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Banking on the Boom, Tripped by the Bust: Banks and the World War I Agricultural Price Shock

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Bank lending booms and asset price booms are often intertwined. Although a fundamental shock might trigger an asset boom, aggressive lending can push asset prices higher, leading to more lending, and so on. Such a dynamic seems to have characterized the agricultural land boom surrounding World War I. This paper examines i) how banks responded to the asset price boom and how they were affected by the bust; ii) how various banking regulations and policies influenced those effects; and iii) how bank lending contributed to rising farm land values in the boom, and how bank closures contributed to falling prices in the bust. We find that rising crop prices encouraged bank entry and balance sheet expansion in agricultural counties. State deposit insurance systems amplified the impact of rising crop prices on the size and risk of bank portfolios, while higher minimum capital requirements dampened the effects. Further, increases in county farm land values were correlated with increases in bank loans during the boom. When farm land prices collapsed, banks that had responded most aggressively to the asset boom had a higher probability of closing, while counties with more bank closures experienced larger declines in land prices than can be explained by falling crop prices alone.

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1. Introduction

Asset price booms and busts are often intertwined with lending booms and busts. Although possibly triggered by a fundamental shock, rising asset prices can lead to increased lending and leverage, which in turn causes asset prices to rise further, leading to more lending, and so on. Similarly, falling asset prices can force debt contraction and deleveraging that reinforce the decline in asset prices.[1] Large declines in asset prices can be disruptive, especially when they involve real estate or other highly-leveraged assets, as they often produce financial crises, bank failures, tighter credit conditions, and slower economic growth (e.g., Kindleberger 1978; Minsky 1986; Borio and Lowe 2002; Mian and Sufi 2009; Reinhart and Rogoff 2009; Schularick and Taylor 2012). The interrelationship between asset price and lending booms raises important policy questions, including how various regulations or policies might affect the vulnerability of the banking system to asset price shocks, and how bank lending or instability might exacerbate asset price movements.

This paper studies the interplay of bank lending and asset prices in a prototypical boom-bust cycle affecting U.S. agricultural land prices during and after World War I. In a recent study of the episode, Rajan and Ramcharan (2015) find that credit availability contributed to changes in farm land prices, both directly and by amplifying the impact of fundamentals on land prices. Counties with more banks experienced larger increases in farm land prices and mortgage debt during the boom and suffered larger price declines and more bank failures during the bust. Whereas Rajan and Ramcharan examine the effects of credit availability on land prices, we focus here on how banks responded to the boom and bust, and whether state banking policies affected those responses. Our study thus provides insights about the channels by which the asset boom and bust affected the banking system and supply of credit as well as how banks contributed to the increase and collapse of asset prices.

As Rajan and Ramcharan and others have noted, the World War I episode provides a convenient environment for studying the dynamics of a boom and bust. The farm land price boom had a clearly exogenous trigger—the wartime collapse of European agricultural production. The resulting sharp increase in farm output prices spurred large gains in U.S. farm land prices, supported by a substantial increase in farm mortgage debt, as farmers and their

[1] Theoretical descriptions of how credit cycles can amplify real shocks include Rajan (1994), Kiyotaki and Moore (1997), Geanakoplos (2010), and Nuño and Thomas (2017).

lenders apparently expected that farm incomes and land prices would remain high indefinitely. However, the boom was short-lived. European production recovered quickly after the war, driving down farm output prices and land values in the United States. Reduced farm incomes and land values triggered a wave of farm foreclosures and bank failures in the early 1920s (Johnson 1974; Alston 1983; Alston, Grove and Wheelock 1994).

A second advantage of studying the historical episode for insights about the interrelationships between lending and asset price booms and busts is that bank lending at the time was decidedly local. Federal law prohibited interstate branch banking, and most states either prohibited or severely restricted branching within their borders. The resulting structure meant that banks were closely tied to their local economy and many lacked the diversification or scale necessary to weather adverse shocks. Moreover, with the automobile still in its infancy and paved roads almost nonexistent in rural areas, it would have been impractical for most farmers to obtain services from a bank located more than a few miles from their home. Thus, the prevalence of unit banking ensures that the balance sheet information we observe for individual banks mainly reflects their lending to local farmers.[2] At the same time, we can approximate local income shocks using detailed information about crop production in the county in which a bank was located. Specifically, we calculate a county-specific farm output price shock by applying the annual changes in the prices of 11 major crops to the county output shares of each crop before the war. This provides exogenous variation both across time and within a state to identify the effects of the price shock.

Our study uses detailed, biennial balance sheet data for individual banks in 18 agricultural states for 1908-20 to examine how the price shock affected the establishment of new banks and the portfolio decisions of existing banks, as well as how the ultimate collapse of farm prices and incomes drove banks to close. By aggregating the individual bank balance sheet data to the county-level, we are also able to directly observe the links between bank lending and increases in farm land values during the boom, and between bank closures and declines in farm land values during the subsequent bust.

[2] The county is a reasonable approximation of the area constituting a rural banking market at the time. Most empirical studies define banking markets at the MSA or rural county level even in modern times. Bank regulators sometimes define rural banking markets over larger areas when evaluating the competitive implications of proposed bank mergers and acquisitions, but the county is still the basic unit for defining a rural banking market.

Our research also examines whether banking policies amplified or mitigated the impact of asset price shocks on bank entry, lending, and stability. Prior research finds that deposit insurance contributed to banking instability in the 1920s (e.g., Calomiris 1992; Wheelock 1992a, 1992b; Alston, Grove and Wheelock 1994; Wheelock and Wilson 1995; Dehajia and Lleras-Muney 2007; Calomiris and Jaremski 2018).[3] Other banking regulations at the time included minimum capital requirements (White 1984) and extended liability laws (Grossman 2001) which, along with membership in the Federal Reserve System, might have affected banks' incentives or ability to take risks and in turn affect the stability of the banking system.

Our results show that the banking system responded to rising crop prices and farm land values, both in terms new bank entry and balance sheet expansion of previously established banks. Further, we find that deposit insurance amplified the effects of rising crop prices on bank loan and asset volumes. By contrast, higher minimum capital requirements tended to deter entry and dampen the impact of changes in crop prices on the total loans and assets of banks, whereas extended liability laws and Federal Reserve membership had small and somewhat ambiguous effects.

The collapse of farm prices and incomes brought a wave of bank failures, mergers, and voluntary liquidations in the early 1920s. In addition to the effects of falling local farm land values, we find that a bank's probability of closing was higher, the larger the increase in its loan portfolio during the boom. Banks with insured deposits were also more likely to close. Similar to studies on other periods, we find that a bank's closure probability was also positively correlated with its leverage and loans/assets ratio, and negatively correlated with its size, age, and liquidity/assets ratio. Further, for a given decline in local farm land values, a bank's closure probability was higher in counties that had larger increases in land values during the boom. Thus, we find evidence that banks are more vulnerable when declines in asset prices follow asset price booms than when prices fall after a period of relatively stable prices.

Aggregating the bank data to the county-level, we find that the banking system reinforced the impact of the agricultural price shock on farm land prices in both the boom and the bust. Locations with more state-chartered banks in 1910 or larger increases in bank loan volumes over the ensuing decade saw larger increases in farm land values between 1910 and 1920 for a given

[3] A vast theoretical literature concludes that deposit insurance reduces the incentive for depositors to discipline banks and thereby encourages banks to assume additional risk (e.g., Merton 1977; Kareken and Wallace 1978).

increase in crop prices, supporting the findings of Rajan and Ramcharan (2015). The subsequent decline in farm land values during 1920-25 was not directly correlated with the number of banks present in 1920 or the volume of lending during 1910-20. However, our results indicate that rapid loan growth during the boom increased the likelihood that a bank would close during the bust, and that bank closures had a depressing effect on farm land values. Thus, our research shows that banks can both be affected by and contribute to asset price booms and busts, and that banking regulations and policies can influence the feedback loop around such events.

The paper proceeds as follows: Section 2 provides historical background about the World War I boom/bust and the structure of the U.S. banking system at the time. Section 3 describes the data we use to estimate the interrelationship between banks and the boom/bust. Sections 4 and 5 examine the impact of the agricultural boom and bank regulation on the establishment of new banks and the balance sheets of previously established banks. Section 6 investigates the impact of the run up and collapse of farm land values on bank closures. Section 7 examines the role of banks in fueling the farm land price boom and subsequent collapse. Section 8 concludes.

2. Background

In agricultural regions, fluctuations in farm output prices and incomes importantly influence the demand for funds and profit opportunities for local banks. The early 1900s were generally good years for farmers. Prosperity brought more land under cultivation and rising farm populations, as well as substantial growth in the number of commercial banks in farming communities. Because most states prohibited or severely restricted branch banking, market entry was almost solely in the form of new banks.[4] Across the United States, the total number of banks more than doubled from 13,053 in 1900 to 27,864 in 1914; the South and Great Plains regions experienced increases of more than 200 percent (Board of Governors 1959, p. 33).

World War I transformed good years for farmers and their banks into boom years. Crop prices rose rapidly during the war as the demand for U.S. agricultural products soared. Shown in the top panel of Figure 1, between 1914 and 1919, the unweighted average of 11 crop prices rose by 160 percent. The extent and timing of increases in the prices of individual crops varied, as

[4] Banks with federal charters, i.e., national banks, were prohibited from opening branch offices, as were state-chartered banks in most states, which hampered diversification and tied banks to the fortunes of their local communities. Calomiris (2000, Ch. 1) argues that northern farmers in particular opposed branch banking to ensure that local banks would continue to lend to them bad times as well as during prosperous periods, and in a 1924 referendum, voters in Illinois soundly rejected branch banking (White 1984). Indeed, fewer than 175 new branches were established outside head office cities in the Great Plains, Midwest, and South between 1910 and 1920 (Board of Governors 1959)

shown in the bottom panel of Figure 1. The prices of cotton, flaxseed, Irish potatoes, and tobacco rose by more than 200 percent, while those of oats, rye, sweet potatoes, and buckwheat increased by less than 100 percent.

