Preliminary: comments welcome

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

Rajeev Dehejia[**]
Columbia University,
and NBER

Adriana Lleras-Muney[***]
Princeton University,
and NBER

There is a substantial body of literature arguing that financial development (the growth of banking and financial intermediation) contributes to economic growth. This paper makes two contributions to this literature. First, drawing on the banking history literature, we use data on state bank-branching and deposit-insurance regulation as a source of plausibly exogenous variation in financial development across and within states. Second, we examine the impact of financial development, not on economic growth, but on components of growth (such as the farm and manufacturing sectors, human capital, and child labor), to provide a richer view of the effects of financial development. Our results show a strong link these variables.

[*] The authors are grateful to Ben Bernanke, Charles Calomiris, William Collins, David Cutler, Esther Duflo, Claudia Goldin, Christina Paxson, Hélène Rey, and Cecilia Rouse for invaluable conversations and to participants workshops at the World Bank and Princeton University for their comments and suggestions. Dehejia thanks the National Bureau of Economic Research and the Industrial Relations Section, Princeton University, for their hospitality while working on this project.

[**] Department of Economics and SIPA, Columbia University, 420 W. 118th Street, Room 1022, New York NY 10027; rd247@columbia.edu

[***] Economics Department and Woodrow Wilson School, 320 Wallace Hall, Princeton University, Princeton NJ 08544; alleras@princeton.edu

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

1. Introduction

This paper addresses the question: why does financial development matter? There is a substantial body of literature arguing that financial development (the growth of banking and financial intermediation) contributes to economic growth. This paper makes two contributions to this literature. First, drawing on the banking history literature (see inter alia White [1983] and Calomiris [1992]) we use data on state bank-branching and deposit-insurance regulation as a source of plausibly exogenous variation in financial development across and within states. Second, we examine the impact of financial development not on economic growth, but on components of growth (such as the farm and manufacturing sectors, human capital, and child labor), to provide a richer view of the effects of financial development.

The question we address is important for three reasons. First, there is a substantial and influential literature on the link between financial development and growth. This includes papers in economic history such as Cameron (1967), Rousseau and Wachtel(1998), and Sylla (1969, 1972, 2002). Cameron, using cross-country qualitative studies, argues that banking can contribute to economic growth. Sylla in a sequence of papers argues that the institutional framework of US banking created monopoly power for small local banks, and facilitated the transfer of capital from Southern and Midwestern agricultural states to the industrializing Northeast. Rousseau and Wachtel use time-series methods to argue that financial intermediation Granger causes real per capita output.

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). King and Levine examine the relationship between financial development (as measured inter alia by the ratio of liquid liabilities to GDP) and economic growth across countries. Levine and Zervos show that stock market liquidity and banking development are both also related to economic growth. Rajan and Zingales demonstrate that industrial sectors which are relatively more in need of external finance develop disproportionately faster in

countries with more developed financial markets. Though these papers are persuasive in establishing an association between financial development and growth, they are unable to make causal claims, because their cross-country datasets lack any plausible source of exogenous variation in financial development. Indeed there is a counter current in the literature that suggests that economic growth may cause improvements in financial development (Robinson [1952]).[1] Our contribution with respect to these papers is an examination of a setting—the United States from 1900 to 1940—in which there is a source of exogenous variation in financial development: state branching and deposit insurance regulation.

The paper that is most closely related to our research is Jayaratne and Strahan (1996). They examine the link between state bank-branching regulation (during the period 1972 - 1992) and economic growth. This paper makes several contributions with respect to Jayaratne and Strahan. We examine an additional source of variation in financial development: state deposit insurance schemes. We identify part of the effect of deposit insurance through an exogenous event (the agricultural price crash of 1919). Additionally, rather than examining growth as an aggregate, which indeed is not possible for the period we are studying, we examine components of growth. In particular, we examine the two most important sectors of the economy in this period—agriculture and manufacturing—and the role that financial development played in the shift of the economy from the former sector to the later. We also examine human capital acquisition, a variable that the endogenous growth literature (see for example Nelson and Phelps [1966], Lucas [1988], Barro and Sala-i-Martin [1992]) has linked to steady-state growth and the rate of convergence. Lastly, since we examine a different period, our results are complementary to Jayarathne and Strahan's. In particular, financial development in this period is more associated with fundamental issues such as access to credit rather than the development of more sophisticated financial instruments.[2]

A second reason it is important to understand the link between financial development and the components of growth are the intrinsic policy concerns implicit in

[1] Examination of the effects of the initial size of the financial system on subsequent growth, as in King and Levine (1992), does not resolve the issue of causality: as Jayaratne and Strahan (1996) point out, the anticipation of high growth can lead to an expansion of the financial system.

their nexus. The United States from 1900 to 1940 faced development issues which are similar to those faced by many less-developed countries today. How one may foster economic growth is among the longest-standing issues of development economics (Dehejia and Gratti [2002]). More recently, issues related to schooling and child labor have garnered much attention. Economic theory closely links schooling and child labor with access to credit, and in turn connects these to long-run growth. If the connections among schooling, child labor, and financial development prove to be empirically relevant, then this suggests another policy tool to increase enrollment, reduce child labor, and foster economic growth, namely intervention in credit markets.

Third, the period 1900 to 1940 in the United States has received much attention from both economic historians and labor economists. (see inter alia Katz and Goldin [1997, 1998a,b, 1999a,b], Angrist and Krueger [year], Acemoglu and Angrist [year], and Lleras-Muney [2002]). Much of this literature has focused on the expansion of education, in particular higher education, during this period, and the role that compulsory schooling laws played in increasing school attendance. Our paper complements this literature by examining yet another dimension of policy in this formative period for the United States, and its impact on the components of growth.

Our analysis points to a strong causal link between financial development and the components of growth. We demonstrate that, at least in this period, changes in bank regulation were plausibly exogenous. We show that changes in state banking regulations had significant impacts on financial development, measured by the level and growth of deposits[3]. These regulations affected the credit activity of state banks, specifically, but not, as we would expect, that of national banks. We then examine the effect of changes in state branching and deposit insurance regulation on a range of outcomes. We show that increased financial development induced a reduction in the number of farms and land devoted to agriculture, but also allowed for a more intensive use of machinery. For the manufacturing sector, we show that financial development is associated with increased

[2] White (2002) 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".

[3] As in Jayarantne and Strahan (1996), the growth rate of loans is used here as the measure of financial development. Other measures of financial development such as the ratio of liquid liabilities (M2) to GDP or the ratio of credit to private sector to total domestic credit are closely related to loans. Furthermore, for the period we study, other measures of liquidity are not very relevant.

employment, wages, and value-added. These two observations taken together suggest that financial development facilitated the sectoral shift from agriculture to manufacturing. For human capital acquisition, we find strong evidence of a link between financial development and school enrolment and attendance. However the link is somewhat equivocal: the effect on primary schooling is positive, but it is potentially negative for on secondary schooling. Finally, we show that financial development contributed to wealth acquisition by increasing home ownership.

The paper is organized as follows. In Section 2 we discuss the history of state branching and deposit insurance regulation. In Section 3 we take up the issue of whether changes in these laws can be regarded as exogenous. In Section 4 we describe the data. In Section 5 we examine the impact of these laws on the credit activity of the banking sector. In Section 6 we examine impact of the laws on a range of outcomes. Section 7 concludes.

2. A Brief History of Branching and Deposit Insurance in the United States: 1900-1940

2.1 The Dual Banking System

Banking in the United States is regulated at both the state and the federal level. This so-called dual banking system evolved out of National Banking Act of 1864, which established the Office of the Comptroller of Currency, and granted it authority to charter national banks (Cartinhour [1931], White [1982, 1983]). Existing banks were coerced into joining the national banking system by a 10 percent tax on all non-national banknotes (Westerfield [1939, p. 9]). By 1874, 84 percent of all banks were members of the national banking system (White 1983, p. 12). The National Banking Act also prohibited bank branching, restricted national banks from making real estate loans[4], and allowed the Comptroller of Currency to set banks' minimum capital requirements. Essentially these regulations established barriers to entry into banking.

[4] Less than 25 percent of a bank's portfolio could be in real estate loans, and the loan had to be less than 50 percent of the appraised value of the land. See White [1983, p. 23].

One of the consequences of this regulation was a shortage of banking services in rural areas, where communities were not large enough to meet the minimum capital requirements needed to establish a national bank (White [1982, 1983 p. 5]; Westerfield [1939, p. 11]). States entered the breach by passing "free banking" laws in the 1880s and 1890s (Southworth [1928, p. 8]). Free banking laws allowed for the creation of banks by satisfying a set of regulatory criteria (including minimum capital requirements) rather than applying for special charters. In general, states' minimum capital requirements were lower than those established by the Comptroller of Currency, facilitating the entrance of new banks. This laid the groundwork for active regulatory competition between the state and national banking systems. There were three dimensions to this competition: reserve ratios, minimum capital requirements and restrictions on the kinds of loans the banks could make.

Most states first entered into regulatory competition by allowing lower capital requirements than national banks. In 1895 only two of the states surveyed by the Comptroller of Currency had higher capital requirements than national banks. The Gold Standard Act of 1900 included provisions reducing minimum capital requirements of national banks in towns with fewer than 3000 inhabitants. However states responded in order to maintain the regulatory attractiveness of states banks: when surveyed again in 1909, all but one state that had minimum capital requirements in excess of the federal level had reduced their requirements (White [1982]).[5]

The next round of regulatory competition took place with the passage of the Federal Reserve Act of 1913, which was in large part a response to the bank panic and failures of 1907. Its aim was to establish a central clearinghouse for banks, and eliminate the pyramiding of reserve deposits that arose through the system of correspondent banks. (We discuss correspondent banking and the panic of 1907 in greater detail below.) To this end the Federal Reserve Act sought to encourage membership in the national banking system (see White [1983, Chapter 2]). This was achieved by reducing reserve requirements and weakening restrictions on national banks from making real estate loans. By 1915 fifteen states responded by lowering their reserve requirements. There was another round of regulatory competition in 1921.

