.

A third check on the role of the demand for credit is provided in Table 9, where we restrict our sample to agricultural states. There are two motivations for this strategy. First, deposit insurance was adopted only in agricultural states, and second, when looking at the effects of the agricultural price crash of 1919/20, it makes sense to consider states that were producers of a crop that suffered a significant decline in price. The latter motivates our strategy of looking specifically within states that were wheat producers, a crop that suffered a more than 50 percent decline in price between 1920 and 1921 (see Historical Statistics of the United States [1960]).[16] Table 9 presents these results. With respect to our baseline estimates in Table 5, the results for farm outcomes are very similar in magnitude, though in many cases much more significant. As in Tables 7 and 8, the effect of branching on value of crops is now negative. For manufacturing, the effects are robust in sign, significance, and magnitude. For schooling, the results for elementary are similar to our previous estimates, though the deposit insurance effects are now highly significant, but the results for male secondary (which were never significant) are now even more mixed. Finally, the child labor coefficients have larger standard errors, which is not surprising given the reduced sample size, but the magnitudes are similar.

As a final attempt to deal with the potential endogeneity of these laws, in Table 10 we add all of the controls that we have mentioned in the paper and we use only the years prior to 1930. Though the standard errors are larger, the overall pattern of results is similar to Table 5.

In summary, we find that branching and deposit insurance laws had a significant impact on the outcomes we examined. These results are robust to a variety of specifications and controls, so we tentatively conclude that they are measuring the causal effects that these laws had on a variety of economic outcomes.

7. Discussion

In the results above it is notable that the effect of deposit insurance is less robust than the effect of branching. Although one should not over-interpret the deposit insurance results, they do seem to suggest that, while both deposit insurance and branching had positive

[16] We base this categorization on wheat production in 1900 as listed in the Statistical Abstract of the United States. Our results are robust to alternative categorizations, such as for example Calomiris (1992).

effects on financial development in the sense of increased growth of credit, their impact on real economic activity differed. For farm outcomes, deposit insurance drove down the value of crops produced per farm, even in the pre-1920 period. For manufacturing, deposit insurance seems to have a negative effect on employment and an equivocal effect on wages. In contrast, the effect of branching is much more uniform. For farms, in the post-1930 period there was a robustly positive effect on farm cash receipts, and for all manufacturing outcomes the effect of branching was uniformly positive.

Another issue to consider is why not use these policy changes as instruments for an endogenous variable, such as the growth rate of loans? In the present analysis, this would not be appropriate: even though the laws appear to be exogenous, their effect does not operate exclusively through any one variable such as the growth rate of loans or deposits. As we discuss in Section 5, wages, for example, are an important variable through which the effect of financial development on high school enrollment might operate. In the terminology of Angrist, Imbens, and Rubin (1996), branching and deposit insurance laws satisfy exogeneity, but not the exclusion restriction. The effects we measure are therefore reduced form: even though the direct effect of banking regulations is on banks, the expansion of credit can have indirect effects which would also be captured by these coefficients. Hence our reduced-form estimates capture the causal effect of the laws on the outcomes through a variety of channels.

Finally it is worth noting that there are several outcomes we do not examine. First, as we mentioned in the data description, we do not have income or GDP data. It would be worthwhile to reproduce these results with an overall measure of growth, but unfortunately no such measure exists for this period. One might also question why we do not look at the effect of these regulations on home ownership. In the context of this period, housing finance was not facilitated primarily by banks. National banks were prohibited or severely limited from participating in this market. State banks could make real estate loans, but these constituted less than 20 percent of their portfolio. Furthermore, most real estate loans were for the purchase of land rather than homes (see Carter [1992], Chapter 3), and those mortgages that were offered were usually for less than five years. Therefore, we are not surprised that when we look at this outcome using data from the census we find small and mostly insignificant results.

We do find large effects on the manufacturing sector. This makes sense in the context of banking in the first half of the century. In this period, banking was widely influenced by the real-bills doctrine, which held that loans by banks primarily should facilitate the production (storage, shipment, etc.) of goods and should be short term in nature (see James [1978] and White [1997]). In 1909, such time loans constituted 47 percent of national banks' portfolios and 42 percent of state banks' portfolios. Thus, it is not surprising that the financial development induced by branching and deposit insurance laws had a substantial impact on the manufacturing sector. The resulting effects on schooling and child labor are presumably both direct and indirect. Directly, financial development can increase household access to credit. This in turn allows households to insure against income shocks, and possibly to borrow (either directly or indirectly) to facilitate children's education. Although plausible, the indirect effects through manufacturing are more compelling. As wages in the manufacturing sector increase, the returns to education increase (the high returns to schooling in this period are documented *inter alia* in Katz and Goldin [1998a, 1999a]). At the same time, the economy – with the aid of financial development – was shifting from agriculture (where child labor was used more readily) to manufacturing (where it was more difficult to employ children).

8. Conclusion

This paper has examined the link between financial development and components of economic growth. Our results demonstrate a strong link between state branching and deposit-insurance regulation and activity in the bank, farm, and manufacturing sectors. Our results remain robust to an array of specification checks.