The wartime boom in farm output prices and incomes drove increases in land prices and mortgage debt, and drew still more banks to farming communities. Across the United States, more than 3,000 banks were chartered during or shortly after the war, bringing the total to an all-time high of more than 31,000 banks, or about one bank for every 3,500 persons, in 1921. Relative to population, banks were especially prevalent in Midwest and Great Plains farm states, such as Iowa with one bank for every 1,257 persons, Nebraska with one for every 1,073 persons, South Dakota with one for every 914 persons, and North Dakota with one for every 756 persons residing in the state.[5] Most studies of the period conclude that farmers and their lenders expected that high crop prices would continue to prevail after the war and thereby justify higher land prices and mortgages. For example, Horton, Larsen and Wall (1942, p. 3) argue that "farm owners incurred debts and lenders made loans with the expectation that present or future increases in income and land values would support the debt."[6]

Table 1 provides state-level information on changes in farm land value per acre, mortgage debt per acre, and commercial bank loans during the boom. The first column illustrates the massive boom in farm land value. Land value per acre rose by 51.4 percent on average between 1910 and 1920, with larger increases in the Midwest and South than in the Great Plains. As one might expect, land values increased most in agricultural regions whose principal crops had the largest price gains (i.e., cotton, tobacco, and buckwheat) and where there was less available land to bring into production.

The second column of Table 1 shows that farm mortgage debt rose alongside farm land values. Farmers often financed land and equipment purchases with balloon loans having maturities of five years or less from banks and other lenders.[7] Across all states, mortgage debt rose by an average of 83 percent between 1910 and 1920. Southern states experienced the largest increases (116 percent on average) while states in the Northeast had the smallest increases (54

[5] Data on the number of banks in 1921 by state are from Board of Governors (1959). We divide the number of banks by state population in 1920 from the U.S. Census.
[6] See also Jones and Durand (1954) or Johnson (1974).
[7] The average term of farm mortgage loans recorded by banks during 1917-21 was 2.7 years, ranging from 1.4 years in the South to nearly 5 years in New England (Horton, Larsen, and Wall 1942, Table 74).

percent on average). In many locations, increases in mortgage debt mirrored gains in farm land values (correlation coefficient of 0.64 across all states).

The third column of Table 1 shows percentage increases in commercial bank loans between 1910 and 1920. Loans rose by an average of nearly 100 percent across all states, though states in the Great Plains experienced somewhat larger average increases (119 percent) than those in the South (112 percent), Pacific (107 percent), Midwest (96 percent), and Northeast (71.4 percent). Across all states, increases in bank loan volumes and farm land values were positively correlated (correlation coefficient of 0.18), but especially in the South (0.50) and Midwest (0.25) farm states. Increases in bank loans and mortgage debt per acre were also positively correlated (correlation coefficient of 0.31), especially in the Midwest (0.62) and Great Plains (0.55).[8]

The wartime boom ended abruptly. Contrary to the expectations of farmers and lenders, European production recovered quickly when the war ended, and by 1921, crop prices were some 50 percent below their 1919 levels. Although the price of cotton rose sharply in 1922-23, the prices of most other major crops remained only slightly above their pre-war levels through the mid-1920s. The marked drop in commodity prices in 1920-21 and resulting decline in farm incomes caused farm land values to also collapse. The first column of Table 2 shows that land values fell by an average of 27 percent between 1920 and 1925. States in the Pacific region (especially Wyoming, Nevada, and Arizona) saw the largest declines, averaging 43 percent, but states in the South, Midwest, and Great Plains also experienced substantial declines of between 24 and 39 percent on average. The Northeast emerged relatively unscathed, with states in the region experiencing an average 10.5 percent decline in farm land values.

The post-war collapse of crop prices also brought a sharp increase in bank failures, voluntary liquidations, and mergers, producing the first sustained decline in the number of banks in the United States since the Civil War. After peaking in 1921, the number of banks fell by some 5,000, or 16 percent, over the 1920s. The second column of Table 2 shows the number of bank suspensions between 1920 and 1925 per 1,000 banks operating in 1920 by state.

[8] Growth in bank loans was less strongly correlated with growth in land value per acre in the Great Plains states (0.14), likely because much land was brought under cultivation for the first time in that region. Correlation between growth in bank loans and mortgage debt per acre was relatively modest in the South (0.14), where private individuals and other nonbank lenders issued a larger share of farm mortgages than in other regions. Data on farm mortgage recordings by lender type for different regions are from Horton, Larsen and Wall (1942).

Suspension rates were especially high in states of the Pacific, Great Plains, and South regions where many new banks had been formed during the prior decade.[9]

Differences in the composition and regulation of banks likely contributed to regional differences in loan growth and bank suspension rates. Suspension rates were generally higher among state-chartered banks (state banks) than among banks with federal charters (national banks). Both national and state banks were found in large numbers in farming communities, though national banks were somewhat more prevalent in larger cities and generally less heavily involved in farm lending than state banks.[10] National banks were subject to uniform and relatively strict standards across all states, whereas state banks were subject to the laws, regulations, and policies established by the state in which they were located. State banking regulations were generally weaker than national bank regulations and, in particular, more liberal toward mortgage loans for farm land, building, and equipment purchases.[11] Both federal and state banking laws prohibited interstate branching. National banks were prohibited from operating any branches, and most states severely limited branching or prohibited branching altogether.

State banking policies likely affected the ability and incentives for state-chartered banks to engage in high-risk lending. Notably, eight states operated deposit insurance systems during the 1910s and 1920s.[12] Calomiris and Jaremski (2018) find that insured banks generally had faster loan growth rates than uninsured banks during the boom, but those located in regions where farm output prices rose the most had especially rapid growth rates. Deposit insurance also

[9] Suspensions include banks that failed or otherwise suspended operations on account of financial difficulties. Some banks that suspended later reopened, though most did not.

[10] State legislatures often set low minimum capital requirements to encourage banks to open in even the smallest communities, whereas higher national bank minimums prevented them from entering many small towns (White 1983).

[11] Before 1914, national banks were generally prohibited from real estate lending. However, the Federal Reserve Act (38 Stat. 251, 273), Section 24, specified "Any national banking association not situated in a central reserve city may make loans secured by improved and unencumbered farm land … but no such loan shall be made for a longer time than five years, nor for an amount exceeding fifty per centum of the actual value of the property offered as security. Any such bank may make such loans in an aggregate sum equal to twenty-five per centum of its capital and surplus or to one third of its time deposits…." A 1916 amendment clarified that farm mortgages made by national banks against property other than farm land could have a term of no more than one year.

[12] Oklahoma (1908), Texas and Kansas (1909), Nebraska (1911), South Dakota (1916), and North Dakota (1918) form a column down the middle of the country. The two geographic outliers (Mississippi in 1914 and Washington in 1917) apparently adopted deposit insurance quickly in reaction to increases in bank failures (Robb 1921).

seems to have exacerbated the impact of the post-war collapse of farm prices and incomes on state banking systems.[13]

Other differences in banking policies, such as laws affecting stockholder liability and minimum capital as well as Federal Reserve membership rates, also might have affected how banks in different locales responded to changes in asset prices. Higher capital requirements, in the form of either higher minimum capital amounts required to obtain a bank charter or extended liability on bank shareholders, might discourage risk taking and the formation of new banks. The effects of Federal Reserve membership are less clear cut. Member banks were generally subject to a tougher regulatory regime than non-member state banks, which might have deterred risk, but the availability of the Fed's discount window provided a liquidity backstop that might have encouraged member banks to take greater risks. Regardless, few state banks chose to become Fed members in the System's early years, likely because they perceived that the costs of membership outweighed the benefits. Even as late as 1929, fewer than 10 percent of state banks had chosen to join the Federal Reserve System (Anderson et al 2018).[14]

The remainder of this paper attempts to fill out the story of the World War I agricultural price shock by examining how banks responded to the boom, how banks fared during the bust, and how the presence of banks and their lending influenced the course of farm land values.

3. Data

To examine the effects of the World War I agricultural boom and subsequent bust on banks, we merge county-level census data with bank-level balance sheet data. Our sample includes only states in the South, Midwest, and Great Plains regions that published bank-level information so as to focus on a balanced sample of locations where farming was a large share of economic activity. And, to focus further on farming areas within those regions (rather than urban

[13] Waburton (1959) describes how the collapse of farm incomes led to an increase in bank failures and the demise of state deposit insurance systems, and Calomiris (1992) finds that deposit insurance worsened the contraction of bank deposits during the 1920s and the losses suffered by depositors of failed banks. Alston, Grove and Wheelock (1994), Wheelock (1992b), Wheelock and Wilson (1995) and Hooks and Robinson (2002) find that deposit insurance increased bank failure rates in the 1920s. Chung and Richardson (2006) find that suspensions due to mismanagement were higher in states with deposit insurance systems than elsewhere.

[14] Anderson et al. (2018) find that larger state banks and those which provided services for other banks were more likely to join the Federal Reserve System. Additionally, they find that state banks that did become members tended to increase loans as a share of their total assets and reduce their liquid assets. Similarly, Carlson and Wheelock (2017) find that the balance sheets of national banks were generally less liquid after the Fed's establishment than before, suggesting that banks responded to the Fed's founding by shifting toward less liquid loans and securities.

and manufacturing centers) we include only counties that (1) had no city with a population over 25,000, (2) at least 250 farms, and (3) over 15,000 improved farm acres.[15]

The county-level census dataset contains economic and demographic information for 1900, 1910, 1920, and 1925.[16] Of particular interest is the county-level output of each farm crop. Combining output data for 1910 with annual information on prices for 11 individual crops (corn, wheat, oats, barley, rye, buckwheat, flaxseed, cotton, tobacco, Irish potatoes, and sweet potatoes) from Carter et al. (2006), we form a county-specific crop price index for each year:

$$CropIndex_{c,t} = \frac{\sum_{i=1}^{11} Q_{i,c,1910} * P_{i,t}}{\sum_{i=1}^{11} Q_{i,c,1910} * P_{i,avg}}$$

where $Q_{i,1910}$ is the output of crop *i* in county *c* in 1910, $P_{i,t}$ is the price of crop *i* in year *t*, and $P_{i,avg}$ is the average price of crop *i* between 1908 and 1914. Essentially, the index is the value of a basket of crops at market prices in a given year normalized by the value of that same basket of crops at their pre-war prices, where the fixed basket is defined by the county-specific crop output shares in 1910. The normalization is important to control for differences in the geographic size of counties, as well as in the relative size of each county's agricultural sector before the boom. The measure takes an average value of 1 before World War I and rises throughout the war years.

