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LAND AND CREDIT:
A STUDY OF THE POLITICAL ECONOMY OF BANKING IN THE UNITED STATES IN THE EARLY 20TH CENTURY

Raghuram G. Rajan
Rodney Ramcharan

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ABSTRACT

Economists have argued that a high concentration of land holdings in a country can create powerful interest groups that retard the creation of economic institutions, and thus hold back economic development. Could these arguments apply beyond underdeveloped countries with backward political institutions? We find that in the early 20th century, the distribution of land in the United States is correlated with the extent of banking development. Correcting for state effects, counties with very concentrated land holdings tend to have disproportionately fewer banks per capita in the 1920s. Banks were especially scarce both when landed elites' incentive to suppress finance, as well as their ability to exercise local influence, was higher, suggesting support for a political economy explanation. Counties with high land concentration and fewer banks also had higher interest rates and lower loan to value ratios, consistent with more restricted access to finance. Interestingly, counties with greater land concentration had fewer loan losses during the Great Depression, consistent with borrowers in those counties being less risky, even while they had more limited access to credit in the years leading up to the Depression. We draw lessons from this episode for understanding financial and economic development.

Raghuram G. Rajan
Booth School of Business
University of Chicago
5807 South Woodlawn Avenue
Chicago, IL 60637
and NBER
rajan@chicagogsb.edu

Rodney Ramcharan
International Monetary Fund
Research Department
700 19th St. NW
Washington, DC 20431
RRamcharan@imf.org

What are the factors that cause differences in the development of the financial sector across the world? Some researchers have emphasized elevated demand such as the need for war finance, others the political institutions a country develops, others the origins of a country's legal system, and yet others the constituencies or interest groups that emerge in a country.[2] This last view ties in to a long tradition emphasizing the political economy underpinnings of economic underdevelopment. For example, Engermann and Sokoloff (2002) suggest that the pattern of land holdings in a country, determined by the technology underpinning the crops produced, is an important factor driving economic underdevelopment. Specifically, they argue that economies where land holdings were very concentrated – so called "hacienda economies" – had elite groups that ensured rents for themselves while creating poor economic outcomes for their societies.

The precise channel through which interest groups operate is a matter of some debate. Some (see, for example, Acemogulu, Johnson, and Robinson (2005)) argue that the mediating channel is political institutions, as elite interest groups can create coercive political institutions that give them the power to hold back the development of economic institutions, and hence economic growth. Others (see, for example, Engerman, Mariscal, and Sokoloff (2003), Rajan and Zingales (2003 a, chapter 6) or Rajan (2009)) have argued that a divided society may be sufficient to hold back the development of economic institutions, even if political institutions are broadly egalitarian.

One way to make progress on this debate is to examine patterns within broad political units such as countries and states where political institutions are held relatively constant. To this end, we explore how the structure of banking across counties in the United States was driven by the distribution of land within the county. We focus on banks because they were, and in many areas, still

[2] On the importance of war for finance (and vice versa), see, for example, Brewer (1989) and Peach (1941), on the origins of finance in political development, see, for example, North and Weingast (1989), on the legal origins of finance, see La Porta, Lopez de Silanes, Shleifer and Vishny (1998) and Levine (2005), and on the role of constituencies or interest groups, see, for example, Benmelech and Moskowitz (2007), Claessens and Perotti (2007), Haber and Perotti (2007), Haber (2005a,b), Morck, Wolfenzon, and Yeung (2006), Pagano and Volpin (2005), Perotti and Volpin (2007), Perotti and Von Thadden (2006), Rajan and Zingales (2003a, b), and Sylla (2005).

are, the most important source of local finance, and thus are important economic institutions. Likewise, we focus on the distribution of land because it does represent the diversity of agricultural interests, and agriculture was still a key sector at that time in the U.S. economy.

To set the stage, though, for why agricultural interests might have an incentive to influence the development of finance, it helps to get a flavor of the public discourse in the United States towards the end of the nineteenth- and the beginning of the twentieth century. Farmers felt increasingly marginalized and impoverished, and the growing Populist movement targeted the twin menaces of monopolistic railroads (allegedly charging exorbitant freight rates to carry goods from the Western states to the markets in the East) and tight money or credit. These issues helped transform agricultural grievances into a powerful political constituency at the national level, with access to credit and tight money featuring most famously in the 1896 Presidential election[3].

The costs associated with limited access to credit were most obvious in the interaction between the small tenant farmers and the local store or furnishing merchant. In the agrarian South, a common form of borrowing was through a "crop-lien" loan, whereby the merchant required that in return for an advance of goods, the contracting farmer would

"sign over, as a guarantee that the account would be paid, his "entire crop of cotton, cotton-seed, fodder, peas, and potatoes". His personal property, chattels, and real estate, if he had any, might also be included in the mortgage, and in case he should find it impossible to pay his entire indebtedness out of the proceeds of the season's crop, he was legally obligated to continue trading with the merchant who held the lien until the account should be settled in full….The farmer who gave a lien on his crop delivered himself over to the tender mercies of the merchant who held the mortgage. …he might buy only what the merchant chose to sell him. He was permitted to trade with no other merchant except for cash, and in most cases his supply of cash was too meager to be worth mentioning. He must pay whatever prices the merchant chose to ask. He must market his crop through the merchant he owed until the debt was satisfied, and only then had he any right to determine the time and method of its disposal…."[4]

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[3] In the Democratic Convention that year, William Jennings Bryan brought the convention to its feet with his speech opposing the constraining Gold Standard, ending "You shall not crucify mankind on a cross of gold".

[4] p43-44, *The Populist Revolt: A History of the Farmer's Alliance and the People's Party*, John D. Hicks, University of Minnesota Press, Minneapolis, 1931.

While estimates of the extent of "debt peonage" should be treated with caution, one historian suggests that in the cotton South, for example, "three-fourths to nine-tenths of farmers were ensnared" and that the "credit purchaser paid twenty to fifty percent more for what he bought than what he would have paid if he had been able to buy for cash".[5]

Initially, there was a conflict of interest between large landlords and the furnishing merchant because they both had an interest in tenant farmers. But "as time went on the two classes tended more and more to become one." Landlords were drawn into the store business by "the desirability of supplying their tenants", while "storekeepers frequently became landowners by taking over the farms of those who were indebted to them or by direct purchase at the prevailing low price".[6]

Among landlords, large landowners had an incentive to ""accommodate" their own tenants…[which] gives them greater control over tenants, and unscrupulous landlords may make larger profits by charging higher rates."[7] By contrast, small and medium farmers did not have the surpluses to lend out, and one detailed study of Texas concludes "on the whole, they [owners of small and medium farms] would rather the tenant would get his money in his own way".[8]

If indeed there were profit opportunities to be made in lending to small and tenant farmers, why did banks and other formal credit institutions not enter this business? One argument is based on information asymmetries. As one author puts it,

"this kind of credit business requires close supervision, even to the extent of directing the tenant's farming operations in not a few cases, and such intimate knowledge and care the banks cannot give."[9]

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[5] Hicks (1931, p44). As Ransom and Sutch (1972, p123) explain, "The merchant established two sets of prices or cash prices and credit prices. The cash price applied only if the goods were paid for when received. The credit price was always substantially above the cash price, thus assuring the merchant a rate of return on his loan. The farmer, for his part, had little choice. By the middle of the growing season he was invariably out of cash, and therefore had to charge his purchases."

[6] Hicks (1931, p32). Haney (1914, p54) writes that in most parts of central Texas, "over 90 percent of those tenants who owe the store are also indebted to their landlords for larger or smaller advances."

[7] Haney (1914, p54).

[8] Haney (1914, p55).

[9] Haney (1914, p54)

Others argued that the supply of formal credit was artificially constrained through legislation. Gropp, Scholz, and White (1997) show that laws preventing creditors from seizing homes tend to hurt the poor's access to formal finance, because they have little collateral to pledge other than their homes. By contrast, such laws benefit the rich, who have other collateral. Similarly, usury laws, that place ceilings on interest rates that can be charged, limit the extent of lending from regulated financial institutions to the poor because the poor typically are riskier and lending to them is not profitable at rates below the ceiling. Not only are informal lenders such as landlords and merchants harder for the government to audit than a regulated bank, but they also have a variety of ways to get around the ceiling, including taking repayment in kind.

Some saw careful design in such laws for they argued "legislation like North Carolina's Landlord Lien Law, which gave landlords an automatic crop lien against any advances extended to tenants working their land, strongly reinforced the system of 'debt peonage'."[10]

Finally, the merging of the roles of landlord and furnishing merchant provided these individuals with considerable local power, and historical narratives observe that these individuals often used their control of the local judiciary and political system, and their monopoly over local commerce to deter bank entry and other threats to the status quo (Goodwyn (1978)).[11] In sum then, there were a number of ways that large landowners could limit the access of others to formal finance, and control the supply of credit.

There were other benefits for the rich landlord to limiting access to credit than simply extracting rents from the less-well-off when they purchased goods. The landlord would also enjoy a competitive advantage, for instance by being able to buy land cheaply when small farmers were hit by

[10] Ransom and Odell (1986, p13).

[11] He was the largest landholder…in one county and Justice of the Peace in the next and election commissioner in both, and hence the fountainhead if not of law at least of advice and suggestion…He was a farmer, usurer, a veterinarian. He owned most of the good land in the county and held mortgages on most of the rest. He owned the store and the cotton gin and the combined grist mill and blacksmith shop in the village proper and it was considered to put it mildly, bad luck for a man of the neighborhood to do his trading or gin his cotton or grind his meal or shoe his stock anywhere else—The furnishing merchant in *The Hamlet*, by William Faulkner.

adversity, or by having privileged access to loans in the midst of a prolonged drought—creating so called land syndicates.[12] He could prevent unskilled workers from obtaining the funds needed to educate themselves and expanding their own employment opportunities, thus ensuring there would be a reserve army of workers for field work (see Galor, Moav, and Vollrath (forthcoming)). He might also prevent the emergence of alternative centers of economic power and status by limiting their access to finance (Chapman (1934)).

Along these lines, Calomiris and Ramirez (2004) argue that unit banking laws (that is, laws preventing in-state banks from opening multiple branches, and out-of-state banks from entering the state) provided large farmers with insurance during periods of agricultural distress. Specifically, national banks or state banks with branches could foreclose more easily on loans, and transfer capital to less distressed areas. By preventing such reallocation, unit banking laws provided borrowers insurance. Of course, wealthier farmers would benefit more from keeping capital "in-house", and Calomiris and Ramirez indeed find more restrictions in states with greater farm wealth.

To some modern economists, despite the vast literature on the political economy of branching restrictions, the notion that banking in the United States may have deliberately been kept underdeveloped and uncompetitive, because of the interests of a few, seems implausible. How could the interests of a few prevail? After all, the U.S. was a democracy, albeit an imperfect one, in the early 20th century.

Some writers of that period believed that it was the imperfections in democracy that allowed the elite to capture policy making. Haney (1931, p52) argues that landlords in areas with a large number of black tenant farmers had substantial political power (because of the denial of political rights to blacks), and through their ability to manipulate party conventions, used this power to perpetuate landlord interests more widely. However, we do not need to appeal to perversions of the

[12] Clark (1946) for example describes the connection between the concentration of credit and land holdings, as local merchants gradually acquired land syndicates, taking over land titles from distressed small debtors.

democratic process to obtain departures of policy making from public interest. Clearly, even in a democracy, moneyed interests can overcome public interest, especially if the latter is not organized.[13] Indeed, the Populist movement can be seen as an attempt to organize and give political expression to the concerns of the masses.

It is also important to note that claims about the lack of access to credit and the need for banking reforms fuelled agrarian unrest in areas other than just the rural South (Stock (1994)). In North Dakota, for example, after winning the 1916 gubernatorial race with the help of small farmers, the Populist Party created the United States' first state owned bank, the Bank of North Dakota. The bank's charter begins:

> "Nor is it strange that under these conditions private interests sometimes take advantage of the needs of the people to keep down the prices of farm products, and exorbitantly to advance the prices of the things the farmers had to buy and the rates of interest for farm loans…the only permanent remedy lay in state ownership and control of market and credit facilities" (Bank of North Dakota (1920).

Thus far, we have presented contemporary arguments for why landlords might have had an interest as well as an ability to suppress access to formal credit in parts of the United States where they were powerful. Nevertheless, since our interest is in examining the historical evidence with the view to extracting modern lessons, we have to approach it with the appropriate degree of skepticism.

First, it is not obvious landlords only had the incentive to suppress formal credit. Instead of focusing on preserving his share of a small local pie by limiting bank competition and credit access, and thus squeezing the small farmer and tenants, the large landowner might have been better off increasing the size of the local pie, even if his share were diminished. For instance, greater access to formal finance would draw more potential buyers into the land market, allowing the value of his own land to appreciate. Therefore whether stronger landlord interests lead to a more constrained financial sector and less financial access is an empirical question, which we attempt to answer.

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[13] For example, it has been argued that large landowners controlled much of Florida's banking system during the 1920s, and their attempts to channel credit into real estate, often by bribing state regulators, contributed to Florida's banking crash of 1926 [Vickers (1994)].

Second, as we suggested above, the landlord may have been the only viable source of finance. After all, he was close enough to monitor tenant crops, and was in a better position to make loans against the crop. In other words, landlord lending may have been efficient given the absence of alternatives. However, this does not fully explain why legislation limiting access such as usury laws, homestead exemptions, and landlord crop-lien laws were enacted. Nevertheless, it is a possibility we must investigate.

