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

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ABSTRACT

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A recent literature emphasizes the political economy underpinnings of economic underdevelopment. It notes that powerful constituencies, which arise for example from the pattern of land holdings in a country, can drive the development of economic institutions, and growth more generally (see, for example, Engermann and Sokoloff (2002)). Banks are clearly important economic institutions. While historians have argued that political forces have shaped banking systems (see, for example, Haber (2005a)), there has been little systematic examination of the evidence. In this paper we examine more systematically whether the constituencies or interest groups that emerge in a country as a result of the distribution of land holdings – often the earliest and most important form of wealth -- can shape the development of the banking system. ¹

The precise channel through which constituencies or interest groups operate is also a matter of some debate. Some (see, for example, Acemoglu, Johnson, and Robinson (2005)) argue that the mediating channel is political institutions, as elite interest groups 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 and Sokoloff (2003), Rajan and Zingales (2003a, chapter 6) or Rajan (2009)) argue 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 both questions (whether landed interest groups affect financial development and whether this can happen even in broadly democratic societies) is to examine patterns within broad political units such as countries or states, where political institutions are held relatively constant. To this end, we explore how the structure of banking across counties in the United States in the early part of the 20th century was driven by the distribution of land within the county. We focus on banks because they were, and in many areas still are, the most important source of local finance, and thus are important economic institutions. Likewise, we focus on the distribution of land because it represents the distribution of agricultural wealth and interests at a time when agriculture was still a key sector in the U.S. economy.

Why Did Landlords Restrict Credit?

Clearly, large landowners may have had the money and power to influence county politics even in a flourishing democracy. But why would they want to restrict access to credit for others, especially small farmers and tenants, by limiting the spread of banks? The contemporary literature suggests a number of reasons. First, large landowners generated loanable surpluses. Formal credit institutions could be competition for their business of lending to tenants and small farmers.

Second, tenants and small farmers needed credit to buy supplies from the local store. By limiting credit from alternative sources – for instance, by keeping banks out -- the local merchant could lock the farmer in and charge exorbitant prices. Indeed, such lock-in was formalized in 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 ... 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...²

Initially, there was a conflict of interest between large landlords and the local 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.”³

Among landlords, large landowners had an incentive to “accommodate” their own tenants, as doing so gave them greater control over tenants. By contrast, small and medium farmers did not have surpluses to lend out, and one detailed study of Texas concludes that “on the whole, they [owners of small and medium farms] would rather the tenant would get his money in his own way.”⁴

For the rich landlord, there were other benefits to limiting access to credit than simply extracting rents from the less-well-off when they purchased goods. The landlord could also enjoy a competitive advantage, for instance, by being able to buy land cheaply when small farmers were hit by adversity or by having privileged access to loans in the midst of a prolonged drought. He could further prevent unskilled workers from obtaining the funds needed to educate themselves and expand their own employment opportunities, thus ensuring a reserve army of workers for field work (see Galor, Moav, and Vollrath (2009)). 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 locally, and Calomiris and Ramirez indeed find more restrictions in states with greater farm wealth.

How Did Landlords Maintain Their Hold?

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? Some argue that the supply of formal bank credit was artificially constrained through state-level legislation. For instance, legislation like North Carolina's Landlord Lien Law, which gave landlords an automatic crop lien [a first claim against the crop] against any advances extended to tenants working their land, strongly reinforced the system of 'debt peonage' [the system whereby tenants were trapped in a cycle of debt to their landlords].⁵ Intuitively, if landlords had a senior claim against the tenant's crop regardless of when their claim was contracted, no one else would be willing to lend to the tenant fearing their claim would be diluted by existing or prospective landlord claims.

Landlords could also assert power independently of state level legislation. The merging of the roles of landlord and 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, as well as their monopoly over local commerce to deter bank entry and other threats to the status quo (Goodwyn (1978), Van Woodward (1951), Weiner (1975)). For example, to the extent the sheriff enforced some 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.

Finally, there is some evidence that when the small farmers did secure political power, they tried to create alternative sources of credit, suggesting they chafed under credit constraints and the associated limitation on the channels through which they could purchase and sell products. 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 (Bank of North Dakota (1920) 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.

Alternative Motives and Views

It is not obvious landlords only had incentives to suppress formal credit. First, 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. Whether stronger landlord interests lead to a more constrained financial sector and less financial access is an empirical question, which we attempt to answer. Second, a concentrated distribution of wealth can, in some theoretical models such as Greenwood and Jovanovic (1990), result in greater intermediation – the wealthy can pay the fixed costs of starting up banks. 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. We therefore have to pay attention to issues of causation.

