Did Inequality in Farm Sizes Lead to Suppression of Banking and Credit in the Late Nineteenth Century?

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Abstract:

An important strand of the development literature focuses on the interactions between inequality and development. In a recent study of the United States in the 1920s Rajan and Ramcharan (2011) find that counties with high agricultural inequality had fewer banks, suggesting that former plantation owners still prevented poor farmers from climbing the agricultural ladder nearly 60 years after the Civil War. This paper starts by creating a new data set that covers all banks in the United States in the census years between 1870 and 1900 to test Rajan and Ramcharan's hypothesis during a period when the banking system was starting over from scratch rather than a period when most counties already had a bank. A panel analysis with county and state-by-year fixed effects shows a strong positive relationship between the number of banks and inequality in the size of farm operations between 1870 and 1900. This suggests that large Southern farm operators after the Civil War welcomed new banks as a means of expanding their own wealth and developing a broader based economy. When the analysis is extended into the 1900s, the relationship between banks and inequality becomes more negative. By 1920 most counties had multiple banks, farmers were more mobile, and financial markets were more integreated. The shifting relationship was more likely to have been a result of bankers trying to block new bankers than elite farmers trying to protect competition for consumption credit, which was an arena into which banks rarely ventured.

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Over the last decade, there has been renewed interest in determining whether inequality affects the development of commercial banks and credit. Engerman, Mariscal, and Sokoloff (2003) and Rajan (2009) argue that the simple existence of a large gap between the "haves" and the "have nots" may have been sufficient to establish inefficient institutions. According to Rajan (p. 1): "When citizens in a poor constrained society are very unequally endowed, they are likely to find it hard to agree on reforms, even though the status quo hurts them collectively." Engerman and Sokoloff (2002), North, Wallis, and Weingast (2009), and Acemoglu and Robinson (2012) argue that elites in most societies use their endowments to shape institutions in order to maintain their preferred access to economic opportunities. On the other hand, they also show that a number of societies have successfully made the transition from governments dominated by a group of elites to open access societies where large numbers of people are free to compete and improve their economic welfare. While the United States successfully made this transition early in its development, authors such as Weiner (1975) and Galor, Moav, and Vollrath (2009) raise questions about the openness of the Southern economy after the Civil War.

Rajan and Ramcharan (2011) performed a test of the hypothesis that settings with more inequality led to restricted access to credit in lesser developed economies when they examined the relationship between inequality in the size of farm operations and the extent of banking activity in 1920s America. They argued that elites were providing informal credit to small farmers and tenants and saw commercial banks as potential rivals in the provision of that type of credit; therefore, the elites worked to prevent commercial banks from developing in their areas. Their results show that greater inequality in the size of farm operations was associated with less bank activity per capita in the 1920s.

In this paper we create a new data set that covers all banks in the United States in the census years between 1870 and 1900 and perform a new test of Rajan and Ramcharan's (2011) hypothesis during the late nineteenth century. The test is performed during a much earlier stage of America's economic development and during a period when the provision of informal credit by local elites in the agricultural sector was at its height. This period more closely fits the narrative described by Rajan and Ramcharam because nearly all of the sources they cite in their institutional descriptions are focused on the period from 1870 to 1900. The combination of the Civil War, the National Banking Acts, and the tax on state bank notes led to the absence of commercial banks in large numbers of agricultural counties throughout the country in 1870. Therefore, the banking industry was starting over outside of the Northeast. The situation in the South was compounded further by the end of slavery, which led to substantial changes in the economic and institutional relationships between elites and their work force.

In performing the test we use Rajan and Ramcharan's measure of inequality in agricultural areas, a Gini coefficient for the size distribution of farms run by operators including tenants and share croppers. The use of the measure allows us to make comparisons in the results in our period with those from Rajan and Ramcharan. Also the measure is the only one that can be consistently constructed across many census years. It is an imperfect measure because the census reported the farm operations on a plantation owned by one landowner as separate operations. However, in 1940 the first year in which the Census asked about multi-unit operations, the Gini for all farm operations is strongly correlated with a Gini that takes into account multi-unit farms.

Our results show that farm size inequality was associated with more banks in agricultural counties during the late 19th century. The difference in results between the late 19th century and early 20th century is likely being driven by differences in the stage of banking development in

agricultural areas. After the Civil War when there were no banks or few banks in agricultural areas, the agricultural elites started their own banks or sought to attract banks as a means of increasing their own access to credit and diversifying their investments in the late 19th century. By the early 1920s, nearly every county had one or more banks, and there was increased competition from national lenders like insurance companies, federal land banks, and federal joint stock banks. The results from our paper and Rajan and Ramcharan suggest a more complicated relationship between inequality and bank activity as an economy develops. In the early phases when the banking sector is starting from scratch inequality can lead to increased efforts to attract banks, but once a bank or banks are established in a local area, it appears that the bank owners themselves worked to limit additional entry. For example, Rajan and Ramcharan (2016) find that incumbent banks that survived the Great Depression were able to restrict entry of new banks to replace those that were lost.

1.Rebuilding the Commercial Banking System in the Post-bellum Period

Access to commercial banks was virtually eliminated in the nation's agricultural areas during the 1860s. Nearly all Southern banks closed during the Civil War, whereas many rural Midwest banks closed after a prohibitive tax on state bank notes was passed in 1865 (Jaremski 2013). State and national banks rebounded after 1870, growing from around 2,000 banks to over 10,000 by 1900, but growth was often concentrated in the Northeast and Midwest, largely bypassing Southern agricultural areas. Even as late as 1900, 30% of Southern counties did not have a bank, compared to 15% of non-Southern counties.

There are several potential reasons why banks did not quickly return to agricultural areas. First, national banks were largely prohibited from providing loans on real estate, and most state

banks subscribed to the Real Bills Doctrine, which advocated short-term, self-liquidating loans.[1] Therefore, the majority of bank loans provided operational and seasonal liquidity rather than long-term mortgage debt. As seen in Table I, around 1890 only 30% of all U.S. mortgage debt was provided by financial intermediaries, and the share was lowest in the agricultural South (12%) and Midwest (28%). Savings banks provided more long-term loans, accounting for 15 percent of all mortgage debt, but as a result of their restriction on lending outside their home counties, most of their mortgages were concentrated in the Northeast (Snowden 1995, 221).

Second, national bank capital requirements are a frequently cited reason for the lack of national banks in most rural communities (Sylla 1969). The National Banking Act of 1864 required national banks in a city with more than 50,000 people to have $200,000 in capital, those with 6,000 to 49,999 people to have $100,000, and those in smaller cities to have $50,000. The intent was to prevent speculative banks from arising, but the result was that relatively few national banks were created in any rural areas This created a system where large national banks popped up in locations where there wealthy individuals capable of creating a bank, whereas many small state banks filled in the gaps where capital was scarce. (White 1982)

Third, lending in the agricultural South and West was inherently risky. Eichengreen (1984, 1987) and Snowden (1987) find that higher interest rates in the West and South than in the East in the early 1890s were primarily due to higher risks and higher transactions costs of loans.[2] Another sign of the riskiness of lending comes from the failure rates of local merchants in the 1870s. Marler (2011, 231-234) studied R.G. Dun merchant reports for two Louisiana

[1] Keehn and Smiley (1977) argue that some national banks circumvented the restrictions, but they were the exception not the rule.
[2] Lee (1930, 273-231) documents how higher administrative costs and loss ratios affected both access to credit and interest rates across regions for the period 1914 to 1926.

counties in the 1870s.[3] He finds that in the cotton county only 35 percent of the 72 stores established between 1863 and 1878 survived until 1878, yet in the sugar county only 52 percent of new stores survived.

Fourth, additional banking regulations decreased the return and increased the risk of agricultural lending. Gropp, Scholz, and White (1997) argue that laws preventing the seizure of homes discouraged banks from providing loans secured by real estate, whereas usury laws effectively prevented them from lending to small risky farmers without collateral. Calomiris and Ramirez (2004) and Carlson and Mitchener (2006) argue that the general absence of branch banking prevented banks from diversifying their loan portfolios across agricultural regions.[4]

2. Sources of Credit, 1865-1900

When the Civil War ended slavery and soldiers returned to civilian life, America was on the cusp of a rapid expansion in agriculture. Between 1870 and 1900 the number of farms and the acreage planted on farms nearly doubled. This rapid expansion in farming intensified the demand for credit. Opening up new land for production involved extensive up-front investment in work, time, and capital before the land would be arable. Most farmers took out larger loans to buy the land to start a farm as well as to invest in machinery and work stock. Since payments for a successful harvest came after the farmer had incurred all of the expenses for the year, tenants, croppers, and even established farmer owners extensively used smaller loans to pay for farm expenses like seed, hiring of labor, and purchases of tools.[5]

[3] Marler finds similar results when he expands the sample to the whole state.
[4] Even as late as 1920, national banks could not branch and only 16 states allowed branching of state banks (Deheja and Lleras-Muney 2007).
[5] Savings and credit also helped farmers advance up the tenure ladder over their lifetimes. Even with credit, however, climbing the agricultural ladder was no easy process because low crop yields and low prices often forced people back to lower rungs.

Substantial agricultural growth occurred in nearly every state; however, due to the general lack of banks in rural and agricultural regions after the Civil War, the composition of growth seems to have been driven by the relative differences in resources.[6] In the Midwest and West, there was a large amount of open land and eastern migrants often had some cash and education to get on their feet. This translated into a many family farms with a mixture of owner operators and cash and share tenants. In the South, there was less available land and the most freed slaves had no cash or education. This translated into existing owners seeking new ways to work their land and non-landowners struggling to purchase their own land. Some landowners farmed their own land with the help of unpaid family workers, but many former plantation owners hired wage labor, brought in share croppers who were laborers working a specific plot for a share of the crop, or rented land to share tenants for a share of the crop or cash tenants for a fixed payment. These differences also led to differences in the way credit was supplied.