Third, a finding of a correlation between measures of the strength of landlord interests and limitations on access to formal finance need not imply the former caused the latter. Not only do we have to pay attention to issues of causation, we have to try and provide evidence of the channels through which causation may have worked.

Economists have not ignored these issues of access to finance and monopoly power in the United States, quite the contrary. Indeed, for a while, there was a heated debate amongst economists over whether differentials in interest rates across different regions in the United States around the turn of the nineteenth century were indeed evidence of monopoly power based on legal restrictions on entry (see, for example, Davis (1965) and the responses in Binder and Brown (1991), Eichengreen (1984), James (1976), and Sylla (1975)), or whether the variation in interest rates was because of differences in risk. However, the limitations of the data left the debate somewhat inconclusive, and as banking markets in the United States became very competitive, the debate became primarily one of historical interest. We believe that these questions deserve to be revisited, not only because they shed light on the process of financial and economic development, which is of contemporary interest to many developing countries, but also because we have access to richer and more detailed data than in these past studies (we have data at the county level rather than at the region or state level).

The rest of the paper is structured as follows. We believe that greater land concentration is a reasonable proxy for both the strength of large landowners and the presence of exploitable small farmers and tenants (tenants were typically small farmers). To motivate the paper, we start in section I by showing that there is a correlation between increases in land concentration and increases in state

level legislation restricting banking. Of course, this evidence should only be taken as motivation, since we do not establish causation.

We continue our analysis in section II by focusing on exogenous determinants of land concentration in the United States. In particular, agricultural economists believe the distribution of land holdings was driven by rainfall. Large-scale plantation-like agriculture, surrounded by smaller tenant farmers were favored in areas with high rainfall. By contrast, more moderate sized farms, but without much dispersion in size, were found in areas with moderate rainfall. Using rainfall then as an instrument for land concentration, we look to see if the concentration of land holdings had an influence on the presence of banking institutions and the availability of finance.

We find that land concentration is strongly negatively correlated with the number of banks per capita in a county (and thus positively correlated with more limited access to finance). To bolster the notion that this correlation is not something mechanical (and recognizing that any instrumentation strategy has limitations) we provide a variety of tests in section III showing that the impact of land concentration was most pronounced in situations where the landed elite had the greatest incentive and ability to exert influence. Thus there is some support for the political economy explanations of the variation in land development.

In section IV, we turn to data on the cost and availability of loans against land, and show that farmers in counties with higher concentration of land holding paid higher interest rates and had less access to formal credit. Of course, one possible explanation is that farmers in these regions were riskier. We do not have a direct measure of agricultural loan losses at the county level. So in section V, we turn to another measure of loan risk – the fraction of deposits in banks that failed in the period 1931-36 (bank failures fell substantially after 1934) to the fraction of deposits at the beginning of the period. If indeed farmers in counties with higher average loan rates were riskier, we should see a greater fraction of failed bank deposits in these counties. Indeed, if anything, we see the opposite. There was a smaller fraction of failures in counties with concentrated land holdings, consistent with the notion that access to formal credit was limited to safer borrowers, and limitations on competition

allowed banks to enjoy rents that helped keep them safe (even while allowing informal finance from landowners to potentially flourish).

Of course, no paper can completely eliminate all doubt. But to the extent that the data permits, we establish that local interest groups did affect the development of formal finance, which may explain the extent of popular anger expressed by small farmers in the Populist movement. That said, it is quite possible that bad outcomes may have emerged without malevolent intent on the part of the landlords. If the country started off with an underdeveloped banking sector or laws inadequate to meet the credit needs of a growing economy in the late nineteenth century, counties where yeoman (middle-sized) farmers were well represented may have pushed harder to change the status quo. By contrast, large landlords may have been less concerned about access to credit, and in counties where they held more power may have pushed less forcefully to facilitate access to finance. Thus benign neglect could explain many (though not all) of our findings. The lessons that one takes away for economic development depend not on intent but on outcomes. Whether the economic institutions (such as banking) remained underdeveloped because of malevolent suppression or benign neglect by powerful constituencies does not change the fact that constituencies shape economic growth.

For, while it is on financial development, our paper has broader implications. A recent trend in explaining the underdevelopment of nations has been to attribute it to the historical weakness in their political institutions such as democracy and constitutional checks-and-balances (see, for example, the literature emanating from North (1990) and North and Weingast (1989)). While U.S. political institutions in the 1920s were far from perfect, they were also far from the coercive political structures that are typically held responsible for persistent underdevelopment. Yet even in the United States, we find large variations in the development of enabling economic institutions such as banking, between areas that had different constituencies but were under the same meta-political structures. The significant, and potentially adverse, influence of constituencies even in such environments suggests that fixing political institutions alone cannot be a panacea for the problem of underdevelopment.

I. LANDED INTERESTS AND STATE LAWS

A. A proxy for divergence of interests among the landed

What could be a proxy for the strength of landed interests and their desire to limit access to finance? The classic descriptions of debt peonage (see, for example, Ransom and Sutch (1973)) suggest large landowners involved in plantation agriculture squeezed rents out of small, typically tenant, farmers. Others have argued that large landowners wanted to limit access to finance so that they could monopolize access to the limited savings in the locality, especially in a downturn (see Calomiris and Ramirez (2004)). In any of these hypotheses where there is a group of larger farmers who "exploit", there has to be another group of small farmers or tenants who are explicitly "exploited" (as in the debt peonage hypothesis) or are implicitly "exploited" (for instance, if they contribute savings to the local pool but do not get loans in a downturn because their access to finance is deliberately left underdeveloped, as in Calomiris and Ramirez (2004)).

One measure of the strength of these two constituencies is the Gini coefficient of land farmed, which measures the degree of inequality of land holdings. If land holdings are very unequal, large landowners could have both the ability and incentive to limit access to finance, while if land holdings are relatively equal (whether uniformly large or small), no one has the power or the interest to alter access for others.[14]

Our measure of the concentration of land holdings is based on the distribution of farm sizes as in Ramcharan (2009). The data are collected by the U.S. Census Bureau at the county level for each of the decennial census years 1890-1930. We have information on the number of farms falling within particular acreage categories or bins, ranging from below 3 acres up to 1000 acres, where a farm is defined as "all the land which is farmed by one person, either by his own labor alone or with

[14] This presupposes, of course, that those without land either do not have the basic minimum surplus to be worth squeezing (such as field hands) or live in towns, far from the clutches of the landlords. We will show that a greater fraction of activity in manufacturing (a measure of non-land activity) does diminish the effect of land concentration on financial development and access.

the assistance of members of his household or hired hands". Note that a tenant is also a farmer by this definition. Assuming the midpoint of each bin is the average size of farms in that bin, we construct the Gini coefficient to summarize the farm acreage data (see Table 1 for a precise formula and definitions). The Gini coefficient is a measure of concentration that lies between 0 and 1, and higher values indicate that farms at both ends of the size distribution account for a greater proportion of total agricultural land—that is, the holding of agricultural land is unequally distributed.

In the 1920s, the average Gini coefficient of a county is 0.426, the 99th percentile county is at 0.687, the 1st percentile county is at 0.2 , and the standard deviation 0.10 (see Table 2 for summary statistics). The correlation between the Gini for a county and the share of agricultural land in small farms (below 20 acres) is positive, as is the correlation with the share in large farms (above 175 acres). The correlation between the Gini and the share in medium sized farms (between 20 acres and 175 acres) is negative. Thus counties with high Gini coefficients tend, as we would expect, to have more land in both small, as well as large, farms. Interestingly, as a result of the greater weight in small farms, counties with Gini above median have smaller farms on average than counties with Gini below median. In Figure 1, we plot the regional variation in the data. Even in the South, which generally had higher levels of land concentration, there was significant heterogeneity among counties.

As motivation, it is useful to see whether there is a correlation between our measure of divergence of agricultural interests, land concentration, and seemingly inefficient state laws governing banking. In the United States, historical political battles, such as the one between Andrew Jackson and the Second Bank of the United States, led to more limited federal involvement in banking. As a result, the system was highly decentralized—effectively 48 different banking systems (Lamoreaux and Rosenthal (2005)). Economic efficiency would suggest that each system should have been tailored to the needs of the local economy. Yet some of the observed choices seemed sub-optimal.

B. Branching regulation

For example, branch banking—that is, allowing a single bank to operate many branches spread over the state—should have led to a more efficient and stable financial system, as banks would have been better able to reap scale economies, diversify the risks of the local economy, and offer wider credit access to the population (Ramirez (2003), Carlson and Mitchener (2006)). Yet, only 16 states allowed branching in 1920 (Deheja and Lleras-Muney (2007)).

Clearly, there was hysteresis in banking structures. For example, once unit banks were in place, branching was perceived as a threat, for it would have allowed bigger urban banks to compete in rural areas, threatening the rents of small rural unit banks. As a result, unit banks formed associations, or joined hands with state regulators, to oppose branching (White (1982)). Furthermore, Economides, Palia, and Hubbard (1996) show that states with unit banking pushed for federal branching restrictions on national banks and for federal deposit insurance (which particularly favored small unit banks), suggesting that unit banks had political power in those states.

But this begs the question of why some states chose in the first place to have no branching, while others allowed it. Sylla et al. (1987) argue that taxes on bank profits and dividends were an important source of state revenue. By preventing out-of-state entry, states could extract more taxes from the protected in-state banks. Kroszner and Strahan (1999) emphasize the added revenue that each in-state bank could obtain if it enjoyed a local monopoly, and suggest that this accounted for the limits on branching by even in-state banks.

These arguments, however, apply to all states. Why did some states go in for unit banking and others not? Moreover, if revenue was the primary objective, could they have not chosen a less distortionary means than creating monopolies and then taxing them heavily? Did states that chose unit banking have few other revenue options?

The hypothesis we want to test for why some states chose to impose more restrictions on their banks is based on a “bottom-up” view, where local (that is, county-level) preferences for restrictions so as to limit access to finance aggregated up to a state level preference. While this is not inconsistent

with state-level rationales for restrictions, it does add an additional facet to the study of the political economy of state regulations. Specifically, the hypothesis is that the large landowners' influence over the local financial system would have been made easier, in part, by legal branching restrictions, which prevented national banks and large state banks from entering local markets.

The dependent variable in Table 3 is a binary variable equaling one if a state permitted branching in a particular year. We use data for the years 1900, 1909, 1919 and 1929 (see Dehejia and Lleras Muney (2007)), so adjacent data points for a state are separated by a decade, enough to allow some change in land concentration and in legislation. Using a simple linear probability model, we estimate the relationship between land concentration (the computation for each county is described in Table 1, and is aggregated up to the state level for each decennial census year) and the probability that a state permitted state wide bank branching. We include state fixed effects, year indicators, and cluster standard errors at the state level. While a decade is a relatively small interval from the perspective of legislative changes and changes in land holdings, there does seem to be a measurable correlation. The simple linear probability panel estimate in Table 3 Column 1 suggests that a one standard deviation increase in land concentration at the state level over time is associated with a 0.16 decrease in the probability of observing laws permitting branching. This estimate does not change significantly when we condition on demographic, economic and political variables (Table 3 Column 2).[15]

All we have established is a correlation between our measure of divergence of political power and economic interests, that is, land concentration, and legislation that the literature associates with

[15] A less well-studied method of constraining credit is through usury laws. Low ceilings on interest rates make it difficult to charge rates that allow a lender to break even on high-risk credits. As a result, only the rich with unimpeachable creditworthiness will be able to borrow when usury ceilings are low. Benmelech and Moskowitz (2007) collect data on usury ceilings across the United States ending in the late nineteenth century and indeed find that usury limits do adversely affect lending activity. They also find that the strictness of usury laws increases with the extent that other groups are excluded from political activity, suggesting that usury laws are a form of economic exclusion. We have data on land concentration in 1890 while Benmelech and Moskowitz have data on state usury laws in 1890. Marrying the data they collected, and were kind enough to share, with our data on land concentration, we find (results available from authors on request) that land concentration in 1890 is negatively and significantly correlated with the interest rate ceiling imposed by usury laws in 1890, and the estimate increases in magnitude with the addition of obvious controls.

the suppression of finance. There are a number of problems with taking these results as more than motivation. First, there could be political and institutional differences across states that might account for the results (though persistent differences would be absorbed in the state fixed effect). Second, the direction of causality is unclear – for instance, could branching legislation have led to greater land concentration? In what follows, we delve deeper to the county level where we can keep state-level political institutions and legislation constant, and examine the effects of local constituencies. We also can take the issue of causation more seriously.

II. LANDED INTERESTS AND COUNTY-LEVEL BANK STRUCTURE: THE BASIC TEST

We turn now to county level data on land inequality from 1890-1930 to help measure the impact of the concentration of agricultural land on the various indicators of banking structure. The state-level results suggest that as land holdings in states became more concentrated, state-level banking legislation was more restrictive of financial development. Clearly, in addition to influencing state-level legislation, historical narratives have noted that large landowners had the ability to frame local legislation and its enforcement. They also possessed the local economic clout that allowed them to direct or withhold business in order shape local bank structures [Vann Woodward (1951), Weiner (1975)].

For example, to the extent the sheriff enforced some bank claims more willingly than others, and to the extent that large landowners used their power to direct business to some banks and not others, local powers could alter the structure of banking. The crop lien system—which we address in a subsequent section—treated the lien of landlords as superior to other claimants in the case of default, and restricted the ability of tenant farmers to access outside sources of finance.