[5] There was also competition along the dimension of reserve requirements. See White (1983), p. 143.

In conclusion, the dual banking system led to a multidimensional regulatory competition between the state and federal banking systems, in such areas as minimum capital requirements, reserve ratios, and restrictions on real estate loans.[6]

2.2 Branching Regulations

Branching was largely prohibited by national banks from their inception in 1864 until the Glass-Steagall Act of 1933 (Bradford 1940, P. 20).[7] The reasons for the initial prohibition against branching are unclear.[8] The practice of branching was viewed as suspect, 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 concerning a bank's operation. Branching was also feared because it allowed city banks to expand into smaller localities (see White [1983, pp. 156ff]). As such it was strongly opposed by country (unit) bankers, who portrayed city banks as would-be monopolists (see Chapman and Westerfield [1942, p. 74]).

Of course, the opposite view also existed. Sprague (1902, cited in White [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 which allowed branching were effectively able to withstand a wide range of shocks. Branching also allows banks to exploit economies of scale in banking services.[9] Below, we will also document that bank deposits grew at a faster rate in states that allowed branching.

[6] Trust companies were another source of competition with national banks. There was a substantial growth of trust companies in the late 19th Century and early 20th Century. However, according to White (1983, p. 36), trust companies were largely regulated by state authorities and "virtually indistinguishable from state banks".

[7] This prohibition was weakened on two 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 McFadden Act also allowed national banks to open branches in their home-city offices if state regulations allowed branching.

[8] As discussed in Chapman and Westerfield (1942, Chapter 3), the National Banking Act did not specifically prohibit branching, but it was interpreted in this way by the Comptroller of the Currency.

[9] Branching also increases efficiency: by making entry and consolidation easier, inefficient banks are removed.

Nonetheless, regardless of its origins, the federal prohibition against branching was one of the most stable features of the national banking system.

White (1982, 1983) and Economides, Hubbard, and Palia (1996) argue that the opposition to branching was 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, opening a new branch without having to satisfy the capital requirements for that location. State bankers' associations actively campaigned against allowing national banks to branch. Branching was one of the reforms that was proposed in 1897 to address the lack of expansion of bank services. However, opposition from unit bankers led to the abandonment of this measure in favor of reducing capital requirements for national banks (see White [1983, pp. 84-87]).

Branching, of course, had its proponents as well. In general, large, urban banks favored branching, since this would allow them to expand their base of operation beyond the urban centers in which they operated. Given their larger size, they could offer banking services to smaller communities, and compete with unit bankers. Indeed large banks, led by A. P. Giannini (see White, 1982), lobbied for branching. However, state bankers associations, which existed in many states (e.g. Kansas, Illinois, Iowa, Minnesota, Nebraska and South Dakota) 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. As a consequence, even though unit bankers constituted a small share of the banking industry in economic terms, their views were supported by the public at large and the state legislators. For example, in the 1924 referendum, voters in Illinois in fact rejected branching by a large majority (see White [1982]).

What determined the balance of power between these two forces? Based on the arguments outlined in White (1982, 1983), we theorize that branching failed to take root in rural, sparsely populated states. To the extent that these factors do indeed predict the adoption of branching, we will have to control for selection issues.

2.3 State Bank Deposit Insurance

One of the weaknesses of a unit banking system was its susceptibility to local shocks. Unit banks 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. Some surges in the demand for liquidity, such as seasonal fluctuations, were anticipated, and could be readily met 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 which could cascade throughout the system (see White [1983, pp. 65ff.]).

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. This had a cascading effect which eventually led to a widespread bank panic (see White [1983, pp. 74-83]; Calomiris [1992]).

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 to prevent future crises. At the time these two policies were effectively seen as mutually exclusive alternatives. As discussed in the previous section, the lobby of unit bankers was influential in excluding branching as a reform. However, the same lobby strongly 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, and Texas 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]).

Ultimately, unit bankers' support for deposit insurance was shortsighted. Deposit insurance created a strong moral hazard problem (see White [1984, 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 experienced a relatively large expansion in bank activity in the 1910s,[10] and following the agricultural downturn of the 1920s, a sharp decline in banking services, relative to similar states which did not adopt deposit insurance. Indeed, the combination of moral hazard and the agricultural crisis ultimately led to the failure of these state deposit insurance schemes.

The second incarnation of deposit insurance came in 1935, through the Federal Deposit Insurance Corporation, a creation of the Banking Act.[11] 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 within- and between-state comparisons.[12]

2.4 Branching and Deposit insurance Laws

Table 1 presents a summary of branching and deposit insurance laws from 1900 to 1940. These laws were collected from several data sources (see Data Appendix for more details). As pointed out in the previous section, this table shows that deposit insurance was only adopted by agricultural states, but that both agricultural and non-agricultural states adopted branching. Throughout the paper we define agricultural states using Calomiris' (1992) definition: "Any state that (1) experienced a farm real estate value reduction per acre exceeding 20 percent from 1920 to 1930, or (2) had an average annual farm foreclosure rate exceeding 20 per 1000 from 1926 to 1930."[13]

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 observed 16 changes in insurance laws and 54 changes

[10] Calomiris (1992) also provides some evidence that the expansion in banking services was achieved by increasing the number of banks rather than the assets per bank.
[11] The Glass-Steagall Act (1932) created the Temporary Deposit Insurance Fund. See White (1997a).
[12] 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 1937.
[13] We can also classify states by for example looking at the percentage of the population working in agriculture in 1900 or 1910. This alternative classification does not differ much from Calomiris'.

in branching laws. Also, as Figure 1 suggests, these changes were not always in the same direction. Nonetheless, since there is potentially serial correlation in these laws, particularly for branching, in all estimations the errors are clustered at the state level, as suggested by Bertrand, Duflo and Mullainathan (2002).

3 Are the Laws Exogenous?

3.1 What determined selection?

The political economy theory of banking regulation outlined in the previous section provides a strong story about which factors can explain the adoption of branching and deposit insurance laws. The banking industry was divided into two camps: large and small banks. Each side fought to preserve its privileges. Small banks therefore opposed branching and promoted deposit insurance, and large banks did the opposite. In sparsely populated, rural and agricultural states, small unit banks were common and they swayed the legislator. Finally, there is evidence that the banking panic of 1907 precipitated the adoption of banking regulation. In this section, we examine this theory in our data.

Table 2 presents preliminary evidence regarding the association between urbanization and branching. We note that states which adopted branching were on average more populous, more urban, and geographically smaller. Among the 11 states that never adopted branching, eight were agricultural.

Figure 1 depicts the proportion of states that permitted branching or had state deposit insurance in any given year. From this figure, in the years immediately following the banking panic of 1907, we note a reduction in the number of states that permitted branching, and an increase in the states with deposit insurance. However, a more detailed examination of Table 0 reveals that while some states did prohibit branching in this period (Arkansas, Michigan, Nevada, North Carolina, and Wisconsin), others in fact passed laws permitting branching (Kentucky and Massachusetts).

The evidence on the passage of branching and insurance laws is examined more formally in Tables 3 and 4.[14] Table 3a presents multinomial logit estimates of the probability of branching or deposit insurance, relative to the default of neither law, for the

period 1908 to 1920, when many branching and all deposit insurance laws were adopted.[15] Columns (1) to (4) provide evidence of the ability of the factors discussed above in predicting the passage of branching and insurance laws. In particular, we examine six factors suggested by the literature reviewed in Section 2: percent urban population, population, the initial (1907) average deposits per bank, initial (1907) number of banks per square mile, total initial (1907) bank loans, and the number of banks in 1907. Many are statistically significant, have a large effect in terms of magnitude (measured by the percentage point increase in the predicted probability of branching and insurance due to a one standard deviation increase in the dependent variable), and by and large enter with the expected signs in terms of the theory.

More urban and populous states are more likely to adopt either branching or insurance, with population having a particularly large effect in terms of magnitude. States with larger banks are more likely to adopt branching and less likely to adopt deposit insurance. States with a greater density of banks, indicative of states with many small country banks, are less likely to adopt branching and more likely to adopt insurance. The effect for branching in agricultural states goes in the opposite direction to the expected sign, but otherwise these coefficients confirm the theory of regulatory competition outlined in Section 2: states with fewer, larger banks will have a stronger lobby in favor of branching and against insurance (see White [1981], who finds that branching is a negative predictor of deposit insurance). The final two variables, total bank loans and number of banks, pick up scale effects not directly predicted by the theory, but which are nonetheless useful for their predictive power. Overall, the model is able to predict branching with 83 percent accuracy, and deposit insurance with 93 percent accuracy. Note that in our subsequent specifications fixed effects will control for the initial condition variables, and indeed other time-constant predictive factors.

Once these factors have been controlled for, the banking crisis of 1907 has a minimal impact in predicting the laws. In the last four columns only one of the coefficients on the change in state bank loans from 1907 to 1908 is statistically

[14] White [1981] estimates a cross-sectional probit for the adoption of insurance, using the adoption of branching as a control variable. Our results are a natural extension of his: we use a panel, and we examine the choice among branching, insurance, and the default simultaneously.

significant. The magnitude of the coefficients, though not trivial, is nonetheless smaller than the effects of population and average initial deposit per bank. Changes in national bank loans have an even smaller effect in terms of magnitude on the probability of adopting these laws, and of course we control for national bank loans in subsequent specifications. Note finally that the inclusion of changes in bank loans does not significantly increase the predictive power of the model.[16]

Table 4 asks more generally whether over the entire 1900-1940 period, poor banking performance resulted in the adoption banking regulation. It examines the effect of lagged changes in the number of state banks and state bank loans on the passage of either branching or insurance laws (allowing for fixed effects via a conditional logit). The table shows that neither lagged changes in the number of state banks nor changes in state loans significantly predict the passage of deposit insurance or branching regulation. The table also corroborates the argument that urbanization is a significant predictor of the passage of banking regulation, at least for agricultural states. Population is a significant predictor of branching among all states, but not within the subset of agricultural states.