As the county-level basket of crops is held constant in 1910, $CropIndex_{c,t}$ has the benefit of being exogenous to the actions of local banks. Of course, output levels and crop mix likely changed in response to rising farm incomes, changes in relative prices, and bank loan supply. By holding crop mix constant, we avoid any reverse causality that local lending or changes in land values might have had on the measured crop price shock. Moreover, using national average crop prices to calculate the price index avoids any effects that local conditions would have had on county-level prices.

Figure 2 illustrates the county-level geographic variation in the crop price index and the percentage change in farm land value during the war.[17] The top panel of Figure 2 shows that the South, where cotton and tobacco were the dominant crops, and the upper Midwest, where

[15] The cutoff points for farms and improved acres were chosen to eliminate the bottom 5 percent of the distribution. The population cutoff was chosen because the Census provided the number of people living in places with more than 25,000 for every county.

[16] The data were assembled by Haines (2004). We aggregate counties to their 1910 boundaries so as to have consistent county definitions over time.

[17] Figure 2 presents the county-level aggregates for all counties in the South, Midwest, and Great Plains regardless whether bank-level data exist for the state. We do this to show that the pattern is visible over all states rather than in just the states for which we observe bank-level balance sheet information.

buckwheat and potatoes were grown, generally experienced relatively larger price gains than the Midwest and Great Plains, where corn and wheat were the dominant crops. The bottom panel shows that the change in farm land value per acre followed a similar pattern. In general, the largest gains in farm land values were in the cotton growing portions of the South, and the smallest gains were in the corn growing regions of the Midwest. The correlation is not perfect, however. For example, northwestern Iowa and southeastern South Dakota experienced large gains in farm land values despite relatively modest increases in the prices of the region's principal crops (corn and wheat). The two maps also illustrate the substantial within-state variation in average price and land value increases, which we rely on to identify differential effects of the price shock on banks and farm land values.

Our banking data consist of biennial, bank-level balance sheet information for 1908-20, obtained from *Annual Report of the Comptroller of the Currency* and reports published by state banking departments.[18] The Comptroller published balance sheets for every national bank annually, but many states did not publish balance sheets for their state-chartered banks before 1908, and most only published information every other year (see Mitchener and Jaremski 2015). Between 1908 and 1920, the state reports for Alabama, Florida, Georgia, Illinois, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, South Dakota, and Wisconsin include individual bank balance sheets. We digitized these data and interpolated values for any gaps using the midpoint of data for the immediately surrounding years. The resulting biennial dataset consists of 70,178 observations on 9,613 state banks and 2,649 national banks.[19]

4. Responding to the Price Shock: Establishment of New Banks

One impact the price shock might have had on the banking system was to spur bank entry. Federal and state prohibitions on branching meant that the establishment of new banks, rather than new branches of existing banks, was the dominant form of entry. The number of banks in the United States increased rapidly in the years leading up to World War I, and many more banks opened during the war years, especially in the South and Great Plains regions.

[18] At the time, banking reports did not include income statements or information about the interest rates paid on deposits or loans, thereby making it impossible to calculate profit rates.

[19] Throughout the paper the term "state banks" refers to state-chartered commercial banks, trust companies, and savings banks. All of these financial intermediaries took deposits and made loans during the period. We add 1 to the number of banks to avoid missing values for the few counties that did not have any banks. Appendix Table A1 reports summary statistics for both the county and bank level data.

We estimate a linear regression to investigate the impact of the agricultural price shock on the rate of bank entry at the county-level. The dependent variable is the number of new banks established during a two-year period divided by the number of banks that were present in the county at the end of the prior period. The main explanatory variable is the crop price index measured at the end of each prior period. The model, which we estimate using biennial data from 1908 to 1920 (where entry during 1908-09 is the first observation), is:

$$NewBanks_{c,t} = a + \beta_1 CropIndex_{c,t-1} + \beta_2 Regulation_{c,t} + \beta_3 Regulation_{c,t} * CropIndex_{c,t-1} + \beta_4 X_{c,t} + t_t + c_c + e_{c,t} \quad (1)$$

where $NewBanks_{c,t}$ is the rate of bank entry in county *c* during the biennial period *t*, $CropIndex_{c,t-1}$ is the crop price index in county *c* at the end of the previous biennial period, $Regulation_{c,t}$ is a vector of bank regulation in county *c* in biennial period *t* including a dummy variable for whether the state had an active deposit insurance system, a dummy variable for whether the state imposed double liability on state bank shareholders, and a dummy variable for whether the state had a minimum capital requirement of more than $10,000 on state banks. $X_{c,t}$ is a vector of county-specific census control variables for county *c* in the biennial period *t*, t_t is a vector of year fixed effects, c_c is a vector of county fixed effects, and $e_{c,t}$ is a robust error term. As the county fixed effects control for location characteristics that are constant over time, Equation (1) includes only those census control variables that vary over time. These include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county at the beginning of the period, and the number of state banks in the county at the beginning of the period.[20]

Studies of bank entry in other settings find that entry is affected by local economic opportunities, the size and concentration of the market, and legal barriers to entry (e.g., Adams and Amel 2016; Adams and Gramlich 2016). The crop price index observed at the beginning of a two-year period captures the economic opportunities that encouraged entry. The effects of regulation and other banking policies are reflected in both the level of each policy variable and its interaction with the crop price index. The presence of state-fixed effects in the model implies

[20] We assume that the census variables grew linearly over time in order to construct annual estimates from the decennial observations.

that the coefficients on the levels capture the effects of any changes in the policy. While these effects are important, there were few changes during our period of study.[21] Hence, we focus on the interactions, which indicate how the presence of a particular policy affected the impact of the crop price shock on bank entry rates. The interactions of the crop price index with the policy variables in Equation (1) capture the interplay of factors related to entry barriers and economic opportunities. The interactions test whether the banking policies affected the impact of a given agricultural price shock on bank entry, and are largely independent from the effect of the initial adoption of a given policy.

Because they faced substantially different regulations, we estimate Equation (1) separately for state and national banks. Although national banks were not subject to state banking regulations, we include the state policy interactions as explanatory variables when estimating Equation (1) for national banks because differences between state and national bank regulations likely influenced the charter decision of prospective bankers, as White (1983) shows for the 1920s.

The results, which are reported in Table 3, indicate that crop prices had a positive and statistically significant impact on the entry rate of state banks, but not of national banks. The coefficients shown in the first column of each set indicate that a doubling of the crop price index would lead to a 7.6 percent increase in state bank entry rates and an insignificant 2.5 percent decrease in national bank entry rates. Because they generally faced higher minimum capital requirements and tighter restrictions on mortgage lending than state banks, national banks were more likely to open in larger cities and towns, and less likely to lend directly to farmers in rural areas. Hence, the larger impact of the agricultural price shock on the establishment of state banks than on national banks is not surprising.

[21] Among our sample states, deposit insurance systems were established in Kansas, Mississippi, Nebraska, Oklahoma, and South Dakota. State banks were required to join the deposit insurance systems in all of these states except Kansas, where membership was voluntary. National banks were not permitted to join state deposit insurance systems. At the time, national bank shareholders were also subject to double liability. Several our our sample states also imposed double liability on state banks, including Florida, Georgia, Illinois, Iowa, Kansas, Michigan, Nebraska, North Carolina, Oklahoma, South Dakota, and Wisconsin, but only Mississippi and Ohio adopted double liability during our sample period. Finally, nine states set minimum capital requirements for their state banks at $10,000 (or $5000 in the case of North Carolina), while three had minimums above $10,000 ($15,000 in Alabama, Florida and $25,000 in Ohio). Six states changed their minimums between 1910 and 1920, but only four crossed the $10,000 threshold: Illinois decreased from $25,000 to $10,000; Michigan decreased from $20,000 to $10,000; Nebraska increased from $10,000 to $15,000; South Dakota increased from $10,000 to $15,000. The identities of states that imposed double liability is from Grossman (2001). Information on minimum capital requirements is from White (1983) and Rand McNally Bankers Directory.

We find evidence that some banking policies also affected entry rates. Specifically, minimum capital requirements appear to have been an effective barrier to state bank entry as states that imposed relatively high requirements saw less new state bank formation. For a given value of the crop price index, the entry rate of state-chartered banks in the eight sample states that set a minimum capital requirement above $10,000 was approximately one-half the entry rate in states with lower minimums. The minimums imposed on state banks also affected entry rates for national banks, with national bank entry rates being some 7-10 percent higher in states with minimum capital requirements above $10,000 (national banks were subject to uniform minimum capital requirements across all states that varied only by the population of the city in which the bank was located). By contrast, we find no evidence that the presence of a deposit insurance system affected state bank entry, either directly or by impacting the effect of a crop price shock on entry rates. However, the results indicate that deposit insurance somewhat reduced the impact of the crop price shock on national bank entry rates.[22] Double liability statutes do not appear to have consistently affected the impact of crop prices on the establishment of either bank type.

5. Responding to the Price Shock: Balance Sheets of Banks Established before the War

In addition to encouraging the formation of new banks, rising farm prices and incomes likely affected the growth rates, and possibly the portfolio allocations, of banks that were established before the war. Using bank-level balance sheet data, we examine how the agricultural price shock affected the growth of total assets and loans, as well as ratios of loans to assets (loans/assets), paid-in capital, surplus, and undivided profits to assets (capital/assets), liquid reserves to assets (cash/assets), and bonds and stocks to assets (bonds/assets) of banks. Many studies across many settings find that bank failure risk is correlated with these ratios, as well as with rapid growth of loans and bank size (measured, for example, by total assets). Thus, the analysis provides evidence about whether banks' response to the boom contributed to instability in the banking system by increasing bank failure risk.

Because of differences between state and federal regulation and other banking policies, we again estimate the model separately for national banks and state banks.[23] Our data consist of biennial observations from 1908 through 1920 for banks that were established in 1914 or before.

[22] Calomiris and Jaremski (2018) also find that the introduction of deposit insurance did not significantly affect the entry rates of state or national banks.

[23] Combined results that include an interaction term of the crop price index with a dummy variable for state-chartered banks indicate a larger impact of agricultural prices on total loans and assets of state banks than of national banks. These results are available upon request.