Even when small farmers were able to mobilize in order to tackle the credit supply problem, they allegedly were thwarted by landlord interests. For example, small farmers in Texas created a "joint-note plan" in 1888. This plan pooled the collective lands of small farmers into a note that was to be used as collateral for credit, which in turn would have been allocated to members of the farmers'

cooperative. Banks in Texas, allegedly under the influence of landlords, refused to accept the note, and the plan failed.[16]

The hypothesis is that, correcting for state effects, the greater the power of local landed interests, as proxied for by the degree of land concentration in a county, the greater their ability to shape the structure of banking in the county.

A. Banking density and concentration

One measure of bank structure is to simply count the number of banks in a county, normalized by the number of people in, or area of, the county. Bank density at the county level is an informative measure of access to finance as well as of bank market structure during this period (Evanoff (1988)). Distance was an important factor in economic activity at this time, as Federal involvement in road construction had not yet begun, road transport networks were relatively primitive, and automobile use was still limited (Baum-Snow(2006), Ramcharan (2008)). And during this period, policy debates on the availability of credit often revolved around the geographic proximity of banks, as access to financial services were more restricted in counties with limited banking density (Cartinhour and Westferfield(1980)) [17].

The Federal Deposit Insurance Corporation (FDIC) provides county level data on the number of state and nationally chartered active banks in the county, beginning in 1920. The box plot in Figure 2 indicates high levels of banking density in the upper Mid West, but reveals substantial variation even among Southern counties.

[16] See Goodwyn (1978), pg. 77 for a fuller discussion. The farmers noted that "…all efforts made were unsuccessful, and tended to produce the conviction that those who controlled the moneyed institutions of the state either did not chose to do business with us, or they feared the ill will of a certain class of business men who considered their interest antagonistic to those of our order and corporation."

[17] Like the US during the sample period, bank density remains an important measure of access to financial services in many developing countries today because of their limited transport networks. In these countries, density significantly predicts credit usage by firms and households (Beck et. al (2007)).

We begin by examining the relationship between the density of banks in a county and the concentration of land holdings. The dependent variable in Column 1 in Table 4 is the number of banks per capita in a county in 1920. The explanatory variables are the concentration of farm land holdings in the county, state dummy variables, and a number of geographic controls including the log of county area and its distance from various waterways. Waterways were centers of economic activity, with some of particular relevance to agriculture. For instance, waterways such as the Great Lakes in the upper mid west, and the Atlantic Ocean along the East coast helped spur industrialization and demand for financial services in those regions (Pred (1966)). Including these variables help control for plausibly exogenous determinants of a county's prosperity and the kind of economic activity it might undertake.

The coefficient estimate of concentration in the OLS regression is negative and strongly statistically significant (at the 1 percent level). A one standard deviation increase in land inequality is associated with a decline in the per capita number of banks circa 1920 of 0.31of its standard deviation. In Column 2, we repeat the same exercise for 1930 and again find a negative and statistically significant coefficient estimate for land concentration that is similar in magnitude to the 1920 result. In Column 3, we pool both cross-sections, and include county fixed effects. Thus, the coefficient estimate on the Gini captures the correlation between changes in land concentration and changes in banks per capita, controlling for the potential biases that can arise from geography, soil types, location and any other potentially relevant unobserved time invariant county characteristic that might linearly be correlated with land concentration. Most interesting, this coefficient is also negative and significant at the one percent level, and the estimated magnitude of the impact of concentration in the fixed effect estimate is about 30 percent larger than the 1920 OLS results.

Before making too much of this, we should recognize that there are potential biases in the estimated coefficient. Well known theoretical arguments predict that economic inequality can itself be shaped by credit availability and other forms of asset market incompleteness (Aghion and Bolton (1997), Bannerjee and Newman (1991), Galor and Zeira (1993)), making reverse causality a likely

feature of the data. More banks for example might mean more credit availability, allowing more people to buy farms, and reducing concentration. However, the biases could go in either direction. More competition amongst banks may mean weaker relationships between banks and farmers, and could lead to greater foreclosures of marginal farmers in times of distress, leading to greater land concentration (see Calomiris and Ramirez (2004) or Petersen and Rajan (1995)). If this effect is present, our OLS estimate would understate the true effect of concentration on banks per capita. The larger coefficient estimate for land concentration in the fixed effects estimation suggests that this direction is plausible. To better correct for such reverse causality, we turn to instrumental variables.

B. Land Concentration Again.

Clearly, a large number of factors have historically determined how land in a particular county is distributed (see Gates (1973) or Haney (1931)). These include the historical settlement patterns (Western frontier or Eastern seaboard), the nature of settlers (immigrants from overseas or settlers from previously settled areas in the country), the role of the government (including land grants to railroads and universities), and the role of past events like the Civil War, financial crises, and droughts.

There is, however, a large literature in agricultural economics that suggests land concentration in the United States is also related to weather patterns (Ackerman and Harris (1946), Gardner (2002), Heady (1952), Tomich et. al (1995)). The underlying logic rests on the idea that given the technologies of the period, crops suited for plantation agriculture such as sugar cane, tobacco, fruit, and nuts thrived in warmer counties with regular and heavy rainfall. Some of these crops such as sugarcane required processing soon after harvesting. The need for significant capital investments in the mill, as well as the possibility of hold-up of farmers by the mill owner meant the land and the mill had to be jointly owned (see, for example, Williamson (1985), Hart and Moore

(1990)), with economies of scale stemming from the mill carrying over to the land and warranting a large plantation.[18]

Furthermore, because of the seasonality of work on plantations, it would be reasonable for workers to rent small plots where they could grow other crops such as vegetables. Thus large farms focused on plantation-style agriculture would also often be surrounded by smaller, tenant, farms, naturally leading to a high measured Gini. By contrast, grain—wheat and barley—which are better suited to more temperate climates, also exhibited fewer economies of scale, and were associated with more moderate-sized and equitable land holdings.

The key aspect of weather driving crop choice is rainfall. Virginia tobacco, for example, requires rainfall between 23 to 31 inches per annum, while Nebraska wheat usually thrives in regions that receive between 14 to 21 inches of rain per annum (Seitz (1948), Myers (1940)). Even within states, more arid counties—the Piedmont region of central Virginia for example—may have had a more equitable distribution of farm sizes because of their suitability for grain production.[19] Engerman and Sokoloff (2003) also employ a similar argument to explain the role of geographic endowments in shaping historic cross country differences in land inequality across North and South America. And using US census data as early as 1860, Vollrath (2006) provides evidence consistent with the role of geographic endowments in shaping land inequality across a sample of US counties.

In sum then, our instrument for land concentration is rainfall, and the mediating channel is the kind of crops that the prevailing pattern of rainfall facilitates. In Table 5 we present correlations of our measure of land concentration with the fraction of area covered by different crops in the county and

[18] In some countries, of course, co-operatives in sugar farming and production have led to joint ownership of land and mill without large amounts of land being held by a single owner. Why co-operatives have more limited presence in the United States is a question that is beyond this paper.

[19] Interestingly, cotton was not one of the crops that required plantation-style agriculture – even though substantial labor was needed to harvest the crop quickly soon after the bolls opened to avoid cotton spoiling from dust or rain, once the crop was harvested, it could be processed in due course. Thus labor, rather than capital was essential to cotton production, and following the emancipation of the slaves, small farms became more dominant in cotton.

with average annual rainfall (pooling data from 1920 and 1930). As Table 5 shows, there is a significant positive correlation of 0.35 between average rainfall and land concentration. The higher the average rainfall, the less the share of basic cereals, other grains and seeds, and hay and forage like sorghum in the crops grown in a county. Indeed, these were typically crops grown in the Mid West and areas with relatively less rainfall.

By contrast, fruit and nuts, which were typically grown in both plantations and small tenant plots in Florida, parts of Alabama, Louisiana, Texas, Mississippi, as well as California and the upper Midwest, are found more in counties with higher rainfall, as also are vegetables. Consistent with the discussion above, the share of county production in basic cereals, other grains and seeds, and hay and forage land is significantly negatively correlated with land concentration, while the share in fruit and nuts, as well as vegetables, is positively correlated with land concentration. The detailed acreage data in the Agricultural Census of 1910 provides additional corroboration. For instance, the share of farm acreage devoted to sugar cane—a capital intensive plantation crop—is positively correlated with both land concentration in 1910 and historic rainfall patterns.[20]

Of course, to be a reasonable instrument, rainfall should not directly drive the demand, or supply, of banking services, other than through land concentration. Perhaps it is easiest to think of rainfall driving the demand for banking services. If rainier areas are more productive, for example, one could argue, then it is likely that farmers would be richer, and demand more banking services. So rainier areas would have more banks (given the supply curve), and this would attenuate any negative effect we would expect to see between instrumented land concentration and banking (thus biasing the tests against the hypothesis).

As the first row of Table 6 suggests, agricultural land in counties with above median rainfall were somewhat more productive, producing $15.95 per acre in 1920 versus $15.11 per acre for

[20] For the farm acreage devoted to cane sugar, the correlation coefficients are 0.098 and 0.066 for land concentration and rainfall respectively. These correlations are significant at the 5 percent level, and are robust to the inclusion of the state dummies.

counties with below median rainfall. The difference in productivity widens in 1930 ($9.61 per acre versus $ 7.35 per acre), after a period of falling agricultural prices. By contrast, we find that counties with higher than median rainfall had smaller median farm size. Given that these counties also had higher Gini coefficients (0.46 vs 0.37), this would suggest they had a few really large farms and many small farms, as argued earlier. Finally, note that the percentage of crops that failed in any of the counties in 1930 was below 1 percent, suggesting that higher average historical rainfall was not necessarily correlated with significantly lower crop failures – the crops planted seemed to vary appropriately with rainfall patterns.[21]

So, taken together, do these data suggest that counties with higher rainfall were composed of borrowers that would have less need for credit or less creditworthiness to obtain it, or do they suggest the opposite? On the one hand the land was somewhat more productive, and crop failures in 1930, though low across the board, were slightly lower in rainier counties. This does not suggest significantly lower need or lower creditworthiness. On the other hand, farm sizes, by and large, were lower. However, the evidence from studies on farm loan defaults in the 1930s does not suggest that defaults were correlated with size (see, for example, Jones and Durand (1954) and the studies cited therein). The rationale for this somewhat surprising finding is that those who held small pieces of land typically supplemented their income through other work – for instance on plantations or in towns (Jones and Durand (1954, p175)). So it is not a priori obvious that counties with greater rainfall had borrowers who had lower need for banking services, especially credit, or were less creditworthy.

If we look at two other proxies for economic activity in Table 6, it is again not obvious that counties with higher rainfall were less creditworthy. First, the share of value added by manufacturing in the county turns out to be somewhat higher in counties with higher than median rainfall in 1920 (37% versus 25%), though the difference narrows in 1930 (50% versus 43%). This would make farms

[21] This is not to say that drought and crop failures were not a cause for farm distress in the inter-war period, only that data from the farm experience in 1930 does not suggest that areas with higher rainfall were more prone to distress.

in counties with higher than median rainfall more credit worthy because of access to non-farm work. By contrast, the share of owner occupied housing is lower in counties with higher-than median-rainfall in 1920 (50% versus 58%), with the difference narrowing again in 1930 (49% versus 55%). While this is consistent with less creditworthy households in counties with greater rainfall, it is also consistent with lower access to credit in these counties. Indeed, despite having higher productivity of land in counties with above-median rainfall, the median value of an acre of land is significantly lower in such counties (see Table 6) – a difference that could again be driven by the differential availability of credit. And finally, when we examine banks per capita, the difference is quite extraordinary. There are twice as many banks per capita in counties with lower-than-median rainfall than in counties with higher-than-median rainfall, both in 1920 and 1930. Interestingly, the average size of banks, as measured by bank deposits per bank, does not differ much (if anything, they are slightly smaller in counties with higher-than-median-rainfall), suggesting that the lower number of banks in counties with higher-than-median rainfall is not because they are larger banks.

In sum then, rainfall seems to drive land concentration by affecting the distribution of farm sizes, and does not obviously affect the demand for credit, other than through its effect on concentration and perhaps credit. It is a plausible instrument, certainly exogenous, but also likely to satisfy the exclusion criterion. However, it would be useful in our tests to correct for some of the obvious explanatory variables identified above to ensure that they do not drive any results we find (though we also have to be careful that by including “endogenous” explanatory variables like owner occupancy, we do not absorb some of the explanatory power of land concentration for access to credit).

At the same time, no natural instrument can completely satisfy the exclusion criterion. Rather than abandoning any attempt at examining important historical data, we offer a battery of tests that would help build an overall pattern of results rather than rely on one single test that would depend excessively on the plausibility of the instrument. Any critic then has the more onerous task (than

simply pointing out the endogeneity of the instrument) of explaining why their alternative explanation would account for all the facts we present.

C. Instrumental Variables Estimates

In the first column of Table 7B, we present estimates for a first stage where the dependent variable is land concentration in 1920 and the explanatory variables are the mean rainfall in the county computed over the last century, state dummies, and the geographical variables. The coefficient estimate on mean rainfall is positive and statistically significant at the one percent level, consistent with the literature. The second stage IV estimates are reported in Table 7A, Column 1. The coefficient on instrumented concentration is negative and statistically significant at the one percent level. As with the fixed effects results, the IV coefficient is larger in magnitude than in the OLS regression, suggesting the OLS estimate is biased towards zero. In this case, a standard deviation increase in land concentration reduces the number of banks per capita by about 1.2 standard deviations.