In conclusion, we are confident that the combination of controls and fixed effects we use in our specifications in subsequent sections will address issues of selection.[17]

3.2 Strategies for dealing with selection

The findings in the previous section corroborate the political economy theory of regulatory competition outlined in Section 2, and establish that the variables suggested by the theory have significant predictive power in explaining branching and deposit

---

[15] Historically it is true that no state ever adopted both deposit insurance and branching simultaneously; therefore we estimate a multinomial logit model where these are laws are mutually exclusive choices.

[16] A separate question to consider is predicting the branching versus insurance among the states that passed any law. Using the same set of variables, we find that percent urban population and average initial deposit per bank are statistically significant predictors of branching relative to deposit insurance. The overall predictive accuracy of the model is 99.6 percent.

[17] A recent 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, and also provide evidence that states with larger manufacturing sectors (who would presumably benefit from branching) also tended to allow branching. For our data, we use the average size of farms and the proportion of the population employed in manufacturing to capture these effects. Even though these variables do provide significant predictive power in a cross-section, in a panel they are no longer significant when we condition on the initial levels of farm size and manufacturing employment. Thus, in our results that follow, the state (and time) fixed effects should cleanse any selection arising from these factors.

insurance regulation. Thus, in subsequent sections the inclusion of state fixed effects (to soak up the initial size, density, and number of banks and level of loans variables included in Table 3), time fixed effects, and the additional controls we employ 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. Note as well, that for some variables (banking outcomes) we will compare growth rates within states over time. This provides for yet another level of differencing.

We have two additional strategies to address the issue of selection.

First, we allow for decade heterogeneity in the effect of the deposit insurance variable. Based on the discussion in Section 2.3, it is clear that states that had deposit insurance were especially affected by the agricultural crisis of 1919. Hence, the effect of the interaction between insurance and the decade of the 1920s is essentially identified from an exogenous event (the agricultural crisis of 1919) which could have not been predicted when insurance laws were adopted.

Second, in order to control for the effect of time-varying macroeconomic conditions within a state, we make use of a comparison group: national banks within the same state. These banks are affected by the same macroeconomic shocks as state banks, but (as we will show) are not affected by changes in state banking regulations. Therefore we can use the growth rate of assets of national banks as a time-varying state-level control. 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.

Thus, conditional on fixed effects and additional controls, we do not believe selection to be a particularly severe problem for banking and insurance regulation variables, but nonetheless we use a wide range of strategies to guarantee the conditional exogeneity of these laws.

4. Data Description and Sources

Data for this paper was collected from several sources. To the extent possible, we gathered information on any economic activity and outcomes that would be affected by credit expansions. However in this early period of the United States, data are scarce. For example no data exist to our knowledge on state's GDP or income. Data exists for all years between 1900 and 1940 only for banking outcomes. For all other measures, data only exists for some subset of years. No interpolation was made, except for population and percent urban which are always used as controls in our analysis. Table 5 presents descriptive statistics of our data. All values are expressed in 1982-1984 dollars.[18] For sake of brevity, we present only means of the variables over the entire sample. For additional details see the Data Appendix.

5. The Effect of Branching and Deposit Insurance Regulation on Bank Activity

In the previous section we documented that state branching and deposit insurance laws provide plausibly exogenous sources of variation in banking activity. In this section, we document that this variation in regulation did indeed have an impact on the activities of the banking sector. As such this section replicates the findings of Calomiris (1982) and White (1983) with respect to those laws. We also extend the previous results by examining the entire period from 1900 to 1940. This allows us to deal with potential selection issues using the range of techniques discussed in Section 3.2, including the use of state and year fixed effects.

The results are presented in Table 6. The outcomes we examine are total loans by state and national banks. In the historical period we are examining, bank's credit activities were primarily through loans, rather than more sophisticated financial instruments.[19] We examine the impact of the laws on state and national banks separately.

In the first four columns we examine the impact of branching and deposit insurance regulation on the growth rate of loans for national banks and the log of total national bank loans. To the extent that these laws applied only to state banks, they should

[18] We use the historical CPI constructed by the Bureau of Labor Statistics. Unfortunately the series only starts in 1914, so we use the 1914 value for all previous years.

[19] The impact of these laws can also document for other bank outcomes such as total deposits and assets. The results are virtually identical to those presented here.

not have any significant impact on national banks.[20] This is confirmed in the table. The coefficients on the branching and insurance laws are both small in magnitude (relative, for example, to the effect of percent urban population) and insignificant.

For deposit insurance, we enter not only an indicator for the presence of deposit insurance, but we interact this variable with an indicator for the decade of the 1920s. This is motivated by the observation in Section 2 that deposit insurance had a sharply different impact after the crash of agricultural prices in late 1919. Prior to that period, banks in states with deposit insurance expanded credit rapidly, relative to non-insurance states; however, following the crash, insurance states experienced an especially sharp decline in the availability of credit. Of course for national banks neither of these effects is significant.

We next examine the effect of regulation on the growth of state bank loans and the log of total state bank loans. Since the results in the first four columns confirm that there was no effect of these regulations on national banks, but presumably since national banks were affected by the same macroeconomic shocks as state banks, we include them as a control in the state bank regressions (and in our subsequent regressions).[21] In columns (5) to (8) we see that insurance and branching had impacts in the predicted direction on the credit activities of state banks: the main effect of insurance is positive; the interaction with the 1920s dummy is negative; and the effect of branching is positive. This is true for all states, and for the subset of agricultural states.

For the growth of loans, the main insurance and branching effects are significant, and for the log of total loans, the interaction of insurance and 1920 is significant. The magnitude of the effects is large. Relative to an average growth rate of between 4 and 5 percent, the effect of branching is between 3 and 4 percentage points. The main effect of insurance is of a similar magnitude, and the insurance-in-the-1920s effect is even larger,

[20] One possible concern is if banks switch charters from state to national banks in a way that systematically biases our results. Calomiris (1992) documents that charter switching was an avenue that some banks pursued to avoid state deposit insurance. He also documents that charter switching was only very important in two states, Texas and Oklahoma. Nonetheless, we address this in two ways. First, we rerun our results using loans from all banks, which then eschews the problem of charter switching. Second, we rerun the results excluding states that participated in deposit insurance, for whom the problem of charter switching is presumably more severe. Our results are similar for both of these cases.

[21] Controlling for the growth rate of assets of national banks (rather than of loans) does not change the results.

8.8 percentage points for agricultural states. We analyzed the effect of the laws on the log of total loans purely as a specification check: these laws had presumably a much larger effects on the growth rate of loans, but the results are not qualitatively different for the other measure.

In conclusion, Table 6 verifies that state branching and deposit insurance regulations had a large and significant impact on state banks, but did not have any particular impact on national banks.

6. The Effect of Branching and Insurance Laws on Farm, Manufacturing, and Household Outcomes

In this section we consider the impact of branching and deposit insurance laws on a range of farm, manufacturing, and household outcomes. These regressions follow a similar specification, controlling for percent urban population, the growth of assets of national banks, and allowing for state and year fixed effects. We control for the growth of assets of national banks (rather than loans) in order to control for economic conditions at the state level (rather than only conditions in the credit market at the state level). The effect of the credit variables (insurance, insurance in the 1920s, and branching) represents the reduced form effect of an exogenous increase in credit on the outcome. The effect of branching and insurance is exogenous since we have document that changes in the laws are exogenous conditional on the variables for which we control. Insurance in the 1920s, which identifies the differential effect of credit due to agricultural crash, is exogenous to the extent that there is no systematic relationship between the states that adopted deposit insurance and the subsequent crash in agricultural prices.

Given that we have argued for the exogeneity of branching and deposition insurance regulation, a natural question to ask is: why not use these policy changes as instruments for an endogenous variable? In the present analysis, this would not be an appropriate framework because even though the laws are exogenous their effect does not operate exclusively through any one variable such as the growth rate of loans or deposits. As we will show in Section 5.4, wages, for example, are an important variable through which the effect of financial development on high school enrolment might operate. Likewise for human capital, and the farm and manufacturing sectors, there might be

effects via changes in the interest rate. Unfortunately we do not observe the interest rate but it was most certainly affected by the changes in the supply of loans. 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 in the sense that 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 effect of the laws on the outcomes through a variety of channels.

6.1 The Effect on Farms

During the period we are examining, 1900-1940, the agricultural sector was undergoing a significant transformation, along with the economy in general. In 1900, the average level of urbanization was 34 percent, whereas by 1940 it was 47 percent. At the same time, there was a secular shift of the economy from the agricultural sector to manufacturing, and agricultural was experiencing increased mechanization (see for example Black [1961] and Poulson [1981]). Within this context, what role does credit play? We anticipate that credit allows for consolidation in the agricultural sector (e.g., a reduction in the number of farms), but at the same time allows for more machine-intensive agriculture. The results are presented in Tables 7a and 7b.