2a. Credit in The Midwest and West

In the West and Midwest the void for farm mortgages left by commercial banks was largely filled by other institutional sources of credit. Hicks (1931, 7, 20-21) describes a farming boom fueled by ample mortgage credit from railroads and mortgage brokers in the late 1860s and early 1870s. Railway companies offered ample credit in selling off their lands, and farmers settled the public lands under the rules of the Homestead Act of 1862. After some hard times in the mid to late 1870s, western farming boomed again in the 1880s. Larger mortgage companies developed central offices in major cities and had local agents in many smaller farm communities. In the late 1880s there were between 137 and 200 mortgage corporations in Kansas and Nebraska. In 1890 Kansas, Nebraska, North and South Dakota, and Minnesota all ranked in the

[6] See series Da1-Da224 in Carter et al. (2006, 4-39 to 4-53).

top nine states in terms of per capita mortgage debt. By the early 1890s insurance companies were making 23 percent of the mortgages in the West North Central and 33 percent of the mortgages in the West South Central regions (Table I).

Short term credit for production was provided by banks for larger farms and as well as landowners and tenants with assets and good credit history. Most banks typically did not lend to owner operators and tenants without collateral, support from others, or a strong vetting of the borrower (Mormon 1924, 287-312; Lee 1930, 65-170, 273-322; see also Haney 1914 for Texas). Owners could put up their land as collateral, while both tenants and owner-operators could use mules and tools as collateral. Though pure consumption or emergency loans were generally considered too risky, owners and tenants who had good records and were already borrowing for mules and tools typically could draw credit for family consumption purposes with collateral in the form of work stock, warehouse receipts, crop liens or personal notes. The smaller credit was typically drawn in amounts of $50 to $100 as needed, thus the farmer could reduce the interest payments by delaying borrowing until the cash was needed.[7] Local merchants often filled the void for smaller owner/operators and tenants by providing store credit in return for promissory notes or the crop liens. The merchants themselves often borrowed from banks and their own vendors using store goods, promissory notes, and crop liens from their customers as collateral.

Common in city and country stores, store credit often came in the form of higher prices for credit purchases than for cash purchases. Interest rates on store credit were substantially higher than on bank credit for two reasons: (1) The merchants themselves were borrowing funds and would seek interest rates higher than their borrowing costs. (2) Their customers had lower

[7] Reports based on evidence from the 1910s and early 1920s show that these loans were riskier and involved higher administrative costs per dollar loaned and thus carried higher interest rates.

incomes, little or no collateral to offer, and were borrowing for consumption purchases, which meant the customers had little to offer if the crop failed and they could not pay off the store debt.

2b. Credit in The South

The expansion in farming in the South was delayed by a decade or more relative to the plains and western states, as the amount of land in farms dropped roughly 16 percent during the Civil War decade. Much of this delay has to do with the readjustment of agriculture after the abolition of slavery as well as the virtual loss of banking during the Civil War.[8] As such, Hammond (1897) and Haney (1914) show that the planters and merchants in the 1870s and 1880s and in Texas circa 1910 heavily relied on credit from external sources. Before the Civil War most planters obtained credit from cotton factors in southern ports, the Northeast, and England. After the War the factors tried to reestablish the same arrangements, but the postwar problems with labor, output, and cotton prices caused the factors and the planters to sustain substantial losses. The primary creditors to planters and merchants thus became cotton brokers who mediated between the textile manufacturers buying the products. The cotton brokers and leading northeastern and English manufacturers established offices in major southern cities and sent out agents to negotiate for the coming year's crops. Neither the large landlords nor the merchants had enough cash or capital on hand to survive the long season between the planting of the crop and the harvest, so they often borrowed from the brokers and textile manufacturers using their property and the coming crop as collateral. In a number of cases they consigned a share of the anticipated crop to specific brokers and companies in return for advances that would allow them to survive the year and also provide credit to tenants, croppers, and small land owners. In fact, Hammond (1897, 143-144) describes a situation where the crop lien was a savior

[8] See Carter, et. al. (2006, 3-209, 3-183 to 3-185, 4-51 to 4-53) and Holmes and Lord (1895, 29).

for the landlord and merchant as they could use their crop liens on tenants, croppers, or small farmers as collateral when applying for their own seasonal credit loan.

From the state bank's perspective owner operators and/or landlords were the best borrowers. From a survey he performed of banks, borrowers, merchants, and landlords in Texas around 1910-1913, Haney (1914) claims that roughly 95 percent of farm *owners* borrowed from banks, typically year after year.[9] Most of the loans made by banks to land owners were to "make the crop", and roughly 90 percent of loans were secured by chattel mortgages. The usual items were for feed, seed, groceries, and perhaps mules. Haney compares large loans over $1000 with those for $50 or less. The large loans were typically made for machinery or land. The small loans were typically for labor, feed, and seed costs, with some going to the purchase of mules, plows and improvements. Only one eighth of the small loans were consumption loans of the type that merchants offered and these were typically only made to farmers who had already borrowed from the bank for other purposes. The farmers typically borrowed a total of about $300 for the year in smaller increments with the modal and mean small loans lasting about 3 months. The most common interest rate on long term loans was about 9.3 percent, while the shorter loans were at 10.8 with a range from 8 to 15. The usury law rate was 10 percent. However, the reports from farmers claim rates of 10.7 for large loans and 13 for small loans. The most common rate was 11.1 percent after taking into account that all interest was paid up front on the loan.

The banks most commonly made about 50 percent or more of their loans to tenant farmers. However, the value of the loans to tenant farmers accounted for only about five percent of the total value of the banks' loans. Tenant farmers borrowed multiple small loans of $50 to $75 dollars that aggregated up to between $200 and $600 to "make the crop." The loans were

[9] Haney (1914) provides the best description that we have found of the credit structure. It is important to put his survey in context because Texas was said to have a relatively large number of banks compared to other southern Cotton states at the time. Further, the period was 1912, nearly 50 years after the end of the Civil War.

typically for about 7-9 months with chattel mortgages on teams, stock, implements, and crops and "not infrequently" the personal security of the landlord or of a friend. "Tenant farmers with good standing and acceptable collateral" could typically borrow at 8 to 10 percent but would pay from 10 to 30 percent when borrowing from outside parties.

Haney considered store credit and crop liens to be a "dark place in the Texas farm credit system." Fewer than 10 percent of farm owners but nearly all black tenants and 75 to 90 percent of white tenants regularly depended on advances from the local storekeeper for food, clothes, and various supplies, and posted their crop and any other property they may own, which was often nothing. The merchant rationed the credit based on the amount of acreage and the anticipated productivity of the borrower. Nearly all of the tenants involved with the store also borrowed from their landlord for mules, feed, and other expenses. Where there were large plantations the owners preferred to do the lending as opposed to the bank or the merchant. One reason was that they wanted to avoid interference in the crop choices of their tenants and cropper because the crop choices were part of the portfolio of crop choices the landlords were selecting.

2c. Landlords' Interest in Preventing Banks

Ransom and Sutch (1972, 1977), Hicks (1931), Weiner (1975) and Daniel (1973) all suggest that the informal consumption credit provided by merchants and landlords were highly profitable for the lender, and Rajan and Ramcharam (2011) argue that powerful landlords and merchants worked to keep banks from entering to allow them to maintain these high profits. However, Haney (1914) and Hammond (1897, 142-143) find that a significant share of the merchants and landlords borrowed funds to finance the credit they offered.[10] The interest paid by

[10] Haney also found that between 5 and 20 percent of loans made by Texas banks were made to "country merchants, such loans being "largely" or "almost entirely" used to carry farmers on crop mortgage security.

merchants was usually 8 percent. As security, the merchants endorsed and turned over to the banks the farmers' notes and crop mortgages as collateral at a discount value. Haney concludes that "the country merchants act as the banker's agents in making crop mortgage loans (54)."

Temin (1979) and Goldin (1979) suggest that the higher interest rates on the consumption loans were associated with higher risk rather than excess profit. Haney (1914, 53) agrees: "On the other hand, the tenant is often a shiftless and unreliable person and the percentage of bad debts is high. Not infrequently, the merchant has to carry the farmer over for another year on account of crop failure. In this way a big sum of debt accumulates, and in order to cut a long debt short, the tenant 'pulls up' and leaves the country" (Haney, 53).[11] "The one-year lease is almost universal, and under it, tenants commonly are migratory and take no interest in scientific farming."[12] Marler (2011) shows that country stores of all sizes and credit ratings went out of business in Louisiana.[13] Would the banks have stepped in to replace the merchants and landlords

[11] See also Hammond (1897, 156). After noting that stores might have profited from high credit prices he states "And yet it is questionable whether the business of merchandising in the South presents such great possibilities of becoming speedily wealthy as the above price quotations would seem to indicate." After describing the dishonesty of many purchasers offered credit by merchants, he argues: "the danger of losses involved by doing business on credit with this class of purchasers has been the prime cause of the great difference between cash and 'time' prices, while the frequent failures of advancing merchants, and the unsettled accounts which even the most careful and shrewd of those merchants are obliged to carry over from year to year, do not furnish proof to the statement that, 'the road to wealth in the South, outside of the cities and apart from manufactures, is merchandising.'"

[12] Ransom and Sutch (1977) seem to agree with Fishback (1989) and Wright (1986) that nearly everybody paid off their debts at harvest time. Most poor farmers were thus free to move in between growing seasons, and Wright (1986, 111-113) finds tenants and farm workers also had a great degree of mobility. For the first time in 1940 the U.S. Census asked people where they had lived five years earlier. In the 100 poorest southern State Economic Areas, an average of 7.4 percent of household heads moved into the SEA and another 8.8 percent moved out between 1935 and 1940 (Sorensen, Fishback, Kantor, and Allen 2007). This is much later than the period we study, but comparable estimates of migration between 1850s and 1980s show that the 1930s was the decade with the lowest internal migration rates. These are probably lower bound estimates of the extent of movement across SEAs. Note also that the average SEA contains 7 counties and short-distance migrations across county lines and within counties were much more common than cross-SEA migrations, suggesting an even greater degree of mobility. The cross decade comparisons are based on differences in state of residence and birth state by Rosenbloom and Sundstrom (2004) who document that people listed in the 1940 Census were less likely to be living in a state aside from their birth state than in any other census year between 1850 and 1990.