D. Basic Concern with Specification

There is the concern, of course, that land concentration might proxy for some omitted variable that is also correlated with the number of banks per capita. In particular, a poor, low skilled population, as well as the very young, might not have the ability to farm land independently and might also be an unattractive target market for banks. We should also account for the possibility of discrimination, both in terms of blacks not having access to education, and in terms of their being denied access to financial services (see Ransom and Sutch 1972). Therefore, we include as additional controls the fraction of the county population that is illiterate, the fraction that is young, and the fraction that is black. Moreover, because banking density might be directly affected by the size and spatial distribution of the population, we include the log population, as well as the fraction of the population that is urban (reflecting the degree to which population is unevenly distributed across the county). For instance, the more urban the population, the more the population is crowded in a few areas, and the fewer the bank offices needed to service them.

Of course, these demographic controls are arguably less exogenous than the geographic controls we included earlier. Nevertheless, it is heartening that in Column 2 in Table 7A the coefficient estimate of concentration in the IV regression is negative, strongly statistically significant, and indeed a little larger in magnitude with these additional controls than the coefficient estimated in Column 1. This suggests that concentration does not proxy for these controls. This will be our baseline regression. In what follows, we conduct some additional robustness checks.

In Table 7A Column 3, the dependent variable is banks per capita in 1930, and we estimate the IV regression with the full panoply of geographic and demographic controls. The coefficient estimate for land concentration is again negative and strongly statistically significant. In Table 7 Column 4, the dependent variable is a different measure of bank density, banks per square kilometer in 1920. Again, however, we find the coefficient of instrumented land concentration is negative and strongly statistically significant.[22]

Alternative Instruments

Much of the increase in the number of banks occurred after 1890, as federal and state authorities competed to weaken chartering requirements, capital requirements, reserve requirements, and portfolio restrictions in order to attract more banks into their system (White (1982)). The number of state banks grew from 2534 in 1890 to 14512 in 1914 while the number of national banks grew from 3484 to 7518. Therefore a significant part of bank structure evolved post 1890. Land inequality in 1890 thus predates much of the structural change, and could also be a plausible instrument for land concentration in 1920. We find that when we replace average rainfall as the instrument in the basic specification in Table 7A Column 2 with land inequality in 1890, the coefficient estimate of

[22] One concern may be that a county with uniformly large farms will have a low Gini. While this is not inconsistent with the hypothesis being tested (there is no need to repress finance if there are no small farmers/tenants to exploit), it is important to check that this does not drive our results. Therefore, we recalculate the Gini coefficient using only those counties with farm sizes in all bin categories—we are left with about 55 percent of the sample of counties. The coefficient estimates for the Gini are, however, qualitatively similar, and are available upon request.

instrumented land inequality in 1920 (see Table 7A Column 5) is negative and significant. Predetermination does not, however, imply the instrument satisfies the exclusion restriction.

An alternative instrument frequently suggested to us is the standard deviation of rainfall, as spatially covariant weather risk might also shape the distribution of farm sizes (Ramcharan (2009)). However, the variation in weather related agricultural risk can impact local banking structures through a number of different channels, potentially threatening the exclusion criterion. But to gauge the sensitivity of our results, we add this variable to our instrument set in column 6. The estimated impact of land concentration on bank density is similar to the previous results, and standard over-identification tests do not detect a violation of the exclusion criterion—the Hansen J-statistic is 1.16 (p-value=0.28). Instead of using the standard deviation of rainfall as an instrument, we can include it and other measures of weather risk and local climatic conditions (estimates available from authors) as control variables. The estimated impact of land concentration is qualitatively unaffected[23].

Yet another possible instrument is the variability of land elevation within a county (with higher elevations having different crops and different optimal land sizes). When the variability of elevation is used as an instrument for concentration in our baseline estimation instead of average rainfall, the coefficient on concentration is negative and statistically significant. But when included with rainfall, standard over-identification tests reject its use as an instrument. Again, the baseline results are robust to controlling for elevation variability.

Given that these additional instruments do not add to the analysis, and arguably could fail the exclusion criterion (elevation could be correlated with the cost of transport), in what follows we will use average annual rainfall as the instrument in our baseline, as this variable is more likely to satisfy conditionally the exclusion criterion.

[23] In addition to the core distance from waterways measures, the full range of weather and geophysical controls include the annual average number of frost days—days when the temperature dips below freezing—and growing degree days in the county, as well as the historic standard deviation of these variables. We also include both the mean elevation in the county, and the topographic variability of the terrain. Please see Table 1 for definitions and sources.

Standard errors

We computed robust standard errors in the estimates above. However, it could be argued that we should correct standard errors for possible correlation between physically proximate counties, a correction that is warranted if nearby counties have common historical experiences that shape their banking markets.

Following this logic, the correlation in the error term between county *i* and county *j* may be proportional to the distance between the two counties. We follow Conley [1998] and Rappaport [1999] and assume a spatial structure to the error covariance matrix. Specifically, for county pairs further than 150 kilometers apart—measured as the distance between the counties' geographic center-- we assume independence. Meanwhile, for county pairs less than 150 km apart, we use quadratic weighting:

$$E\left(\varepsilon_i \varepsilon_j\right) = \left[1 - \left(\frac{\text{distance}_{ij}}{150}\right)^2\right]\rho_{ij}, \qquad \text{where } \rho_{ij} = e_i e_j$$

We re-estimate standard errors using GMM and find that the previously-estimated coefficients continue to remain statistically significant. This adjustment typically increases standard errors, and in what follows, we report these more conservative distance-adjusted standard errors.

E. Rainfall as a proxy for demand side factors.

Given that the negative correlation between land concentration and banks per capita or per area seems fairly robust to time period and choice of instrument, let us turn to a different issue – could the instrument, rainfall, proxy for factors that reflect the demand for finance? One way to address this is to include explanatory variables that proxy for demand and see whether these diminish the coefficient estimate on land concentration.

The problem, of course, is that proxies for demand could also reflect the supply of finance, which is the channel we are focused on. For instance, we would think that counties with more owner-occupied housing are likely to be richer and have greater effective demand for financial services (it is

well established in the literature that the rich have more serviceable demand for financial services than the poor). However, the availability of credit is also likely to make it easier for households to buy rather than rent. Thus the fraction of owner-occupied housing is also likely to be a proxy for credit supply. Similarly, one could criticize almost any economic proxy for demand.

Nevertheless, we are on stronger ground if we find that the inclusion of reasonable proxies for demand does not alter the estimated coefficient on instrumented land concentration significantly. We identified a number of economic variables in Table 6 that varied substantially between counties with high rainfall and counties with low rainfall. Let us see what happens when we include them.

In Table 8, we start by including in the baseline regression in Column 1 both the log average size of farms and the log of the number of farms in the county – perhaps smaller farms are not credit worthy or perhaps if there are a few large farms, only a few bank outlets are needed to service them. The coefficient estimate for neither variable is significant, while the coefficient for land concentration remains relatively unchanged from the baseline (the magnitude is marginally higher, and despite a higher standard error, the coefficient is statistically significant). Next in Columns 2-4 we include the share of owner occupied housing, land productivity, and the value of land per acre in turn, and find similar results – a relatively unchanged and still significant coefficient estimate on land concentration. Of course, one could ask what would happen when we include all the variables simultaneously. Unfortunately, the standard errors blow up. This is probably to be expected – we identified all these economic variables because they vary with our rainfall instrument (which is positively correlated with concentration), so putting them all in the regression is likely to result in multi-collinearity.

F. Land Concentration Working Through Other Channels

It may be that it is not land concentration, but the presence of farms of a certain size that drives the availability of banking services. Therefore, we include in the baseline regression the share of land area under operation by farms in each size bin. These land shares have the potential to mechanically absorb much of the explanatory power of the Gini for land concentration, and this coefficient declines by about 45 percent, but remains significant at the 1 percent level (results

available from authors). So the distribution, rather than only the share of land in each size bin, matters.

It could be argued that different kinds of crops imply different demands for financing. We include in the baseline regression the value of each type of crop grown in the county, expressed as a share of total crop values in the county. The coefficient on land concentration is qualitatively the same (results available from the authors).

It could also be argued the effect is driven by Southern states. When we estimate a coefficient on concentration separately for non-Southern states in our baseline, it is negative and statistically significant (results available from the authors).

In addition to finance, the landed elite may have sought control over other local policies, including the suppression of public goods such as education (Galor et. al (2008), and Ramcharan (2009)). And rather than reflecting the direct influence of land concentration on local banking structures, these results might indirectly reflect the success of these groups in limiting human capital investment, and thus, the demand for finance. The baseline specification already controls for illiteracy, but we also include the per capita education expenditures in the county. This variable is available only for 1930, and we run our baseline specification using banks per capita in 1930 as the dependent variable. The coefficient on land concentration remains qualitatively similar to the baseline (results available from authors).

The set of possible alternative explanations one could advance for the negative correlation between land concentration and banks per capita is well nigh unlimited. Therefore, having addressed some important concerns, let us instead check in other ways whether this correlation might represent the influence of landed interests on access to finance. To the extent that these other checks bear out, any alternative explanation has to pass a stiffer test – it has to explain not just the correlation between land concentration and banks per capita but also these other correlations.

III. THE INFLUENCE OF LANDED INTERESTS

We therefore turn to more direct evidence that landed interests were influential in determining banking structure. Were landed interests more inclined to assert their influence when the ostensible incentive to do so was higher? What if the channel through which they could control finance was suppressed? Were landed interests more favorable to the financiers they could control than to those they could not control? And were landed interests more assertive when their overall ability to exert influence was higher?

A. Tenancy

Many of the arguments about the incentives of large land owners to limit access to finance revolve around tenancy. Land owners could negotiate lucrative share cropping contracts with cash-strapped tenants or sell goods at a high price where access to credit was limited. Also, because large farmers were usually owners while small farmers were tenants, in counties with high levels of tenancy a higher concentration in land holdings would likely reflect a more skewed distribution of economic and political power than in counties with low levels of tenancy. Thus landed interests would have both a greater interest and ability to limit finance in counties with greater tenancy.

To test this, in Column 1 of Table 9, we include an interaction between the fraction of farms in the county operated by tenants and land concentration in the baseline regression, controlling directly for the impact of tenancy using both linear and quadratic terms. The interaction between land concentration and the share of tenant farms in the county is negative and significant at the one percent level. For a county at the 25th percentile level of tenancy in the sample, a one standard deviation increase in inequality is associated with about a 1.1 standard deviation decline in banking density. But for a county at the 50th percentile of tenancy, the impact is about 26 percent larger. Interestingly, the direct correlation of tenancy is positive and significant. Evaluated around the median levels of concentration and tenancy, a standard deviation increase in tenancy is associated with a 0.05 standard deviation increase in the number of banks per capita. This is consistent with the view that tenants had

a greater demand for finance and, absent the influence of landed interests, would have attracted more banks per capita.

Sharecropping and cash tenants

It is useful to distinguish between sharecroppers and cash tenants. Sharecroppers had so little ready cash that they contracted to pay a share of their output as rent. The implicit interest rates in these contracts were often as high as 150 percent, with nearly half of share tenants borrowing about 100 percent of their expected income from their share of the crop (Brogan (1994)). Thus, because the profitability of share cropping depended on the underdevelopment of the financial system, landed interests would have been more likely to oppose wider credit access in counties where share cropping was more common. Unlike sharecroppers, cash tenants owned their harvest, paying landlords a fixed cash rent up front. These tenants were typically better off since they were either able to self finance the rent and cost of farming or had pre-arranged sources of financing.

In Column 2, we include an interaction between the fraction of farms operated by sharecroppers and land concentration, as well as the fraction of sharecroppers and the fraction of sharecroppers squared directly. In Column 3, we do the same for the fraction of cash tenants. In Column 2, for a county at the 25th percentile level of sharecropping in the sample, a one standard deviation increase in inequality is associated with about a 0.89 standard deviation decline in banking density. But for a county at the 50th percentile of sharecropping, the impact is about 15 percent larger. Interestingly, the direct effect of sharecropping measured at its mean is positive, suggesting that counties with greater sharecropping had, ceteris paribus, more demand for finance, and more banks per capita, but the effect of concentration was to reduce the presence of banks.

In contrast to share croppers, the interaction term between concentration and the fraction of farms operated by cash tenants is positive, small and not statistically different from zero. For a county at the 25th percentile level of cash tenancy in the sample, a one standard deviation increase in

inequality is associated with about a 1.20 standard deviation decline in banking density. But for a county at the 50th percentile of cash tenancy, the impact is about 3 percent smaller.

In sum, the negative relationship between land concentration and banks per capita seems most pronounced in counties where there was likely to be the greatest demand for credit, and hence the greatest incentive for landed interests to control it.

B. Crop Lien Legislation

We have seen that crop lien laws were one of the principal tools that the landed elite allegedly used to restrict credit from banks and limit their business (Ransom and Sutch (1977, 2001), Van Woodward (1951)). These laws made the landlords' claims on tenants superior to other creditors, effectively preventing banks and merchants from lending to tenant farmers. Although such laws were deeply unpopular among small farmers, the landed elite used their political influence with legislatures throughout the South to enact them.