The first panel presents the effect for all states. For the number of farms, we see that main effect of deposit insurance is negative (and significant at the 10% level), the interaction effect is positive (and significant at the 5% level), and the effect of branching is negative (though not significant). Since deposit insurance and branching present increases in the credit (and insurance in the 1920s a reduction in credit) these results suggest that increased credit led to a reduction in the number of farms. Note that since we allow for fixed effects, this represents within-state variation. The second columns reveals that the total number of acres devoted to agriculture also declined more rapidly in states with greater banking activity. In this sense, financial development hastened the demise (contraction) of the agricultural sector. However, in column (3) we note that the value of machines and implements used per acre increased in states with greater bank credit activity. In this sense, land was farmed more intensively in states with greater access to

credit.[22] A similar set of results is obtained for these variables when looking within agricultural states, and within manufacturing states for the effect of branching (Table 7b).

On the output side of the farming sector, results are more mixed. In column (4) we see that increased access to credit led to a decline in the value of crop produced per farm: the main effect of insurance and the effect of branching are negative, and the interaction effect is positive. The negative effect of insurance is also significant for the subset of agricultural states. Based on the banking literature (White [1983] and Calomiris [1992]) this 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 an indiscriminate access to credit can have negative effects. In column (5) we see that when confining attention to the period after the demise of deposit insurance (1930 onwards), farm receipts significantly increased with branching.

In conclusion, our results for the farm sector suggest that credit hastened the transition away from the farm sector, and facilitated a more intense use of those resources that remained in agriculture. This then suggests that the effect of bank activities on the manufacturing sector should be positive. We examine this in the next section.

6.2 The Effect on Manufacturing

Taken independently of changes in the farm sector, basic price theory gives a strong set of predictions for the effect of an expansion in credit to firms. An increased supply of credit, other things being equal, reduces interest rates, leading to a greater use of capital by firms. This also reduces the marginal cost of production, and should allow for a greater expansion of manufacturing relative to firms (or states) with a lower access to credit. The effect on wages depends on the Hicks Laws of Substitution [check this]. For the type of labor that is complementary to capital, there will be an increased demand, and presumably increased wages. Table 8 presents our results.

In columns (1), (4), and (7) we examine the effect of branching on total employment in manufacturing. For all states, and also agricultural and non-agricultural

[22] Note that both the number of acres cultivated and farm machinery are declining in this period and with the banking laws. But in states with credit, machinery decreases at a slower rate than the acreage.

states considered separately, increased access to credit leads to a significant increase in employment. The effect of branching is significant for all three estimates. The effect of deposit insurance in the 1920s is strongly negative for agricultural states. The main effect of deposit insurance is negative when estimated over all states, but is positive for the subset of agricultural states.

In columns (2), (5), and (8) we examine the effect on the log of real annual manufacturing wages per worker. Again the effect of credit is positive and significant. Insurance in the 1920s is only significant for the full sample, but branching is significant for all three samples (indeed, significant at the 1 percent level for manufacturing states). The magnitude of the effect is large, on the order of a 3 to 5 percent increase in wages due to branching. Note that in general 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, columns (3), (6), and (9) confirm that the value added in manufacturing also increased with banking activity. The effect of branching is uniformly positive, large in magnitude, and significant. Relative to a mean value added of $4,282,805 in non-agricultural states, the effect of branching is on the order of 28 percent. The effect for agricultural states is of a similar order of magnitude.

Hence our results in this section confirm that an expansion of banking activities assisted in the process of an expansion of the manufacturing sector.

6.3 The Effect on Human Capital

The literature on financial development has documented that increased financial activity leads to increased economic growth. Our results thus far corroborate this finding by suggesting that financial development not only stimulated manufacturing, but also hastened the transition away from an agricultural economy. In this section, 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 lower demand for child labor and increased schooling.

There are additional reasons why we might expect increases in credit to have an impact on schooling and child labor even in the absence of a sectoral shift. Access to credit allows individuals efficiently to trade off the current costs of education with the future returns. Even though credit constraints may not be the most important factor determining school attendance, this line of reasoning suggests that it should be a contributing factor to the great high school expansion documented by Katz and Goldin (1997) and Katz and Goldin (1998).

We examine these effects using data from the Biennial Survey of Education and the Census. In Tables 9a to 9c, we examine the Survey of Education. One advantage of this data is its relative frequency. It was biennial from 1917 onward. A second advantage is that the data allow us to control for other important determinants of school attendance, such as availability of schools, educational expenditures, and compulsory schooling laws. Though the results in the tables are not overwhelming, they do offer limited but significant support for the role of credit and financial development.

For the sample of all states, credit contributes positively to male elementary enrolment. It is statistically significant through the 1920s interaction – a reduced access to credit leads to reduce enrolment, and when we control for additional variables the main effect is also significant. For the reduced sample of agricultural states, the effect of branching is significant for both male and female primary enrolment. For non-agricultural states, the effect, counter-intuitively, is negative, though it is not statistically significant. The effects are substantial in magnitude, between 1 percent for branching to 5 percent for deposit insurance.

For secondary enrolment there are positive and marginally significant effects on female secondary enrolment, for all states, but not significant with a full set of controls for agricultural states. For non-agricultural states, the effect (of branching) is uniformly negative. Though these estimates are not significant they might reflect the offsetting effect of wages in enrolment. In the previous section we noted that credit led to an expansion of manufacturing and an increase in manufacturing wages. To the extent that the upper age range of primary schooling and secondary schooling represent a potential

labor force for manufacturing, the increased wage could account for reduced enrolment. Note that the coefficient on the age at which a child could obtain a work permit is positive and sometimes significant, perhaps corroborating this theory.

This negative effect is confirmed when we examine data from the census in Table 10. For all states and agricultural states, the effect of credit is positive for school attendance between the ages of 5 and 14. The effect on high school attendance is also positive, though it is only significant for male high school attendance in agricultural states. In non-agricultural states, the effect of branching is uniformly negative, and indeed significant for percentage school attendance for ages 5 to 14.This corroborates the finding from the Survey of Education data that there are perhaps offsetting effects of wages on school attendance.

It must be noted however that the magnitude of these effects is small, much smaller than those measured in the Biennial Survey.[23] There are many reasons why the magnitudes are different, including the fact that the census uses many fewer observations, but the main reason is that the census greatly overstates school enrollment. [24] Overall the evidence does suggest a limited, though significant, link between financial development and school enrolment and attendance.

6.4 The Effect on Child Labor

A cursory analysis might ignore child labor as an outcome on the grounds that increased schooling must automatically imply reduced child labor. During this period in US history child labor was low (15 percent for boys in 1900 and 6 percent for girls), and rapidly declining (to 2 percent for boys and 0.6 percent for girls in 1940). However, schooling

[23] The average rate of school attendance over this period was 60 percent between the ages of 5 and 14, and 22 percent between the ages of 14 and 18. The effect with the largest magnitude is deposit insurance, which is on the order of 1 percentage point for both categories. Instead the negative effect of branching in non-agricultural states is less than 0.2 percentage points for primary schooling.

[24] Both data sources have well-known limitations that may contribute to these results. From the Survey of Education we have enrolment data that is arguably more representative of participation in school than the data from the Census, which captures attendance only during the reference week. For this reason, the small magnitude of the effects from the Census is not surprising. The significant limitation of the Survey data is that there is no perfect denominator by which to scale school enrolment, since breakdowns of state population by age are not available in off-Census years (see the extensive discussion in Goldin [1994]). Our compromise is to regress log attendance and to control, inter alia, for log population. To the extent that population is the correct denominator its coefficient should be one. From Tables Xa to Xc we note that true

and child labor are not necessarily one-for-one substitutes. Some forms of child labor, such as work on the family farm, are not full time and do not preclude school attendance, which in turn can be scheduled to accommodate the exigencies of farm labor. Alternatively, children that do not attend schools are not necessarily working. In keeping with the literature (see Moehling, [1999]), we define child labor as the percentage of children ages 10-15 that are not in school and are at work.[25]

Again, since the majority of children that are gainfully employed are in agriculture, we expect that the shift away from agriculture reduced child labor significantly. Additionally, 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]). Table 11 assesses the question empirically.[26]

The results uniformly suggest that increased financial sector activity leads to reduced child labor. The effect of branching is uniformly negative, and significant for all but the female sample in agricultural states. The coefficients are statistically significant from the five to the one percent level depending on the sample. The magnitude of the branching effects is, however, small: 0.1 to 0.2 percentage points on a base prevalence of child labor ranging from 5 to 6 percent for boys to 2 to 3 percent for girls. The effect of deposit insurance is instead much larger. The magnitude of these effects is 1.1 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 insurance effect is similar for female child labor, but the effects are not significant at the standard levels.

In summary, the table provides a clear picture of a negative association between financial development and child labor.

---

in some cases, but far from true in other cases. To some extent, the estimated coefficient on log population corrects for this.

[25] 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 Gratti [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.

[26] Note that in 1940, only children ages 14 and above were asked about the occupation, so that in principle, the child labor measure cannot be calculated for 1940. However, we note that we observe some children below ages 14 declaring an occupation. Also we note that in previous years a large fraction of those children classified as child labor are in the 14-15 age category. So we chose to include 1940.

6.5 The Effect on Household Wealth

One of the most direct effects of access to credit on the household is presumably an increased ability of the household to purchase its home. We examine this effect in Table 12.

For the sample of all states, the effect of insurance interacted with the 1920s is significant. For agricultural states, none of the effects is significant. For non-agricultural states the effect of branching is positive and highly significant. However, the magnitude of these effects is extremely small. The overall rate of home ownership is on the order of 40 percent or more. The effect of financial sector activity is on the order of one percent.