We omit the first observation for banks that opened between 1908 and 1914 because the balance sheets of new banks are typically highly idiosyncratic. The model is as follows:

$$Y_{i,c,t} = a + \beta_1 CropIndex_{c,t} + \beta_2 Regulation_{c,t} + \beta_3 Regulation_{c,t} * CropIndex_{c,t-1} + \beta_4 X_{c,t} + \beta_5 CropIndex_{c,t} * Yr1918 + t_t + u_i + e_{i,c,t} \quad (2)$$

where $Y_{i,c,t}$ is one of the specified balance sheet variables for bank *i* in county *c* during biennial period *t*, $Yr1918$ is a dummy variable that takes the value 1 in 1918 and 0 otherwise, u_i is a vector of bank-fixed effects, $e_{i,c,t}$ is the error term clustered by county, $X_{c,t}$ now contains all the previous variables with the addition of the numbers of state and national banks in the current year, $Regulation_{c,t}$ now contains a dummy variable for Federal Reserve membership during biennial period *t*, and the rest of the variables retain their previous definitions. In these regressions, we include the interaction between the crop price index and the 1918 dummy to control for any differential effects of the price shock on banks when the United States was at war. During the war, the U.S. government and Federal Reserve encouraged banks to purchase large amounts of government bonds and to provide funds to help their customers buy bonds (Meltzer 2003, pp. 84-90). This pressure might have altered how banks responded to rising crop prices in those years.

Table 4 reports estimates of Equation (2) for state banks. The basic specification in the first column of each set reveals a positive and statistically significant impact of the crop price index on total assets and total loans. A doubling of the crop price index is estimated to increase a state bank's assets by 21.5 percent and loans by 23.7 percent. Further, the coefficients on the crop price index are positive for loans/assets, cash/assets, and negative for capital/assets and bonds/assets. Specifically, a doubling of the crop price index is estimated to increase loans/assets by 1.2 percentage points, decrease capital/assets by 2.3 percentage points, increase cash/assets by 1.1 percentage points, and decrease bonds/assets by 3.8 percentage points. Hence, the results suggest that, on average, state banks in the sample responded to booming agricultural prices by shifting their asset portfolios away from bonds toward loans and cash reserves, and by increasing their leverage (i.e., by lowering capital/assets).

Quantitatively, the effects are modest, though statistically significant, and somewhat ambiguous about whether banks that were established before the war responded to the boom by increasing their overall risk. Higher loans/assets, and lower capital/assets and bond/assets is indicative of higher risk, but higher cash/assets would imply lower liquidity risk. Finally, we find

that the impacts of a given crop price index value on state bank loans, loans/assets, and capital/assets were significantly lower in 1918 compared with other years, while the impacts on total assets, cash/assets and bonds/assets were much larger in that year.

The second and third columns of each set of regressions include banking policy variables and an indicator for whether the bank was a member of the Federal Reserve System. As previously discussed, due to the inclusion of bank fixed effects, the estimated impacts of these policy variables are associated with the few changes in regulations that occurred during the sample period and should be carefully interpreted. The baseline regressions reported in the second column of each set indicate that the adoption of double liability exerted downward pressure on total assets, total loans, and loans/assets, and upward pressure on capital/assets, cash/assets, and bonds/assets. Not surprisingly, the adoption of a higher minimum capital requirement increased bank size, reflected in total assets and total loans, as well as higher loans/assets. The establishment of deposit insurance also was associated with more total assets and loans, as well as with higher loans/assets.

Federal Reserve membership was required of all national banks at the System's inception in 1914, but membership was optional for state-chartered banks. The second column of each regression set indicates that, controlling for the crop price shock and state banking policy variables, Fed membership tended to be associated with lower total loans, loans/assets and bonds/assets, but somewhat higher capital/assets. Of course, because membership was optional for state banks, the direction of causality is ambiguous. Few state banks joined the Federal Reserve System, and those which did join tended to be located in larger cities and generate relatively more of their income from providing payments and other services to other banks (Anderson et al. 2018).[24]

Focusing on the interactions of the policy variables with the crop price index in the third column of each set, the negative coefficients on the interaction of the minimum capital requirement dummy variable with the crop price index indicate that the impact of a given crop price index value on total loans, total assets, and loans/assets was smaller in states with relatively high minimum capital requirements. Recall that we also find that higher minimum capital requirements suppressed state bank entry. To the extent that higher minimums gave rural banks a

[24] The estimated coefficients for other variables in the regressions are qualitatively similar if we exclude Federal Reserve membership (and its interaction with the crop price index) from the regressions.

degree of local monopoly power, they likely encouraged conservative behavior and hence less asset and loan expansion in response to a local price shock.

The positive coefficients on the interaction of double liability with the crop price index indicates that double liability tended to boost the impact of crop prices on assets, loans, and loans/assets. This result seems consistent with Grossman (2001), who finds that double liability generally reduced risk taking except in periods of heightened financial distress, such as the early 1920s. Grossman notes that double liability was eventually eliminated in the 1930s because it was widely viewed as ineffective at containing banking system risk.

Finally, deposit insurance seems to have amplified the impact of crop prices on total loans and assets of banks in state deposit insurance systems. Moreover, the results indicate that insured banks increased their loans/assets ratios and reduced their capital/assets ratios more in response to a given price shock than did uninsured state banks. Thus, the results support prior studies in finding that deposit insurance increased bank risk taking in the 1910s and 1920s.

Table 5 reports estimates of Equation (2) for national banks. National banks, which were less likely to serve farming communities, seem to have been less responsive to crop price shocks, particularly in terms of the extensive growth measures. The results of the baseline regressions, which exclude the state policy variables, indicate that a doubling of the crop price index would decrease national bank assets by 3.3 percent, decrease national bank loans by an insignificant 0.7 percent, increase loans/assets by 1.4 percentage points, increase capital/assets by 1.0 percentage points, decrease cash/assets by 2.0 percentage points, and increase bonds/assets by an insignificant 0.5 percentage points.

The results indicate that the impact of crop prices on national bank assets, cash/assets, and bonds/assets was larger after banks had become Fed members, but the impact of crop prices on total loans and loans/assets was smaller (i.e., closer to zero). However, since all national banks were required to become members of the Federal Reserve System when the System was established in 1914, the interaction cannot clearly separate the effect of becoming a Fed member from the effect of the beginning of World War I.

The results also indicate that national banks tended to be larger in terms of total loans and assets in states where state banks were subject to higher minimum capital requirements, and that higher minimum capital requirements dampened the impact of crop prices on loans, assets and loans/assets, similar to their effect on state banks. The results thus indicate that higher minimum

capital requirements tended to dampen expansion of the banking system in response to fundamental shocks. The effects on national banks of double liability or deposit insurance regimes for state banks were more mixed. However, as with state banks, deposit insurance tended to amplify the impact of crop prices on total loans and assets. Finally, the interactions of the crop price index with the dummy variable for 1918 indicate that the crop price shock had larger, positive impacts on total bank assets, total loans and cash/assets in that year, but smaller effects on loans/assets, capital/assets, and bonds/assets.

Our results reveal several dynamics about the boom. First, we find that the agricultural price shock produced large increases in the assets and loans of state banks that were already established in 1914. The results are somewhat ambiguous, however, as to whether these banks responded to rising crop prices by taking on greater balance sheet risk. Second, crop prices had much less impact on the total loans and assets of national banks, likely because of their more limited role in financing agriculture. The differential response of state and national banks indicates that our crop price index likely reflects the agricultural price shock rather than other factors correlated with World War I. Third, our findings indicate that bank regulations and policies affected the response of state banks to the price shock, and even the response of national banks to some extent. High minimum capital requirements lessened the impact of rising farm output prices on the growth of bank balance sheets and balance sheet ratios correlated with risk, whereas deposit insurance amplified those effects.

6. Which Banks Closed?

Farm output prices collapsed in 1920 and farm land values quickly followed. With much lower incomes, many farmers were unable to repay mortgages and other loans incurred during the boom, resulting in the failure of hundreds of banks in farming regions. Across the United States, 1,787 commercial banks suspended operations during 1921-24, representing about 6 percent of active banks in 1921. Suspensions were highly concentrated in farm states; Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas combined for 947 suspensions (Board of Governors 1943, p. 284). Although many banks were forced to close, many more survived the crisis. Our bank-level data enable us to test various hypotheses about the causes of individual bank closures during the bust.[25]

[25] Florida, Minnesota, and Oklahoma stopped reporting data before 1924. To determine whether each bank in the three states closed, we compare the bank list in 1920 with the bank list in the 1925 *Rand McNally Bankers*

We estimate a probit model to examine the determinants of bank closures between 1920 and 1924. Our specification is similar to those estimated in other settings, such as the Great Depression (White 1984), 1980s-90s (Wheelock and Wilson 1995; 2000), and Great Recession (Cole and White 2012), in which closure outcome is regressed on various balance sheet measures and bank age intended to capture bank performance and risk. Small, unit banks are at greater risk of closing due to limited diversification and perhaps weaker management, and thus we expect that larger size reduces the probability of closing. We anticipate that higher loans/assets would increase the likelihood of closure because loans are typically a bank's most risky assets. By contrast, we expect that greater liquidity (reflected in higher cash/assets) or capital (reflected in higher capital/assets) would reduce the probability of closure. Finally, older banks might be better managed or have more stable funding, and accordingly we expect that the closure probability was lower for older banks.

We also test whether the farm land boom affected closure rates directly, rather than simply through their impact on bank balance sheets. We include the percent changes in farm land value per acre, mortgage debt per acre, and improved farm acreage between 1910 and 1920, as well as the log of mortgage debt per acre in 1920 to capture the boom.[26] We do not include measures of the bust, such as the change in farm land value during 1920-25, at this point because they might be determined in part by local bank closures. The model takes the form:

$$\begin{aligned} Closure_{i,c} = \; & a + \beta_1 \Delta LandValue_{c,1910-20} + \beta_2 \Delta ImpAcres_{c,1910-20} + \beta_3 \Delta MtgDebt_{c,1910-20} \\ & + \beta_4 MtgDebt_{c,1920} + \beta_5 Regulation_{c,t} * CropIndex_{c,t-1} + \beta_6 X_{c,1920} \\ & + \beta_7 B_{i,1920} + s_s + e_{i,c} \quad (3) \end{aligned}$$

where $Closure_{i,c}$ is a dummy variable set to 1 if bank *i* in county *c* closed before 1924, $\Delta LandValue_{i,1910-20}$ is the percent change in farm land value per acre in county *c* between 1910 and 1920, $\Delta ImpAcres_{c,1910-20}$ is the percentage growth in improved acres in county *c* between

Directory. It is important to note that neither the state reports nor *Rand McNally* provide consistent information on why a bank exited. A bank might exit because it failed, voluntarily liquidated, merged with another bank, or changed its name or charter type (e.g., a state bank that switched to a national charter). As mergers, acquisitions, and name changes were often undertaken for reasons correlated with bank distress, this should not bias the results in any particular direction.