Although we find that financial development has an important impact on growth, this effect is not always positive. We document that indiscriminate expansions of credit, such as the one that resulted from deposit insurance laws, can have a negative impact on some components of growth. Our results suggest, in some specifications, that even prior to 1920 deposit insurance had a negative impact on employment in the manufacturing sector. In contrast, under all specifications, the effect of branching on manufacturing activity is uniformly positive. Thus we confirm Jayaratne and Strahan (1996)'s suggestive findings that the quality (not only quantity) of lending matters.

These results are important for several reasons. First, our results provide evidence in favor of a causal link between financial development and growth. Second, the paper sheds light on the role that financial development played in the structural transformation that was underway in the United States during this period. Third, the paper suggests that policies that encourage financial development, especially through bank branching, could foster growth and development.

Several caveats and directions for future work should be mentioned here. It would be interesting to look at the effect of credit on capital intensive crops and on the capital accumulation of firms. However, for the 1900-1940 period, data is scarce. Nonetheless, efforts in this direction would provide important additional evidence to corroborate our findings.

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Appendix A: Data Sources

Data on banking regulations was collected from the following publications: Chapman and Westerfield, "Branch Banking: Its Historical and Theoretical Position in American and Abroad" contains information on branching regulations in 1896. Frederick Bradford, "The Legal Status of Branching in the United States" contains information for the years 1910, 1924, 1929, 1932, 1936, and 1939. We use "State Laws Relating to Branch Banking" (Federal Reserve Bulletin, March 1925) and "Compilation of Federal and State Laws Relating to Branch Banking within the United States" (Federal Reserve Bulletin, November 1936) to time changes in the laws.

Data on state deposit insurance schemes are gleaned from secondary sources such as Calomiris or White.

Data on banks at the state level come from the "United States Historical Data on Bank Market Structure, 1896-1955" collected by Flood from several sources. Importantly, these data contain aggregate information for all banks in the state and for national banks. We construct the state bank information as the difference between the two. This means that our measure of state banks also includes some private banks, but we can confirm from All-Bank Statistics that these are small both in number and in size of total deposits.

Data on percentage of children in school by gender and percentage of children considered child labor are calculated using the censuses from 1900 to 1940. In all of these censuses, individuals were asked if they were in school anytime in the last year,[17] and what their occupation was. All children who declared an occupation[18] were classified as working.[19] We define child labor as the percentage of children ages 10 to 15 who are not in school and are working. We calculate these state measures by aggregating the individual level data available from the IPUMS. Although individual level 1930 census data are not available in electronic format, the relevant state-level information was published by the Census Bureau (see Bibliography below)

Data on employment are obtained from two sources. From the census for years prior to 1940, we have gainful employment: "persons reported as having an occupation, that is, an occupation in which they earned money or a money equivalent, or in which they assisted in the production of marketable goods, regardless of whether they were working or seeking work at the time of the census" (Sixteenth Census of the United States: 1940, Population, Volume III, The Labor Force, pp. 2-3). Instead, "the labor force is defined in the 1940 census on the basis of activity during the week of March 24 to 30, and includes only persons who were at work in that week. Certain classes of persons, such as retired workers, some inmates of institutions, recently incapacitated workers, and seasonal workers neither working nor seeking work at the time of the census, were frequently included among gainful workers in 1930, but in general, such persons are not

[17] This number overstates the number of children who attended school for several months (see Goldin, 1999).

[18] We used the variable occ1950. Those with codes less than 980 were considered to be working.

[19] As in Moehling (1999), we use occupation to determine work status. The reason is that labor force status is available in 1910, 1920 and 1940 only of those 16 and above, but occupation was asked of all the persons aged 10 years and older in all the relevant censuses.

in the 1940 labor force. On the other hand, the 1940 labor force includes persons seeking work without previous experience, that is, new workers and persons reported as in the labor force from whom neither occupation nor industry was entered on the schedule". Another difference in the 1940 census is that it records workers only age 14 or older, because the "number of workers 10 to 13 years old has become relatively small and no longer justifies the additional burden of enumeration and tabulation".

Data on primary and secondary enrollment by gender, education expenditures and number of school buildings per state comes from several years of the Biennial Survey of Education. The data exist for even years, starting in 1916/1917.

Data on the percentage of households that own their house is calculated by aggregating the household level data available from the IPUMS. Although individual level 1930 census data are not available in electronic format, the relevant state-level information was published by the Census Bureau.

Data on average value of farm property per farm and per acre of farm land was reported in the Statistical Abstract of the United States for 1910, 1920, 1925, 1930 and 1940. Value of farm property is reported in thousands. Value of farm implements and machinery: nominal value of farm implements and machinery, from The Statistical Abstract of the United States, various numbers.

Farm cash receipts, from the Economic Research Service of the Department of Agriculture, includes total cash receipts by farm and total cash receipts from crops. The difference between the two is essentially livestock (diary, cattle, poultry, etc.).

Data on number of gainful workers, value of crops and value of implements and machinery comes from the "Historical, Demographic, Economic, and Social Data: The United States, 1790-1970", ICPSR study number 0003, 0007, 0008, 0014, 0017.