[13] In the Dun credit ratings of the Louisiana stores in Marler's sample for the 1870s, 81 percent had low ratings of 3 and 3.5, 17.4 percent had 2 or 2.5, and only 1 percent had a rating of 1.5. Store owners with more net worth typically had the highest ratings, but even large stores failed. Store failure rates were 20 percent for stores with $50 to $100 thousand dollars in net worth, 12.5 percent in the $25-50 thousand category, 23 percent for the $10-25 thousand range, 29 percent for the $5-10 thousand range, 24.4 percent for the $2-5 thousand range, 42 percent for the $1-2

in providing such consumption credit? Haney says no because the banks did not want to make the small 9-month loans with the crop only as collateral because they do not want to closely supervise the operation of the farm. He argues that the banks would rather make the loan to the merchant or landlord and let them perform the supervision. This is likely one reason why merchants and landlords were still providing consumption credit in the 1920s, long after the entry of numerous banks into many agricultural counties (Morman 1924, Lee 1930). The expansion of commercial banks thus likely would not have had much impact on these loans because they would not have made these types of loans.

The entry into banking in agricultural areas was likely to have been driven by expansions in the number of farms and the amount of farmland under cultivation by owners and tenants who had land, mules, and tools that could be used for collateral. There is a sense in Rajan and Ramcharan (2011) that the new banks would have been started by outsiders. However, another possibility is that successful local landowners and merchants with capital were likely to be the ones to start the banks, sometimes in conjunction with outside investors. Hammond (1897, 161-2) describes just such a process in a number of counties in South Carolina in the 1870s when a group of local landowners joined together to start their own banks. Schweikart (1987, 210) notes "Merchants, factors, and banks seem to have changed places frequently throughout the South. Even a switch from planter to bank to merchant, then back to planter again, was not unusual in the less urban areas." Indeed, many merchants became landowners after their customers

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thousand range, and 29.4 percent for under a thousand dollars. Ransom and Sutch (1977) also documented high failure rates and show that there was wide dispersion in the location of stores. In many places there was only one store, although the store may have faced competition from planters. Ransom and Sutch argued that the high failure rates and dispersion were signs of market power, but Fitzrandolph (1982) found that the same facts fit a model of spatial competition that limited market power. Even if there were some market power, the low Dun credit ratings and the high probability of failure for all types of stores suggest that the stores borrowed at higher interest rates that reflected higher risk and these costs were passed on to the consumption borrowers who were buying from the store. As noted by Haney (1914) and Hammond (1897) the additional premium in implicit interest for consumption borrowers reflected the risk of nonpayment.

defaulted, and then eventually moved into banking as they expanded their business. The local merchants and landowners had an advantage over outsiders because they knew the potential customers and the structure of opportunities in the area.[14] Further, starting a local bank raised the possibility that the landowners and merchants could diversify their investments and expand the range of the local market. Recent studies show that the presence of a bank led to future growth in output and population in the 1800s (Bodenhorn and Cuberes 2010, Jaremski and Rousseau 2013). It therefore is just as likely that the local elites, particularly successful ones, would be interested in starting a bank as it would that they would try to prevent a bank from starting. Ultimately, the relationship between large landowners and financial development is an empirical question that must be tested.

3. Data on Banks and Agriculture

In prior studies of the late 19th century, the lack of county-level bank data has prevented a comprehensive examination of U.S. agricultural and banking. Seminal financial studies by Davis (1965), Sylla (1969, 1975), and James (1976a, 1976b) focus on regional differences in interest rates, whereas the few bank-level studies focus only on small geographic areas (Redenius 2002) or national banks (Fulford 2010). We fill this gap by assembling a nation-wide bank database from 1870 to 1900 from the *Merchants and Bankers' Directory* and *Rand McNally Bankers' Directory.* The bank directories provide "a complete list of banks, bankers, savings banks, and principal trust companies in the United States," and match quite well with the reports provided by state banking authorities. These annual directories provide the location of every bank in

[14] Dodi and Schweikart (1991, 25-27) suggest that a significant share of western banks were started by local merchants who had started lending and created banks to expand their businesses. Greenwood and Jovanovic (1990) suggest the existence of this behavior as does the long history of "insider lending" practiced by banks owned by entrepreneurs in the antebellum Northeast (Lamoureaux 1996).

operation, as well as, whether they were chartered by a state legislature (state bank) or the Comptroller of the Currency (national bank).[15]

Following Rajan and Ramcharan (2011), we measure wealth inequality using the degree of land inequality among *farm operators*. Specifically, we calculate the Gini coefficient based on the distribution of farm sizes at the county-level provided by the census records compiled in Haines (2004).[16] The tabulated data contain the number of farms within seven acreage bins (less than 9 acres, 10 to 19 acres, 20 to 49 acres, 50 to 99 acres, 100 to 499 acres, 500 acres to 1,000 acres, and more than 1,000 acres), and we construct the estimate using the midpoint of acreage between the values in each bin.[17] Taking a value between 0 and 1, a large coefficient implies that a greater proportion of agricultural land was farmed by a few farm operators, whereas a low coefficient would imply uniformly small, medium, or large farms. A high Gini coefficient signals that a few individuals held a great deal of power, whereas a low coefficient implies that no small group of individuals had the power and self-interest to influence county-level institutions.

There are two potential sources of measurement error in measuring inequality of wealth and land ownership with this Gini Coefficient. First, farm size may not fully account for wealth or the power of local interest groups when land was used for mining, manufacturing, or living. The evidence at the very least suggests that agriculture made up 68% of land in the average county and some of the remaining "land" was likely rivers, lakes, and other uninhabitable areas. Wealth not captured by the Gini thus would be limited and generally confined to large urban and

[15] For the empirical analysis, we merge trust companies with state banks because they were chartered in the same manner and carried out certain functions. The results are similar when we do not include trust companies.
[16] Notice that an inequality measure is important because a landowner might only wish to prevent (or encourage) financial development when it gave him additional power over small farmers who were reliant upon credit. The incentives in a county with many large landowners and few small farms would be different from those in a county with one large landowner and many smaller farms. Therefore, the empirical results are weaker for measures such as the Herfindahl index or the fraction of large farms in a county.
[17] The 100 to 499 acre bin is divided into three separate bins in some decades. We aggregate the extra bins to create a consistent measure across time.

manufacturing areas, especially for the South. This is one reason why we remove counties containing a city of more than 25,000 people from the regression analysis and control for manufacturing output.[18]

We test whether the farm size Gini is a good proxy for overall wealth inequality using the IPUMS 1% sample of the Census of 1870 (Ruggles et al. 2010). The 1870 Census was the last census to ask households about their wealth. Because there were often few sampled households per county in the IPUMS sample, we aggregated to the state level before calculating the Gini coefficient.[19] The correlation between the wealth Gini and the farm operation size Gini across all states is 0.57, but varies by region. It is 0.34 for the Northeast, 0.14 for the Midwest, 0.72 for the South, and 0.43 for the West. The farm size Gini thus seems to match the inequality of wealth for the South better than in areas where non-land based wealth had developed.

Second, farm sizes reported in the census are not perfectly matched with the size of agricultural landholdings. The census did not consistently report information on the amount of land owned by people. Instead, it reported information on the size of farms for farm operators, which included owner/operators, tenants (cash or share) and share croppers. For example, a plantation on which the landowner farms part of his acreage, rents to 3 cash tenants and 10 share tenants, and hires 20 share croppers would show up as 34 farm operations instead of 1 plantation with a single land owner. The distribution of farm size, therefore, only matches the distribution of agricultural landholdings in locations where landowners farmed all the land themselves, and otherwise underestimates the inequality of land holdings. We limit this type of measurement error by controlling for the fraction of tenant farms in the eventual regression analysis.

[18] The results become more significant when we exclude urban areas of less than15,000 people or more.

[19]When we use county or SEA data and drop observations with few sampled individuals, the correlations are slightly less but display a similar regional pattern. The bins are: no wealth, 1 to 50, 50-99, 100-199, 200-299, 300-399, 400-499, 500-749, 750-999, 1,000-1,999, 2,000-2,999, 3,000-3,999, 4,000-4,999, 5,000-7,499, 7,500-9,999, 10,000-14,999, 15,000-19,999, more than 200,000. The midpoint of each bin was used to calculate the Gini.

We have performed two tests to see how much the Gini for farm land holdings differs from the Gini for farm operations. First, the 1945 Agricultural Census was the first to publish detailed size distributions for multi-unit farm operations like plantations in the South (U.S. Census Bureau 1947). When ignoring tenants as part of the distribution of farm owners, the correlation across counties between the Gini of all farm operations versus the Gini that treats each multi-unit operation as only one farm is 0.945. When tenants are counted as being farmers with no land, the correlation becomes 0.8047. To show that the structure of plantations did not change the 1800s and 1940, we performed a second comparison using data on the size of owner operated farms in 1880 and 1890 (1870 and 1900 were unavailable. The correlation between the Gini for owner operators and the Gini for farm operation size is 0.91. The ratio of the size of tenant and cropper farms to the size of owner-operator farms also remained relatively constant across the two decades. Therefore, to the extent that these relationships remained constant across the entire period, our Gini coefficient should provide a reasonable proxy for the inequality of farm owners and county-fixed effects should control much of the measurement error.

4. Land Inequality and Financial Development Before 1900

There was a great deal of variation in the Gini coefficient across locations and time. Figure II shows that farm land was more unequally distributed in the South and West than in the Northeast and Midwest.[20] In the Midwest and Northeast, the inequality measure displayed relatively little variation, in contrast with the large degree of variation within the South and West. In fact, farm inequality in the South actually goes hand-in-hand with cotton production. The Gini coefficient was higher in the cotton counties on either side of the Mississippi River and

[20] The concentration of land holdings in the southwest is largely due to their small numbers of farms and large county boundaries, and might only compare a few family farms to large cattle ranchers.

along the Atlantic coast, but lower for the non-cotton counties of Georgia and Tennessee. The finding suggests that variables such as soil quality, topography, and climate could have shaped the amount of inequality over time by altering the types of crops that could be farmed.