Findings

We find that in the early 20th century, counties in which the agricultural elite had disproportionately large land holdings had significantly fewer banks per capita, even correcting for state level effects. Moreover, credit appears to have been costlier, and access to it more limited, in these counties. The evidence thus suggests that elites may restrict financial development in order to limit access to finance, and they may be able to do so even in countries with well developed political institutions.

While our focus is on financial development, the paper has broader implications. A recent trend in the literature on the underdevelopment of nations has been to attribute such outcomes to the historically weak political institutions (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 U.S., we find large variations in the development of growth-facilitating economic institutions such as banks, across areas with different constituencies but under the same meta-political structures. The significant, and potentially adverse, influence of powerful constituencies intent on preserving their privileged position, even in such environments suggests that fixing political institutions alone cannot be a panacea for the problem of underdevelopment.

We are, of course, not the first to address these issues of access to finance and monopoly power in the United States. Indeed, for a while, there was a heated debate amongst economists over whether differentials in interest rates across regions in the United States around the turn of the 19th century were 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 due to differences in risk. 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 did these past studies (we have data at the county level rather than at the region or state level).

The rest of the paper is organized as follows. In Section I, we lay out the basic test. In Section II, we derive more detailed predictions on whether large land owners exerted influence to suppress access to credit, while in Section III, we examine actual access to credit in counties with concentrated land holdings. We conclude in Section IV.

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

What could be a proxy for the strength of landed interests and their desire to limit access to finance? In any argument 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 relative 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 the incentive to limit access to finance, while if land holdings are relatively equal (whether uniformly large or small), no one group is likely to have the power or the interest to alter others’ access.⁶

Our measure of the concentration of land holdings is based on the distribution of farm sizes, as in Ramcharan (2009a). The data were collected by the U.S. Census Bureau at the county level for each of the decennial census years 1890 to 1930. A farm is defined as “all the land which is farmed by one person, either by his own labor alone or with the assistance of members of his household or hired hands.” Note that a tenant is also a farmer by this definition. We have information on the number of farms falling within particular acreage categories or bins, ranging from below three acres up to 1,000 acres. 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 the Appendix for a precise formula and definitions). The Gini coefficient is a measure of concentration that lies between zero and one, with higher values indicating 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.

----- Table I approximately here -----

In the 1920s, the average Gini coefficient of a county is 0.43, the 99th percentile county is 0.69, the 1st percentile county is 0.2, and the standard deviation is 0.10 (see Table I for summary statistics). The correlation between the Gini coefficient for a county and the share of agricultural land in small farms (below 20 acres) is positive, as is the correlation with the share of large farms (above 175 acres). The correlation between the Gini coefficient and the share of medium sized farms (between 20 acres and 175 acres) is negative. Thus, as we would expect, counties with high Gini coefficients tend 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 coefficients above the median have smaller farms on average than counties with Gini coefficients below median.

We now examine county-level data on land inequality from 1890 to 1930 to help assess the impact of the concentration of agricultural land on the various indicators of banking structure. Our 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 by the 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(2007), Ramcharan (2009b)). Moreover, during this period, policy debates on the availability of credit often revolved around the geographic proximity of banks, as access to financial

services was more restricted in counties with limited banking density (Cartinhour and Westerfield (1980)).⁷

----- Figure 1 here -----

The Federal Deposit Insurance Corporation (FDIC) provides county-level data on the number of state- and nationally-chartered banks in the county, as of 1920. We begin by examining the relationship between the density of banks in a county and the concentration of land holdings. Figure 1 suggests a negative relationship between bank density and land concentration both in the full sample of counties in the data—about 3,000—and when restricting the sample to counties located in either the northern or southern regions of the United States.

This negative relationship between banks per capita in 1920 and land concentration can be formally established through an OLS regression controlling for aggregate state-level factors using state indicators. We can also control for county-level geographic characteristics including the log of county area and its distance from various waterways. Waterways were centers of economic activity as well as transportation (and if freshwater, of irrigation). For instance, waterways such as the Great Lakes in the upper Midwest and the Atlantic Ocean along the east coast helped spur industrialization and demand for financial services in those regions (Pred (1966)). Including these variables helps control for other determinants of a county's prosperity and the kind of economic activity it might undertake.