All monetary values (education expenditures, manufacturing wages, net income and farm value) were converted into real dollars using the Wholesale Price Index series provided by the Bureau of Labor Statistics and available in the Historical Statistics of the United States, Colonial Times to 1957. The base period is 1947-1949.

Data Bibliography

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Figure 1: The Evolution of Branching and State Deposit Insurance Laws

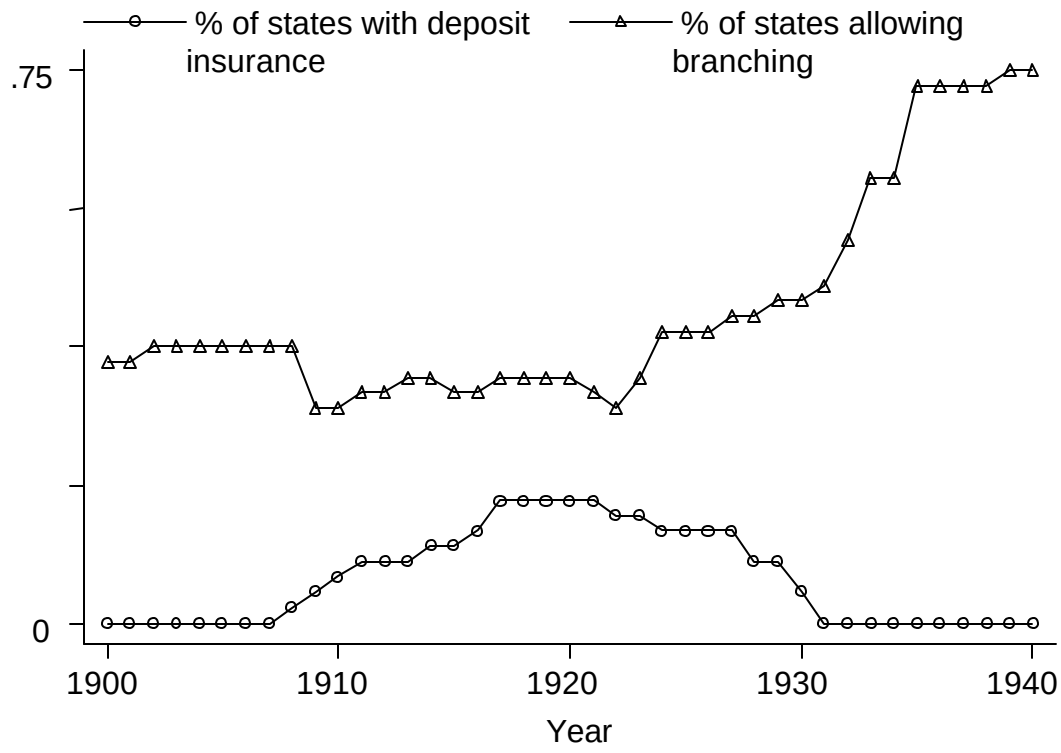
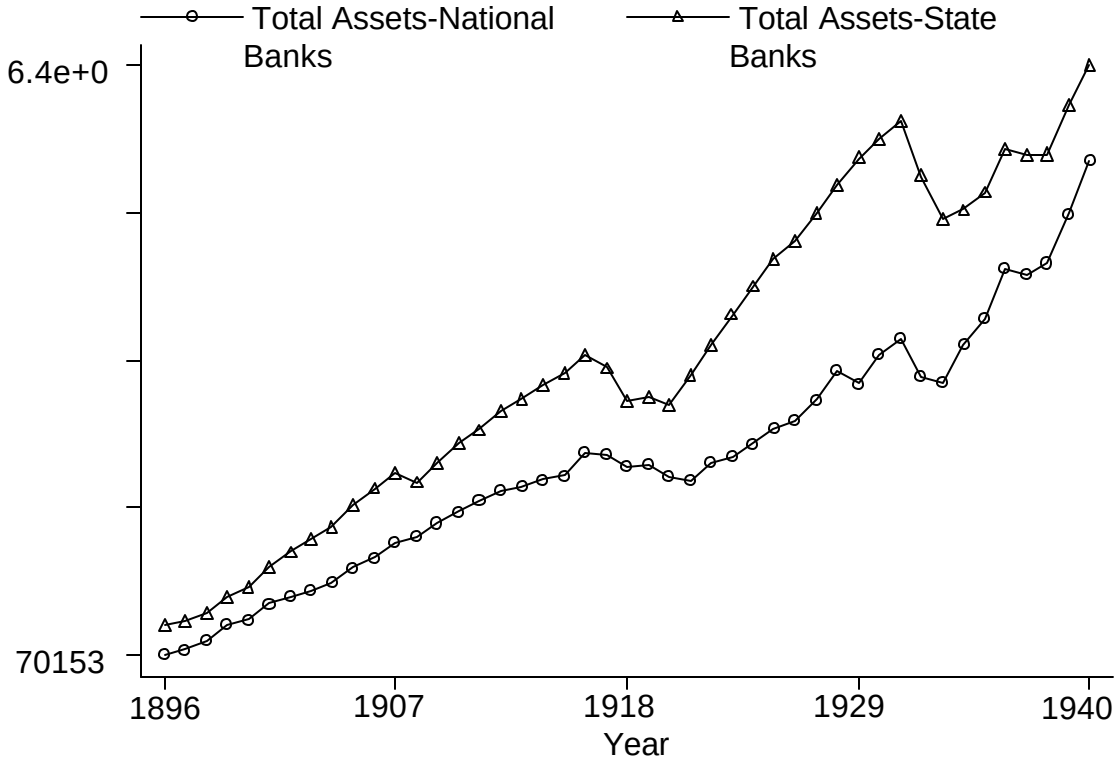
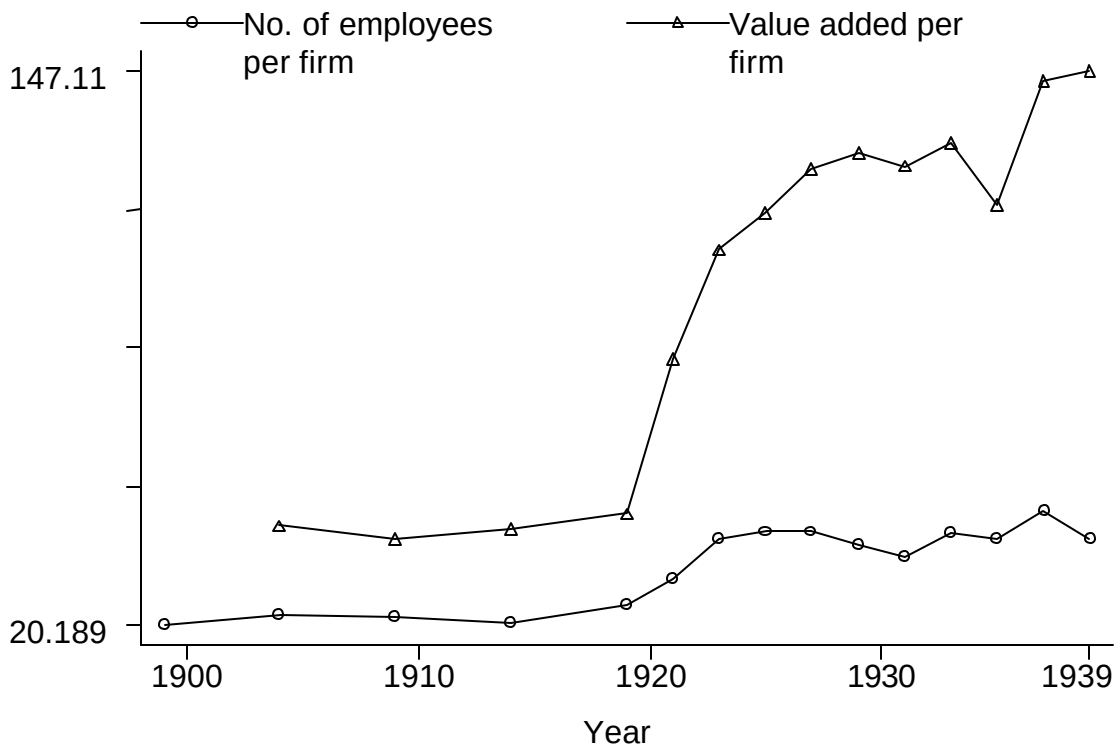