[26] Note that throughout the paper our measures of farm land values, mortgage debt, and bank loans and assets are in nominal dollars, rather than inflation-adjusted. Because farm mortgages and other bank loans were not indexed for inflation, bank failures and other outcomes reflected the performance of bank assets in nominal, rather than real terms. For consistency, we also model the relationships between farm land values and bank lending in nominal terms. However, we obtain qualitatively similar results from regressions in which we use dollar values adjusted for changes in the aggregate price level.

1910 and 1920, $\Delta MtgDebt_{c,1910-20}$ is the percentage growth in mortgage debt per acre in county *c* between 1910 and 1920, $MtgDebt_{c,1920}$ is the value of mortgage debt per acre in county c in 1920, $X_{c,1920}$ is the vector of county census variables used before with some additions noted below, $B_{i,1920}$ is a vector of bank-specific control variables for bank *i* in 1920, $e_{c,t}$ is the robust error term, and the rest of the values retain their previous definitions. Because the asset price boom measures are observed at the county-level, we cannot include county-fixed effects and instead expand on the county-level controls to include the logarithm of crop value in 1920, average rainfall in the county, the standard deviation of rainfall in the county, the logarithm of county land area (in square miles), logarithm distance in miles to the Mississippi River, logarithm distance in miles to the Atlantic Ocean, logarithm distance in miles to the Great Lakes, and logarithm distance in miles to the Pacific Ocean.[27] The vector of bank-specific variables includes dummies for the entry year of the bank, the logarithm of total assets, loans/assets, capital/assets, and cash/assets in 1920.

We estimate the model on the full sample of banks present in 1920 as well as on a reduced sample of banks that were present in 1914 and survived through 1920. The latter sample allows us to include each bank's percent increase in total loans from 1914 to 1920 to test whether rapid loan growth affected closure probability over and above the location-specific factors. We anticipate that banks with larger percentage increases in loan volume during the boom would have been more likely to close during the bust since rapid growth might reflect aggressive lending associated with less screening of borrowers or a lowering of lending standards. Rapid loan growth has been found to be a characteristic of banks that failed in other settings, such as the 1980s (Federal Deposit Insurance Corporation 1997).

Table 6 reports the marginal effects of the probit regression of Equation (3). The results indicate that the probability of a bank closing during 1920-24 was positively correlated with the increase in county farm land value during the 1910s. A doubling of farm land value over the 1910s is estimated to have increased a state bank's probability of closing during 1920-24 by 10.8 percentage points and a national bank's probability of closing by 8.3 percentage points. Controlling for the change in farm land value between 1910 and 1920, we find no impact of changes in mortgage debt per acre or improved acreage, or of the level of mortgage debt per acre

[27] We obtained these extra variables from Rajan and Ramcharan (2015) with the exception of crop value which is from Hanes (2004).

in 1920, on closure probabilities for state banks. However, national banks located in counties with larger increases in improved acreage during the 1910s had higher probabilities of closing during 1920-24.

Including bank-specific variables in the model does not reduce the impact of changes in farm land value or improved acreage. Further, as many studies of bank closures have found in other settings, our results indicate that for state banks, the probability of closure was negatively related to bank size (measured by the log of total assets), positively related to a bank's loans/assets, and negatively related to its capital/assets and cash/assets. The results for national banks go in the same direction but are not always statistically significant, likely due to their lower closure rates and fewer observations. Finally, for both bank types, the year of entry dummies indicate that older banks were much more likely to survive than banks that entered between 1918 and 1920 (i.e., the excluded group). Compared with a bank that opened between 1918 and 1920, a state bank that opened between 1916 and 1918 was 3.4 percent less likely to close, a state bank that opened between 1914 and 1916 was 6.7 percent less likely to close, and a state bank that opened before 1914 was between 4.8 and 8.3 percent less likely to close.

The results for the sample of banks that were established before 1914 are generally similar to those for all banks present in 1920. The age dummies are no longer statistically significant, indicating that the year of establishment mattered little for banks that opened before 1914. We also find that rapid loan growth during the boom increased a bank's probability of closing during the bust. The estimates indicate that a 76.9 percent increase in loans during 1914-20 (i.e., the average percentage change in bank loans in the sample) would have increased the probability of closure by 1.38 percentage points even after controlling for the increase in county farm land value during 1910-20 and bank balance sheet composition in 1920.

As in previous sections, we next examine whether state banking regulations and policies affected closure rates directly (rather than through their effects on bank balance sheets) using interactions with the change in farm land value during 1910-20. If access to the Federal Reserve's discount window provided member banks with a reliable source of liquidity, then they might have been better able to withstand the decline in farm land prices.[28] Deposit insurance might have increased the probability of bank closure during the 1920s by encouraging greater

[28] White (2015) argues that the Federal Reserve Bank of Atlanta lent aggressively to reduce bank distress during the early 1920s.

risk-taking during the boom or as losses eroded bank net worth during the bust. The effect of double liability on the closure probability is unclear *a priori*. Although conceivably a deterrent to risk taking, Grossman (2001) speculates that double liability gave bankers an incentive to close sooner than otherwise in order to avoid hitting shareholders with larger losses when banks inevitably failed. Finally, higher capital requirements might be associated with greater buffers for losses as well as higher franchise values.

The results reported in the third and fourth columns indicate that of the policy variables, only deposit insurance had a statistically significant impact on closure probability. The coefficient estimates indicate that the impact of the increase in land prices during 1910-20 on bank closure probability during 1920-25 was four times larger for banks carrying deposit insurance than for uninsured state banks. The insignificant coefficients on the other regulatory variables suggest that their effects, if any, are captured by the bank balance sheet variables in the model. Interestingly, however, the inclusion of these interactions greatly reduces the size and statistical significance of the coefficient on the change in farm land value during 1910-20, suggesting that the effect of the land boom worked through its impact on bank balance sheets and their interactions with regulation.

We did not include the change in farm land value during 1920-25 in our base regressions because of the possibility that bank closures had an impact on local land prices. However, we consider whether controlling for the size of the decline in local farm land values affects our estimates of the impacts of the boom and balance sheet variables on bank closure probabilities. With the explicit understanding that the coefficients are not necessarily causal estimates, we add the percent change in farm land value per acre for 1920-25 to Equation (3) to observe whether bank closures were sensitive to the farm land price bust as well as the boom.

Table 7 reports the results of the expanded model. In the first column of each set, the addition of the change in land value per acre for 1920-25 does not qualitatively alter the previous results. The coefficient on the growth of farm land value per acre for 1910-20 remains positive and statistically significant, the balance sheet measures retain their signs and statistical significance, and banks that entered during the war were still more likely to close than banks that existed before the war. For both state and national banks, the probability of closing was negatively correlated with the change in farm land value per acre in the 1920s. That is, a larger decline in local land value increased the probability that a bank would close. The coefficients on

the change in land value during 1920-25 are generally not statistically significant, however, unless we omit the policy interaction variables, in which case the coefficient on the change in land value during 1920-25 is statistically significant and larger.

Taking the analysis a step further, we include interactions of the boom and bust variables in the second column of each set. The interaction tests whether the impact of the decline in land prices on bank closure probability depended on the size of the preceding land price boom. The coefficient on interaction is negative and statistically significant for state banks that were established before the war, and nearly so when we estimate the model for all state banks. This indicates that the impact of a given decline in local farm land value per acre during the bust on the probability of closing was greater, the larger the increase in farm land value during the boom. Comparing two counties with the average change in farm land value during 1920-25 (i.e., –34.9 percent), a state bank in a county that experienced a 25 percent larger rise in farm land value during the 1910s was 1.6 percentage points more likely to close in the early-1920s than a state bank that did not based on the coefficients in column (2) of Table 7. Because the coefficients for the changes in farm land values in 1910-20 and 1920-25 are no longer statistically significant when we include the interaction terms, it appears that state bank closures were more a reflection of the asset price boom and bust than of simply the decline in farm land values during the bust. National banks, by contrast, were less consistently affected by instability in farm land prices, likely because they were less involved in agricultural lending than state banks.

The bank-level analysis provides insight into the dynamics surrounding the interplay of bank and agricultural distress during the 1920s. On a macroeconomic level, both the boom and bust affected bank outcomes, but the interaction of these two factors made things even worse, at least for state-chartered banks. That said, microeconomic and regulatory factors also played a role. Banks that opened during the war, expanded their loans during the boom, had higher loans/assets, lower capital/assets, or lower cash/assets were more likely to close during the bust period. Deposit insurance appears to have made banks particularly vulnerable to the boom and bust in farm land values.

7. Banks and Land Values

The previous sections have shown how the agricultural price shock affected banks. In this section, we explore the impact of banks on the growth of farm land values. Rajan and Ramcharan (2015) show that increases in farm land values during the 1910s were positively correlated with

the presence of banks in 1910. Here we aggregate our bank-level data to the county-level to explore further the channels by which banks played a role in the boom and subsequent bust.