The coefficient estimate of land concentration in the OLS regression (see the Internet Appendix, available online at <http://www.afajof.org/supplement.asp>) is negative and strongly statistically significant (at the 1% level). A one-standard deviation increase in land inequality is associated with a decline in the per capita number of banks circa 1920 of 0.31 of its standard deviation. The precision and magnitude of the correlation in the 1930 cross-section is similar. When we pool both cross-sections and include county fixed effects, which helps absorb the effects of geography, soil types, location, and any other potentially relevant unobserved time-invariant county characteristics that might be linearly correlated with land concentration, we get estimates about 30% 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), Banerjee 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, which could lead to greater foreclosures of marginal farmers in times of distress, and hence 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 county 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 Hicks (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.

A large literature in agricultural economics suggests that land concentration in the United States is also related to weather patterns (Ackerman and Harris (1946), Gardner (2002), Heady (1952), Tomich, Kilby and Johnston (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 that joint ownership of the land and the mill

was more efficient, with economies of scale stemming from the mill carrying over to the land and warranting a large plantation.⁸

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 that focused on plantation-style agriculture would also often be surrounded by smaller, tenant farms, naturally leading to a high Gini coefficient. By contrast, grain—wheat and barley—which are better suited to more temperate climates, 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. Flue cured or 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.⁹ Engerman and Sokoloff (2002) 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 U.S. 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 U.S. counties.

In sum, our instrument for land concentration is average rainfall (though later in the paper we use other instruments such as the variance of rainfall in robustness checks), and the mediating channel is the kind of crops that the prevailing pattern of rainfall facilitates. In Table II we present correlations between our measure of land concentration and the fraction of area covered by different crops in the county, average annual rainfall, as well as other indicators of climatic conditions (pooling data from 1920 and 1930). As Table II 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 Midwest and other areas with relatively little rainfall.

-----Table II here-----

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 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.¹⁰

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.¹¹

Of course, to be a reasonable instrument, rainfall should not directly drive the demand for (or, less likely, the supply of) banking services, other than through land concentration. If rainier areas are more productive, for example, then it is likely that farmers would be richer, and demand more banking services. This would imply that rainier areas have more banks (given the supply curve), and thus 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 III 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 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 average 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%, 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.¹²

----- Table III approximately here -----

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 were generally 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 III, 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 above-median rainfall in 1920 (37% versus 25%), though the difference narrows in 1930 (50% versus 43%). This would make farms in counties with higher-than-median rainfall more creditworthy 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 III) – a difference that could be driven by the differential availability of credit. Finally, when we examine banks per capita, the difference is quite extraordinary. There are twice as many banks per capita in counties with below-median rainfall than in counties with above-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,

banks are slightly smaller in counties with above-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, rainfall appears to drive land concentration by affecting the distribution of farm sizes, but 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 of our results (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 help build an overall pattern of results rather than rely on one single test that would depend excessively on the plausibility of the instrument.

C. Instrumental Variables Estimates

In the first column of Table IV, 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 using data from weather monitoring stations over the period 1900 to 2000, state indicators, and the geographical variables. The coefficient estimate on mean rainfall is positive and statistically significant at the 1% level, consistent with the literature.¹³ Using these geophysical controls, the corresponding second-stage IV estimates are reported in Table IV, Column 3. The coefficient on instrumented concentration is negative and statistically significant at the 1% 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 one-standard deviation increase in land concentration reduces the number of banks per capita by about 1.2 standard deviations. To put these estimates in perspective, for a county of average population in the sample, about 31,000 people, a one-standard

deviation increase in land concentration translates into approximately fifteen fewer banks, or a 1.5 standard deviation decrease in the number of banks.

----- Table IV approximately here -----

D. Addressing Possible Violations of the Exclusion Restriction Assumption

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 concentrated in a few areas and hence 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 4 of Table IV the coefficient estimate on 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 3. The first-stage estimates in Column 2 are also little changed (the full regression estimates are in the Internet Appendix).¹⁴ 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 IV Column 5, 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 on land

concentration is again negative and strongly statistically significant. In Table IV Column 6, the dependent variable is a different measure of bank density, banks per square kilometer in 1920. Again, however, we find the coefficient on instrumented land concentration is negative and strongly statistically significant.¹⁵