Figure 2: Evolution of Assets, National and State banks.



Notes: All monetary values are deflated using the Wholesale Price Index. The base period is 1947-1949.

Figure 3: Evolution of Manufacturing firms



Notes: All monetary values are deflated using the Wholesale Price Index. The base period is 1947-1949.

Table 1: State Branching and Deposition Insurance Regulations

State	Branching 1900	Branching 1909	Branching 1919	Branching 1929	Branching 1939	Deposit Insurance
Alabama	0	0	0	0	1	
Arizona	1	1	1	1	1	
Arkansas	1	0	0	0	1	
California	1	1	1	1	1	
Colorado	0	0	0	0	0	
Connecticut	0	0	0	0	1	
Delaware	1	1	1	1	1	
Florida	1	1	1	0	0	
Georgia	1	1	1	1	1	
Idaho	0	0	0	0	1	
Illinois	0	0	0	0	0	
Indiana	0	0	0	0	1	
Iowa	0	0	0	0	1	
Kansas	0	0	0	0	0	1909-1929
Kentucky	0	1	1	1	1	
Louisiana	1	1	1	1	1	
Maine	1	1	1	1	1	
Maryland	0	0	1	1	1	
Massachusetts	0	1	1	1	1	
Michigan	1	0	0	1	1	
Minnesota	0	0	0	0	0	
Mississippi	0	0	0	1	1	1914-1930
Missouri	0	0	0	0	0	
Montana	0	0	0	0	1	
Nebraska	0	0	0	0	0	1911-1930
Nevada	1	0	0	0	1	
New Hampshire	0	0	0	0	0	
New Jersey	0	0	0	1	1	
New Mexico	0	0	0	0	1	
New York	1	1	1	1	1	
North Carolina	1	0	0	1	1	
North Dakota	0	0	0	0	1	1917-1929
Ohio	0	0	0	1	1	
Oklahoma	0	0	0	0	0	1908-1923
Oregon	1	1	1	0	1	
Pennsylvania	0	0	1	1	1	
Rhode Island	1	1	1	1	1	
South Carolina	0	0	0	1	1	
South Dakota	0	0	0	0	1	1916-1927
Tennessee	1	1	1	1	1	
Texas	0	0	0	0	0	1910-1927
Utah	0	0	0	0	1	
Vermont	0	0	0	1	1	
Virginia	0	0	0	1	1	
Washington	1	1	1	0	1	1917-1921
West Virginia	0	0	0	0	0	
Wisconsin	1	0	0	0	1	
Wyoming	0	0	0	0	0	