Table II indicates that the inequality in the size of farm operations was rising in the South and Northeast and falling in the Midwest and West. Between 1860 and 1900, inequality rose by 1 percentage point in the Northeast and 2.4 percentage points in the South, but declined by 2.9 percentage points in the West and 7.4 percentage points in the Midwest. Despite the flood of former slaves released into the southern labor market, farm size inequality only slightly increased between 1860 and 1870 and had nearly returned to its original value by 1880. This temporary increase was likely caused by time it took freedmen to become farm operators.

Matching the agricultural census with the bank data, Figure III illustrates the average number of banks from 1860 through 1900 as a function of a county's Gini coefficient. For all states the average number of banks bounces between 2 and 4 until the Gini coefficient hits 0.65, and then rises sharply. This shape is a mixture of the distinct distributions of the South and the Midwest, in which the Midwest dominates at lower Ginis and the South dominates at higher Ginis. The rise in the number of banks is always greater for counties with large Gini coefficients than small ones, suggesting an overall positive relationship.

While the aggregate pictures display a positive relationship, they do not control for the large number of other characteristics and institutions that could have been driving bank growth and inequality. We, therefore, proceed with a regression analysis at the county-level. To examine local conditions of interest groups in agricultural regions, we aggregate counties up to their 1860 boundaries and drop any county that was larger than 6,500 square miles as well as those that had

fewer than 25 farms or a city of 25,000 people or more.[21] The resulting panel contains information for 1870, 1880, 1890, and 1900 for 1,564 counties in 38 states.[22]

Following Rajan and Ramcharan (2011), we estimate a county's financial development over the period using a linear model. However, we take further steps in the analysis by pooling the data over time and using county fixed effects to control for time-invariant features for each county, year fixed effects to control for nation-wide shocks, and state by year fixed effects to control for state-specific shocks in each year. Each observation is a county-year. The dependent variable, $Banks_{i,t}$, is the number of banks in county *i* in year *t*. The full model is as follows:

$$Banks_{i,t} = a + \beta_1 Gini_{i,t-10} + \beta_2 X_{i,t-10} + T + S * T + u_i + e_{i,t} \quad (1)$$

$X_{i,t-10}$ is the vector of time-varying county-level controls from the prior census year described below, T is a vector of year fixed effects, S is a vector of state fixed effects, u_i denotes a vector of county-level fixed effects[23], and $e_{i,t}$ is the error term. The vector of county fixed effects control for features of the county, such as nearness to rivers, coast-lines, elevation, soil quality, type of agriculture, and long run attitudes that did not change over time but varied across counties. The vector of year fixed effects control for national-level shocks to the money supply and national legislation related to excise taxes and tariffs. The vector of state specific effects interacted with the year effects controls for differences in state policies over time. For instance, Sylla (1969) and James (1976) have argued that the lowering of state-specific and national

[21] We matched counties using Horan and Hargis (1995). Focusing the sample on non-urban areas is one difference between our model and Rajan and Ramcharan's; however, we believe it is an important change due to the fact that we are focused on agricultural interest groups. We will show the results when keeping these counties in a later table.
[22] Excluded states were typically those that did not obtain statehood until after 1875. The dropped states were Alaska, Hawaii, Oklahoma, South Dakota, North Dakota, Montana, Idaho, Utah, New Mexico, Arizona, Wyoming, and Washington. We do not use the 1860 observations for banks because of the largely exogenous destruction of banks due to the National Banking Acts and Civil War, but we do use non-financial variables in 1860 to control for other time-varying county-level characteristics because they did not experience a large change.
[23] Results are similar when replacing the county fixed effects with state fixed effects and the large number of time invariant variables used in equation (2).

minimum capital requirements increased the number of banks and decreased interest rate differentials across regions.

The key parameter estimated is β_1 the coefficient on the Gini measure from the previous census year ($Gini_{i,t-10}$). We measure the Gini during the previous census year to reduce problems with simultaneity and endogeneity. The models of Aghion and Bolton (1997), Banerjee and Newman (1991), and Galor and Zeira (1993) indicate that economic inequality is shaped by credit availability. In our context, the *Gini* in year *t* would likely have been influenced by *Banks* in year *t*, leading to a correlation with the error term $e_{i,t}$. The Ordinary Least Squares (OLS) estimation of $Banks_{i,t}$ on $Gini_{i,t}$ thus would lead to a bias to the extent that increases in the financial development affected inequality. Because serial correlation in most economic series rarely extends beyond 5 years, it is likely that the farm inequality Gini from ten years earlier would not be correlated with the error term in year *t* in the bank equation ($e_{i,t}$).

We work to eliminate any additional endogeneity bias that might arise from the omission of variables that were correlated with both banks and farm inequality. First, we control for time varying county demographics. The demand for banking services is captured by the logarithm of population, and the impact of race on credit, social, and economic relationships is captured by the fraction of the county's population that was non-white. Second, we control for the economic environment. County production is captured by the logarithms of crop output per capita and manufacturing output per capita. The size of the agricultural sector is captured by the logarithm of the number of farms. In all cases, we use the lagged values of the county-level variables to avoid simultaneity and endogeneity because the presence of a bank has been shown to lead to future growth in output and population.

We estimate the model using the number of banks as the dependent variable and also the number of banks per capita.[24] The number of banks might be preferred to banks per capita as a measure of access to bank credit for three reasons. First, the traditional story of farmers seeking credit through informal lenders was the result of not having any banks, rather than not having enough banks. And despite not lending to every farmer, there is evidence that banks had an indirect effect on the availability of credit. The banks often lent to the merchants and landlords who then offered credit to tenants, croppers, and small producers using crop liens and their store goods as collateral. Second, a decline in the number of banks per capita would not always represent a reduction in access to credit, because the number of banks could remain the same but each bank could expand to accommodate a larger population of borrowers and depositors. As a result, banks per capita could have more measurement error in determining the credit available. Third, when using banks per capita, banks and the inverse of population are assumed to respond in the same way to the right-hand side variables. When using the number of banks while controlling for population on the right hand side, we are allowing more flexibility in the estimation because the coefficients on the right-hand side variables reflect the change in banks holding population constant.

As can be seen in Table III, the coefficients on the lagged Gini coefficient are generally positive and statistically significant. In the final specifications for all states, the OLS coefficient for the lagged Gini in the number of banks regression is 1.370, which implies that a move from complete equality of the size of farm operations to complete inequality, would have been associated with an increase the number of banks by 1.37. A more common occurrence would have been a one standard deviation (OSD) change of 0.086, which would have led to an increase

[24] As the nation's road network was primitive and automobiles were not available, the availability of commercial credit before 1900 depended on the geographic proximity of banks. As a result, few farmers received credit from a bank in another county (Baum-Snow 2006, Ramcharan 2008).

of about 0.12 banks or an eighth of the bank. That change would have been about a one-twentieth of a standard deviation of the number of banks. When banks per capita is the dependent variable, the coefficient of 0.020 is statistically insignificant and the effect of a OSD rise in the Gini led to a one-fiftieth of a standard deviation rise in banks per capita.

Because the stories of powerful landlords and merchants are centered on the South, we estimate the model for just the Southern states to see if the effects differ. In this region, the positive effect of the Gini is even larger for bank creation because there were fewer banks in the southern counties. Indeed, a OSD change in the southern Gini would have increased both the number of banks and banks per capita by one-twelfth of a standard deviation. The evidence thus suggests that the Gini had its largest positive effect in the locations where land concentration was largest. As such, Rajan and Ramcharan's focus on all states might have negatively biased the coefficient on the Gini.

The weaker positive effect when using the number of banks per thousand people is most likely driven by banks encouraging population growth (Bodenhorn and Cuberes 2010). Since population is in the denominator of banks per capita, a change that would have increased the number of banks would also have increased the population, leading to a more negative impact for banks per capita than for banks alone.

We report a number of additional specifications in Table IV to test whether the positive relationship between banks and land concentration is the result of our sample or variable choice. First, while dropping out counties with large cities helps us eliminate measurement error from locations with non-agricultural wealth and few farms, the restriction sets us apart from Rajan and Ramcharan (2011). We, therefore, re-estimate equation (1) without dropping large cities and adding a control for the fraction of people living in an urban area on the right hand size. In the

first panel of Table IV, the number of banks is still positively and significantly correlated with the Gini coefficient. If anything, the coefficients increase in value. On the other hand, the number of banks per capita is no longer statistically significantly correlated with the Gini coefficient across the South, and the coefficient across all states becomes negative and statistically insignificant.

Second, using lagged values avoids the potential for auto-correlation with the error term, but also could be diluting the results. We, therefore, re-estimate equation (1) using contemporary values for all county-level variables to make sure that the results are robust to our chosen specification.[25] In the second panel of Table V, the results using the county variables in the same year are roughly equivalent to those using lagged values in Table III. Lagging the independent variables thus does not have a large effect especially after accounting for fixed effects.

The third and fourth specifications are separate models with the number of state banks and the number of national banks as dependent variables.[26] As national banks could not provide loans on real estate directly, they would have served a different purpose in agricultural regions than state banks and would not have competed with large landowners in the provision of farm mortgage loans; therefore, the relationship between the number of banks and inequality could have been different for the two types of banks. The overall results show a positive relationship between inequality and the total number of banks of any kind. However, the coefficients and statistical significance tests for state and national banks differ. The number of both state and national banks was positively and statistically significantly associated with the Gini coefficient

[25] While its inclusion does not dramatically alter the results, we continue to exclude observations in 1860 in order to avoid changes due to the Civil War and National Banking Acts.
[26] We include the number of trust companies in the count of the number of state banks because they were chartered in the same way and carried out similar actions.

across the country, but in the South, the positive relationship with inequality was only statistically significant for national banks.

Finally, we take the additional step of using an IV estimation procedure in case the use of lagged values for the Gini does not resolve the endogeneity problem. The IV is based on the average rainfall instrument used by Rajan and Ramcharan. The presence of county-fixed effects presents us from using long-run rainfall as the instrument and the lack of sufficient weather stations before 1896 prevents us from using rainfall per decade. In the panel we thus interact the long run average rainfall for 1896 to 1930 with a dummy for 1880, 1890, and 1900 to allow for variations in the effect of the rainfall on the Gini in each of the four years. These IV estimates likely suffer from weak instrument bias because the F-statistics for the instruments are in the range of 3.77 to 5.488. The IV coefficient of the Gini for the number of banks is 36.493, which implies that a OSD increase in the Gini would have been associated with an increase of 3 banks or nearly one standard deviation. The IV coefficient for banks per capita is 1.585, which implies that a OSD rise in the Gini would have been associated with a rise of 1.35 standard deviations in the number of banks.