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 2,534 in 1890 to 14,512 in 1914 while the number of national banks grew from 3,484 to 7,518. Land inequality in 1890 thus pre-dates much of the structural change in banking, 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 IV Column 4 with land inequality in 1890, the coefficient estimate on instrumented land inequality in 1920 (see Table IV Column 7) is negative and significant. Pre-determination 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 (2009a)). However, the variation in weather-related agricultural risk can impact local banking structures through a number of different channels, suggesting a potential violation of the exclusion criterion. Nonetheless, to gauge the sensitivity of our results, we add this variable to our instrument set in Column 8. The estimated impact of land concentration on bank density is similar to the previous results, and standard overidentification tests do not detect a violation of the exclusion criterion—the Hansen J-statistic is 1.16 (p -value=0.28). As an alternative to using the standard deviation of rainfall as an instrument, we can include it and other measures of weather risk and local climatic conditions (see Internet Appendix) as control variables in an OLS regression. We also separately add crop and livestock average productivity and variability over the period 1860 to 1910 as additional controls. The OLS estimates are robust and similar across the two specifications, but continue to be smaller than their IV counterparts (the coefficients of the IV estimates are not reported).¹⁶

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 elevation is used as an instrument for concentration in our baseline estimation instead of average rainfall (see The Internet Appendix) the coefficient on concentration is negative and statistically significant. But when included with average rainfall, standard overidentification tests suggest a violation of the exclusion restriction assumption.

Given that these additional instruments do not add to the analysis, and arguably could violate the exclusion criterion (for example, 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.

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 interested in. 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 identify a number of economic variables in Table III that vary substantially between counties with high

rainfall and counties with low rainfall. 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. We include both the log average size of farms and the log number of farms in the county in the baseline regression. The coefficient on land concentration is qualitatively similar. Our results are robust to including the share of owner-occupied housing, land productivity, and the value of land per acre in turn – see Internet Appendix.

F. Land Concentration Working Through Other Channels

It may be the case that it is not land concentration, but rather 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 coefficient for land concentration. Indeed, the coefficient on concentration declines in magnitude by about 45%, but remains significant at the 1% level (see Internet Appendix). 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 (see Internet Appendix).

The significant coefficient on concentration could be driven by the peculiar political and agricultural legacy of the Southern states compared to the upper Midwestern agricultural states. When we estimate a coefficient on concentration separately for the Southern and upper Midwestern agricultural states (states in the U.S. Census East North Central and West North Central region) in our baseline regression, they are both negative and statistically significant (see Internet Appendix).

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, Moav and Vollrath (2008), and Ramcharan (2009a)). 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 (see Internet Appendix).

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, we now turn to 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.

II. THE INFLUENCE OF LANDED INTERESTS

In this section, we turn to more direct evidence on whether landed interests were influential in determining banking structure. Specifically, 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 conjecture, in Column 1 of Table V we include the 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 1% 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 roughly 26% 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.

----- Table V approximately here -----

Share Cropping 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. By contrast, cash tenants could pay rent up front, and therefore had less need for credit.

There is suggestive evidence that landlords squeezed sharecroppers because the latter needed credit. The implicit interest rates on sharecropping contracts were often as high as 150%, with nearly half of share tenants borrowing approximately 100% of their expected income from their share of the crop (Brogan (2001)). Thus, because the profitability to the landlord of sharecropping depended on the underdevelopment of the financial system, landed interests would have been more likely to oppose wider credit access in counties where sharecropping 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 for land as well as the cost of farming, or had pre-arranged sources of financing.

In Column 2, we include the 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. 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, whereas for a county at the 50th percentile of sharecropping, the impact is about 15% larger. Interestingly, the direct effect of sharecropping measured at its mean is positive, suggesting that counties with greater sharecropping have, *ceteris paribus*, more demand for finance and more banks per capita, but the effect of land concentration is to reduce the presence of banks, especially in counties with more sharecroppers.

In contrast to sharecroppers, 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 land inequality is associated with about a 1.20 standard deviation decline in banking density. For a county at the 50th percentile of cash tenancy, the magnitude of the effect is about 3% 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 (2001), Van Woodward (1951)). These laws made the landlords' claims on tenants superior to other creditors, effectively preventing others 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.

For a period, Texas 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.¹⁷ 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 (Graves (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.

In Column 4 of Table V, 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. We should note however that while the point estimates are consistent with historical narratives, this evidence should be interpreted with caution, as the standard errors remain large.