7.1. Boom!

First, we estimate regressions to explore the dynamics of the boom. The dependent variable is the percentage change in farm land value per acre from 1910 to 1920. We include the change in the crop price index between 1910 and 1919 (the year that prices peaked) to capture the direct effect of the price shock. The numbers of state and national banks in the county in 1910 capture the general effect of the banking system on the agricultural outcome variables, as in Rajan and Ramcharan (2015). The model takes the form:

$$\begin{aligned}\Delta LandValue_{c,1910-20} &= a + \beta_1 \Delta CropIndex_{c,1910-19} + \beta_2 SBanks_{c,1910} * \Delta CropIndex_{c,1910-19} \\ &+ \beta_3 NBanks_{c,1910} * \Delta CropIndex_{c,1910-19} + \beta_4 X_{c,1910} + \beta_5 LandValue_{c,1910} \\ &+ s_s + e_c \quad (4)\end{aligned}$$

where $\Delta LandValue_{c,1910-20}$ is the percentage change in farm land value per acre for county c between 1910 and 1920, $SBanks_{c,1910}$ and $NBanks_{c,1910}$ are the numbers of state and national banks in operating in county c in 1910 respectively, $LandValue_{c,1910}$ is the value of farm land value per acre for county c in 1910, and $X_{c,1910}$ is the same vector as in Equation (3) with the addition of the percentage of unimproved land in the county in 1910. The rest of the variables retain their previous definitions. The county-level variables are all measured at the start of the decade so as not to confound changes due to the crop price shock with the effect of the controls.

To examine more closely how banks and bank lending might have contributed to the boom, we estimate two additional models. First, we add interactions of the initial numbers of state and national banks with the change in the crop price index to test whether the price shock had a larger impact in counties with more banks in 1910. Second, we add the percentage change in state and national bank loans in the county from 1910 to 1920 to capture the direct effect of each banking system's expansion. Although the interactions between the initial number of banks and the change in the crop price index are exogenous to the land boom, we recognize that the growth in bank loans is endogenous to the change in farm land value and hence that the model does not capture the causal effect of loan growth on land prices. However, the regressions are useful for examining whether changes in farm land values were correlated with the growth in bank loans after controlling for the change in crop prices and initial numbers of banks, and

whether the direct effect of crop prices on farm land values is mitigated when the change in loans is included. While bank lending might have contributed to the growth in land prices, rising farm incomes and possibly other factors associated with higher crop prices likely also played a role. By including banking system measures and interactions, we get a better sense of the channels by which the price shock drove the land price boom.

Similar to the findings of Rajan and Ramcharan (2015), our results in Table 8 indicate that increases in farm land value were boosted by the presence of banks in 1910. However, the impacts of state and national banks appear to differ. Whereas changes in land value and debt per acre are positive correlated with the number of national banks in 1910, the impact of state banks appears to work mainly through its interaction with rising crop prices. This likely reflects the fact that state banks were generally more heavily focused on agricultural lending than national banks and, as our balance sheet regressions show, were more responsive to crop prices in terms of increasing their lending volumes than national banks. At the mean change in the crop price index (159 percent), the effects of an additional state bank or national bank on farm land value is about the same (0.57 and 0.69 percent respectively). However, at the 75 percentile value of the change in the crop price index (174 percent), an additional state bank would increase farm land value by 1.28 percent and an additional national banks would reduce it by 0.9 percent.

Finally, and perhaps not surprisingly, the percentage changes in farm land value was positively correlated with the percentage changes in bank loan volumes, with higher per dollar impacts from state bank loans. Notably, however, including changes in bank loans does not reduce the size or statistical significance of the coefficients on either the change in the crop price index or the initial numbers of state and national banks. The results thus support the findings of Rajan and Ramcharan (2015) in showing a relationship between the presence of banks and the growth in land values and debt. However, the fact that the coefficients on the number of banks and the interaction terms remain statistically significant when loan growth is included in the model suggests that banks provided additional services beyond lending that supported growth in land values, or alternatively that those variables capture lags or nonlinear effects of lending not reflected in contemporaneous changes in bank loans.

7.2. Bust!

Next, we examine the dynamics of the bust. Specifically, we are interested in understanding whether the expansion of the banking system in the 1910s worsened the decline in

farm land prices during 1920-25. As with the bank closure regressions, we include both a measure of the boom (i.e., the percent change in land value per acre from 1910-20) and a measure of the bust (i.e., the percent change in the crop price index from 1919-25).[29] The model takes the form:

$$\Delta LandValue_{c,1920-25} = a + \beta_1 \Delta CropIndex_{c,1919-25} + \beta_2 SBanks_{c,1920} * \Delta CropIndex_{c,1919-25} + \beta_3 NBanks_{c,1920} * \Delta CropIndex_{c,1919-25} + \beta_4 \Delta LandValue_{c,1910-20} + \beta_5 X_{c,1920} + s_s + e_c \quad (5)$$

where $\Delta LandValue_{c,1920-25}$ is percentage change in farm land value per acre for county *c* from 1920 to 1925, $\Delta CropIndex_{c,1919-25}$ is the percentage change in the crop price index for county *c* from 1919 to 1925, $SBanks_{c,1920}$ and $NBanks_{c,1920}$ are the numbers of state and national banks in operating in county *c* in 1920 respectively, and the rest of the variables retain their prior definitions. Our specifications include interactions of the crop price bust variable with the number of state and national banks in the county in 1920, and the percent change in bank loan volume from 1910-20. The bank-level regressions reported in Table 6 indicate that rapid loan growth increased the probability that a bank would close during the bust. Thus, conceivably, the decline in crop prices after 1919 might have had a larger impact on farm land values in counties that had larger growth in bank loans during the boom via increased bank closures and associated loan liquidations as well as reduced credit supply.

The results, reported in Table 9, reveal a strong, positive impact of changes in the crop price index during 1919-25 on changes in farm land values during the bust phase. Our results also reveal a strong, negative impact of changes in farm land value per acre during the boom (1910-20) on changes in farm land value during the bust (1920-25). That is, controlling for changes in crop prices after 1919, counties with larger increases in farm land values during the 1910s suffered larger declines in land values during 1920-25. Our estimates indicate that a county with an additional 10 percent increase in farm land value during the 1910s had a decline of about 3.1 percent in farm land value in the 1920s (i.e., about 10 percent of the mean decline in the sample) relative to another county.

[29] We obtain qualitatively identical results using the change in the crop price index from 1910 to 1919, the change from 1914 to 1919, or the 1919 value of the crop price index instead of the change in farm land value per acre from 1910 to 1920.

The growth in bank loans might have had an impact to the extent that it contributed to rising farm land values during the boom, but we find little or no direct impact of either the number of banks in 1920, the interaction of the number of banks in 1920 with the crop price change 1919-25, or the growth in bank loans during 1910-20 on the change in farm land values during 1920-25. Thus, unlike the boom years, when the presence of banks seems to have boosted land values beyond what could be explained by rising crop prices alone, the same was not generally true of the bust. On balance, the presence of banks apparently neither exacerbated nor limited the decline in land values when crop prices fell. To some extent, this disconnect might reflect a tendency of banks to continue to lend to farmers when prices and incomes began to fall, hoping for a rebound. Although crop prices began to fall in 1920, farm mortgage debt continued to increase until 1923 as a result of "distress borrowing to tide over the period of reduced income" (Horton, Larsen, and Wall, 1942, p. 3). Thus, continued lending might have delayed or slowed the decline in land prices resulting from falling crop prices in some regions.

Although the mere presence of banks in 1920 did not generally affect land prices during the bust, changes in local credit supply resulting from bank failures or other closures might have had an impact. To explore this possibility, we augment Equation (5) with two different types of closure measures. First, we include the actual number of bank closures during 1920-25 in each county. Because the model already includes the number of banks in a county in 1920, adding the number of closures implies a closure rate. This specification is reported in Column 3, and the results indicate that the change in land value during 1920-25 was negatively correlated with the closures of state banks, but not national banks.

The number of closures is the most accurate measure of bank distress available, but is likely endogenous to the decline in farm land value. Because of this, in Columns 4-7, we include predicted and arguably exogenous measures of bank closure risk from the regressions reported in Table 6. Specifically, we obtain the predicted closure probability for each state and national bank from the model in the second and sixth columns of Table 6, respectively.[30] From there, we count the number of banks that had a predicted closure probability above a particular cutoff (e.g.,

[30] The median predicted closure probabilities for state and national banks are 10 percent and 6 percent, respectively. The results are similar if we restrict the sample to older banks and include the percentage growth in loans 1914-20 (as in the fourth and seventh columns of Table 6) or if we include regulatory interactions (as in the third column of Table 6).

above 5, 10, 15, and 20 percent) for each county.[31] Because the county-level regressions include the change in the farm land value for 1910-20, state fixed effects, and other county-level control variables, the effect of the predicted closures on the change in farm land value during 1920-25 can only reflect predetermined bank-specific values (i.e., bank age and balance sheet variables).

The results indicate that the estimated decline in farm land value is larger, the larger the number of predicted closures of state banks with a probability of closure in excess of 10, 15, or 20 percent. However, the impact of predicted closures on the change in farm land value is not statistically significant when we use the 5 percent cutoff for counting predicted closures, and is never statistically significant for predicted national bank closures. Because the median predicted closure probability was 10 percent, the 5 percent cutoff captures many banks that had a relatively small estimated probability of closing and undoubtedly did not close. The evidence indicates that controlling for the increase in farm land values between 1910 and 1920, bank closures put downward pressure on farm land values during 1920-25. Using the 10, 15 or 20 percent cutoff, the model indicates that farm land value would decline by 0.5 percent for each additional bank closure.[32] To put the results in specific terms, moving from the median number of bank closures to the 75 percentile under the 10 percent cutoff would imply three more closures and an additional 1.5 percent decline in farm land value (representing about 4 percent of the mean land value decline in the sample). While not large in comparison with the fundamental shock (i.e., the decline in crop prices), the marginal impact of bank closures is both statistically and economically significant given the host of controls in the model.

8. Conclusion

Banks are often intertwined with asset price booms and busts. However, the complexity of modern financial systems, including banks with extensive branching networks and off-balance sheet activities, can obscure our view of this dynamic. Historical studies can be valuable for revealing fundamental relationships and the effects of different types of policies that might not be apparent in more complex environments. The World War I agricultural boom and post-war bust is a particularly useful episode for studying the interrelationships between banks and assets

[31] Estimating the regression for additional cutoff points provides little additional information. The coefficient on predicted state bank closures becomes statistically significant when a cutoff above 5 percent is chosen and remains so for any reasonable value. The coefficient on predicted national bank closures is never negative and significant regardless of the cutoff value chosen.