6. Why Do Our Results Conflict with Rajan and Ramcharam's Results for 1920 and 1930

The strong positive relationship between banking and farm operation inequality in the late 19th century contrasts with the negative relationship found by Rajan and Ramcharan (2011) using data from 1920 and 1930. There are two non-mutually exclusive reasons why the results in our paper differ from theirs: time period and identification strategy.

First, there was a radical transformation of the financial system between 1870 and 1920. While the rural banking system was essentially starting from scratch after the Civil War and the

National Banking Acts, the commercial banking structure was significantly more mature in 1920. As seen in Figure IV, only 32 percent of counties had at least one bank in 1870, yet over 95 percent of counties had at least one bank by 1910 and most had multiple banks competing for business. The presence of existing banks likely changed the nature of the competition.[27] The competition for agricultural loans only intensified after the federal government provided startup money for Federal Land Banks and joint stock banks after 1916. Both types of banks were created to provide funding for low interest loans to farmers who had little access to credit.[28] The financial sector in the 1920s was much more like that of the retailing and industrial sectors where incumbents often battled against entry by new stores. This is even confirmed in a later paper by Rajan and Ramcharan (2016). They show that after the Great Depression surviving banks seemingly were able to prevent new banks from rising up to take the place of those that closed.

Farmers and farm workers in the 1920s also had higher incomes and greater flexibility than those in the late 19th century. For instance, 86 percent of farm owners and 48 percent of farm tenants owned automobiles and over 34 percent of all households owned telephones by 1930 (U.S. Census Bureau 1933, 535; 1943, 451-454).[29] Farmers, therefore, had greater capacity to go outside their community for loans, creating more cross-county competition among banks. Increased cross-state competition led to more integration of lending markets. Bodenhorn's (1996) estimates show that the standard deviation across states in commercial bank interest rates

[27] Moreover, large landowners were often already owners or part owners of the banks, as shown by the large number of banks with "Farmers" in the title.

[28] The Federal Government provided seed money and federal backing of the issuance of securities for a set of regional Land Banks that worked with local farm associations to develop cooperative mortgage lending. The government also created the structure for joint stock banks funded by farmers directly. By 1930, the share of mortgages held by federal land banks was over 12 percent and the share held by joint stock banks was about 6 percent (Federal Farm Loan Board 1931, 14-15, 31). On top of all this, the federal government provided emergency loans through Congressional legislation to areas hit by disaster on at least 5 occasions during the 1920s, giving poor farmers a safety net when climbing the agricultural ladder.

[29] The numbers are slightly lower in the South, but still non-trivial: 54 percent of farm owners and 31 percent of farm tenants owned automobiles.

fell from an average of about 5 percentage points in the late 1870s to around 2.7 in the 1890s to around 1 percentage point in the 1920s.

Second, the difference between the two studies could also be based on different identification strategies. Our panel analysis identifies the effect of the Gini coefficient based on variation over time within a county while controlling for state-wide shocks in each year. In contrast, the identification in Rajan and Ramcharam's analysis comes from variations across counties within the same state. The panel process also allows us a longer timespan to better control for omitted variable bias, whereas the Rajan and Ramcharan use an IV in order to reduce endogeneity and measurement error.

To sort out the reasons why the results differ, we thus have to determine whether the cross-sectional regressions tend to provide negative results in all periods and whether the additional panel controls lead to a different result in the 1900s. Adding data for 1910, 1920, and 1930, we conduct this analysis in two steps. We first examine decade cross-sections to see if the difference has to do with the additional controls and identification of the panel. We then re-estimate the panel regressions using additional years but holding the specification fixed in order to see if the changing time-span is responsible.

Table VI presents the regressions when we take Rajan and Ramcharam's cross-sectional approach for each decade from 1870 through 1930. Lacking time-series variation, the model is:

$$Banks_i = a + \beta_1 Gini_i + \beta_2 X_i + S + e_i \quad (2)$$

the variables retain the previous definitions with the exception of X_i. Because the specifications cannot include county-fixed effects, we include a variety of constant county-level characteristics that could be driving the number of to X_i.[30] We include the fraction of the population that was

[30] There is a large literature on the connection between land concentration and weather patterns. See for instance, Heady (1952), Tomich et. al (1995), and Gardner (2002).

illiterate, the fraction of the population that was aged 8 through 20, and the fraction of farms that are worked by a tenant.[31] The fraction of tenant farms is particularly important to control for any mismeasurement of the Gini in locations with high shares of tenant and cropper farms. As small family farms often did not generate sufficient surplus to avoid foreclosure during bad periods, the concentration of acres in large farms would vary based on the typical rainfall and extreme temperatures. Due to the lack of many early weather stations, we use average rainfall, average temperature, and the standard deviation of temperature from 1895 through 1930.[32] As a rugged landscape, lack of water, and bad soil would limit agriculture, we control for the difference between the highest and lowest elevations in a county, the amount of moisture in the soil, the percent of clay in the soil, and whether the county had a large river or coast within its borders.[33]

To be clear, Rajan and Ramcharan's original models do not include all of these control variables. Therefore, to offer a clear comparison to their results, we estimate a regression as close to their specification as possible and then slowly add controls. We start with a model similar to theirs that only contains population, land area, whether the county was on a large river or coast, fraction illiterate, fraction young, fraction non-white, and state-fixed effects.[34] Next we add the additional Census, weather, and topological controls listed above. Finally we follow Rajan and Ramcharan and use long-term rainfall as an instrument instead of a control.

[31] Because the Census did not consistently measure or report these three variables, we thus take the maximum value of the county for all years when they are reported.
[32] We find that the climate measures were relatively consistent decade to decade. The measures thus seem to provide a good proxy for the county's general suitability to growing crops and potential risk of extreme weather.
[33] The geographic variables were created and used by Fishback, Haines, and Kantor (2006). The paper describes the sources. More can be downloaded from http://www.u.arizona.edu/~fishback/Published_Research_Datasets.html.
[34] When we run the Rajan and Ramcharan's specification, there are some differences in variables used as correlates, but we see no sign that the differences influence the statistical significance of the inequality measure. In the geographic measures Rajan and Ramcharan use distance from the Mississippi River, the Great Lakes, and Oceans. We use dummy variables to show whether a county is located along rivers of different sizes and/or is adjacent to oceans and the Great Lakes. Further we drop the urbanization variable and replace it with population as we drop out all large urban areas before estimation.

The identification of the impact of the Gini in Table V comes from variation across counties within the same state. Using either bank measure as the dependent variable for 1920 and 1930, the OLS results are similar to the ones Rajan and Ramcharan report in their NBER working paper, which were not reported in the final published version in the *Journal of Finance.* In both years the OLS coefficients for the Gini are negative and statistically significant. As we move earlier in time, the negative effect of the Gini becomes less stable, particularly when the additional controls are added. For instance, the coefficients in the OLS model with additional controls are not statistically significant in 1870, 1880, and 1890 for the number of banks and in 1880, 1900, and 1910 for banks per capita. The coefficients of the Gini in 1870 and 1880 are much smaller than the coefficients after 1900.

In general, the IV strategy tends to lead to a much stronger negative effect of the Gini coefficient than the OLS estimates. It is not clear, however, that long run rainfall is a good instrument in this context. The problem is not with strength, the F-statistics for the instrument in the first stage are over 30 in all years except for 1870, when it is 5.2. The problem is with rainfall's excludability: Can we legitimately expect that long run average rainfall is uncorrelated with the error term in the banks per capita regression? In agricultural areas access to rainfall is a major consideration in determining the economic opportunities; therefore, the bank is likely to consider long run rainfall patterns when choosing to enter or exit the county. This would be true even while controlling for current or past income in the equation because long run rainfall covers a much longer time span than just the current year. Whether the current year income was low or high, the long run rainfall average provides additional information about whether the current year income was a good, bad, or average year. Thus, we might expect that the rainfall measure would belong in the final stage equation as a correlate. In fact, in the OLS cross-sectional analysis with

long run rainfall included as an additional correlate for banks per capita, the rainfall coefficient is negative and statistically significant in every year from 1870 to 1920. The only year in which it is not statistically significant is 1930.

The cross-sectional results suggest two conclusions. First, the differences in identification strategies lead to different results. Negative coefficients are present when the identification comes from cross-county variation within states, while positive coefficients are more common when using variation across time within counties while controlling for annual shocks within states. Second, the changing nature of the financial community is also a factor.

The next step is to test whether the panel structure also picks up this change in the effect of the Gini coefficient. To do this, we extend our panel analysis through additional years. Specifically, we examine the results when adding additional data for 1910, 1920, and 1930.[35] Table VI shows the result when estimating equation (1) using just 1870 through 1890, then each subsequent panel adds another decade. Like Rajan and Ramcharam, we control for differences in state regulation of capital, reserve requirements, usury rates, and bank supervision. In the panel context this means including state-by-year fixed effects.

In the panels for different time periods, the positive effects of the Gini coefficient are largest for the 1870-1890 and 1870-1900 periods when there were relatively few banks. The coefficients get smaller as more years are added to the panel. The coefficients in the banks per capita estimations have the same pattern, but the coefficients turn negative when 1910, 1920, and 1930 are added to the sample. The results for the South sample in Table VI also show roughly the same pattern. There are statistically significant positive coefficients for the panels for 1870-

[35] Data from 1910 comes from the same Rand McNally Bankers Directory, whereas the later data come from the FDIC (2001). Additional panel specifications for other sets of years are available upon request. However, the results are similar with the Gini mattering more early and mattering less after 1900. We do not implement the IV approach for the panel as long-run rainfall has already been shown to be a poor instrument when accounting for county-fixed effects and state by year fixed effects.

1890 and 1870-1900, adding 1910 leads to positive but statistically insignificant coefficients, and adding 1920 and 1930 leads to negative but statistically insignificant coefficients.