C. Relative Power of Landed Interests

Landed interests are likely to have had more influence on the structure of banking if they were 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 V 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. For a county at the 50th percentile of manufacturing share, the impact is about 14% 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 until the early 1920s, and may have been a greater source of demand for banking services than manufacturing.

D. Distance from State Capital

During this period state governors appointed state bank commissioners, and politics often shaped chartering and regulatory decisions (Mitchener (2005)).¹⁸ 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. When we include the interaction between land concentration and the distance of the county from the state capital, we find a positive and significant coefficient estimate. So, concentration mattered more if the county was near the state capital. In contrast, the Comptroller of Currency in Washington DC chartered and regulated national banks using a system of national bank examiners. Perhaps as a result, distance from the state capital does not alter the influence of land concentration on national bank density (see Internet Appendix).

Of course, one might wonder why the national banks did not occupy the space vacated by state banks. The landed elite in a county would have been much more viscerally opposed to national banks (over whose policies they had little control) than over state banks. Although land concentration is negatively correlated with both types of banks, the impact is especially large on national banks (see see Internet Appendix). So while the landed elite in a county could not use their influence over state

chartering to deter national banks, they could use their local influence – such as their control over law enforcement or over local business – to make activity difficult for national banks.

III. 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. *Access to Credit*

To address this question, we hand-collect several county-level indicators of local land mortgage loans from the 1930 U.S. Census archives. 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.¹⁹

Around 50% of farms were indebted in 1930, the average mortgage debt to value ratio was around 37%, and the average interest rate in 1930 was 6.48%. The average ratio of mortgage debt to bank deposits across counties was 56%.

----- Table VI approximately here -----

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 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. And the simple correlations in Table VI 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% 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 VI. 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:

$$\text{Measure of access}_i = \alpha_0 + \alpha_1 \text{Bank}_i + X_i \beta_1 + \varepsilon_{1i} \quad (1)$$

$$\text{Bank}_i = \alpha_2 + \alpha_3 \text{Land Concentration}_i + X_i \beta_2 + \varepsilon_{2i} \quad (2)$$

$$\text{Land Concentration}_i = \alpha_3 + \alpha_4 \text{Rain}_i + X_i \beta_3 + \varepsilon_{3i}. \quad (3)$$

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.²⁰

The IV estimates in Table VII Panel A 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 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.

----- Table VII A&B here -----

In the estimates in Table VII Panel A, we instrument 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 coefficient are reported in Table VII Panel B, take the expected sign and, again with the exception of column 3, are statistically significant. In sum, access to credit appears lower in areas with concentrated land holdings.

B. Default Experience

We have argued that borrowers paid high oligopolistic interest rates and obtained less credit in concentrated counties precisely because bank competition was more limited. But this also suggests that if banks were prevented in various ways from expanding access to credit, we should find that the pool of actual borrowers from banks was less risky in concentrated counties. The obvious alternative explanation of our findings is that in concentrated counties, potential borrowers were riskier and less creditworthy, so banks, although competitive, held back from lending. This would suggest that even the loans that banks actually made in concentrated counties should be riskier (as evidenced by the higher competitive interest rate paid by borrowers).

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

Nevertheless, one way to distinguish the explanation that potential borrowers were deliberately rationed from the explanation that potential borrowers in concentrated counties were of 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 fewer loan defaults there relative to counties with low concentration. By contrast, if borrowers could not borrow as cheaply or as much because they were riskier, 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.

Unfortunately, we do not have data on county-by-county loan default experience. However, we do have data on state bank failures from the FDIC, including the value of deposits in suspended state banks. We can therefore compute the ratio of deposits in suspended state banks in the period 1931 to 1936 (which covers the bulk of bank failures during the Depression – few banks failed after 1934) to the level of deposits in 1930. 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. Unfortunately, it is the only data that we have, and because it is noisy, we will have to take extra care to weed out outliers and influential observations.

Even though our proxy for loan losses is crude, several different estimators suggest 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 (see Internet Appendix). This supports the view that credit from the formal sector in such counties was restricted to those with better underlying creditworthiness. The finding that interest rates were higher in such counties, while access to credit was lower, is thus more consistent with a supply side constraint – access to credit was limited – than a demand side explanation – potential borrowers were less creditworthy.

IV. 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 U.S., 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 proxies for 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.

While the political economy at the county level can plausibly explain 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, might have ensured that banking remained underdeveloped. Benign neglect rather than malign intent could explain many, but not all, of our findings. The lessons that one takes away for economic development depend, however, not on intent but on outcomes -- intent does not change the fact that constituencies or interest groups shape economic growth.