Texas, for a period, was an important exception. In part, because of different electoral rules that briefly allowed small farmers to elect a Populist governor, Texas was the only Southern state that actually passed legislation restricting the maximum liens that landlords could claim[24]. The legislation, passed in 1915, also limited the shares that landlords could negotiate in a share cropping contract--1/3 of the cotton crop and ¼ th of the grain (US Census (1940)). The Texas Supreme Court—appointed mainly by the landlord dominated legislature--eventually declared the law unconstitutional in 1929. Nevertheless, for a time, Texas' crop lien legislation imposed a less onerous barrier to bank entry in rural areas, implying that the impact of land concentration on banking density in Texan counties would have been weaker compared to counties in other Southern states during our sample period.

[24] The Populist Movement in the United States is often thought to have begun in Texas with the founding of the Grand State Farmers' Alliance in the 1890s. By the early 1900s, the state passed the Terrell Act in 1905 which created a direct primary system, allowing voters rather than party elites to select the gubernatorial nominee in a direct election. This of course created a wave of populism and reforms, of which the 1915 law is an example. However, the legislature was still dominated by the landed elite, and they eventually impeached the Governor three years after the passage of the 1915 legislation (Newton and Gambrell (1935)).

In Column 4 of Table 9, we restrict the baseline specification in 1920 to Southern counties, but allow the impact of land concentration on banking density to differ for Texan counties. The estimates are generally imprecise, and in 1920, five years after the law, the impact of land concentration on per capita banks, if anything, is more negative in Texan counties. However, 15 years after the initial passage of the Texan legislation, the impact of concentration on per capita banks is significantly more muted in Texan counties compared to other Southern counties in the 1930 cross-section (Column 5). Indeed, the coefficient estimate on land concentration in Texas is essentially zero.

C. Relative Power of Landed Interests

Landed interests are likely to have had more influence on the structure of banking if they are a dominant economic power in the county. But this was a period when the manufacturing sector, an important consumer of financial services, was growing. It is reasonable to think that in counties where the economic power of the agricultural sector was offset by the power of the manufacturing sector, the effect of land concentration on bank structure would be weaker.

One measure of relative economic power is the ratio of the value of manufacturing output to the value of manufacturing and agriculture output. In Table 9 Column 6, we include the interaction between manufacturing share and land concentration in our baseline regression, taking care to include manufacturing share and its square directly.

The estimates suggest that as the strength of manufacturing interests in a county increase, the adverse impact of land concentration on the per capita number of banks falls. The point estimates in Column 6 suggest that for a county at the 25th percentile level of manufacturing share in the sample, a one standard deviation increase in land inequality is associated with about a 1.40 standard deviation decline in banking density. But for a county at the 50th percentile of manufacturing share, the impact is about 14 percent smaller. Note that it is hard to argue that this reflects a greater demand for banking services in counties with more manufacturing share, because we control for the direct effects of manufacturing (through both linear and squared terms). Indeed, the direct effect is negative,

consistent with the fact that agriculture was undergoing a boom till the early 1920s, and may have been a greater source of demand for banking services than manufacturing.

D. National vs State Banks

The early years of the 20th century were years of fierce competition between federal and state regulatory authorities in a seeming race to the bottom (White (1982)). National banks were chartered by the Office of the Comptroller of Currency in Washington DC, while state banks were chartered by state authorities. As some of the banking scandals of the 1920s suggest, state chartered banks were easier for powerful landed interests to control than nationally chartered banks (see, for example, Vickers (1994)). One would expect, therefore, that landed interests would discourage the spread of banks, but be particularly averse to the spread of national banks.

In Table 10 Column 1, we report our baseline specification, but with the dependent variable being the number of national banks per capita in 1920 . The coefficient on land concentration is negative and statistically significant, as is the coefficient in Table 10 Column 2 where the dependent variable is the number of state banks per capita in 1920. Thus landed interests discouraged both types of banks, a reassuring finding. In Table 10 Column 3, the dependent variable is the share of national banks to total banks in the county. The coefficient on land concentration is negative and significant – there are not just fewer banks of any kind but relatively fewer national banks in counties with concentrated landed interests. Note that by including state indicators, we control for any direct legislative impediments to the setting up of national banks in the state.

Before putting too much weight on this finding, one concern needs to be addressed. Until the relaxation of the 1864 National Bank Act in 1913, national banks were barred from mortgage loans – that is, loans against land (Sylla (1969)). There is disagreement about the effectiveness of this restriction (Keehan and Smiley (1977)). Nevertheless, and despite the tremendous change in bank activity over this period, it is plausible that the past legal restrictions on agricultural loans may have had some effect on national bank presence in counties with concentrated land holdings in 1920. But

this is an unlikely explanation for our findings -- for this to be a factor in explaining relatively lower national bank presence in concentrated counties, counties with higher land concentration should have been more agricultural. Yet Table 6 suggests the opposite – counties with higher-than-median concentration land holdings had a somewhat greater presence in manufacturing.

E. Distance from State Capital

We have provided evidence suggesting that landowners influenced state regulation to favor their private objectives. In most cases, state governors appointed the state bank commissioners, and politics often shaped chartering and regulatory decisions (Mitchener (2005))[25]. To the extent that state power was important, one might expect that at this time –when physical distance mattered greatly -- that powerful landowners in counties that were physically closer to the state capital might have had greater influence on bank structure than landowners who were further away. We thus allow the impact of land concentration to depend on the distance between the county seat and the state capital (calculated with US Census geographic data). The county's distance from the state capital also enters as a linear and quadratic term to absorb any direct impact on bank structure.

In Column 1 of Table 11, there is some evidence that concentration may have had a larger negative impact on banking in counties closer to the state capital. But consistent with the fact that state bank chartering and regulations were determined in state capitals, these results appear to be driven by state banks (Column 2). At the state capital, a one standard deviation increase in land concentration is associated with a 1.8 standard deviation decline in bank density. This impact is about 20 percent smaller in counties located one standard deviation away from the capital.

By contrast, the Comptroller of Currency in Washington DC chartered and regulated national banks using a system of national bank examiners. One should not expect distance from the state

[25] Using previously secret government documents, Vickers (1994) note for example that land developers often overcame chartering obstacles by bringing powerful politicians into banking deals. Land developers then used bank deposits for unsecured personal loans for themselves, politicians, and bank regulators. These loans were rarely repaid.

capital to matter for national banks. Indeed, the distance interaction term in Column 3, where the dependent variable is national banks per capita, is small and not different from zero.

IV. Land Concentration and Access to Credit

Having provided some evidence that political economy may have been responsible for differences in bank structure across counties, let us examine another aspect of the allegations at that time -- that there were few banks per capita in counties with concentrated land holdings because landed interests wanted to suppress access to formal sources of credit. A natural question is whether formal credit was actually scarce in such counties.

A. Credit Conditions

To address this question, we hand-collected several indicators of local land mortgage loans from the 1930 US Census. We have the average interest on farm mortgages held by banks, a proxy for the cost of credit. We also have data on the fraction of indebted farms, and the debt to value ratio for farms. Finally, we have the amount of bank mortgage credit, which when scaled by local state bank deposits, gives us a credit to deposit ratio, a standard measure of local credit activity.[26]

Around 50 percent of farms were indebted in 1930, the average mortgage debt to value ratio was around 37%, while the average interest rate in 1930 was 6.48%. The average ratio of mortgage debt to bank deposits across counties was 56%. In Figure 3, we use a box plot to depict the regional variation in the average cost of credit. Consistent with the notion that credit markets in California and the Pacific states were more geographically integrated, there is less variation in the average interest rate across counties in that region (Calomiris (2000)). In contrast, credit markets in the South were generally more segmented, and the dispersion in the interest rate is higher among those counties.

Of course, it is possible to argue against each of these variables taken alone as a measure of the supply of credit – they could be a measure of effective demand, as determined both by the need

[26] We scale by state bank deposits, given the earlier caveat that state banks may have been more into lending against land.

for credit as well as the creditworthiness of the borrower. However, assuming the underlying distribution of creditworthiness is the same across counties, the simultaneous prevalence of lower interest rates and higher credit volumes is more consistent with higher supply than higher demand. Indeed, the simple correlations in Table 12 suggest that counties with lower interest rates also had a greater fraction of indebted farms and higher loan to value ratios.

To focus further on this aspect, we extract the principal component from our four proxies for access to credit. The first component explains about 41 percent of the variance in the data, nearly twice as much as the second component. Moreover, it correlates negatively with interest rates and positively with the proxies for credit volume; the share of indebted farms, the debt to value ratio, and the mortgage credit to deposit ratio (see Table 12). Therefore, we use the first component as a summary measure of local credit supply conditions.

Thus far, we have argued that rainfall determines land concentration which, in turn, determines banks per capita. We now take this one step further by saying that banks per capita determines access to credit, that is, the interest rate charged and the volume lent. The system of equations below summarizes our empirical strategy:

$$Measure\ of\ \ access_i = \alpha_0 + \alpha_1 Bank_i + X_i\beta_1 + \varepsilon_{1i} \qquad (1)$$
$$Bank_i = \alpha_2 + \alpha_3 Land\ Concentration_i + X_i\beta_2 + \varepsilon_{2i} \qquad (2)$$
$$Land\ Concentration_i = \alpha_3 + \alpha_4 Rain_i + X_i\beta_3 + \varepsilon_{3i} \qquad (3)$$

We estimate the impact of local bank structures on the various measures of access in equation (1). These local bank structures are determined by local land concentration (equation (2)), which depends on the mean rainfall in the county (equation (3)). The system is exactly identified, and equation (1) can be estimated using instrumental variables. We include our usual geographic, demographic, and state fixed effects controls in each equation.[27]

[27] In equations (2) and (3), we could use banks per capita in 1930. However, some of the measures of access we have (for example, mortgage credit to deposits) reflect the cumulative consequences of lending over time. In that case, it might be more appropriate to use banks per capita in 1920. Fortunately, the results do not depend

The IV estimates in Table 13A Column 1 suggest an economically large relationship. A one standard deviation increase in bank density in 1920 is associated with a 0.38 percentage point or about a 0.66 standard deviation decrease in the average mortgage interest rate. The coefficient estimates for the effect of bank density on the fraction of indebted farms in Column 2, the mortgage debt to value ratio in Column 3, and the mortgage credit to deposit ratio in Column 4 are positive, economically large, and with the exception of Column 3, statistically significant. Finally, the principal component extracted from these series is also positively and significantly related to bank density (Column 5). So, counties with more banks per capita appear to have greater credit availability: lower interest rates, a higher fraction of indebted farms, greater debt to value ratios, and a higher mortgage credit to deposit ratio.

In the estimates in Table 13A, we instrumented banks per capita directly with average rainfall (because the system is exactly identified, this is equivalent to the three stage least squares estimate). Alternatively, we could include the Gini coefficient instrumented with rainfall. The estimates for the Gini are reported in Table 13B, are the expected sign and, again with the exception of column 3, are statistically significant. In Table 13C, we show the results in Column 5 of Table 13A (for the principal component) is robust to the inclusion of our usual economic controls. In sum, access to credit appears lower in areas with concentrated land holdings.

But this suggests one more question. The obvious alternative explanation of our findings is that credit was costlier and less of it was obtained in concentrated counties because potential borrowers were riskier and less creditworthy. Two pieces of evidence already weigh against this explanation. First, the mortgage credit to deposit ratio was lower in more concentrated counties, suggesting that local deposits seemed plentiful relative to the credit that was given – consistent with the notion that credit was constrained by supply rather than constrained by the low quality of potential

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qualitatively on which measure is used, so we use the latter, though results are available for the former from the authors.

borrowers. Second, the historical percentage of crop failures in more concentrated counties was somewhat lower, suggesting that farming, if anything, was less risky.

Nevertheless, one way to tell the "deliberate rationing" explanation-- that potential borrowers were deliberately rationed -- apart from the "naturally constrained" explanation -- where the potential borrowers in concentrated counties were lower quality – is to look at the default experience. If borrowers were deliberately rationed, with the lower quality tenants being most frozen out of the market for formal credit in counties with high land concentration, we should find a better default experience (i.e., lower loan defaults) there relative to counties with low concentration. By contrast, if they were naturally constrained, we should find that the default experience is, if anything, worse because the underlying quality of the borrower group is lower in counties with high concentration. This is what we finally turn to examine.

V. LAND CONCENTRATION AND THE DEFAULT EXPERIENCE

Unfortunately, we do not have data on the loan default experience, county by county. However, we do have data on state bank failures from the FDIC, including the value of deposits in suspended state banks[28]. We can therefore compute the ratio of deposits in suspended state banks in the period 1931-36 (which covers the bulk of bank failures during the Depression – few banks failed after 1934) to the level of deposits in 1930. In Figure 4, we plot the fraction of failed deposits across regions. The failure rate was highest in counties in the Mid West and Pacific regions.

The failure rate is a noisy proxy for defaults on mortgage loans, for banks could have failed for reasons other than loan losses, such as speculation on securities. Moreover, losses on loans might not translate into bank failures in a continuous way – a bank in one county may have serious losses but may just avoid failure, while a similar bank in another county may lose just a little more and fail.

[28] Because state banks and national banks may have done different things, and because the mix varies across counties in deterministic ways, we decided to focus on state bank lending. The results for national bank lending are not qualitatively different.

Unfortunately, it is the only data that we have, and because it is noisy, we will have to take extra precautions to weed out outliers and influential observations.