The comparisons of the panels suggest that there was a change in the relationships of banks with the Gini somewhere around 1900. At the bottom of Table IV are the panel results for the periods 1900 to 1930 and 1910 to 1930. The coefficients on the Gini for banks per capita are all negative although none are statistically significant. When number of banks is the dependent variable three of the four coefficients are much smaller than the coefficients for 1870 to 1890 and 1870 to 1900. Three of the coefficients are positive but only the one for all states in 1910, 1920, and 1930 is statistically significant, although it is larger than the coefficients in the earlier period.

The changing nature of the financial system and regulation seem to be leading to a differential effect between the two time periods. Given that it is a change based on time period, it seems likely that the change would be a national one. One candidate for the change was the new lower capital requirements in small communities for national banks enacted with the Gold Standard Act of 1900. The Act lowered the minimum capital requirement for locations with fewer than 4,000 people to only $25,000. The number of national banks grew rapidly over the next decade. Of the 3,387 national banks created between 1899 and 1909, 2,197 or 65 percent had a capital stock lower than $50,000 (Barnett 1911, 232-233). State bank growth kept pace with national banks as states further lowered their capital requirements. The size of banks thus dramatically decreased over time and more areas were able to create multiple competing banks. Since most counties had a bank by 1900, it would not be a surprise that the banking elite sought to block entry, just as would be the case by any firm seeking to block entry into a market.

7. Conclusion

This paper examines the extent to which landed elites affected the development of commercial banking in rural areas following the Civil War from 1870 through 1900. The National Banking Acts forced the commercial banking system in agricultural areas to start anew as a result of tighter regulations on both national and state banks. We thus examine a period near the height of landowner power, informal farm credit, and during the rebirth of agricultural finance. We find that areas with a high level of land inequality, i.e. higher concentration of farming in larger farm operations, tended to establish more banks.

When the effects of farm inequality on banking are broken down for state and national banks, areas with more land inequality in the South were associated with an increase in the number of national banks but there was only a small positive association with the number of state banks. To the extent that Southern rural elites wielded power over banking, it makes sense that they would have wanted to spur the entry of national banks that provided the issuance of notes but would not have competed with themselves in providing farm mortgage loans. At the same time, the insignificant positive effect of inequality on the number of state banks suggests that Southern landowners did not prevent the addition of new state banks. In the Midwest, where there were far fewer large farmers who might have had the capacity to loan, a higher inequality of farms was associated with increased state banking but not national banking.

The results for 1870 to 1900 differ from the findings of a negative relationship between banks and inequality by Rajan and Ramcharan (2011) for 1920 and 1930. We believe that there are two reasons for the difference: a difference in the method of identification and a substantial change in the structure of banking. Rajan and Ramcharam's identification came from cross-sectional variation across counties within the same state, as well as the use of long run rainfall as

an instrument for inequality. When we use Rajan and Ramcharam's identification methods for the late 1800s, the banking-inequality relationship is often negative, as they found for 1920 and 1930. However, there are economic reasons to question the validity of the long run rainfall as an instrument and long run rainfall has a statistically significant effect when included in the final banking equation. Our identification method is based is on variation across time within counties while controlling for state-year specific differences.

Using our panel identification methods, we find that there is no longer a positive relationship between banking and inequality after 1900 in most specifications. There are a variety of reasons why the banking structure in the U.S. differed substantially between the late 1800s and the 1920s. Nearly every county had a bank by 1910 and most counties had multiple banks. Moreover, the federal government had sharply reduced minimum capital requirements for national banks in small communities with the Gold Standard Act of 1900 and had provided ample start-up funding for national land banks that made loans to mutual societies of farmers, who made mortgage loans. Banking markets thus were more integrated as the standard deviation across states had fallen from above five in the 1870s to around one in the 1920s.

The new results thus tell a more complex story about the relationship between inequality and financial development. When rural areas started from scratch after the Civil War and the National Banking Acts, the elites in those areas, composed primarily of large landowners, joined forces to invest in local banks to expand credit and also the breadth of development beyond agriculture in the late 1800s. As the formal credit markets matured and cross-state interest rate differentials declined, nearly every rural county had a bank and many had multiple banks by the 1920s. At that point the landed elites, as part owners of the banks, had incentives to prevent entry just as retailers and other local businesses had incentives to prevent entry, particularly from

expanding chain stores (Rajan and Ramcharan 2016). Thus, the opposition to additional banks in rural areas was more likely to have been driven by local elites protecting banks rather than protection of informal consumption credit that banks rarely provided.

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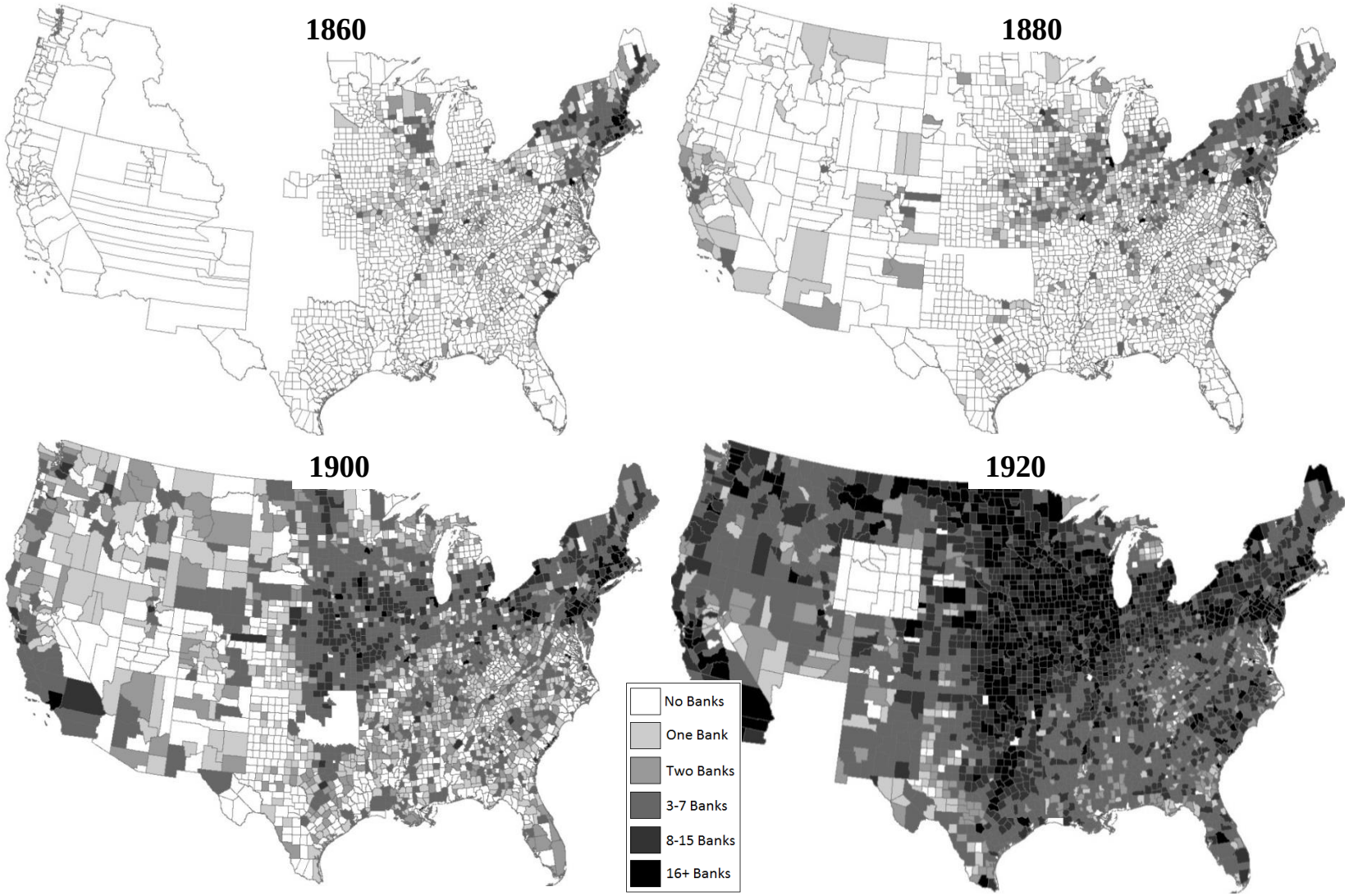

Figure I

Total Number of Banks by County (1860-1920)

Notes: Displays the number of banks in each county. County boundaries obtained from Minnesota Population Center (2004). There is no data for Wyoming and Arizona in 1920. See text for the sources of bank data.