Sources: varied, see Appendix A.

Table 2: Descriptive Statistics- State Level Data (excluding Alaska and Hawaii)

Variable	Obs	Mean	Std. Dev.	Min	Max
Banking Laws (1900-1940)					
State has deposit insurance	1968	0.062	0.241	0.000	1.000
State has deposit insurance in 1920s	1968	0.033	0.177	0.000	1.000
State allows branching	1968	0.429	0.495	0.000	1.000
Bank Outcomes, All Bank Statistics (1900-1940)					
Total loans, national banks	1968	207770	397107	656	4362453
Total loans, state banks	1968	322152	881035	922	10800000
Growth rate of assets, national banks	1968	0.045	0.123	-1.138	0.948
Growth rate of assets, state banks	1968	0.037	0.148	-1.863	0.788
Growth rate of loans, national banks	1968	0.032	0.154	-1.508	0.906
Growth rate of loans, state banks	1968	0.026	0.177	-2.290	0.798
Census of Agricultural data (1900, 1910, 1920, 1925, 1930,1935, 1940)					
Number of Farms	336	131160	103215	2184	501017
Log of number of acres devoted to agriculture	336	9.430	1.135	5.403	11.833
Value of machinery and implements per acre devoted to agriculture	288	3423	2808	259	17826
Value of all crops per farm	237	0.002	0.008	0.000	0.100
Value of cash receipts per farm (1925, 1930, 1935, 1940)	192	2.066	1.184	0.459	6.245
Census of Manufacturing data (1899, 1904, 1908, 1914, 1919, 1921, 1923, 1925, 1927, 1929, 1931, 1933, 1935, 1937, 1939)					
Total employment in manufacturing	672	157213	225732	802	1228130
Log of annual wage earnings per worker in manufacturing	672	8.375	0.900	5.968	9.319
Per capita value added in manufacturing	672	0.156	0.115	0.013	0.534
Biennial Survey of Education Data (1917, 1919, 1921, 1923, 1925, 1927, 1929, 1931, 1933, 1935 1937, 1939)					
Log total number of males enrolled in elementary	576	11.849	1.044	8.723	13.698
Log total number of females enrolled in elementary	576	11.809	1.051	8.660	13.645
Log total number of males enrolled in secondary	576	10.101	1.140	6.516	12.790
Log total number of females enrolled in secondary	576	10.220	1.103	6.750	12.796
Total number of Schools	576	5338	3828	251	19444
Log of educational expenditures	576	11.726	1.101	8.119	14.774
Child labor and Continuation school laws (1915-1940)					
Age needed to obtain work permit	1190	14.127	0.977	7.000	18.000
Continuation school law	1200	0.498	0.500	0.000	1.000
Census Data (1900, 1910, 1920, 1930, 1940)					
% males 10-15 working and not in school	240	0.062	0.075	0.000	0.368
% females 10-15 working and not in school	240	0.029	0.044	0.000	0.350
% households that own their home	240	0.446	0.099	0.215	0.711
% urban (interpolated)	1968	0.420	0.212	0.062	0.975
Other Data (Statistical Abstract)					
Square miles	1968	62944	46872	1212	266807

Table 3: Predicting Passage of Branching and Insurance Laws, Multinomial Logit Estimates