6.6 Interpreting the Results

Overall we find that branching and deposit insurance laws had a significant impact on the outcomes we examined. At first blush, it may seem surprising that the smallest and weakest impacts we estimated were for home ownership. However, in the context of this period, housing finance was not primarily facilitated by banks. National banks were prohibited or severely limited from participating in this market. State banks could make real estate loans, but this segment of the market constituted less than 20 percent of their portfolio. Furthermore, most of these loans were for the purchase of land rather than of homes (see Carter [1992], Chapter 3), and those mortgages that were offered were usually for less than five years. As documented in Doti and Schweikart (1991) and Clauretie and Webb (1993), middlemen acting as intermediaries between Eastern capital and Western borrowers were an important segment of the mortgage market. Many of these worked in conjunction with banks, but did not necessarily operate through banks.

Likewise, the large impact on the manufacturing sector makes sense in the context of banking in the first half of the century. Banking in this period was widely influenced by the real-bills doctrine, which held that loans by banks should primarily facilitate the production (storage, shipment, etc.) of goods and should be short term in nature (see James [1978] and White [1997b]). In 1909, such time loans constitute 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 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 borrow (either directly or indirectly) to facilitate children's education. Though plausible, 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 more readily practiced) to manufacturing (where it was more difficult to employ children).

7. Conclusion

This paper has examined the causal link between financial development and components of economic growth. Our results have demonstrated a strong link between state branching and deposit-insurance regulation and activity in the bank, farm, and manufacturing sectors.

Although we find that financial development, as measured by banks loans, has in 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 growth under some circumstances. Thus we confirm Jayarathne and Strahan (1996)'s suggestive findings that quality (not only quantity) of lending matters.

Our results for human capital also suggest a clear but equivocal link. Financial development is associated with an increase in primary enrolment, but there is evidence of a slight reduction in secondary enrolment. Finally, there is a strong, negative, and significant link between financial development and the reduction of child labor.

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 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.

References

Angrist, Joshua, Guido Imbens, and Donald Rubin (1996), "Identification of Causal Effects Using Instrumental Variables" (with discussion), *Journal of the American Statistical Association*, 91, 444-72.

Angrist, Joshua, and Alan B. Krueger (1991), ``Does Compulsory School Attendance Affect Schooling and Earnings?," *Quarterly Journal of Economics*, 106, 979-1014.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan (2002), "How Much Should We Trust Differences-in-Differences Estimates?," NBER Working paper No. 8841

Black, John (1961). "Agriculture," in Seymour Harris (ed.), *American Economic History*. New York, NY: McGraw Hill, chapter 15, pp. 483-521.

Bradford, Frederick A. (1940). *The Legal Status of Branch Banking in the United States*. New York, NY: American Economists Council for the Study of Branch Banking.

Calomiris, Charles (1992). "Do 'Vulnerable' Economies Need Deposit Insurance? Lessons from U.S. Agriculture in the 1920s," in Philip L. Brock (ed.), *If Texas Were Chile: A Primer on Banking Reform.* San Francisco, CA: Institute for Contemporary Studies, pp. 237–349.

------ and Carlos Ramirez (2002). "The Political Economy of Bank Entry Restrictions: Theory and Evidence from the U.S. in the 1920s," unpublished.

Cameron, Rondo (1967). *Banking in Early Stages of Industrialization*. New York: Oxford University Press.

Carter, J.M. (1992). *Commercial Bank Liquidity Management, Discretionary Reserve Behavior, and the Allocation of Credit, 1873-1913*. New York, NY: Garland Publishing.

Cartinhour, Gaines Thomson (1931). *Branch, Group, and Chain Banking*. New York, NY: MacMillan.

Chapman, John M., and Ray B. Westerfield (1942). *Branch Banking*. New York, NY: Harper & Brothers.

Clauretie, Terrence M., and James R. Webb (1993). *The Theory and Practice of Real Estate Finance*. New York, NY: The Dryden Press.

Dehejia, Rajeev, and Roberta Gatti (2002), "Child Labor: The Role of Access to Credit and Income Variability," mimeo Columbia University and World Bank, previous version circulated as a WB Policy Research Paper No 2767.

Doti, Lynne, and Larry Schweikart (1991). *Banking in the American West: From the Gold Rush to Deregulation*. Norman, OK: University of Oklahoma Press.

Economides, N., R. Glenn Hubbard, and D. Palia (1996). "The Political Economy of Branching Restrictions and Deposit Insurance: A Model of Monopolistic Competition among Small and Large Banks," *Journal of Law and Economics*, 39, 667-704.

Goldin, Claudia (1994). "How American Graduated from High School," National Bureau of Economic Research Working Paper, No. W4762, and Appendix, Working Paper No. H0057.

Jayaratne, Jith, and Philip Strahan (1996), "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation," *Quarterly Journal of Economics*, 111, 639-670.

James, John A. (1978). *Money and Capital Markets in Postbellum America*. Princeton, NJ: Princeton University Press.

Katz, Lawrence, and Claudia Goldin (1997). "Why the United States Led in Education: Lessons from Secondary School Expansion, 1910 to 1940," National Bureau of Economic Research Working Paper No. 6144.

------ and ------ (1998a). "Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910 to 1940," National Bureau of Economic Research Working Paper No. 6439.

------ and ------ (1998b). "The Shaping of Higher Education: The Formative Years in the United States, 1890 to 1940," National Bureau of Economic Research Working Paper No. 6537.

------ and ------ (1999a). "The Returns to Skill in the United States across the Twentieth Century," National Bureau of Economic Research Working Paper No. 7126.

------ and ------ (1999b). "Education and Income in the Early 20th Century: Evidence from the Prairies," National Bureau of Economic Research Working Paper No. 7217.

King, Robert, and Ross Levine (1993). "Finance and Growth: Schumpeter Might be Right," *Quarterly Journal of Economics*, 108, 717-737.

Levine, Ross, and Sara Zervos (1998). "Stock Markets, Banks, and Economic Growth," *American Economic Review*, 88, 537-558.

Lleras-Muney, Adriana (2002) ``Were State Laws on Compulsory Education Effective? An analysis from 1915 to 1939," *Journal of Law and Economics*, forthcoming.

Lucas, Robert (1988). "On the Mechanics of Economic Development," *Journal of Monetary Economics.*

Moehling, Carolyn M. (1999). "State Child Labor Laws and the Decline of Child Labor." *Explorations in Economic History,* 36, 72-106.

Nelson, Richard R., and Edmund S. Phelps (1966). "Investment in Humans, Technological Diffusion and Economics Growth," *American Economic Review*.

Poulson, Barry (1981). *Economic History of the United States*. New York, NY: Macmillan Publishing Co.

Rajan, Raghuram, and Luigi Zingales (1998). "Financial Dependence and Growth," *American Economic Review*, 88, 559-586.

Roussea, Peter, and Paul Wachtel (1998). "Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries," *Journal of Money, Credit, and Banking*, 30, 657-678.

Sala-i-Martin, Xavier, and Robert Barro (1992). "Convergence," *Journal of Political Economy*, 100, 223-251.

Southworth, Shirley Donald (1928). *Branch Banking in the United States*. New York, NY: McGraw-Hill.

Sylla, Richard (1969). "Federal Policy, Banking Market Structure, and Capital Mobilization in the United States, 1863-1913," *The Journal of Economic History*, 29, 657-686.

------ (1972). "The United States 1863-1913," in Rondo Cameron (ed.), *Banking and Economic Development: Some Lessons of History*. New York: Oxford University Press, pp. 232-262.

------ (2002). “Financial Systems and Economic Moderization,” *The Journal of Economic History*, 62, 277-292.

Westerfield, Ray B. (1939). *Historical Survey of Branch Banking in the United States*. New York, NY: American Economists Council for the Study of Branch Banking.

Wheelock, David C. (1992). “Regulation and Bank Failure: new Evidence from the Agricultural Collapse of the 1920s,” *Journal of Economic History*, 52, 806-825.

------ and Subal C. Kumbhakar (1995). “Which Banks Choose Deposit Insurance? Evidence of Adverse Selection and Moral Hazard in a Voluntary Insurance System,” *Journal of Money, Credit and Banking*, 27, 186-201.

------ and Paul W. Wilson (1995). “Explaining Bank Failures: Deposit Insurance. Regulation, and Efficiency,” *The Review of Economics and Statistics*, 77, 689-700.

White, Eugene Nelson (1981), “State-Sponsored Insurance of Bank Deposits in the United States, 1907-1929,” *Journal of Economic History*, 41, 537-557.

------ (1982), “The Political Economy of Banking Regulation, 1864-1933,” *Journal of Economic History*, 42, 33-40.

------ (1983). *The Regulation and Reform of the American Banking System, 1900–1929*. Princeton, NJ: Princeton University Press.

------ (1997a). “The Legacy of Deposit Insurance: The Growth, Spread, and Cost of Insuring Financial Intermediaries,” NBER Working Paper No. 6083.

------ (1997b). “Deposit Insurance,” in Gerard Caprio, Jr., and Dimitri Vittas (eds.), *Reforming Financial Systems: Historical Implications for Policy*, chapter 5. Cambridge: Cambridge University Press, 1997.

Data Appendix

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 from All-Bank Statistics we can confirm that these are small both in number and in terms of 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 these censuses, individuals were asked if they were in school anytime in the last year,[27] and what their occupation was. All children that declared an occupation[28] were classified as working.[29] We define child labor as the percentage of children ages 10 to 15 that 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

[27] This number overstates the number of children that attended school for several months (see Goldin, 1999).
[28] We used the variable occ1950. Those with codes less than 980 were considered to be working.
[29] 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.

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 in define din 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 s 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 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 of 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 enrollement by gender, education expenditures and number of schools buildings per state comes from several years of the Biennial Survey of Education. The data exists for even years, starting in 1916/1917.

Data 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 roads come from the "Socio-Economic, Public Policy, And Political Data For The United States, 1890-1960", ICPSR study number 0015.