In Table 14A Column 1, we estimate the 3SLS regression outlined in the system of equations (1)-(3) described in the last section, but with the fraction of failed state bank deposits as the dependent variable. As we see, the coefficient estimate on banks per capita is positive but not statistically significant. Recognizing that this may be because of the noise in the variable, we use a Huber and bi-weighting procedure to identify influential observations, dropping the 5 percent most influential observations from the sample (Hamilton (1991)).[29] When we estimate the 3SLS for the reduced sample in Column 2, we find the coefficient is significantly higher, statistically significant, and more precisely estimated. A one standard deviation increase in the number of banks increases the fraction of defaulted state bank deposits by 0.36 of its standard deviation.

In Column 3, we replace state banks per capita in 1920 with state banks per capita in 1930 and find similar results. In Column 4, we replace state banks per capita with the Gini (instrumented by rainfall), and find a negative and significant coefficient. The evidence is clear; counties with more concentrated land holdings had a lower, not higher, fraction of deposits failed.

To further gauge the robustness of these results, we retain the full available sample, and replicate the preceding specifications in columns 2-4 using instrumental variables quantile regressions. Estimates of the conditional median are less affected by influential observations (Chernozhukov and Hansen (2008)). The results in columns 1-3 of Table 14B continue to suggest a robust relationship between bank structures and loan losses. In column 1, for example, a one standard deviation increase in the number of banks increases the fraction of defaulted state bank deposits by about 0.23 of its standard deviation. Finally, as an additional check, in the four columns of Table 14C, we include the various economic controls we have encountered earlier in our baseline regression of

[29] Using robust regression estimation, we estimate the second stage of the baseline instrumented variable regression, and determine the weights the robust regression attributes to observations. We then drop the 5% of the observations that are accorded the least weight by the regression.

Table 14A Column 2: the coefficient on banks per capita remains positive and statistically significant.[30]

In sum, even though our proxy for loan losses is crude, it suggests that loans in counties with more concentrated land holdings were, if anything, less risky – the ratio of deposits of failed state banks to total deposits was lower in such counties. This supports the view that credit from the formal sector in such counties was restricted to those with better underlying creditworthiness. This then makes the finding that interest rates were higher in such counties, while access to credit was lower, more consistent with a supply side constraint – access to credit was limited – than a demand side explanation – the potential borrowers were less creditworthy.

VI. DISCUSSION AND CONCLUSION

The evidence in this paper suggests that the nature of local constituencies had substantial influence over the course of banking development in the United States, even as recently as the early twentieth century when the United States was well on its way to becoming the foremost industrial economy in the world.

Not only do we find fewer banks per capita in counties with a more concentrated distribution of farm land, we also find that interest rates were higher for land mortgage loans, while measures of the availability of credit were lower. Finally, we also find that loan losses were lower in counties that had more concentrated land holdings, suggesting that the greater riskiness of the underlying pool of borrowers cannot explain our results.

[30] Counties that had more concentrated land holdings or rainfall had a somewhat greater share of value added in manufacturing in 1930 (see Table 6). While the Great Depression was probably not any less severe on small and medium manufacturers than on farming, it might be that greater bank diversification across agriculture and manufacturing was what led to lower failures in concentrated counties. We can include either the share of manufacturing, the value added in manufacturing per capita, or the quantity of power used per capita in the county, and their respective squares, as measures of the extent of diversification. Even though we lose approximately 300 observations and the standard errors go up, the coefficient estimates on banks per capita go up in magnitude by about 20 percent (relative to Table 14 A Column 2) in all cases and are statistically significant in two out of three cases.

While the political economy within the counties is a plausible explanation of the differential access to credit we do not have sufficient evidence to suggest that large landowners actively suppressed access to credit. It is possible that in the counties with concentrated land holdings, large landowners had no incentive to press for financial development, while the absence of a powerful group of mid-sized farmers pushing for financial access, and the political weakness of small and tenant farmers, implied banking remained underdeveloped. Benign neglect rather than malign intent could explain many, but not all, of our findings.

Note that throughout our analysis, we have focused on the United States, and we have corrected for state fixed effects. It is interesting then that we find large effects, even though institutions that are commonly thought of as important for economic growth, such as broad political and legal institutions, are held relatively constant. This is not to suggest that institutions are unimportant (we have nothing to say on that), but rather that large variations in developmental outcomes may stem simply from differences in the distribution of economic wealth and power in a society (see Banerjee and Iyer (2005), Ramcharan (2009) or Rajan (2009), for recent studies). Examining the relative importance of constitutions and constituencies or, equivalently, institutions and interests, is a task for future research.

Finally, it is interesting that counties with more limited banking competition seemed to have fared better during the Great Depression. This does not necessarily mean that less competition is better ex ante, for the Great Depression was a tail event that was unexpected. To base policy on an outcome that is of low probability is probably unwise. Nevertheless, we should also note that land prices were bid higher relative to fundamentals (such as crop productivity) in counties with more banks in the 1920s. Does more bank competition fuel asset price bubbles? Could this have created more fragility before the Depression? Is such competition good or bad for long run growth? Those are important questions to tackle in future research, especially in light of the current economic crisis enveloping the world.

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Table 1: Variables' Definitions and Sources

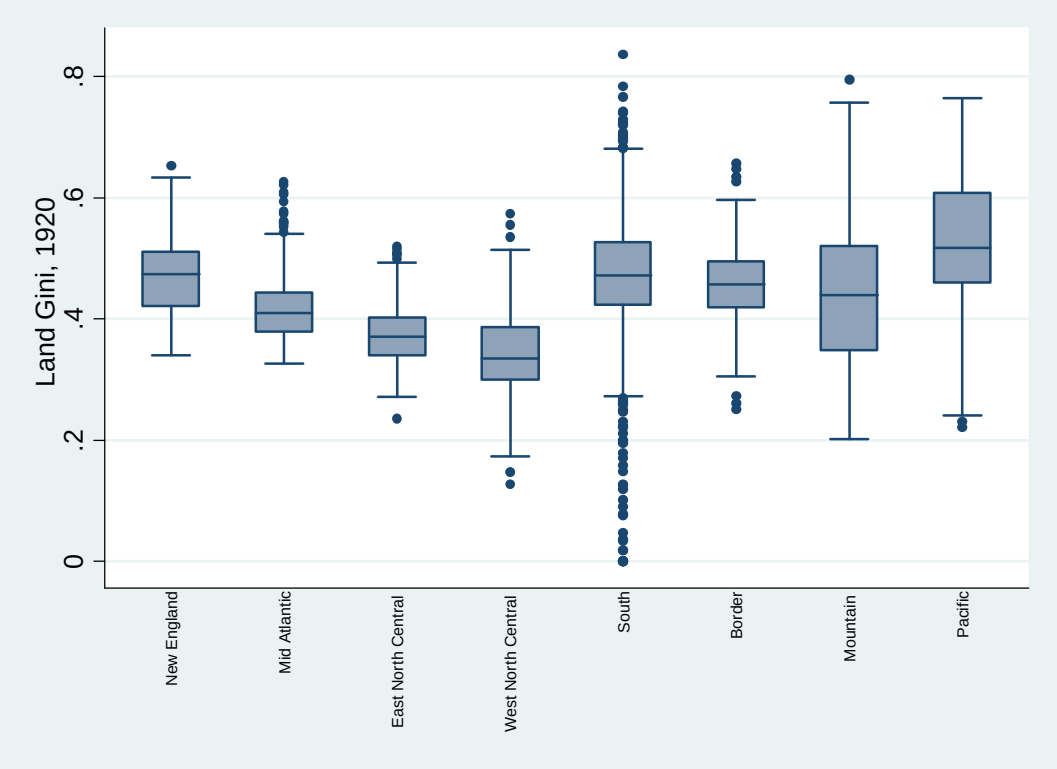
Variable	Source	Definition
Land Inequality (Gini Coefficient)	United States Bureau of Census; Inter-University Consortium for Political and Social Research (ICPSR) NOs: 0003, 0007,0008,0009,0014,0017	The number of farms are distributed across the following size (acres) bins: 3-9; 10-19 acres; 20-49 acres; 50-99 acres; 100-174;175-259;260-499;500-999; 1000 and above. We use the mid point of each bin to construct the Gini coefficient; farms above 1000 acres are assumed to be 1000 acres. The Gini coefficient is given by $1+1/n-\left[2/(m*n^2)\right]\sum_{i=1}^{n}(n-i+1)\,y_i$ Where farms are ranked in ascending order of size, y_i, and n is the total number of farms, while m is the mean farm size. [Atkinson, A.B. (1970)]. At the state level, we sum the total number of farms in each bin across counties, then compute the Gini coefficient.
Number of State and National Banks Active in each county.	Federal Deposit Insurance Corporation Data on Banks in the United States, 1920-1936 (ICPSR 07).	
Urban Population; Fraction of Black Population; Fraction of Population Between 7 and 20 years; County Area; County Population; Value of Crops/ Farm Land Divided by Farm Population	United States Bureau of Census; Inter-University Consortium for Political and Social Research (ICPSR) NOs: 0003, 0007,0008,0009,0014,0017	
Distance From Mississippi River; Atlantic; Pacific and the Great Lakes.	Computed Using ArcView from each county's centroid.	
Annual Mean Rainfall	Weather Source 10 Woodsom Drive Amesbury MA, 01913 (Data Compiled from the National Weather Service Cooperative (COOP) Network	The COOP Network consists of more than 20,000 sites across the U.S., and has monthly precipitation observations for the past 100 years. However, for a station's data to be included in the county level data, the station needs to have a minimum of 10 years history and a minimum data density of 90 percent: ratio of number of actual observations to potential observations. If one or more candidate stations meet the above criteria the stations' data are averaged to produce the county level observations. If no candidate station exists within the county, the nearest candidate up to 40 miles away in the next county is substituted. The arithmetic mean and standard deviation level of rainfall are computed from the monthly data for all years with available data.
Annual Standard Deviation Growing Degree Days	Weather Source 10 Woodsom Drive Amesbury MA, 01913 (Data Compiled from the COOP Network	Computations are similar to rainfall. Growing degree days (GDD) derived by taking the average of the daily high and low temperature each day and subtracting the baseline temperature, which for most counties is 10 degrees Celsius. For example a day with a high of 20C and a low of 16C would correspond to 8 GDD.
Weighted Standard Deviation of Elevation	Weather Source 10 Woodsom Drive Amesbury MA, 01913	The number of square miles of each county's land area is listed from below 100 meters, 0–100 meters; 100–200 meters; the bins increase in increments of 100 meters up to 5,000 meters. The weighted standard deviation is then computed, with the weight being the share of land area in each elevation category.

Table 2. County Level Variables, Summary Statistics

	Circa 1920		Circa 1930	
	Mean	Standard Deviation	Mean	Standard Deviation
Land Gini	0.43	0.10	0.43	0.10
All Banks, Number Per 100 Square Kilometers	0.08	0.51	0.07	0.40
All Banks, Per 1000 Inhabitants	0.48	0.04	0.37	0.26
State banks, as fraction of all banks	0.71	0.25	0.69	0.27
County Area (Logs)	7.38	0.98	7.38	0.98
National banks, Per 1000 Inhabitants	0.11	0.130	0.09	0.10
Total Population (Logs)	9.76	1.03	9.81	1.05
Urban Population	19.01	24.83	21.30	25.73
Population Density	61.13	902.56	67.75	836.09
Black Population, as a fraction of total population	0.12	0.19	0.11	0.18
5-17 year olds, as a fraction of total population	0.30	0.04	0.30	0.04
Per capita value added in manufacturing, 1920 (logs)	0.01	0.66	---	---
Per capita value of crops, in 1920 (logs)	-0.63	0.51	---	---
Value of fruits, as a share of total agriculture value added	4.35	9.74	5.40	11.97
Value of cereals, as a share of total agriculture value add	42.23	25.06	35.80	26.34
Value of vegetables, as a share of total agriculture value added	11.53	13.60	10.09	14.12
Per capita value added in agriculture, 1930	---	---	3981.91	4751.81
Distance from Mississippi	1032163.00	808239.30	1032163.00	808239.30
Distance from Atlantic	1884416.00	1418925.00	1884416.00	1418925.00
Distance from Great Lakes	1347100.00	926554.80	1347100.00	926554.80
Distance from Pacific	3686264.00	1415177.00	3686264.00	1415177.00
Annual average rainfall (inches)	36.41	13.68	36.41	13.68
Proportion of owner occupied homes	0.528	0.140	0.509	0.134
Average farm size (logs),	5.019	0.9403	5.009	0.975
Number of farms (logs)	7.333	1.005	7.302	0.977
Percent of acreage reporting crop failures	---	---	1.270	1.602
Share of the value of manufacturing output to the value of manufacturing and agriculture output	0.392	0.306	0.502	0.311
Fraction of tenant farmers	0.335	0.196	0.375	0.209
Fraction of sharecroppers	0.159	0.114	---	---
Fraction of cash tenants	0.073	0.076	---	---
Average interest rate	---	---	6.480	0.683
Fraction of indebted farms	---	---	0.498	0.151
Average mortgage debt, as a percent of farm values	---	---	37.378	8.08
Average mortgage debt, as a percent of state bank deposits	---	---	1.298	2.916
Total deposits of suspended state banks, 1931-1936, as a share of state bank deposits in 1930.	---	---	28.051	33.151

Sources and definitions in Table 1.