Note that throughout our analysis, we focus on the U.S., and correct 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 variation 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 (2009a) 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.

Appendix: Variables' Definitions and Data 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	<p>The number of farms are distributed across the following size bins: 3-9 acres; 10-19 ; 20-49 ; 50-99 ; 100-174 ; 175-259 ; 260-499 ; 500-999 ; and 1,000 and above. We use the midpoint of each bin to construct the Gini coefficient; farms above 1,000 acres are assumed to be 1,000 acres. The Gini coefficient is given by</p> $1 + 1/n - \left[2/(m * n^2) \right] \sum_{i=1}^n (n - i + 1) y_i,$ <p>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.</p>
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 (the ratio of number of actual observations to potential observations) of 90%. 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	Computations are similar to rainfall. Growing degree days (GDD) are derived by taking the average of the daily high and low temperature each day and subtracting the baseline temperature, which for most

	COOP Network).	counties is 10 degrees Celsius. For example a day with a high of 20C and a low of 16C would correspond to eight GDD.
Weighted standard deviation of elevation	Weather Source 10 Woodsom Drive Amesbury MA, 01913 (Data compiled from the COOP Network).	The number of square miles of each county's land area is listed from below 100 meters, 0–100 meters; 100–200 meters and so on; 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.

¹ 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).

² Hicks, John D. (1931), *The Populist Revolt: A History of the Farmer's Alliance and the People's Party*, University of Minnesota Press, Minneapolis, 1931, p43-44.

³ 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.”

⁴ Haney (1914, p55-56).

⁵ Ransom and Odell (1986, p13).

⁶ 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 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.

⁷ Like the United States 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, Demirgüç-Kunt, and Martinez-Peria (2007)).

⁸ In some countries, of course, cooperatives 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 cooperatives have more limited presence in the United States is a question that is beyond this paper.

⁹ 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.

¹⁰ Note also that warmer areas were less likely to specialize in cereals, and had higher levels of land concentration. There is also a positive correlation between the standard deviation of rainfall and land concentration, and we subsequently use some of these correlations to gauge the robustness of our identification strategy.

¹¹ 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% level, and are robust to the inclusion of the state dummies.

¹² This is not to say that drought and crop failures were not a cause for farm distress in the inter-war period, but rather that data from the farm experience in 1930 does not suggest that areas with higher rainfall were more prone to distress.

¹³ Because of the likely spatial correlation between geographically proximate counties, 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:

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

Since geographic characteristics extend across political boundaries, this weighting applies even for adjacent counties in different states. Simple clustering within states generally yields standard errors between 20% to 30 % higher than the distance weighting procedure—and the estimates remain statistically significant at conventional levels.

¹⁴ Using a semi-parametric estimator, Figure 1 of the Internet appendix also suggests that the linearity assumption might be appropriate (Yatchew (2003)).

¹⁵ One concern may be that a county with uniformly large farms will have a low Gini coefficient. 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 % of the sample of counties. The coefficient

estimates for the Gini coefficient are qualitatively similar, however, and are available upon request.

¹⁶ 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 2 for definitions and sources.

¹⁷ 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 1905, the state passed the Terrell Act which created a direct primary system, allowing voters rather than party elites to select the gubernatorial nominee in a direct election. This 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)).

¹⁸ Using previously secret government documents, Vickers (1994) notes 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.

¹⁹ 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 (Keehn and Smiley (1977)). Nevertheless, rather than mixing state banks and national banks in what follows, we focus only on state banks.

²⁰ 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 qualitatively on which measure is used, so we use the latter, though results are available for the former from the authors.

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Table I.
Summary Statistics

This table presents summary statistics for the county-level variables. Sources and definitions are provided in the Appendix.

	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 added	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

Table II: Pairwise Correlations

This table presents the pairwise correlations between land concentration, crop shares, and rainfall. (**) denotes significance at the 5% level or higher. Unless otherwise noted, all crop shares are expressed as shares of land farmed within the county.