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 Consumer Price Index series provided by the Bureau of Labor Statistics online at ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt. The base period is 1982-84.

Data Bibliography

U.S. Department of Commerce, Bureau of the Census, "Fifteenth Census of the United States: 1930," GPO Washington 1933.

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

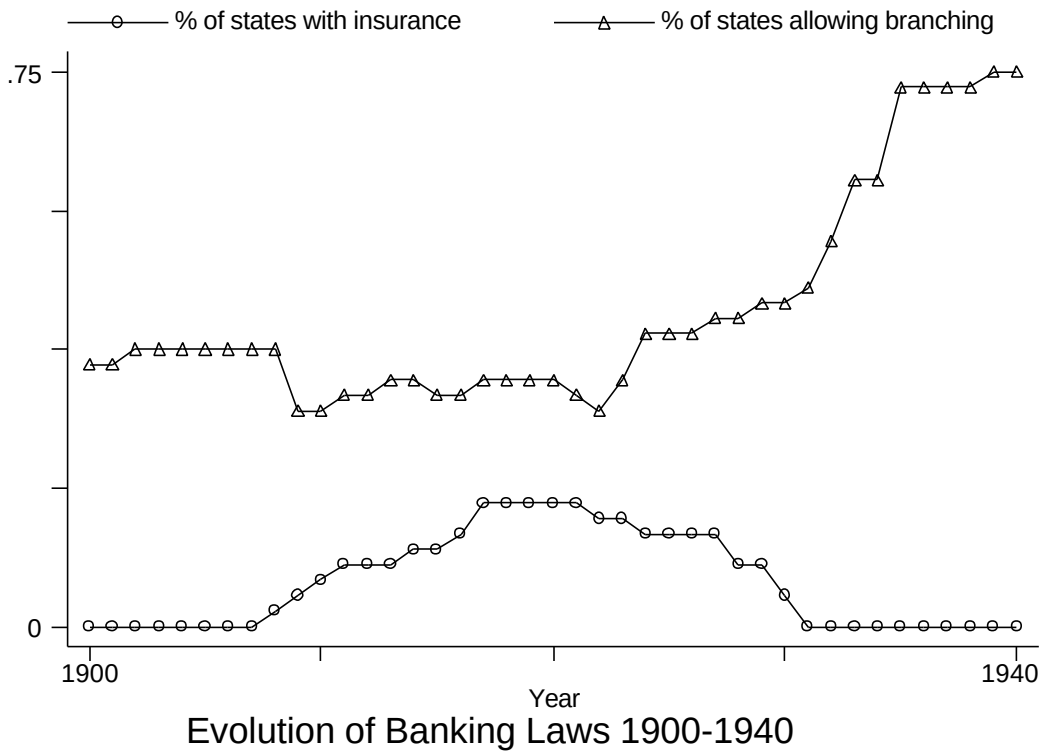

Table 1: State Branching and Deposition Insurance Regulations

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	

Table 1 (continued): State Branching and Deposition Insurance Regulations

State	Branching 1900	Branching 1909	Branching 1919	Branching 1929	Branching 1939	Deposit Insurance
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	

Notes: States in bold font are states classified as "Agricultural Crisis States" according to Calomiris (1992): "Any state that (1) experienced a farm real estate value reduction per acre exceeding 20 percent from 1920 to 1930, or (2) had an average annual farm foreclosure rate exceeding 20 per 1000 from 1926 to 1930."

The years that are shown in this table are years for which the laws in place in each state were reported in the various publications where these laws were gathered. As explained in the data appendix, for some years the laws were interpolated.

Sources: varied, see Data Appendix.

Table 2: A Comparison of Branching and Non-Branching States

	Branching allowed	Branching not allowed	Agricultural states with insurance	Agricultural states without insurance
Population	2585978	1900473	1882949	2096948
	(2656638)	(1683807)	(1232436)	(1603741)
Percent urban	.479	.375	.260	.338
	(0.233)	(0.184)	(0.103	(0.154)
Land area	50732	73595	96143	72594
	(39178)	(50350)	(67581)	(38459)
States ever allowing branching/ insurance	39	11	8	24
State-year observations	845	1128	122	1190

Notes: Standard deviation in parentheses.

Table 3: Predicting Passage of Branching and Insurance Laws 1908-1920, Multinomial Logit Estimates

	All states		Agricultural states		All states		Agricultural states	
Dependent Variable:	Branching	Insurance	Branching	Insurance	Branching	Insurance	Branching	Insurance
Percent urban	0.67	5.10	7.29*	4.87	0.44	12.5	6.50	11.0
	(2.65)	(7.10)	(4.11)	(7.17)	(2.81)	(8.49)	(4.87)	(8.91)
	[0.005]	[0.098]	[0.179]	[0.064]	[-0.024]	[0.172]	[0.103]	[0.160]
Population	1.13e-06*	2.48e-07	2.16e-06*	2.56e-07	1.30e-06*	1.68e-07	1.62e-06*	5.36e-08
	(6.64e-07)	(1.07e-06)	(1.13e-06)	(1.08e-06)	(7.50e-07)	(1.10e-06)	(9.36e-07)	(1.21e-06)
	[0.387]	[-0.005]	[0.473]	[-0.028]	[0.413]	[-0.018]	[0.417]	[-0.037]
Average deposit per bank 1907	2.12e-04***	-0.002	8.65e-04	-0.001	2.34e-04***	-0.003*	7.71e-04*	-0.003
	(8.48e-05)	(0.003)	(5.41e-04)	(0.003)	(8.40e-05)	(0.002)	(4.49e-04)	(0.002)
	[0.419]	[-0.156]	[0.722]	[-0.159]	[0.420]	[-0.106]	[0.713]	[-0.159]
Banks per square mile, 1907	-234**	183	549	256	-258***	1247	754***	1450
	(105)	(189)	(343)	(206)	(105)	(774)	(289)	(910)
	[-0.162]	[0.148]	[0.394]	[0.060]	[-0.228]	[0.467]	[-0.022]	[0.593]
Total state bank loans,1907	-1.99e-08	-3.72e-06	-7.07e-06***	-4.68e-06	1.33e-07	-2.14e-05	-1.04e-05***	-2.44e-05
	(4.74e-07)	(2.79e-06)	(2.78e-06)	(2.91e-06)	(4.52e-07)	(1.31e-05)	(2.89e-06)	(1.56e-05)
	[0.004]	[-0.156]	[-0.187]	[-0.159]	[0.072]	[-0.106]	[-0.187]	[-0.159]
Number of national banks, 1907	-0.013**	0.006	-0.035**	0.007	-0.014***	-5.73e-04	-0.027**	0.002
	(0.006)	(0.012)	(0.016)	(0.012)	(0.006)	(0.011)	(0.013)	(0.011)
	[-0.161]	[0.092]	[-0.185]	[0.110]	[-0.200]	[0.003]	[-0.177]	[0.043]
Change in state banks' loans, 1907-1908					3.85e-06	-9.59e-05	-3.11e-05*	-1.09e-04
					(3.86e-06)	(6.31e-05)	(1.76e-05)	(7.57e-05)
					[0.232]	[-0.106]	[-0.187]	[-0.159]
Change in national banks' loans, 1907-1908					-3.70e-06	-4.81e-05*	-5.18e-06	-5.15e-05*
					(4.91e-06)	(2.73e-05)	(1.44e-05)	(3.07e-05)
					[-0.082]	[-0.106]	[-0.071]	[-0.159]
Predicted prob.	0.21	0.16	0.19	0.16	0.32	0.11	0.19	0.16
Predictive accuracy	0.83	0.93	0.84	0.93	0.75	0.95	0.88	0.93
Observations	624	624	416	416	624	624	416	416

* significant at 10%, ** significant at 5%, *** significant at 1%.

Notes: Predicted probability is the average predicted probability of branching and insurance relative to the default (no branching and no insurance). Predictive accuracy is the proportion of state-year laws correctly predicted, where a predicted probability greater than 0.5 is taken as a prediction of 1. Standard errors (in parenthesis) and clustered at the state level. Number of observations per state used as weights.

Table 4: Conditional Logit Estimates of the Effect of Changes in the Number of Banks and in Loans on Regulations

	All states Passed any banking law	Agricultural states Passed any banking law	All states Passed any banking law	Agricultural states Passed any banking law
(# of banks, t-1)-(#of banks, t-2)	-0.001 (0.002)	-9.39e-04 (0.002)	-0.001 (0.002)	-0.001 (0.003)
(# of banks, t-2)-(#of banks, t-3)			1.07e-06 (0.002)	0.001 (0.002)
(total loans, state, t-1)-(total loans, state, t-2)	-7.10e-07 (4.47e-07)	-5.63e-07 (5.40e-07)	-4.95e-07 (5.17e-07)	-3.99e-07 (6.17e-07)
(total loans, state, t-2)-(total loans, state, t-3)			-3.94e-07 (5.10e-07)	-3.17e-07 (5.64e-07)
% urban	-2.51 (1.66)	8.30*** (2.24)	-2.44 (1.74)	8.79*** (2.36)
Lagged Growth rate of assets, national banks	0.72 (0.63)	1.24* (0.68)	0.84 (0.65)	1.41** (0.71)
Population	1.65e-06*** (2.55e-07)	3.58e-07 (3.09e-07)	1.65e-06*** (2.62e-07)	3.54e-07 (3.19e-07)
Observations	1209	897	1178	874

* significant at 10%, ** significant at 5%, *** significant at 1%.

About the number of observations in used in each regression:

-In column (1): Because of differencing we can only use 39 years. 17 states have all ones or zeros, leaving 31*39=1209.

-In column (2): 9 states dropped, 23 used, leaving 23*39=897.