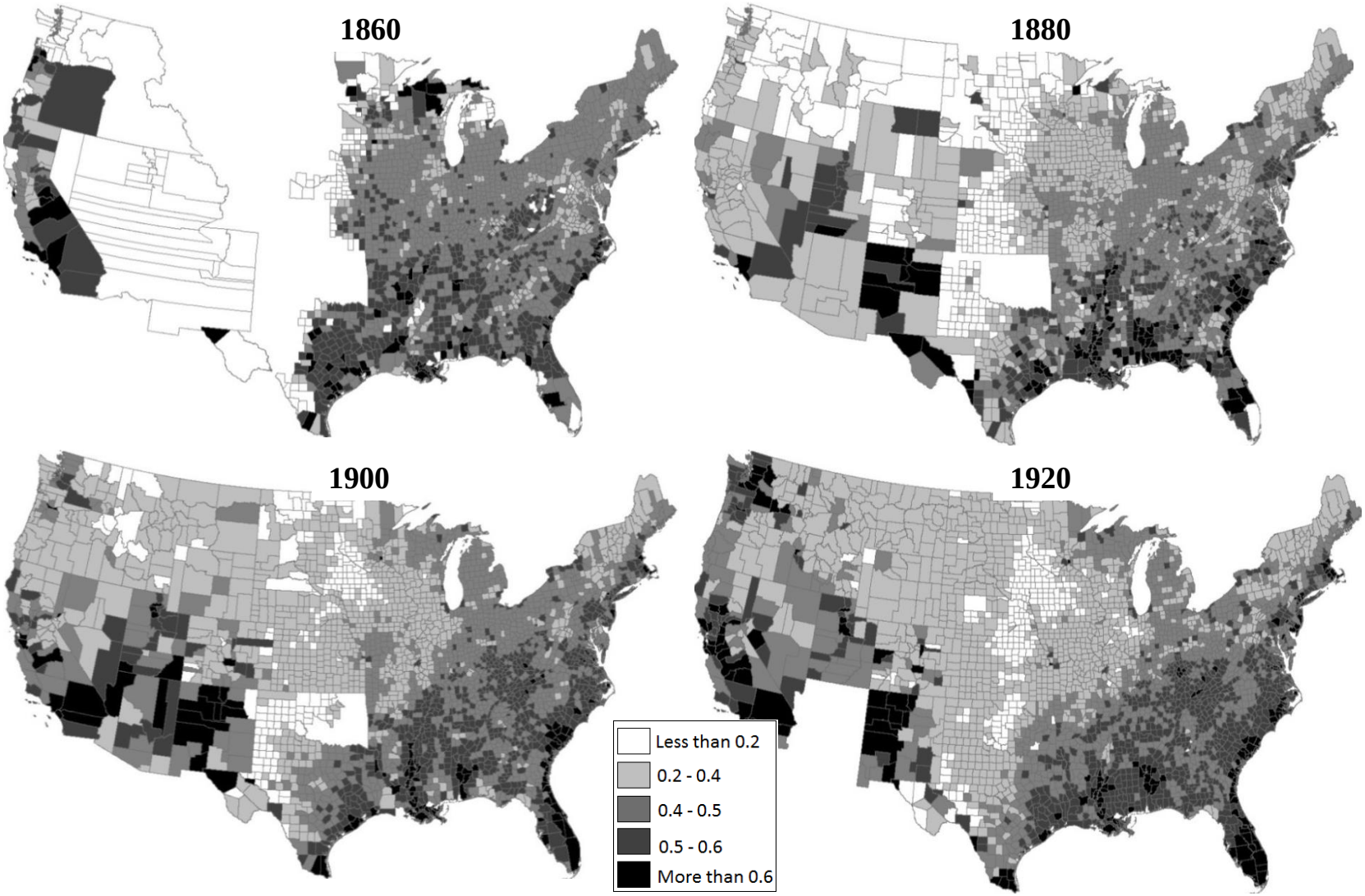

Figure II

Gini Coefficient by County (1860-1920)

Notes: Displays county-level Gini coefficient. County boundaries obtained from Minnesota Population Center (2004), and Gini coefficient calculated from Haines (2004). See text for the sources.

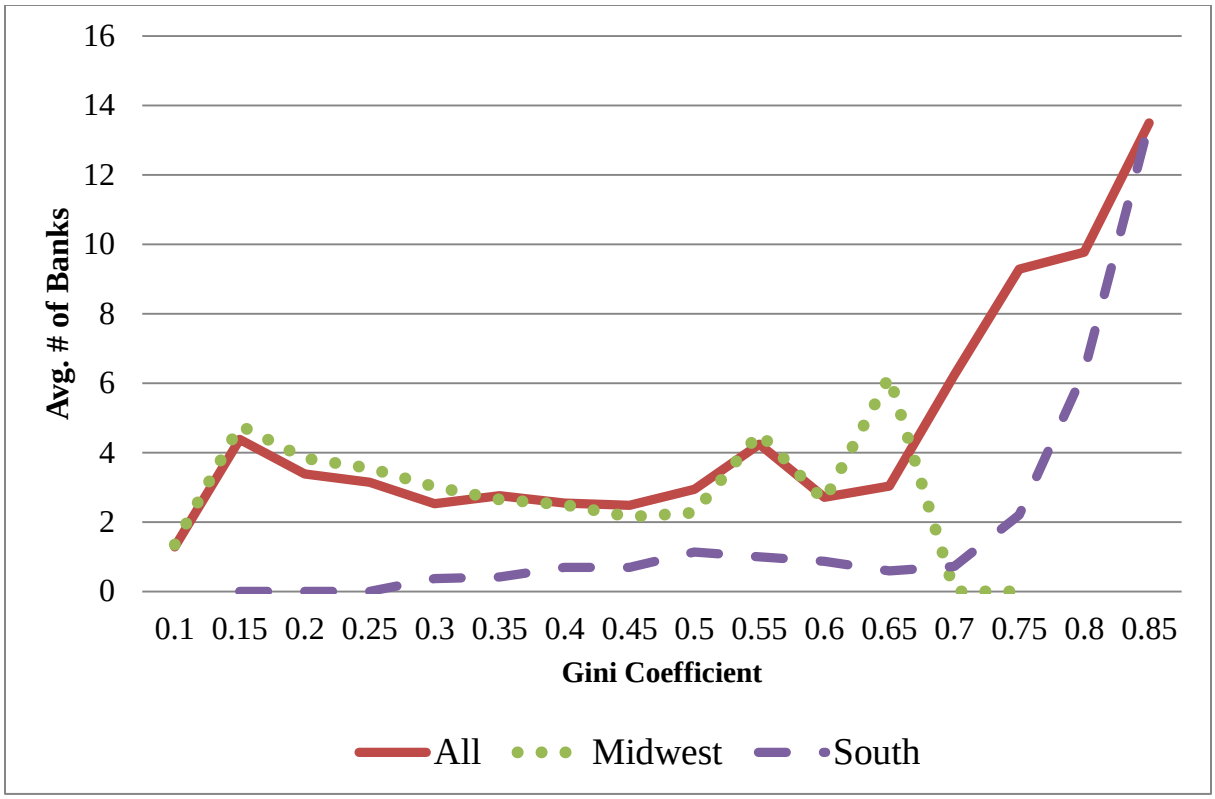

Figure III

Average Number of Banks By Gini Coefficient (1860-1900)

Notes: Figure presents the average number of banks in a county as a function of its Gini Coefficient. The data contain one observation for each county for 1860, 1870, 1880, 1890, and 1900. See text for the sources.

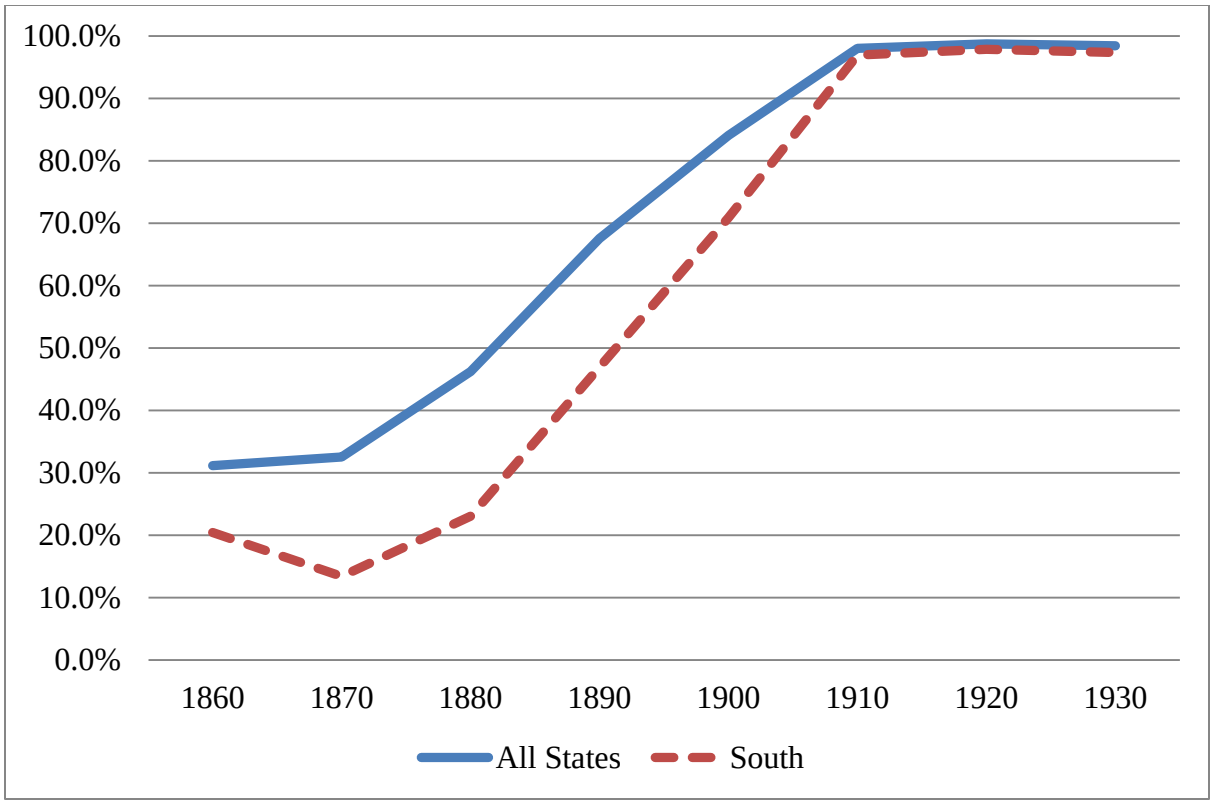

Figure IV

Percent of Counties With At Least One Bank (1860-1930)

Notes: Figure presents the percent of counties that had at least one bank in the specified year. Counties are aggregated to their 1860 boundaries. See text for the sources.