Dependent Variable:	Branching	Insurance	Branching	Insurance	Branching	Insurance	Branching	Insurance	Branching	Insurance
% urban population	0.54*	-0.24***	-0.31	-2.85e-08	-0.37	-7.20e-08	-0.21	1.01e-08	-0.23	-9.00e-09
	(0.29)	(0.084)	(0.41)	(3.50e-07)	(0.42)	(5.49e-07)	(0.41)	(1.45e-07)	(0.43)	(1.05e-07)
Population	1.36e-08	8.37e-09	5.65e-08	1.90e-14	6.07e-08	1.97e-14	3.80e-08	8.99e-15	5.58e-08	3.50e-15
	(2.72e-08)	(7.33e-09)	(4.05e-08)	(9.46e-14)	(4.15e-08)	(9.80e-14)	(3.77e-08)	(4.14e-14)	(3.97e-08)	(3.04e-14)
Deposits per bank, 1900			2.92e-04***	-1.21e-09	3.08e-04***	-1.25e-09	2.78e-04***	-7.22e-10	3.19e-04***	-2.54e-10
			(8.04e-05)	(5.63e-09)	(8.32e-05)	(5.82e-09)	(7.46e-05)	(3.15e-09)	(9.49e-05)	(2.04e-09)
Banks per square mile, 1900			-24.6**	4.01e-06	-24.6**	4.59e-06	-28.0***	1.48e-06	-22.8**	7.54e-07
			(10.9)	(1.67e-05)	(11.0)	(1.95e-05)	(11.5)	(5.47e-06)	(11.6)	(5.88e-06)
% manufacturing employment, 1900									-1.22	2.05e-07
									(2.57)	(1.35e-06)
Acres per farm, 1900							-0.36*	-4.08e-08		
							(0.20)	(2.02e-07)		
Shock to bank loans, 1st lag					-0.006	-3.37e-10				
					(0.069)	(2.75e-08)				
Shock to bank loans, 2nd lag					-0.11	2.40e-08				
					(0.070)	(1.03e-07)				
Predictive accuracy	0.62	0.94	0.69	0.94	0.69	0.94	0.66	0.93	0.68	0.94
Observations	1968	1968	1920	1920	1728	1728	1728	1728		

Notes: Marginal coefficients are presented.

Table 4: Fixed Effects Results

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching	Number of observations	R^2
Banking outcomes					
Growth of state loans	0.025**	-0.13***	0.021**	1968	0.63
	(0.013)	(0.026)	(0.010)		
Agricultural outcomes					
Number of farms	-18280	18075	-7513	336	0.97
	(16506)	(15099)	(4735)		
Log farms per acre	-0.065*	0.034	-0.063***	336	0.99
	(0.039)	(0.029)	(0.020)		
Value of machines per acre	762*	-198	496	288	0.92
	(411)	(307)	(479)		
Value of crops per farm	-1.69e-04	-1.99e-04	8.24e-05	237	0.51
	(1.38e-04)	(2.78e-04)	(9.98e-05)		
Cash receipts per farm			0.76***	96	0.97
			(0.19)		
Manufacturing outcomes					
Total employment in manufacturing	-29424	-6215	40095***	672	0.98
	(19979)	(9678)	(12748)		
log of real annual wage earnings per worker	0.037	-0.047	0.035***	672	1
	(0.033)	(0.030)	(0.011)		
Value added per capita in manufacturing	0.030***	-0.050***	0.028***	672	0.95
	(0.008)	(0.009)	(0.008)		
Human capital outcomes[(1)]					
Log enrollment, male elementary enrollment	0.058*	-0.051**	0.008	573	1
	(0.030)	(0.024)	(0.014)		
Log enrollment, female elementary enrollment	0.049	-0.047	0.015	573	1
	(0.032)	(0.035)	(0.014)		
Log enrollment, male secondary enrollment	0.097	-0.043	-0.003	573	0.98
	(0.094)	(0.084)	(0.055)		
Log enrollment, female secondary enrollment	0.17**	-0.065	0.004	573	0.98
	(0.080)	(0.073)	(0.053)		
% male age 10-15 working and not in school	-0.015***	0.015***	-0.002**	240	0.81
	(0.006)	(0.005)	(8.38e-04)		
% female age 10-15 working and not in school	-0.005	0.005	-0.001*	240	0.69
	(0.004)	(0.004)	(6.71e-04)		

Notes: Regressions are weighted using state population, they control for percent urban and population, and are clustered at the state level. Nominal values are deflated using the wholesale price index, base 1947-1949. (1) Enrollment regressions also control for child labor laws, compulsory schooling laws and education expenditures. They control for log of population rather than population. Because data are only available from the census and because of the nature of the outcome, child labor regressions use number of years regulations have been in place in each decade rather than the dummies.

Table 5: Fixed Effects with National Banks as Control

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching
Banking outcomes			
Growth national bank assets	-0.005	0.002	-0.007
	(0.008)	(0.010)	(0.007)
Growth of state loans	0.025*	-0.13***	0.021**
	(0.013)	(0.027)	(0.009)
Agricultural outcomes			
Number of farms	-22016	25489*	-8682*
	(15183)	(15095)	(4706)
Log farms per acre	-0.073**	0.049*	-0.065***
	(0.035)	(0.027)	(0.021)
Value of machines per acre	986***	-592*	605
	(374)	(305)	(485)
Value of crops per farm	-1.75e-04	-1.88e-04	7.82e-05
	(1.43e-04)	(2.87e-04)	(9.98e-05)
Cash receipts per farm			0.77***
			(0.19)
Manufacturing outcomes			
Total employment in manufacturing	-29616	-6284	39505***
	(20125)	(9611)	(13155)
log of real annual wage earnings per worker	0.038	-0.047	0.036***
	(0.033)	(0.030)	(0.011)
Value added per capita in manufacturing	0.030***	-0.050***	0.029***
	(0.008)	(0.009)	(0.008)
Human capital outcomes			
Log enrollment, male elementary enrollment	0.056*	-0.050**	0.009
	(0.030)	(0.023)	(0.014)
Log enrollment, female elementary enrollment	0.048	-0.045	0.016
	(0.032)	(0.035)	(0.014)
Log enrollment, male secondary enrollment	0.10	-0.049	-0.007
	(0.095)	(0.084)	(0.054)
Log enrollment, female secondary enrollment	0.17**	-0.072	-0.002
	(0.080)	(0.074)	(0.053)
% male age 10-15 working and not in school	-0.013**	0.013***	-0.002***
	(0.006)	(0.005)	(8.45e-04)
% female age 10-15 working and not in school	-0.004	0.004	-0.001*
	(0.004)	(0.004)	(6.77e-04)

Notes: See notes in table 4.