-In column (3): due to one additional difference, we have 38 years. 17 states dropped, leaving 31*38=1178

-In column (4) 9 groups dropped, 23 used, leaving 23*38=874.

Table 5 : 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	1258970	2346876	3717	21400000
Total loans, state banks	1968	1927059	4967497	5142	55000000
Growth rate of assets, national banks	1968	0.047	0.110	-1.069	1.001
Growth rate of assets, state banks	1968	0.038	0.133	-1.793	0.773
Growth rate of loans, national banks	1968	0.033	0.139	-1.438	0.959
Growth rate of loans, state banks	1968	0.031	0.131	-1.755	0.547
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	20630	15766	1698	97713
Value of all crops per farm	237	5983	5145	5.529	24537
Value of cash receipts per farm (1925, 1930, 1935, 1940)	192	11.602	6.587	2.578	35.059
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	8.777	0.255	7.765	9.319
Value added in manufacturing	672	2780144	4499390	14828	29000000
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)					
% 5-14 males in school	240	0.603	0.147	0.235	0.923
% 5-14 females in school	240	0.603	0.148	0.200	0.927
% 15-18 males in school	240	0.220	0.187	0.000	0.771
% 15-18 females in school	240	0.232	0.191	0.036	0.756
% 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 6: The Effect of Branching and Insurance on Bank Outcomes

	(1) growth rate of loans-national banks	(2) log of total loans-national banks	(3) growth rate of loans-national banks	(4) log of total loans-national banks	(5) growth rate of loans-state banks	(6) log of total loans-state banks	(7) growth rate of loans-state banks	(8) log of total loans-state banks
State has deposit insurance	-0.006	0.056	-0.003	-0.007	0.023	0.37***	0.010	0.25**
	(0.008)	(0.075)	(0.009)	(0.077)	(0.015)	(0.11)	(0.017)	(0.11)
State has deposit insurance in 1920s	-0.026	0.087	-0.009	0.068	-0.11***	-0.068	-0.088***	-0.029
	(0.022)	(0.12)	(0.022)	(0.12)	(0.026)	(0.066)	(0.028)	(0.067)
State allows branching	0.017	-0.091	0.014	-0.099	0.034***	0.034	0.038***	0.094
	(0.016)	(0.068)	(0.020)	(0.092)	(0.010)	(0.075)	(0.012)	(0.072)
% urban	-0.25***		0.077		-0.21***	-1.44**	-0.081	0.38
	(0.089)	0.73 (0.47)	(0.18)	1.59 (0.98)	(0.060)	(0.63)	(0.15)	(1.35)
log of total population		1.23***		0.96***		0.38*		0.71***
		(0.24)		(0.22)		(0.23)		(0.20)
log of total loans-national banks						0.31***		0.21**
						(0.11)		(0.095)
growth rate of loans-national banks					0.31***		0.24*	
					(0.10)		(0.12)	
Observations	1968	1968	1312	1312	1968	1968	1312	1312
R-squared	0.41	0.96	0.45	0.96	0.49	0.95	0.56	0.96

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 7a: The Effect of Branching and Insurance on Agricultural Outcomes, All States

	(1) number of farms	(2) Log of number of acres devoted to agriculture	(3) Value of machinery and implements per acre devoted to agriculture	(4) Value of all crops per farm	(5) Value of cash receipts per farm (1930, 1940)
State has deposit insurance	-23856*	-0.083***	3321***	-1121**	
	(12266)	(0.024)	(1134)	(501)	
State has deposit insurance in 1920s	27893**	0.063*	-3587***	-98.7	
	(13086)	(0.033)	(1305)	(1198)	
State allows branching	-7398	-0.058***	2838	197	3.76***
	(6299)	(0.024)	(2410)	(499)	(0.87)
% urban	40603	0.94***	-28489***	9199*	-49.6
	(68570)	(0.34)	(10847)	(4843)	(54.7)
growth rate of assets-national banks	-77478***	-0.21**	18438***	931	0.48
	(21475)	(0.093)	(5161)	(2297)	(6.39)
Observations	336	336	288	237	96
R-squared	0.97	0.99	0.93	0.78	0.97

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 7b: The Effect of Branching and Insurance on Agricultural Outcomes, by Agricultural Status

	(1) number of farms	(2) Log of number of acres devoted to agriculture	(3) Value of machinery and implements per acre devoted to agriculture	(4) Value of all crops per farm	(5) Value of cash receipts per farm (1930, 1940)
Agricultural States					
State has deposit insurance	-26799*	-0.12***	3578***	-1533***	
	(14018)	(0.046)	(1505)	(583)	
State has deposit insurance in 1920s	29544**	0.079**	-3159**	245	
	(14426)	(0.035)	(1441)	(1445)	
State allows branching	-7772	-0.064**	-76.2	-385	3.49***
	(7742)	(0.029)	(1269)	(521)	(0.72)
% urban	-81239	-0.91	12002	-5482	21.1
	(145080)	(0.89)	(22005)	(4728)	(52.9)
growth rate of assets-national banks	-75040***	-0.11	6491*	1952	-8.72
	(23220)	(0.15)	(3517)	(1979)	(7.79)
Observations	224	224	192	157	64
R-squared	0.96	0.96	0.90	0.87	0.95
Non- Agricultural States					
State allows branching	-5978	-0.055*	8628**	524	20.3
	(10679)	(0.032)	(3939)	(616)	(18.7)
% urban	-2952	1.10***	4690	4689	-127
	(74248)	(0.42)	(12807)	(5823)	(135)
growth rate of assets-national banks	-90835**	-0.17	10197	-4917	-14.5
	(42216)	(0.14)	(6794)	(3594)	(21.1)
Observations	112	112	96	80	32
R-squared	0.97	1.00	0.95	0.79	0.98

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 8: The Effect of Branching and Insurance on Manufacturing Outcomes

	(1) All States total employment in manufacturing	(2) All States log of real annual wage earnings per worker	(3) All States Value added in manufacturing, thousands	(4) Agricultural States total employment in manufacturing	(5) Agricultural States log of real annual wage earnings per worker	(6) Agricultural States Value added in manufacturing, thousands	(7) Non-Agricultural States total employment in manufacturing	(8) Non-Agricultural States log of real annual wage earnings per worker	(9) Non-Agricultural States Value added in manufacturing, thousands
State has deposit insurance	-29616	0.048	-47010	2849	0.044	428810			
	(20125)	(0.035)	(387570)	(15677)	(0.036)	(403590)			
State has deposit insurance in 1920s	-6284	-0.055*	-723120***	-15874***	-0.035	-558450***			
	(9611)	(0.031)	(277050)	(6082)	(0.029)	(210770)			
State allows branching	39505***	0.031**	1117000***	21174*	0.032*	587510	34662***	0.048***	1305400***
	(13155)	(0.014)	(323830)	(10933)	(0.018)	(371340)	(10829)	(0.020)	(264850)
% urban	748680***	-0.093	3490600	428840*	0.81	-4619600	494390**	-0.33	1554000
	(226870)	(0.24)	(3863100)	(243680)	(0.55)	(8491000)	(222790)	(0.25)	(2303200)
total population	-24165	0.033	-785930	-21775	0.044	-439200	-85398	-0.032	-4754800
	(34653)	(0.025)	(1156200)	(59045)	(0.029)	(1720700)	(69600)	(0.058)	(3555300)
growth rate of loans-national banks	-6.61e-04		1.74***	0.047***		2.72***	-0.006		1.53***
	(0.014)		(0.18)	(0.013)		(0.54)	(0.019)		(0.11)
N	672	672	672	448	448	448	224	224	224
R-squared	0.98	0.94	0.97	0.97	0.95	0.95	0.98	0.94	0.97

Notes: All regressions include state and year fixed effects, and are weighted by the number of observations in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 9a: The Effect of Branching and Insurance on Schooling, Survey of Education, All States

	(1) Log number of males enrolled in elementary	(2) Log number of males enrolled in elementary	(3) Log number of females enrolled in elementary	(4) Log number of females enrolled in elementary	(5) Log number of males enrolled in secondary	(6) Log number of males enrolled in secondary	(7) Log number of females enrolled in secondary	(8) Log number of females enrolled in secondary
State has deposit insurance	0.052	0.054*	0.042	0.046	0.11	0.10	0.17**	0.17**
	(0.034)	(0.032)	(0.034)	(0.033)	(0.082)	(0.095)	(0.075)	(0.080)
State has deposit insurance in 1920s	-0.039*	-0.046**	-0.035	-0.043	-0.020	-0.049	-0.030	-0.072
	(0.022)	(0.024)	(0.033)	(0.035)	(0.064)	(0.084)	(0.049)	(0.074)
State allows branching	0.016	0.013	0.022	0.019	-0.010	-0.007	4.12e-04	-0.002
	(0.015)	(0.014)	(0.015)	(0.014)	(0.064)	(0.054)	(0.065)	(0.053)
% urban	0.079	0.15	-0.092	-0.045	0.89	0.82	0.95	0.94
	(0.20)	(0.19)	(0.18)	(0.18)	(0.87)	(0.83)	(0.98)	(0.85)
growth rate of loans-national banks	0.016	0.015	0.019	0.018*	-0.098**	-0.090*	-0.12***	-0.12***
	(0.014)	(0.013)	(0.012)	(0.011)	(0.050)	(0.050)	(0.038)	(0.042)
log of total population	0.90***	0.88***	0.97***	0.97***	0.17	0.011	0.15	0.002
	(0.047)	(0.058)	(0.052)	(0.060)	(0.62)	(0.51)	(0.62)	(0.50)
number of schools		-5.41e-06		-5.96e-06		-1.36e-05		-2.29e-05
		(3.95e-06)		(3.84e-06)		(2.05e-05)		(1.99e-05)
Age for work permit		7.20e-04		-3.44e-04		0.029***		0.028**
		(0.005)		(0.005)		(0.011)		(0.013)
continuation school laws		-0.009		-0.006		0.10*		0.084*
		(0.019)		(0.017)		(0.059)		(0.047)
Log educational expenditures		0.044***		0.034***		0.16*		0.20**
		(0.015)		(0.011)		(0.088)		(0.096)
Observations	576	573	576	573	576	573	576	573
R-squared	1.00	1.00	1.00	1.00	0.98	0.98	0.98	0.98