[32] The fact that the coefficients on bank closures for the cutoffs above 5 percent are similar indicates that the results are not driven by banks just over a particular cutoff beyond 5 percent.

prices. Triggered by the outbreak of war and collapse of European agriculture, rapidly rising commodity prices ignited a farm land price boom in the United States. Prior research has found that banks contributed to the boom, in that locations with more banks ex ante experienced larger increases in land values and mortgage debt (Rajan and Ramcharan 2015). Here, using bank-level information, we show how banks became enmeshed in the boom. New banks were established and others expanded their lending to accommodate rising demand for credit which in turn helped to push farm land prices higher. Banking regulations and policies influenced the extent to which banks responded to the boom, with higher minimum capital requirements deterring bank entry and loan growth and deposit insurance encouraging more aggressive lending. The World War I asset price boom thus provides supporting evidence for studies of modern crises such as Glaeser, Gottlieb, and Gyourko (2013) as well as a micro-level view of the macroeconomic dynamics studied by authors such as Kindelberger (1978), Reinhart and Rogoff (2009), and Schularick and Taylor (2012).

Banks were also impacted by the bust. When farm output and land prices collapsed after the war, banks with weak balance sheets and those that had lent most aggressively during the boom were more likely to fail or be acquired than other banks, as were banks that opened during the boom. Deposit insurance was destabilizing in that it amplified the effect of the boom in land values on the closure probabilities of banks when farm prices subsequently collapsed. Bank closures, and by extension banking policies, also played a role in exacerbating the collapse of farm land prices in the 1920s. Controlling for the change in crop prices, counties with more bank closures saw larger declines in crop prices. Thus, banking instability made the collapse of asset prices worse than it would have otherwise been.

The historical episode offers many lessons for policymakers, not least of which is that it supports the old adage that “capital is king” when it comes to promoting the stability of banking systems, while mispriced deposit insurance can have the opposite effect. Moreover, the experience demonstrates that draconian restrictions on branch banking and other policies that inhibit bank scale and diversification can make a banking system prone to instability in the face of asset price shocks. Finally, the episode provides further evidence of how banking system instability can exacerbate asset price booms and busts, and thus serves as a reminder that regulations and other policies that influence the stability of banking systems can ultimately affect the stability of asset prices and hence real activity.

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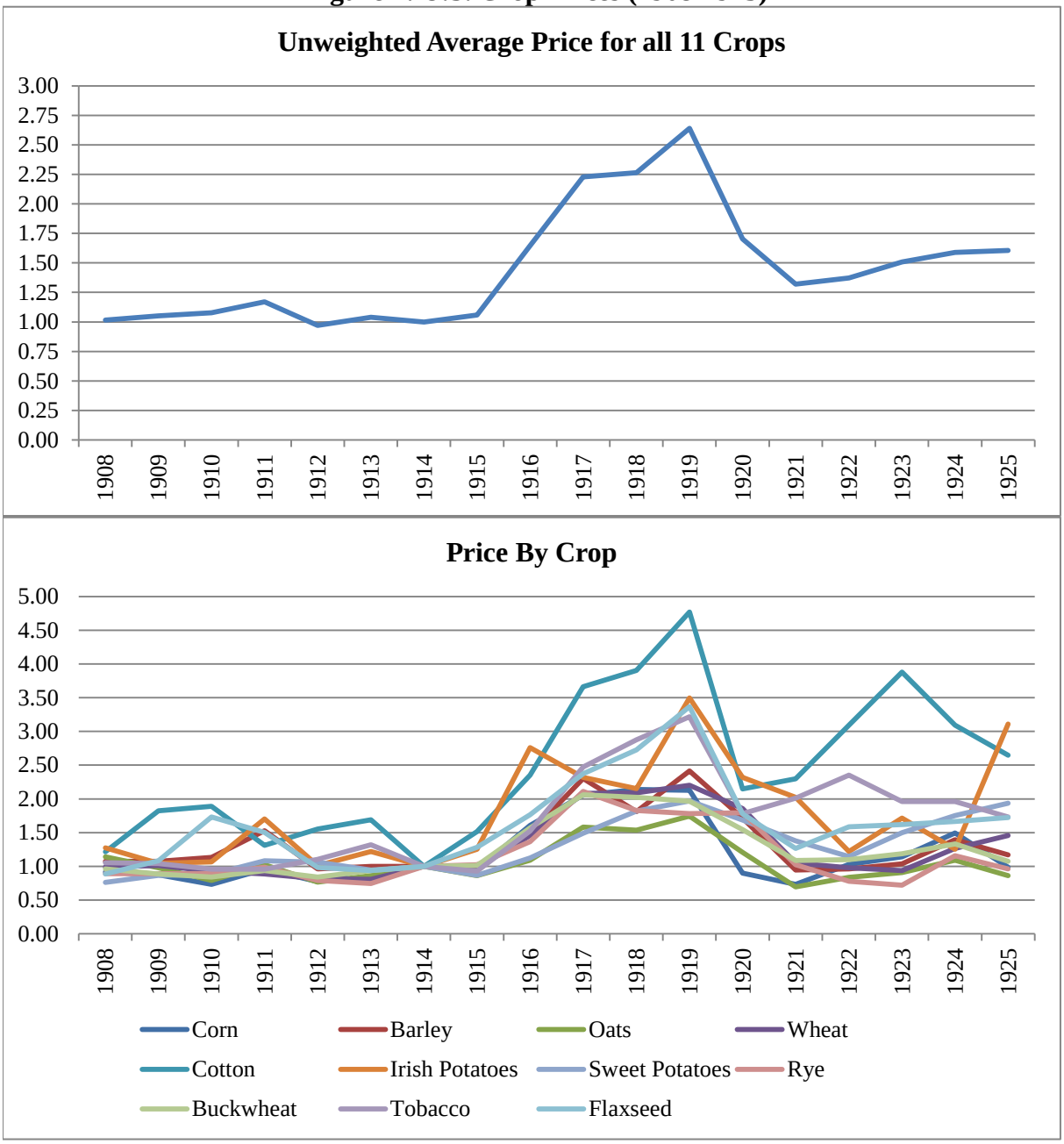
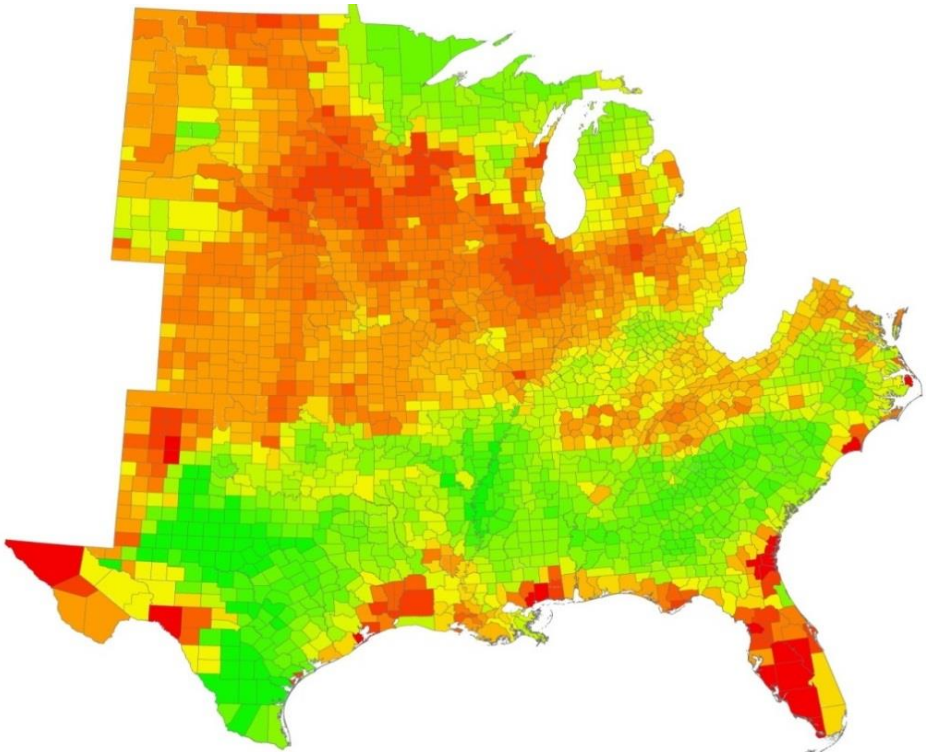
Figure 1: U.S. Crop Prices (1908-1925)



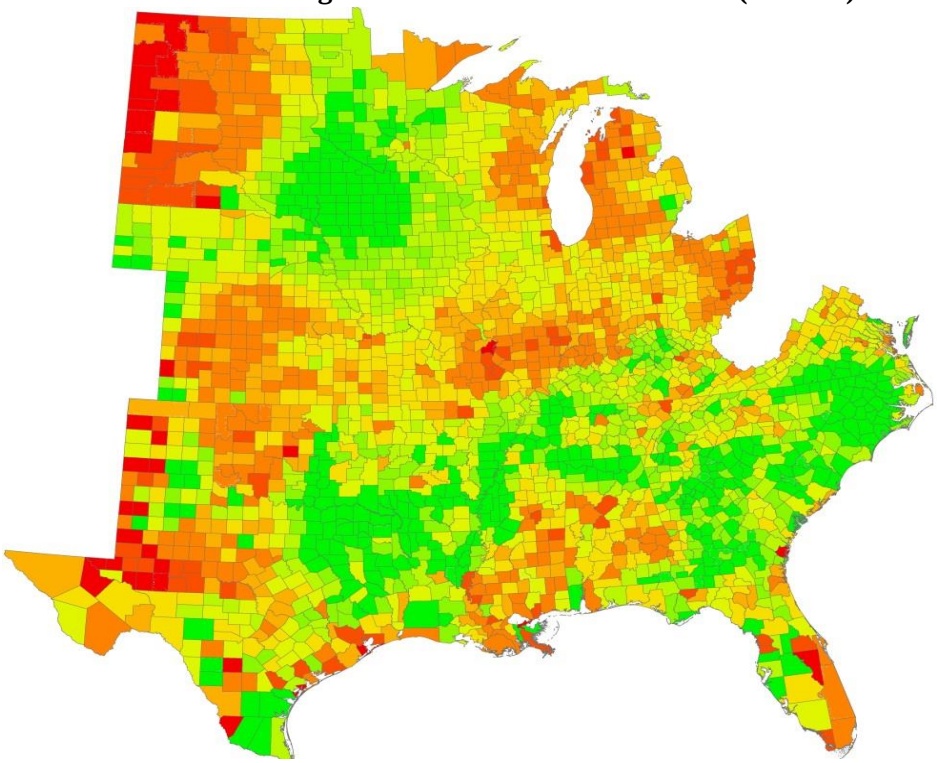
Notes: The figure shows nation-wide prices of 11 major crops. The top panel plots an unweighted annual average of all crops; the bottom panel plots the individual prices of each crop. All prices are normalized to "1" in 1914. Price data are from Carter et al. (2006).