Table 6: Fixed Effects Results, 1930 and Earlier

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching
Bank outcomes			
Growth of state loans	0.029**	-0.12***	0.024***
	(0.015)	(0.026)	(0.009)
Agricultural outcomes			
Number of farms	-19926	29108**	-14686**
	(12661)	(14457)	(6324)
Log farms per acre	-0.052	0.086***	-0.11***
	(0.034)	(0.036)	(0.025)
Value of machines per acre	877***	-762***	393
	(358)	(324)	(523)
Value of crops per farm	-1.41e-04	-1.95e-04	1.14e-04
	(1.70e-04)	(3.15e-04)	(1.74e-04)
Cash receipts per farm			0.77***
			(0.19)
Manufacturing outcomes			
Total employment in manufacturing	-37167**	8058	37524***
	(17590)	(13613)	(14963)
log of real annual wage earnings per worker	-0.001	-0.051	0.038***
	(0.014)	(0.032)	(0.016)
Value added per capita in manufacturing	0.022***	-0.045***	0.022*
	(0.009)	(0.008)	(0.012)
Human capital outcomes			
Log enrollment, male elementary enrollment	0.047*	-0.035	0.022
	(0.025)	(0.025)	(0.018)
Log enrollment, female elementary enrollment	0.037	-0.032	0.028
	(0.028)	(0.037)	(0.019)
Log enrollment, male secondary enrollment	-0.092	-0.005	0.074
	(0.068)	(0.075)	(0.083)
Log enrollment, female secondary enrollment	-0.013	-0.033	0.063
	(0.054)	(0.054)	(0.089)
% male age 10-15 working and not in school	-0.013**	0.013***	-0.002***
	(0.006)	(0.005)	(8.45e-04)
% female age 10-15 working and not in school	-0.004	0.004	-0.001*
	(0.004)	(0.004)	(6.77e-04)

Notes: See notes in table 4.

Table 7: Controlling for Growth of Value Added per Firm

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching
Bank outcomes			
Growth of state loans	0.026*	-0.13***	0.020**
	(0.013)	(0.027)	(0.009)
Agricultural outcomes			
Number of farms	-38701	30150	-3092
	(24103)	(18457)	(4456)
Log farms per acre	-0.11***	0.048*	-0.041**
	(0.031)	(0.028)	(0.021)
Value of machines per acre	847	-381	770
	(586)	(363)	(587)
Value of crops per farm	-2.64e-04*	-1.73e-04	-4.02e-05
	(1.43e-04)	(2.99e-04)	(1.07e-04)
Cash receipts per farm			0.73***
			(0.26)
Manufacturing outcomes			
Total employment in manufacturing	-30187	-5097	39143***
	(19885)	(9527)	(13165)
log of real annual wage earnings per worker	0.037	-0.046	0.035***
	(0.033)	(0.029)	(0.011)
Value added per capita in manufacturing	0.030***	-0.049***	0.028***
	(0.008)	(0.009)	(0.008)
Human capital outcomes			
Log enrollment, male elementary enrollment	0.056*	-0.050**	0.009
	(0.030)	(0.024)	(0.014)
Log enrollment, female elementary enrollment	0.048	-0.045	0.016
	(0.032)	(0.035)	(0.014)
Log enrollment, male secondary enrollment	0.10	-0.050	-0.007
	(0.095)	(0.085)	(0.054)
Log enrollment, female secondary enrollment	0.18**	-0.074	-0.002
	(0.080)	(0.075)	(0.053)
% male age 10-15 working and not in school	-0.017**	0.017**	-6.17e-04
	(0.008)	(0.007)	(7.82e-04)
% female age 10-15 working and not in school	-0.011**	0.010**	-5.98e-04
	(0.005)	(0.005)	(6.01e-04)

Notes: See notes in table 4.