	Land Concentration	Basic cereals	Grains and Seeds	Hay and forage	Fruits and Nuts	Vegetables	Average Annual rainfall	Standard deviation of rainfall	Average temperature
Land concentration	1								
Basic cereals	-0.446**	1							
Grains and seeds	-0.048*	-0.024	1						
Hay and forage	-0.175*	-0.159**	-0.023	1					
Fruits and nuts	0.341**	-0.284**	-0.049**	-0.016	1				
Vegetables	0.299**	-0.377**	-0.028**	0.063*	0.163**	1			
Average annual rainfall	0.346**	-0.212**	-0.167**	-0.461**	0.042**	0.118**	1		
Standard deviation of rainfall	0.360**	-0.171*	-0.059**	0.332**	0.148**	0.135**	0.661**	1	
Average temperature	0.436**	-0.223*	-0.009	0.617**	0.082**	-0.065**	0.498**	0.532**	1

Table III: Rainfall, Land Concentration and Economic Outcomes

This table presents the median values of economic outcomes for the sample of counties above and below the median value of rainfall and land concentration. (**) denotes medians are significantly different at the 5% level or higher across the subsamples.

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 10,000 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**	380.28**

Table IV. Land Concentration and Bank Density, IV Estimates.

This table presents the relationship between land concentration and various measures of bank density using instrumental variables. All standard errors are adjusted for spatial correlation. ***, **, * denotes significance at the 1%, 5% and 10% levels. All specifications include state dummy variables. All coefficients multiplied by 100,000. Columns 1 and 3 include only geophysical controls: land area and distances from Atlantic, Pacific, Mississippi and Great Lakes (in logs). Columns 2 and 4-8 include both geophysical and demographic controls: illiterate, urban, African-American and young (ages 7-20) population shares, as well as log of total population. Average rainfall is the instrument in Columns 3-6. Land concentration in 1890 is the instrument in column 7. Column 8 uses both average rainfall and its standard deviation as instruments. Land concentration is the Gini coefficient of farm sizes within the county.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	OLS	IV	IV	IV	IV	IV	2SLS
	First Stage		Second Stage					
Dependent Variable	Land concentration (1920)	Land concentration (1920)	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
Average rainfall	13.90*** [2.46]	13.00*** [2.28]	---	---	---	---	---	---
Land concentration			-481.041*** [109.728]	-496.036*** [122.248]	-234.706*** [79.323]	-4712.885*** [1222.766]	-78.683** [34.881]	-465.171*** [101.090]
No. Obs.	2907	2907	2907	2907	2934	2907	2573	2907
R ²	0.0944	0.2129						

Table V: Banks Per Capita and Factors that Change the Incentives and the Economic Power of the Landed

This table presents results on the factors that shape the relationship between land concentration and bank structures. All standard errors are adjusted for spatial correlation. ***, **, * denotes significance at the 1%, 5% and 10% levels. All specifications include a county's distance from the Atlantic, and Pacific Oceans; the Great Lakes; the Mississippi River (in logs); county area; population; illiterate, urban, African-American and young (ages 7-20) population shares; as well as state dummies. 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. Land concentration is the Gini coefficient of farm sizes within the county. Tenants share is the fraction of farms within a county operated by tenant farmers. Sharecroppers and Cash tenants are the fraction of farms operated by tenants using a sharecropping and cash contract respectively. Definitions and sources can be found in the Appendix.

Regression	(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 (IV)
<i>Explanatory variables</i>						
Land concentration	-318.27* [149.49]	-298.50** [114.92]	-484.30*** [110.75]	-541.28 [583.37]	-164.33** [81.72]	-645.84*** [198.61]
Land concentration *Tenants share	-789.83** [322.40]	-805.58*** [241.97]	324.07 [307.12]	--- ---	--- ---	--- ---
Tenants share	442.18** [153.72]	408.16*** [119.52]	-48.25 [143.26]	--- ---	--- ---	--- ---
Tenants share, squared	-167.98*** [51.24]	-181.61** [72.57]	-119.02 [99.66]	--- ---	--- ---	--- ---
Land concentration *Texas	--- ---	--- ---	--- ---	-557.30 [867.02]	223.26* [119.80]	--- ---
Land concentration *manufacturing	--- ---	--- ---	--- ---	--- ---	--- ---	359.12** [130.04]
Manufacturing	--- ---	--- ---	--- ---	--- ---	--- ---	-137.74** [55.52]
Manufacturing , squared	--- ---	--- ---	--- ---	--- ---	--- ---	-23.60* [13.20]
No. Obs.	2908	2908	2908	1289	1308	2745

Table VI. Simple Correlations, Credit Variables

This table presents simple pairwise correlations. * denotes significance at the 5 percent level or better.