Figure 1: Land Concentration (Gini Coefficient), 1920.



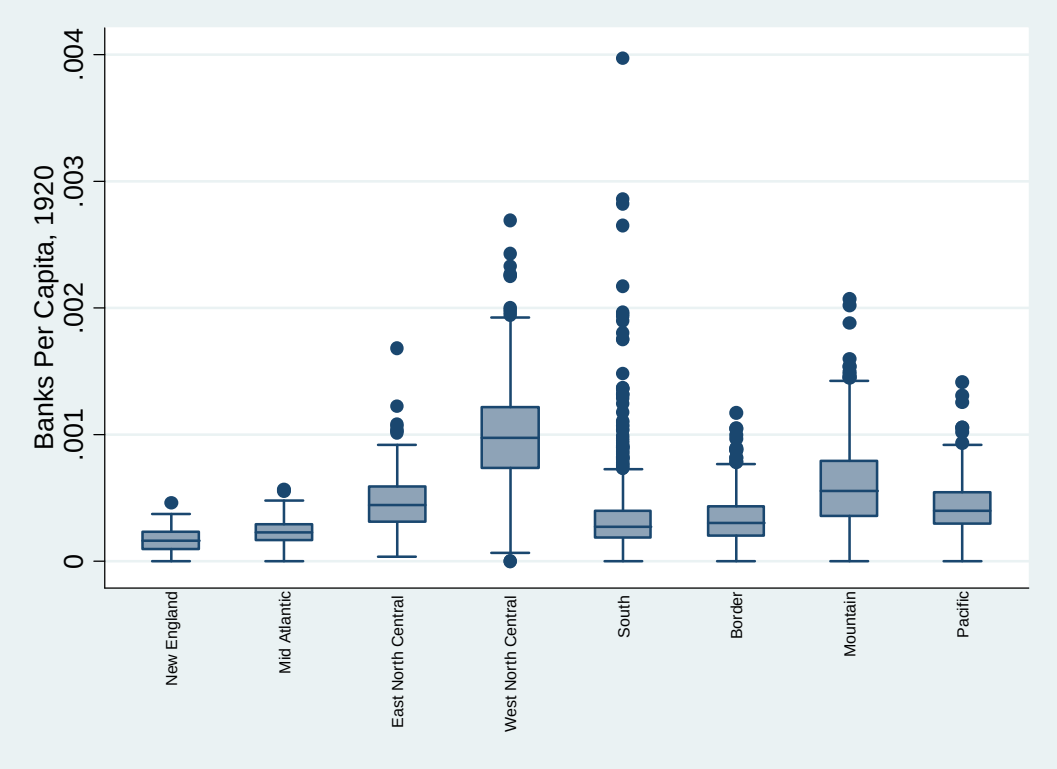
The shaded rectangle represents the interquartile range, which contains the median—the solid line. The ends of the vertical lines extend to a maximum of 1.5 times the interquartile range. Dots beyond this range are possible outliers.

Table 3: State Laws and Landed Interests

	(1) OLS	(2) OLS
	Branching Permitted =1, 1900-1929	Branching Permitted =1, 1900-1929
Land Concentration	-2.256**	-2.311**
	[1.039]	[1.0208]
Population	---	0.009
	---	[0.009]
Population Density	---	0.278**
	---	[0.129]
Urban Population	---	-0.411
	---	[0.840]
Black Population (Fraction)	---	-0.463
	---	[2.483]
Per Capita Wealth (Real Property)	---	0.009**
	---	[0.003]
Observations	189	189
R-squared	0.67	0.71

* significant at 10%; ** significant at 5%; *** significant at 1%. Columns 1 and 2 include state and year fixed effects, with standard errors clustered at the state level.

Figure 2: Banks per Capita 1920.



The shaded rectangle represents the interquartile range, which contains the median—the solid line. The ends of the vertical lines extend to a maximum of 1.5 times the interquartile range. Dots beyond this range are possible outliers.

Table 4. Bank Density and Land Concentration, OLS Estimates

Dependent Variable	(1)	(2)	(3)
	(OLS) Banks per Capita 1920	(OLS) Banks per Capita 1930	(OLS) Banks per Capita (County Fixed Effects)
Land Concentration	-110.86***	-63.44***	-141.00***
	[10.30]	[5.33]	[34.6]
County Area (log)	-0.11	-1.71*	---
	[0.98]	[0.70]	---
Distance from Mississippi (log)	3.79***	1.55*	---
	[0.80]	[0.60]	---
Distance from Atlantic (log)	-1.09	-0.17	---
	[0.72]	[0.52]	---
Distance from Great Lakes (log)	4.45	2.89	---
	[2.41]	[1.66]	---
Distance from Pacific (log)	1.44	1.67	---
	[2.25]	[1.61]	---
Observations	2907	2934	6036

Robust standard errors in brackets. ***,**,* denotes significance at the 1, 5 and 10 percent levels. Columns 1 and 2 include state dummy variables—these are absorbed in the county fixed effects in column 3. All coefficients multiplied by 100,000.

Table 5: Pairwise Correlations between Land Concentration, Crop Shares, and Rainfall.

	Land concentration	Share of land in basic cereals	Share of land in grains and seeds	Share of land in hay and forage	Share of land in fruits and nuts	Share of land in vegetables	Average annual rainfall
Land concentration	1						
Share of land in basic cereals	-0.4463*	1					
Share of land in grains and seeds	-0.0480*	-0.0239	1				
Share of land in hay and forage	-0.1751*	-0.1591*	-0.0227	1			
Share of land in fruits and nuts	0.3410*	-0.2843*	-0.0489*	-0.0159	1		
Share of land in vegetables	0.2990*	-0.3773*	-0.0278*	0.0634*	0.1629*	1	
Average annual rainfall	0.3458*	-0.2123*	-0.1668*	-0.4609*	0.0421*	0.1183*	1

(*) significance at the 5% level or higher

Table 6: Rainfall, Land Concentration, and Economic Outcomes.

Median Values for the Cell	Rainfall Average 1920		Land Concentration 1920		Rainfall Average 1930		Land Concentration 1930	
	Above Median	Below Median	Above Median	Below Median	Above Median	Below Median	Above Median	Below Median
Value of produce per acre ($)	15.95	15.11	13.43	17.04	9.61	7.35	8.77	8.55
Percent of Crops that Failed in 1930	.	.	.	.	0.70	0.85	0.69	0.88
Average Farm Size (acres)	88	191	96	145	84	192	94	147
Share of Manufacturing in county	0.37	0.25	0.39	0.24	0.50	0.43	0.51	0.42
Fraction of housing in county that is owner occupied	0.50	0.58	0.49	0.59	0.49	0.55	0.48	0.56
Value of land per acre	34.34	46.20	32.59	48.99	24.46	32.42	24.84	30.84
Number of banks per 10000 people	2.71	6.23	2.78	5.91	1.87	3.96	1.90	3.99
Deposits per bank	.	.	.	.	392.73	400.60	420.92	380.29

All data winsorized at .01

Table 7 A. Bank Structure and Land Concentration, IV Estimates 2nd Stage

	(1)	(2)	(3)	(4)	(5)	(6)
Instruments	Average Rainfall	Average Rainfall	Average Rainfall	Average Rainfall	Land Concentration (1890)	Average Rainfall, Rainfall Std Deviation
	(IV)	(IV)	(IV)	(IV)	(IV)	(2SLS)
Dependent Variable	Banks per Capita 1920	Banks per Capita 1920	Banks per Capita 1930	Banks per sq km 1930	Banks per Capita 1920	Banks per Capita 1920
Land Concentration	-481.041***	-496.036***	-234.706***	-4712.885***	-78.683**	-465.171***
	[84.500]	[92.800]	[61.000]	[1030.000]	[29.900]	[84.000]
County Area (log)	-1.033	-2.14	-1.976*	-499.693***	2.28*	-1.832
	[1.450]	[1.740]	[0.987]	[27.800]	[1.070]	[1.650]
Distance from Mississippi (log)	-2.131	-0.595	0.8084	17.852	3.357***	-0.3312
	[1.670]	[1.360]	[0.714]	[17.400]	[0.693]	[1.270]
Distance from Atlantic (log)	-14.391***	-13.539***	-4.158*	-145.991***	0.9691	-12.494***
	[3.310]	[3.520]	[1.750]	[42.100]	[1.150]	[3.180]
Distance from Great Lakes (log)	8.879***	8.486***	3.357**	47.66	1.389	7.961***
	[1.740]	[2.140]	[1.200]	[36.600]	[0.886]	[1.980]
Distance from Pacific (log)	-10.214*	-10.458*	-4.722	28.167	0.4398	-9.557*
	[4.970]	[5.130]	[3.100]	[48.400]	[2.530]	[4.830]
Illiterate population share		55.618	32.317	1606.574***	-81.822***	45.35
		[42.900]	[29.100]	[443.000]	[15.400]	[39.700]
Urban population share		-0.1514*	-0.2379***	0.2726	-0.3722***	-0.1641**
		[0.063]	[0.033]	[0.746]	[0.033]	[0.060]
Log of Total Population		1.775	1.757	494.818***	-4.371***	1.272
		[2.080]	[1.320]	[27.100]	[1.090]	[1.940]
African-American population share		8.89	5.503	-196.931*	19.732***	9.492
		[8.140]	[3.830]	[88.100]	[3.790]	[7.720]
Youth population (7-20) share		-111.728	-194.95***	-4708.142***	-197.733***	-113.118**
		[41.700]	[25.500]	[462.000]	[22.100]	[40.200]
Observations	2907	2907	2934	2907	2573	2907

Robust standard errors in brackets. ***,**,* denotes significance at the 1, 5 and 10 percent levels. All specifications include state dummy variables. All coefficients multiplied by 100,000.

Table 7B; First Stage Estimates

	(1)		(2)	
Dependent Variable	*Land Concentration in 1920*		*Land Concentration in 1920*	
Average Rainfall	13.90	***	13.00	***
	[2.46]		[2.28]	
County Area (log)	3.23		-61.10	*
	[30.50]		[31.60]	
Distance from Mississippi (log)	-117.00	***	-50.60	**
	[22.70]		[21.40]	
Distance from Atlantic (log)	-352.00	***	-330.00	***
	[31.20]		[32.20]	
Distance from Great Lakes (log)	106.00	***	158.00	***
	[30.80]		[27.60]	
Distance from Pacific (log)	-213.00	**	-192.00	**
	[91.30]		[82.30]	
Illiterate population share			3370.00	***
			[471.00]	
Urban population share			5.10	***
			[0.86]	
Log of Total Population			129.00	***
			[25.80]	
African-American population share			-201.00	
			[140.00]	
Youth population (7-20) share			111.00	
			[637.00]	
Observations	2907		2907	
R^2	0.0944		0.2129	

Robust standard errors in brackets. ***,**,* denotes significance at the 1, 5 and 10 percent levels. All specifications include state dummy variables. All coefficients multiplied by 100,000.

Table 8. Banks Per Capita 1920 and Land Concentration, Robustness.

	(1)	(2)	(3)	(4)
	IV	IV	IV	IV
Land Concentration	-510.50*	-480.71***	-486.84***	-426.05***
	[227.86]	[120.67]	[121.57]	[112.32]
Average Farm Size (log)	-1.88	---	---	
	[7.52]	---	---	
Number of Farms (log)	-11.43	---	---	
	[7.91]	---	---	
Fraction owner occupied homes	---	-18.33	---	
	---	[12.89]	---	
Average productivity of land (log)	---	---	2.20	
	---	---	[2.17]	
Value of land per acre (log)				8.58***
				[2.19]
Observations	2907	2906	2907	2906

Standard errors in brackets adjusted for spatial correlation. ***,**,* denotes significance at the 1, 5 and 10 percent levels. All regressions include state dummy variables, county area, population, distance from major waterways, illiteracy rate, black population, urbanization, young population. Land concentration is instrumented by average rainfall. All coefficients multiplied by 100,000.

Table 9: Banks per capita and factors that change the incentives and the economic power of the landed

	(1) All Tenants	(2) Share Croppers	(3) Cash Tenants	(4) Crop Lien Laws	(5) Crop Lien Laws	(6) Manufacturing Share
Dependent variable	Banks Per Capita, 1920 (IV)	Banks Per Capita, 1920 (IV)	Banks Per Capita, 1920 (IV)	Banks Per Capita, 1920	Banks Per Capita, 1930	Banks Per Capita, 1920
Explanatory variables						
Land Concentration	-318.27*	-298.50**	-484.30***	-541.28	-164.33**	-645.84***
	[149.49]	[114.92]	[110.75]	[583.37]	[81.72]	[198.61]
Land Concentration *Tenants Share	-789.83**	-805.58***	324.07	---	---	---
	[322.40]	[241.97]	[307.12]	---	---	---
Tenants Share	442.18**	408.16***	-48.25	---	---	---
	[153.72]	[119.52]	[143.26]	---	---	---
Tenants Share, Squared	-167.98***	-181.61**	-119.02	---	---	---
	[51.24]	[72.57]	[99.66]	---	---	---
Land Concentration *Texas	---	---	---	-557.30	223.26*	---
	---	---	---	[867.02]	[119.80]	---
Land Concentration *Manufacturing	---	---	---	---	---	359.12**
	---	---	---	---	---	[130.04]
Manufacturing	---	---	---	---	---	-137.74**
	---	---	---	---	---	[55.52]
Manufacturing , Squared	---	---	---	---	---	-23.60*
						[13.20]
Observations	**2908**	**2908**	**2908**	**1289**	**1308**	2745

All specifications include a county's distance from the Atlantic, and Pacific Oceans; the Great Lakes; the Mississippi River; county area; population; illiteracy; urban population share; young population; black population; as well as state dummies. Spatially corrected standard errors in brackets:* significant at 10%; ** significant at 5%; *** significant at 1%. Columns 4 and 5 use only counties in Southern and Border states. Manufacturing share (Column 6) is the fraction of manufacturing value added relative to value added in manufacturing and agriculture. All coefficients multiplied by 100,000.