Table 8: Controlling for Size of Farms

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching
Banking outcomes			
Growth of state loans	0.026*	-0.13***	0.020**
	(0.013)	(0.027)	(0.009)
Agricultural outcomes			
Number of farms	-38096	28873	-2932
	(23735)	(17903)	(4423)
Log farms per acre	-0.11***	0.064***	-0.035*
	(0.038)	(0.024)	(0.018)
Value of machines per acre	850	-394	763
	(603)	(409)	(573)
Value of crops per farm	-2.63e-04*	-1.72e-04	-4.00e-05
	(1.39e-04)	(3.03e-04)	(1.04e-04)
Cash receipts per farm			0.76***
			(0.19)
Manufacturing outcomes			
Total employment in manufacturing	-29694	-6431	39520***
	(20194)	(9550)	(13190)
log of real annual wage earnings per worker	0.037	-0.048	0.036***
	(0.034)	(0.030)	(0.011)
Value added per capita in manufacturing	0.030***	-0.050***	0.029***
	(0.009)	(0.009)	(0.008)
Human capital outcomes			
Log enrollment, male elementary enrollment	0.056*	-0.050**	0.009
	(0.030)	(0.023)	(0.014)
Log enrollment, female elementary enrollment	0.048	-0.045	0.016
	(0.032)	(0.035)	(0.014)
Log enrollment, male secondary enrollment	0.10	-0.049	-0.008
	(0.095)	(0.084)	(0.055)
Log enrollment, female secondary enrollment	0.17**	-0.072	-0.002
	(0.080)	(0.074)	(0.053)
% male age 10-15 working and not in school	-0.017**	0.017**	-4.93e-04
	(0.008)	(0.007)	(7.95e-04)
% female age 10-15 working and not in school	-0.011**	0.010**	-5.08e-04
	(0.005)	(0.005)	(6.13e-04)

Notes: See notes in table 4.

Table 9: Fixed Effects within Wheat Growing States

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching
Banking outcomes			
Growth of state loans	0.025*	-0.14***	0.029**
	(0.014)	(0.028)	(0.013)
Agricultural outcomes			
Number of farms	-23507	29599**	-8356
	(14339)	(15085)	(6559)
Log farms per acre	-0.11***	0.080***	-0.035
	(0.043)	(0.033)	(0.023)
Value of machines per acre	971***	-701***	101
	(382)	(298)	(211)
Value of crops per farm	-1.51e-04	-4.19e-04	-8.57e-05
	(1.81e-04)	(3.60e-04)	(8.72e-05)
Cash receipts per farm			0.89***
			(0.15)
Manufacturing outcomes			
Total employment in manufacturing	-3815	-14084	34312**
	(21810)	(9621)	(17291)
log of real annual wage earnings per worker	0.017	-0.034	0.041***
	(0.021)	(0.027)	(0.012)
Value added per capita in manufacturing	0.040***	-0.049***	0.029***
	(0.011)	(0.010)	(0.011)
Human capital outcomes			
Pupils enrolled, male elementary enrollment	0.058***	-0.053***	0.016
	(0.017)	(0.016)	(0.017)
Pupils enrolled, female elementary enrollment	0.054***	-0.062***	0.028
	(0.018)	(0.017)	(0.018)
Pupils enrolled, male secondary enrollment	-0.072	0.060	0.053
	(0.088)	(0.064)	(0.059)
Pupils enrolled, female secondary enrollment	0.070	-0.024	0.025
	(0.080)	(0.061)	(0.052)
% male age 10-15 working and not in school	-0.009	0.010	-0.002*
	(0.007)	(0.006)	(0.001)
% female age 10-15 working and not in school	9.76e-05	0.001	-7.69e-04
	(0.004)	(0.004)	(6.60e-04)

Notes: See notes in table 4.

Table 10: All Controls, 1930 and Earlier

	Deposit Insurance before 1920	Deposit Insurance after 1920	Branching
Banking outcomes			
Growth of state loans	0.026*	-0.13***	0.020**
	(0.013)	(0.027)	(0.009)
Agricultural outcomes			
Number of farms	-38701	30150	-3092
	(24103)	(18457)	(4456)
Log farms per acre	-0.11***	0.048*	-0.041**
	(0.031)	(0.028)	(0.021)
Value of machines per acre	847	-381	770
	(586)	(363)	(587)
Value of crops per farm	-2.64e-04*	-1.73e-04	-4.02e-05
	(1.43e-04)	(2.99e-04)	(1.07e-04)
Cash receipts per farm			0.73***
			(0.26)
Manufacturing outcomes			
Total employment in manufacturing	-30187	-5097	39143***
	(19885)	(9527)	(13165)
log of real annual wage earnings per worker	0.037	-0.046	0.035***
	(0.033)	(0.029)	(0.011)
Value added per capita in manufacturing	0.030***	-0.049***	0.028***
	(0.008)	(0.009)	(0.008)
Human capital outcomes			
Log enrollment, male elementary enrollment	0.056*	-0.050**	0.009
	(0.030)	(0.024)	(0.014)
Log enrollment, female elementary enrollment	0.048	-0.045	0.016
	(0.032)	(0.035)	(0.014)
Log enrollment, male secondary enrollment	0.10	-0.050	-0.007
	(0.095)	(0.085)	(0.054)
Log enrollment, female secondary enrollment	0.18**	-0.074	-0.002
	(0.080)	(0.075)	(0.053)
% male age 10-15 working and not in school	-0.017**	0.017**	-6.17e-04
	(0.008)	(0.007)	(7.82e-04)
% female age 10-15 working and not in school	-0.011**	0.010**	-5.98e-04
	(0.005)	(0.005)	(6.01e-04)

Notes: See notes in table 5.