	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

Table VII**Panel A. Credit Access and Banks Per Capita**

Panel A presents results on the relationship between state banks per capita and various measures of credit access. Panel B presents results on the relationship between land concentration and various measures of credit access. All standard errors are adjusted for spatial correlation. ***, **, * denotes significance at the 1%, 5% and 10% levels. All specifications include a county's distance from the Atlantic, and Pacific Oceans; the Great Lakes; the Mississippi River (in logs); county area; population; illiterate, urban, African-American and young (ages 7-20) population shares; as well as 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. Land concentration is the Gini coefficient of farm sizes within the county.

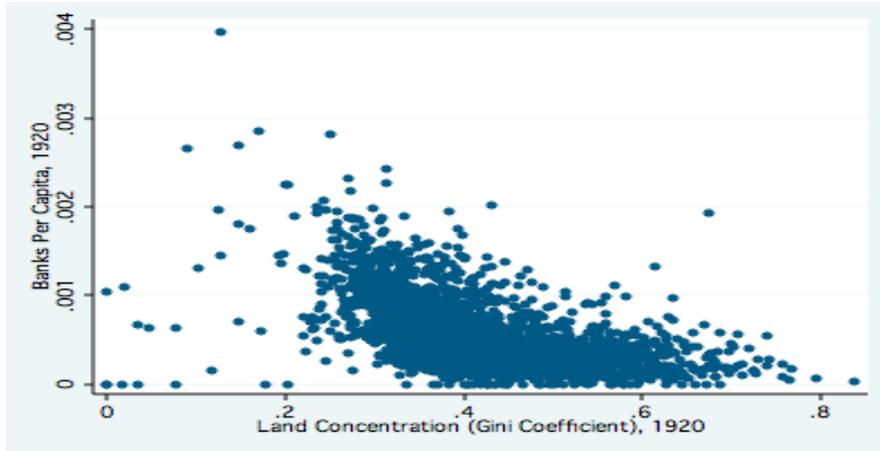
	(1)	(2)	(3)	(4)	(5)
Dependent Variable	(IV) Interest rate	(IV) Fraction of indebted farms	(IV) Mortgage debt as a share of farm value	(IV) Mortgage debt, as a share of state bank deposits	(IV) Principal component
State banks per capita	-1176.7** [412.5]	1320.7*** [193.9]	7118.4 [5936.7]	4459.4*** [1371.2]	6553.7*** [1050.2]
Observations	2902	2904	2902	2698	2697

Table VII**Panel B. Credit Access and Land Concentration**

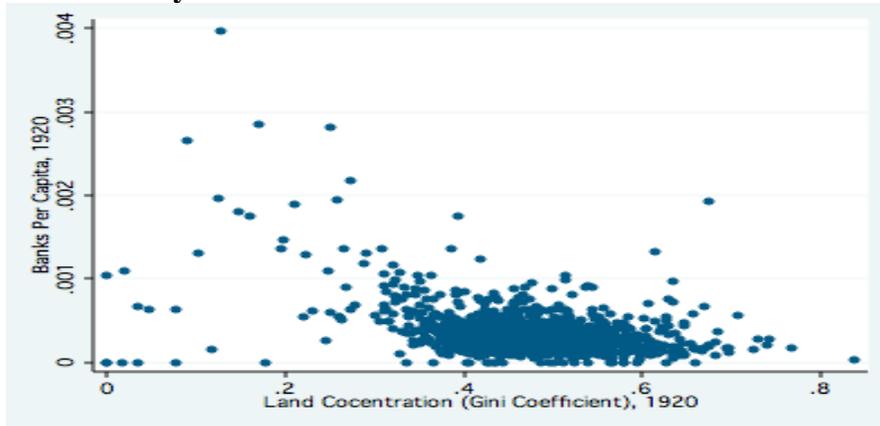
	(1)	(2)	(3)	(4)	(5)
Dependent variable	(IV) Interest rate	(IV) Fraction of indebted farms	(IV) Mortgage debt as a share of farm value	(IV) Mortgage debt, as a share of state bank deposits	(IV) Principal component
Land concentration	5.57** [2.34]	-6.16*** [1.60]	-37.51 [27.51]	-21.13** [8.38]	-31.22*** [7.77]
Observations	2953	2957	2953	2716	2715

Figure 1, Land concentration (Gini coefficient) and banks per capita, 1920

Panel A. All counties



Panel B. Only Southern Counties



Panel C. Only Northern Counties