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 9b: The Effect of Branching and Insurance on Schooling, Survey of Education, Agricultural States

	(1) Log number of males enrolled in elementary	(2) Log number of males enrolled in elementary	(3) Log number of females enrolled in elementary	(4) Log number of females enrolled in elementary	(5) Log number of males enrolled in secondary	(6) Log number of males enrolled in secondary	(7) Log number of females enrolled in secondary	(8) Log number of females enrolled in secondary
State has deposit insurance	0.034	0.028	0.029	0.028	0.088	0.034	0.14*	0.096
	(0.036)	(0.026)	(0.035)	(0.030)	(0.086)	(0.10)	(0.078)	(0.072)
State has deposit insurance in 1920s	-0.020	-0.022	-0.022	-0.025	-0.053	-0.011	-0.047	-0.029
	(0.023)	(0.021)	(0.034)	(0.033)	(0.073)	(0.077)	(0.059)	(0.054)
State allows branching	0.038*	0.030*	0.043***	0.037**	0.013	0.013	0.032	0.009
	(0.020)	(0.018)	(0.017)	(0.017)	(0.065)	(0.055)	(0.067)	(0.052)
% urban	0.37	0.068	0.15	0.017	0.38	-0.65	0.54	-0.79
	(0.43)	(0.39)	(0.40)	(0.39)	(1.00)	(1.20)	(1.03)	(1.07)
growth rate of loans-national banks	0.017	0.017	0.015*	0.015	-0.054	-0.046*	-0.095***	-0.086***
	(0.011)	(0.013)	(0.009)	(0.010)	(0.035)	(0.028)	(0.033)	(0.034)
log of total population	0.94***	0.80***	1.05***	0.98***	1.36***	0.95**	1.18**	0.61
	(0.12)	(0.11)	(0.13)	(0.14)	(0.53)	(0.48)	(0.56)	(0.41)
number of schools		-1.52e-06		-1.20e-06		1.83e-05		1.11e-06
		(4.07e-06)		(4.47e-06)		(1.40e-05)		(1.42e-05)
Age for work permit		0.004		0.002		0.008		2.47e-04
		(0.006)		(0.006)		(0.009)		(0.010)
continuation school laws		-0.005		-0.007		0.033		0.022
		(0.021)		(0.018)		(0.066)		(0.056)
Log educational expenditures		0.091***		0.048		0.28*		0.40***
		(0.033)		(0.031)		(0.16)		(0.12)
Observations	384	381	384	381	384	381	384	381
R-squared	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 9c: The Effect of Branching and Insurance on Schooling, Survey of Education, Non-Agricultural States

	(1) Log number of males enrolled in elementary	(2) Log number of males enrolled in elementary	(3) Log number of females enrolled in elementary	(4) Log number of females enrolled in elementary	(5) Log number of males enrolled in secondary	(6) Log number of males enrolled in secondary	(7) Log number of females enrolled in secondary	(8) Log number of females enrolled in secondary
State allows branching	-0.029	-0.024	-0.024	-0.020	-0.061	-0.034	-0.046	-0.017
	(0.019)	(0.023)	(0.021)	(0.024)	(0.087)	(0.062)	(0.082)	(0.055)
% urban	0.32*	-0.059	0.15	-0.27	4.27***	2.19	4.50***	3.09***
	(0.16)	(0.48)	(0.18)	(0.48)	(0.93)	(1.39)	(1.11)	(1.27)
growth rate of loans-national banks	0.011	-0.013	0.045*	0.021	-0.16	-0.27	-0.094	-0.18
	(0.017)	(0.030)	(0.023)	(0.038)	(0.17)	(0.20)	(0.17)	(0.20)
log of total population	0.79***	0.96***	0.84***	1.02***	-1.01***	-0.30	-0.99**	-0.56
	(0.050)	(0.20)	(0.066)	(0.21)	(0.38)	(0.61)	(0.45)	(0.58)
number of schools		-1.51e-05		-1.59e-05		-5.96e-05		-3.61e-05
		(1.26e-05)		(1.23e-05)		(3.82e-05)		(3.56e-05)
Age for work permit		-0.003		-0.004		0.012		0.028*
		(0.007)		(0.007)		(0.012)		(0.015)
continuation school laws		0.010		0.016		0.18***		0.15**
		(0.025)		(0.026)		(0.069)		(0.070)
Log educational expenditures		0.011		0.010		0.075		0.092
		(0.014)		(0.013)		(0.050)		(0.056)
Observations	192	192	192	192	192	192	192	192
R-squared	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 10: The effect of Branching and Insurance on Schooling, Census Data

	(1) All States % 5-14 males in school	(2) All States % 5-14 females in school	(3) All States % 15-18 males in school	(4) All States % 15-18 females in school	(5) Agr. States % 5-14 males in school	(6) Agr. States % 5-14 females in school	(7) Agr. States % 15-18 males in school	(8) Agr. States % 15-18 females in school	(9) Non-Agr. States % 5-14 males in school	(10) Non-Agr. States % 5-14 females in school	(11) Non-Agr. States % 15-18 males in school	(12) Non-Agr. States % 15-18 females in school
State has deposit insurance	0.003	0.011*	0.012***	0.009	0.002	0.011*	0.009**	0.006				
	(0.009)	(0.006)	(0.004)	(0.006)	(0.009)	(0.006)	(0.004)	(0.005)				
State has deposit insurance in 1920s	-0.004	-0.011**	-0.012***	-0.006	-0.003	-0.011**	-0.009**	-0.004				
	(0.009)	(0.005)	(0.004)	(0.006)	(0.009)	(0.006)	(0.004)	(0.006)				
State allows branching	-3.22e-04	-2.47e-04	-9.31e-04	-0.001	4.20e-04	5.88e-04	-0.001	-0.001	-0.002**	-0.002**	-3.10e-04	-4.11e-04
	(7.46e-04)	(7.30e-04)	(0.001)	(0.001)	(0.001)	(9.83e-04)	(0.002)	(0.002)	(7.38e-04)	(7.73e-04)	(0.002)	(0.002)
% urban	0.21***	0.16**	-0.005	-0.076	0.19	0.15	0.11	-0.083	0.17***	0.11	0.11	0.052
	(0.071)	(0.070)	(0.074)	(0.078)	(0.22)	(0.22)	(0.15)	(0.13)	(0.039)	(0.084)	(0.12)	(0.099)
growth rate of loans-national banks	-0.006	0.006	0.13***	0.040*	-0.031	-0.016	0.10*	0.040	0.018	0.016	0.12	0.074
	(0.030)	(0.028)	(0.033)	(0.024)	(0.063)	(0.042)	(0.063)	(0.049)	(0.026)	(0.029)	(0.080)	(0.074)
Observations	240	240	240	240	160	160	160	160	80	80	80	80
R-squared	0.96	0.96	0.98	0.98	0.95	0.95	0.98	0.98	0.99	0.98	0.98	0.97

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 11: The Effect of Branching and Insurance on Child Labor

	(1) All States	(2) All States	(3) Agricultural States	(4) Agricultural States	(5) Non-Agricultural States	(6) Non-Agricultural States
	% males 10-15 working and not in school	%females 10-15 working and not in school	% males 10-15 working and not in school	% females 10-15 working and not in school	% males 10-15 working and not in school	% females 10-15 working and not in school
State has deposit insurance	-0.012**	-0.004	-0.011*	-9.11e-04		
	(0.005)	(0.004)	(0.006)	(0.005)		
State has deposit insurance in 1920s	0.012***	0.004	0.011**	0.002		
	(0.005)	(0.003)	(0.006)	(0.004)		
State allows branching	-0.002**	-0.001*	-0.003**	-0.001	-0.002***	-0.002**
	(8.43e-04)	(6.67e-04)	(0.001)	(0.001)	(8.07e-04)	(7.64e-04)
% urban	-0.018	0.020	0.035	0.19	-0.052	-0.060
	(0.072)	(0.053)	(0.18)	(0.18)	(0.065)	(0.050)
growth rate of loans-national banks	0.056*	0.013	0.088	0.018	0.012	-0.031
	(0.032)	(0.024)	(0.059)	(0.027)	(0.040)	(0.032)
Observations	240	240	160	160	80	80
R-squared	0.81	0.69	0.81	0.69	0.86	0.79

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 12: The Effect of Branching and Insurance on Home Ownership

	(1) All States	(2) Agricultural States	(3) Non-Agricultural States
	percentage of household that own their house	percentage of household that own their house	percentage of household that own their house
State has deposit insurance	0.003	-4.91e-04	
	(0.005)	(0.005)	
State has deposit insurance in 1920s	-0.007*	-0.003	
	(0.004)	(0.004)	
State allows branching	0.001	1.46e-05	0.003***
	(0.002)	(0.002)	(0.001)
% urban	-0.23***	-0.13	-0.11
	(0.076)	(0.18)	(0.11)
growth rate of loans-national banks	0.11***	0.088*	-0.027
	(0.031)	(0.053)	(0.080)
Observations	240	160	80
R-squared	0.90	0.90	0.92

Notes: All regressions include state and year fixed effects, and are weighted by the population in the state. Standard errors (in parentheses) are clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%.