Table I
Structure of Intermediated Mortgage Lending, 1890-1893

			Percent of Mortgage Debt Held By:					
			Commercial Banks		Building and Loan			
	Total Mortgage Debt ($ millions)	Held by Intermediaries	Non-Savings Banks	Savings Banks	Local	National	Life Insurance Companies	Mortgage Companies
Northeast	3,105	962 (31%)						
New England	519	325 (63%)	0	91	4	0.2	4	0
Mid-Atlantic	2,586	637 (25%)	1	53	22	0.7	24	0
Midwest	1,630	459 (28%)						
East North Central	1,027	315 (31%)	4	8	49	3	35	0
West North Central	603	144 (24%)	2	18	10	7	41	23
South	957	212 (22%)						
South Atlantic	126	24 (19%)	3	7	61	25	5	0
East South Central	173	39 (22%)	1	1	63	26	9	0
West South Central	658	149 (23%)	7	1	27	3	29	33
West	324	158 (49%)	14	71	12	1	2	0.2
U.S.	6,017	1793 (30%)	3	45	24	3	22	5

Notes: Table is taken from Snowden (1995, Table 7.1, p. 220). Mortgage debt outstanding from U.S. Census Office 1985. Commercial and savings banks from Comptroller of the Currency. Building and loan associations from Wright (1983). Life Insurance companies from Pritchett (1977). Debt for January 1, 1890, whereas debt held by intermediaries comes as closed to January 1, 1893 as possible. Debt allocated to region of intermediary's headquarters, except for insurance companies. Mortgages held by insurance companies are allocated to the region where they originated. Regions are New England: CT, ME, MA, NH, RI, VT; Mid-Atlantic: DE, NJ, NY, PA, MD, DC; East North Central: IL, IN, MI, OH, WI; West North Central: IA, MN, NB, ND, SD, WY, MT; South Atlantic: VA, WV, FL, GA, NC, SC; East South Central: AL, KY, MS, TN, LA; West South Central: MO, AR, KS, TX, CO, NM; West: AZ, ID, NV, UT, CA, OR, WA.

Table II
Trends in Land Concentration By Region (1860-1900)

	Gini Coefficients									
	All		**Northeast**		**Midwest**		**South**		**West**	
	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev
1860	0.462	0.07	0.449	0.065	0.449	0.053	0.485	0.083	0.456	0.086
1870	0.483	0.078	0.471	0.069	0.468	0.058	0.511	0.091	0.444	0.126
1880	0.43	0.104	0.441	0.076	0.381	0.09	0.494	0.098	0.338	0.122
1890	0.424	0.106	0.438	0.071	0.365	0.093	0.494	0.091	0.377	0.139
1900	0.44	0.106	0.465	0.079	0.374	0.096	0.509	0.08	0.459	0.12
Δ1860-1900	**-2.1%**		**1.7%**		**-7.5%**		**2.4%**		**0.4%**	

Notes: Table presents the average Gini coefficient of each region in each year. See text for data sources.

Table III : Regression Estimates Explaining Number of Banks with a Panel for 1870, 1880, 1890, and 1900

	Number of Banks			
	All States		South	
	(1)	(2)	(3)	(4)
L.Gini Coeff	1.392***	1.370***	1.169***	1.372***
	[0.415]	[0.452]	[0.377]	[0.428]
Location Fixed Effects	State	County	State	County
Time Fixed Effects	Yes	Yes	Yes	Yes
State-Yr Interactions	Yes	Yes	Yes	Yes
Census Controls	Yes	Yes	Yes	Yes
Observations	6,001	6,001	2,691	2,691
R-squared		0.522		0.413
	Number of Banks Per 1,000 People			
	All States		South	
	(1)	(2)	(3)	(4)
L.Gini Coeff	0.011	0.020	0.031*	0.042**
	[0.015]	[0.018]	[0.016]	[0.021]
Location Fixed Effects	State	County	State	County
Time Fixed Effects	Yes	Yes	Yes	Yes
State-Yr Interactions	Yes	Yes	Yes	Yes
Census Controls	Yes	Yes	Yes	Yes
Observations	6,001	6,001	2,691	2,691
R-squared		0.587		0.463

Notes: The table presents individual linear regressions. The dependent variables are defined by the Column headings. Panel formed by aggregating counties to boundaries in 1860. South region defined by Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North and South Carolina, Oklahoma, Tennessee, Texas, and Virginia. County-level lagged variables: ln(population), fraction non-white, ln(manufacturing output per capita), ln(agricultural output per capita), ln(# of farms). Dollar values are deflated to 1860 using Officer (2008). Robust standard are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table IV: Impact of Farm Inequality on the Number of Banks with Alternative Specifications and Samples

	Not Dropping Counties With City of 25,000+ and Adding %Urban			
	All States		South	
	Banks	BanksPC	Banks	BanksPC
Gini Coeff	3.805***	-0.008	1.419***	0.022
	[1.018]	[0.017]	[0.512]	[0.020]
Location Fixed Effects	County	County	County	County
	Contemporary Values for 1870, 1880, 1890, and 1900			
	All States		South	
Dependent Var	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	1.297**	0.008	0.969**	0.055***
	[0.514]	[0.018]	[0.404]	[0.016]
Location Fixed Effects	County	County	County	County
	National Banks Only			
	All States		South	
Dependent Var	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	0.623***	0.008	0.926***	0.026*
	[0.226]	[0.010]	[0.260]	[0.016]
Location Fixed Effects	County	County	County	County
	State Banks Only			
	All States		South	
Dependent Var	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	0.747**	0.012	0.445	0.016
	[0.361]	[0.014]	[0.311]	[0.013]
Location Fixed Effects	County	County	County	County
	IV Using Long-Run Rainfall X Year			
	All States		South	
Dependent Var	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	36.493***	1.585***	3.620	0.298*
	[13.509]	[0.556]	[4.802]	[0.167]
Location Fixed Effects	County	County	County	County
F-Stat on IV	3.77	3.77	5.488	5.488

Notes: The table presents robustness checks on individual linear regressions. The dependent variables are defined by the Column headings. All specifications contain county-level lagged variables: ln(population), % black, ln(manufacturing output per capita), ln(agricultural output per capita), ln(# of farms). All specifications contain county-fixed effects, time fixed effects and the interaction between state fixed effects and time fixed effects. See text for sample composition and region definitions. Dollar values are deflated to 1860 using Officer (2008). Robust standard are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table V: Cross-Sectional Regression Estimates Explaining Number of Banks (1870-1930)

			1870			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-0.515**	-0.337	-8.835	-0.025***	-0.019*	-0.330
	[0.260]	[0.274]	[8.113]	[0.010]	[0.009]	[0.241]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	5.206	-	-	5.206
			1880			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-0.544	-0.454	-3.998	-0.018	-0.007	-0.283***
	[0.337]	[0.348]	[2.469]	[0.014]	[0.014]	[0.091]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	66.29	-	-	66.29
			1890			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-0.725	0.115	-24.780***	-0.194***	-0.151***	-2.489***
	[0.482]	[0.456]	[5.613]	[0.042]	[0.041]	[0.506]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	38.137	-	-	38.137
			1900			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-4.422***	-2.763***	-20.359***	-0.086	0.007	-0.727***
	[0.624]	[0.608]	[4.494]	[0.065]	[0.064]	[0.280]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	57.755	-	-	57.755
			1910			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-7.415***	-4.396***	-21.162***	-0.315***	-0.085	-1.889***
	[0.949]	[0.960]	[4.796]	[0.070]	[0.072]	[0.344]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	98.914	-	-	98.914
			1920			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-11.404***	-7.669***	-31.150***	-0.558***	-0.189**	-2.270***
	[1.102]	[1.156]	[7.040]	[0.079]	[0.086]	[0.474]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	66.569	-	-	66.569
			1930			
	Banks	Banks	Banks	BanksPC	BanksPC	BanksPC
Gini Coeff	-6.110***	-4.652***	-8.750*	-0.359***	-0.194***	-0.410*
	[0.974]	[1.051]	[4.895]	[0.048]	[0.053]	[0.247]
RR Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Extra Controls?	No	Yes	Yes	No	Yes	Yes
Rainfall IV used?	No	No	Yes	No	No	Yes
F-Stat on IV	-	-	94.596	-	-	94.596

Notes: The table presents individual decade cross-sectional regressions. The column headings provide the year and the dependent variable. RR controls: population, land area, whether the county was on a large river or coast, fraction illiterate, fraction young, and fraction non-white, and state-fixed effects. Extra Controls ln(manufacturing output per capita), ln(agricultural output per capita), ln(# of farms), fraction tenants, average rainfall, average temperature, and the standard deviation of temperature, maximum change in elevation, soil moisture, percent of clay in the soil. Dollar values are deflated to 1860 using Officer (2008). Robust standard are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.

Table VI: Extending Panel Regressions Forward In Time

	Panel for 1870, 1880, and 1890			
	All States		South	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	1.138***	0.038***	1.351***	0.049***
	[0.335]	[0.015]	[0.337]	[0.015]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County
	Panel for 1870, 1880, 1890, and 1900			
	All States		**South**	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	1.370***	0.020	1.372***	0.042**
	[0.452]	[0.018]	[0.428]	[0.021]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County
	Panel for 1870, 1880, 1890, 1900, and 1910			
	All States		**South**	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	0.955	-0.024	0.901	0.023
	[0.744]	[0.020]	[0.708]	[0.022]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County
	Panel for 1870, 1880, 1890, 1900, 1910, and 1920			
	All States		**South**	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	0.183	-0.087***	-0.967	-0.013
	[0.970]	[0.023]	[0.999]	[0.023]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County
	Panel for 1870, 1880, 1890, 1900, 1910, 1920, and 1930			
	All States		**South**	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	0.179	-0.104***	-0.984	-0.025
	[1.050]	[0.023]	[0.999]	[0.022]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County
	Panel for 1900, 1910, 1920, 1930			
	All States		**South**	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	0.894	-0.006	-1.166	-0.075
	[1.699]	[0.067]	[1.610]	[0.062]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County
	Panel for 1910, 1920, 1930			
	All States		**South**	
	Banks	BanksPC	Banks	BanksPC
L.Gini Coeff	4.164*	-0.062	0.974	-0.119
	[2.133]	[0.090]	[1.970]	[0.105]
State-Yr Interactions	Yes	Yes	Yes	Yes
Location Fixed Effects	County	County	County	County

Notes: The table presents individual linear regressions. The dependent variables are defined by the Column headings. All specifications contain county-level lagged variables: ln(population), fraction non-white ln(manufacturing output per capita), ln(agricultural output per capita), ln(# of farms). All specifications contain county-fixed effects, time fixed effects and the interaction between state fixed effects and time fixed effects. See text for sample composition and region definitions. Dollar values are deflated to 1860 using Officer (2008). Robust standard are provided in brackets. * denotes significance at 10%; ** at 5% level and *** at 1% level.