Table 10: National Banks, State Banks, and Land Concentration

	(1)	(2)	(3)
	(IV)	(IV)	(IV)
Dependent Variable	National Banks Per Capita, 1920	State Banks Per Capita, 1920	Share of National Banks, 1920
Explanatory Variable			
Land Concentration	-138.26***	-336.24***	-1.39*
	[41.24]	[90.65]	[0.70]
Observations	2908	2908	2869

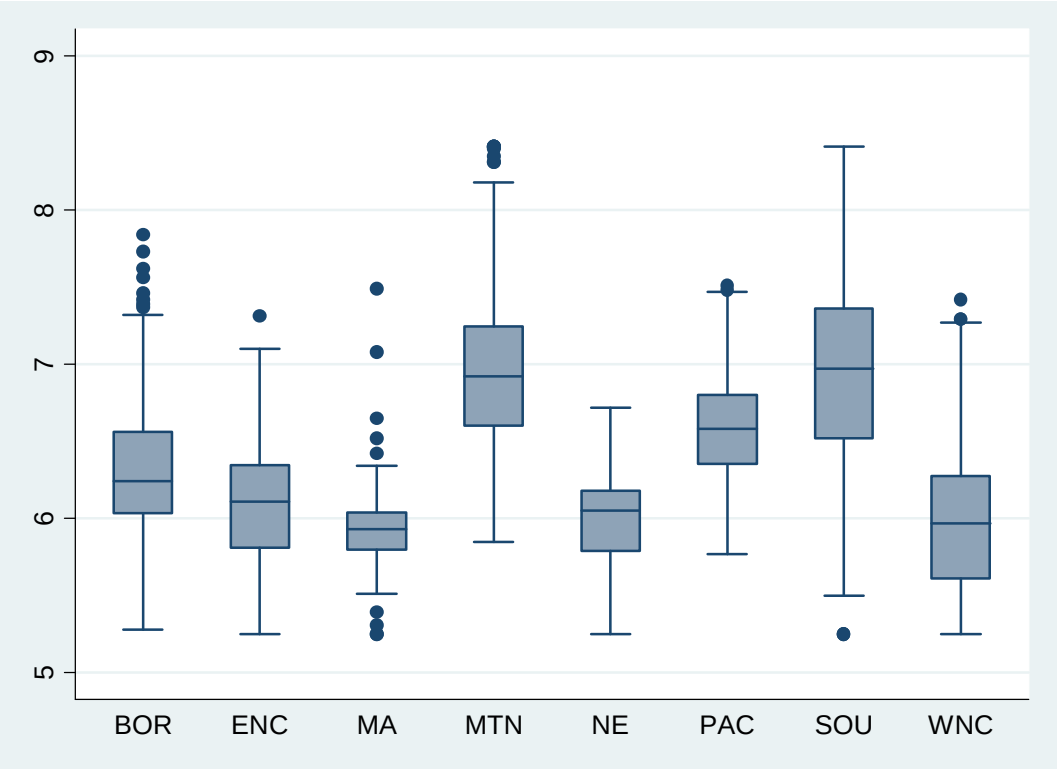
Spatially corrected standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All specifications include a county's distance from the Atlantic, and Pacific Oceans; the Great Lakes; the Mississippi River; county area; population; illiteracy; urban population share; young population; black population; as well as state dummies. All coefficients multiplied by 100,000.

Table 11. State Banks, National Banks and Distance from State Capitals.

	(1)	(2)	(3)
	All Banks Per Capita, 1920	State Banks Per Capita, 1920	National Banks Per Capita, 1920
	(IV)	(IV)	(IV)
Land Concentration	-973.79*	-719.28*	-180.30
	[441.39]	[326.55]	[109.99]
Land Concentration*Distance from State Capital	1.62	1.36*	0.12
	[1.02]	[0.76]	[0.26]
Observations	2908	2908	2908
R-Squared	0.47	0.53	0.15

Spatially corrected standard errors in parenthesis. ***, **, * denote significance at the 1, 5 and 10 percent respectively. All regressions include distance from major waterways, area, population, urbanization, black population, age structure (5-17 year olds), state dummies. Distance from the state capital enters as a second order polynomial. All coefficients multiplied by 100,000.

Figure 3: Average Interest Rate, 1930, by Regions



Census Regions. BOR:Border; ENC:East North Central; MA:Mid Atlantic; MTN: Mountain; NE: New England; PAC:Pacific; SOU: South; WNC: West North Central. The shaded rectangle represents the interquartile range, which contains the median—the solid line. The ends of the vertical lines extend to a maximum of 1.5 times the interquartile range. Dots beyond this range are possible outliers.

Table 12. Simple Correlations, Credit Variables

	Mortgage Interest Rate	Mortgage Debt to Farm Values	Fraction of Indebted Farms	Ratio of Mortgage Debt to Banks Deposits	Principal Component
Mortgage Interest Rate	1				
Mortgage Debt to Farm Values	-0.1845*	1			
Fraction of Indebted Farms	-0.3365*	0.2977*	1		
Ratio of Mortgage Debt to State Bank Deposits	0.0029	0.2473*	0.0975*	1	
Principal Component	-0.6366*	0.7130*	0.7663*	0.3844*	1

*Significant at 5% level or higher. All variables are winsorized.

Table 13A. Credit Access and Banks Per Capita

Dependent Variable	(1) (IV) Interest Rate	(2) (IV) Fraction of Indebted Farms	(3) (IV) Mortgage Debt as a Share of Farm Value	(4) (IV) Mortgage Debt, as a Share of State Bank Deposits	(5) (IV) Principal Component
State Banks Per Capita	-1176.7**	1320.7***	7118.4	4459.4***	6553.7***
	[412.5]	[193.9]	[5936.7]	[1371.2]	[1050.2]
Observations	2902	2904	2902	2698	2697

Table 13B. Credit Access and Land Concentration

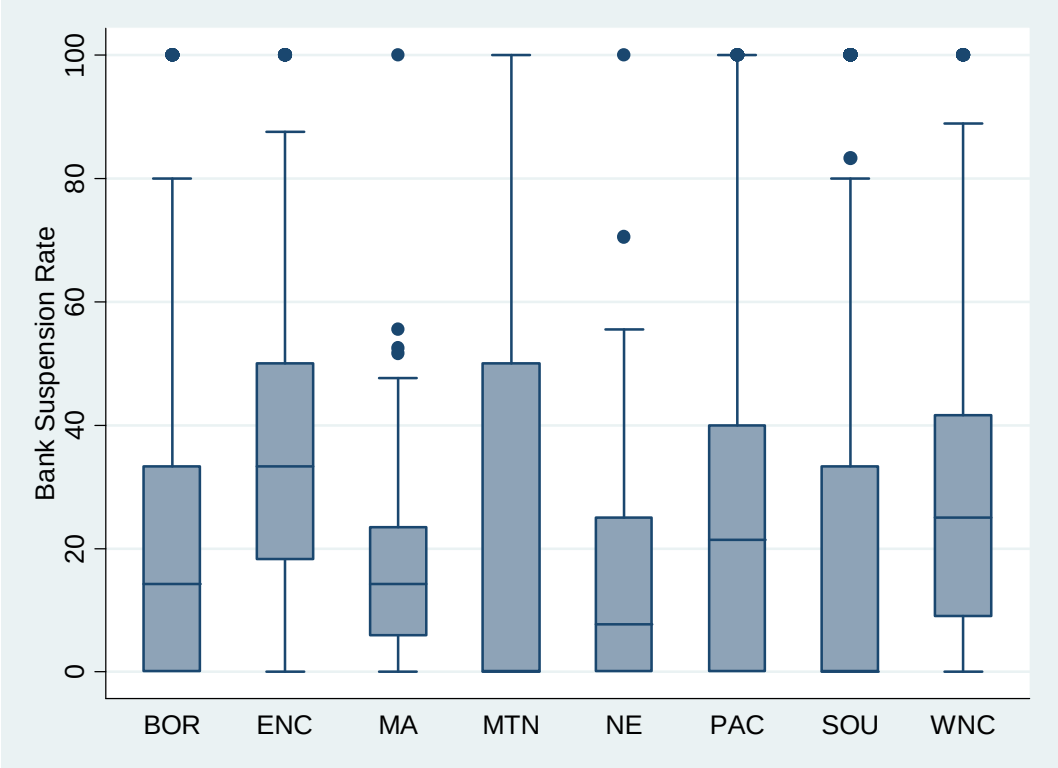
Dependent Variable	(1) (IV) Interest Rate	(2) (IV) Fraction of Indebted Farms	(3) (IV) Mortgage Debt as a Share of Farm Value	(4) (IV) Mortgage Debt, as a Share of State Bank Deposits	(5) (IV) Principal Component
Land Concentration	5.57**	-6.16***	-37.51	-21.13**	-31.22***
	[2.34]	[1.60]	[27.51]	[8.38]	[7.77]
Observations	2953	2957	2953	2716	2715

Table 13C. Credit Access and Banks Per Capita: Robustness Checks

	(1) (IV)	(2) (IV)	(3) (IV)	(4) (IV)
Dependent Variable		Principal Component		
State Banks Per Capita	7253.3***	6102.1***	6292.8***	6237.7***
	[1314.0]	[840.6]	[860.9]	[891.6]
Average Farm Size (log)	-0.0976			
	[0.165]			
Farms (log)	0.5476***			
	[0.087]			
Average productivity of land (log)		0.2758***		
		[0.069]		
Homes owner occupied share			-0.9832**	
			[0.437]	
Average Price Per Acre of land (log)				0.1674**
				[0.081]
Observations	2697	2697	2697	2697

Spatially corrected standard errors in parenthesis. ***, **, * denote significance at the 1, 5 and 10 percent respectively. All regressions include distance from major waterways, area, population, urbanization, black population, age structure (5-17 year olds), and state dummies. The "Principal Component" is the common first component extracted from the 4 measures of credit access. All coefficients are multiplied by 100,000 in Table 13 B.

Figure 4. Bank Suspension Rates, by Regions.



Census Regions. BOR:Border; ENC:East North Central; MA:Mid Atlantic; MTN: Mountain; NE: New England; PAC:Pacific; SOU: South; WNC: West North Central. The shaded rectangle represents the interquartile range, which contains the median—the solid line. The ends of the vertical lines extend to a maximum of 1.5 times the interquartile range. Dots beyond this range are possible outliers.

Table 14 A: Suspended deposits, banks per capita and land concentration- IV estimates, outliers dropped

Dependent Variable	*Fraction of state bank deposits suspended (1931-36)*	*Fraction of state bank deposits suspended (1931-36)*	*Fraction of state bank deposits suspended (1931-36)*	*Fraction of state bank deposits suspended (1931-36)*
	1 With outliers	2 Without outliers	3 Without outliers	4 Without outliers
State Banks Per Capita 1920	15193.3 [15314.5]	29877.4** [12591.6]		
State Banks Per Capita 1930			66586.7** [30210.2]	
Land Concentration(1920)				-138.2** [67.3]
Observations	2702	2568	2587	2587

In column 1 all observations are included, in columns 2-4, outliers are dropped using the Huber bi-weighting procedure.

Table 14 B: Suspended deposits, banks per capita and land concentration- IV Quantile Regressions

Dependent Variable	*Fraction State Bank Deposits Suspended (1931-36)*	*Fraction State Bank Deposits Suspended (1931-36)*	*Fraction State Bank Deposits Suspended (1931-36)*
	1	2	3
State Banks Per Capita	18834.3* [10726.7]		
State Banks Per Capita 1930		53479.2 [35599.0]	
Inome Inequality			-86.44* [45.3]
Observations	2702	2721	2721

Table 14 C: Suspended Deposits, Banks per Capita, and Land Concentration: Robustness

Dependent variable: Fraction of Suspended State Bank Deposits 1931-36	Without outliers 1	Without outliers 2	Without outliers 3	Without outliers 4
State Banks Per Capita	57693.7 **	25537.6 *	33201.5 **	24105.2 *
	[21787.2]	[13367.7]	[13725.2]	[14076.4]
Average Farm Size (log)	-7.032 **			
	[2.8]			
Farms (log)	-1.688		-0.386	
	[1.5]		[1.1]	
Average productivity of land (log)		2.562 *		
		[1.2]		
Homes owner occupied share			12.95	
			[8.2]	
Average Price Per Acre of land (log)				2.948 *
				[1.4]
Observations	2568	2568	2568	2568

In columns 1-4, outliers are dropped using the Huber bi-weighting procedure. Spatially corrected standard errors in parenthesis in Tables 14 A and 14 C, robust standard errors in Table 14 B. ***, **, * denote significance at the 1, 5 and 10 percent respectively. All regressions include distance from major waterways, area, population, urbanization, black population, age structure (5-17 year olds), and state dummies.