Figure 2: County-Level Changes in Crop and Farm Value

Panel A: Crop Price Index By County in 1919



Panel B: % Change of Farm Land Value Per Acre (1910-20)



Notes: The map in the top panel displays the county-level crop price index in 1919. The construction of the crop price index is described in the text. The map in the bottom panel displays the percentage change in farm land value per acre (1910-20) from Haines (2004). In both maps green denotes higher values whereas red denotes lower values. Boundaries were obtained from Minnesota Population Center (2004).

Table 1: Growth in Agricultural Land Value, Mortgage Debt, and Bank Lending During the Boom (1910-1920)

	% Change in Farm Land Value Per Acre 1910-1920	% Change in the Value of Mortgage Debt Per Acre 1910-1920	% Change in Value of Commercial Bank Loans 1910-1920
South			
Alabama	70.8%	109.1%	94.4%
Arkansas	90.2%	145.9%	119.1%
Florida	75.0%	142.0%	113.2%
Georgia	94.3%	129.0%	102.8%
Kentucky	80.4%	108.3%	81.4%
Louisiana	75.5%	86.9%	121.9%
Mississippi	94.7%	82.9%	104.5%
North Carolina	103.0%	128.0%	145.2%
South Carolina	96.7%	99.7%	126.6%
Tennessee	80.2%	139.7%	108.2%
Virginia	69.2%	104.0%	110.3%
Average	84.5%	116.0%	111.6%
Midwest			
Illinois	54.7%	54.9%	92.9%
Indiana	51.7%	61.6%	85.5%
Iowa	88.2%	88.8%	89.9%
Michigan	43.9%	63.5%	106.6%
Minnesota	90.5%	109.6%	115.5%
Missouri	57.9%	64.9%	81.7%
Ohio	47.4%	66.6%	88.3%
Wisconsin	52.4%	83.1%	108.3%
Average	60.8%	74.1%	96.1%
Great Plains			
Kansas	43.0%	39.4%	101.7%
Nebraska	63.5%	90.5%	104.5%
North Dakota	33.1%	58.7%	111.0%
Oklahoma	48.9%	88.6%	149.9%
South Dakota	61.8%	72.1%	123.8%
Texas	67.3%	80.1%	123.9%
Average	52.9%	71.5%	119.1%
Northeast			
Connecticut	47.8%	55.0%	76.0%
Delaware	28.2%	46.9%	84.4%
Maine	42.9%	60.9%	62.9%
Maryland	51.4%	62.0%	92.4%
Massachusetts	33.3%	50.0%	71.6%
New Hampshire	28.5%	57.8%	49.7%
New Jersey	25.6%	37.5%	84.3%
New York	18.5%	46.8%	82.5%
Pennsylvania	19.3%	40.6%	66.9%
Rhode Island	25.6%	38.7%	45.3%
Vermont	44.7%	73.6%	51.9%
West Virginia	44.1%	74.2%	88.9%
Average	34.1%	53.7%	71.4%
Pacific			
Arizona		37.5%	159.9%
California	69.8%	126.7%	94.0%
Colorado	15.2%	60.1%	95.6%
Idaho	41.8%	113.6%	113.0%
Montana	17.3%	103.6%	106.5%
Nevada	63.5%	161.3%	74.8%
New Mexico		76.1%	121.7%
Oregon	23.3%	77.4%	111.6%
Utah	37.7%	130.2%	93.4%
Washington	31.4%	74.0%	79.8%
Wyoming	49.2%	98.1%	133.9%
Average	38.8%	96.2%	107.7%

Notes: The table provides state-level growth rates for the variables listed in the column headings.Data on farm land value per acre and mortgage debt per acre are from Haines (2004). Data on commercial bank loans are from All Bank Statistics (Board of Governors 1959).

Table 2: Collapse of Agricultural Land Value and Bank Suspension Rate During the Bust (1920-1925)

	% Change in Farm Land Value Per Acre 1920-1925	Bank Suspension Rate 1920-1925
South		
Alabama	-14.1%	5.4%
Arkansas	-25.7%	5.7%
Florida	62.9%	8.0%
Georgia	-58.0%	20.7%
Kentucky	-45.3%	3.4%
Louisiana	-29.6%	10.5%
Mississippi	-49.0%	7.5%
North Carolina	-14.9%	11.6%
South Carolina	-46.2%	25.4%
Tennessee	-28.7%	3.6%
Virginia	-16.9%	4.0%
Average	-24.1%	9.6%
Midwest		
Illinois	-38.7%	1.8%
Indiana	-49.6%	3.2%
Iowa	-51.4%	12.5%
Michigan	-17.3%	3.3%
Minnesota	-41.8%	12.2%
Missouri	-44.4%	8.2%
Ohio	-38.2%	1.1%
Wisconsin	-27.8%	3.6%
Average	-38.6%	5.7%
Great Plains		
Kansas	-26.2%	7.4%
Nebraska	-44.4%	28.5%
North Dakota	-40.0%	9.1%
Oklahoma	-25.4%	19.7%
South Dakota	-54.1%	34.5%
Texas	-17.4%	10.7%
Average	-34.6%	18.3%
Northeast		
Connecticut	-6.7%	2.5%
Delaware	-15.3%	0.0%
Maine	-11.0%	0.8%
Maryland	-17.0%	2.9%
Massachusetts	-9.3%	0.6%
New Hampshire	-10.1%	1.2%
New Jersey	8.4%	0.5%
New York	-13.8%	1.6%
Pennsylvania	-18.8%	1.4%
Rhode Island	0.2%	6.1%
Vermont	-18.5%	0.0%
West Virginia	-13.6%	2.4%
Average	-10.5%	1.7%
Pacific		
Arizona	-85.0%	29.9%
California	6.7%	2.2%
Colorado	-42.4%	15.4%
Idaho	-48.4%	24.8%
Montana	-51.0%	44.5%
Nevada	-54.7%	3.0%
New Mexico	-38.6%	48.0%
Oregon	-19.2%	8.3%
Utah	-26.3%	11.3%
Washington	-26.7%	10.2%
Wyoming	-85.6%	35.0%
Average	-42.8%	21.1%

Notes: The table provides state-level percentage change in land value per acre and bank suspension rate, 1920-25. Data on farm land value per acre are from Haines (2004). The bank suspension rate is calculated as the number of bank suspensions (*Board of Governors* 1943) divided by the number of banks in 1920 (Flood 1998).

Table 3: Determinants of Bank Entry (1910-1920)

	Rate of Banks Established					
	State Banks			National Banks		
Crop Price Index At Start of Period	0.076*** [0.016]	0.071*** [0.016]	0.117*** [0.018]	-0.025 [0.015]	-0.025 [0.015]	0.003 [0.018]
Double Liability		-0.023 [0.020]	-0.004 [0.025]		0.016 [0.016]	0.034 [0.022]
Double Liability * Crop Price Index At Start of Period			-0.017 [0.013]			-0.017 [0.015]
Min Cap>$10,000		-0.157*** [0.043]	-0.067 [0.045]		0.068*** [0.019]	0.098*** [0.033]
Min Cap>$10,000 * Crop Price Index At Start of Period			-0.057*** [0.012]			-0.017 [0.013]
Deposit Insurance		-0.001 [0.025]	0.010 [0.028]		-0.027 [0.018]	0.008 [0.024]
Deposit Insurance * Crop Price Index At Start of Period			-0.017 [0.014]			-0.029* [0.015]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7199	7199	7199	7199	7199	7199
R-squared	0.172	0.181	0.185	0.124	0.127	0.130

Notes: The table presents the results of an OLS regression. The dependent variable is the rate of new banks entering the county in each year where the numerator is the number of entering banks and the denominator is the number of banks at the beginning of the period. Each observation is a county and each county is observed every two years. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with cities over 25,000 population, fewer than 250 farms, or fewer than 15,000 improved farm acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county at the beginning of the period, and the number of state banks in the county at the beginning of the period. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 4: Effect of Crop Price Shock on State Bank Balance Sheets (1908-1920)

	Ln(Assets)			Ln(Loans)			Loans/Assets		
Crop Price Index	0.215***	0.200***	0.187***	0.237***	0.209***	0.185***	0.012*	0.004	-0.004
	[0.019]	[0.018]	[0.020]	[0.022]	[0.021]	[0.022]	[0.007]	[0.006]	[0.007]
Fed Member		-0.001	0.070		-0.039**	-0.018		-0.024***	-0.066***
		[0.018]	[0.048]		[0.020]	[0.056]		[0.005]	[0.016]
Fed Member * Crop Price Index			-0.027			0.005			0.026***
			[0.023]			[0.029]			[0.009]
Double Liability		-0.052***	-0.092***		-0.155***	-0.222***		-0.064***	-0.079***
		[0.015]	[0.020]		[0.019]	[0.024]		[0.006]	[0.007]
Double Liability * Crop Price Index			0.055***			0.085***			0.016***
			[0.012]			[0.014]			[0.005]
Min Cap>$10,000		0.143***	0.302***		0.200***	0.406***		0.036***	0.055***
		[0.016]	[0.023]		[0.018]	[0.026]		[0.005]	[0.008]
Min Cap>$10,000 * Crop Price Index			-0.113***			-0.146***			-0.014***
			[0.011]			[0.013]			[0.004]
Insured Bank		0.052***	-0.125***		0.075***	-0.125***		0.012***	-0.005
		[0.012]	[0.017]		[0.013]	[0.019]		[0.004]	[0.007]
Insured Bank * Crop Price Index			0.106***			0.116***			0.009**
			[0.012]			[0.014]			[0.005]
Crop Price Index * Yr=1918	0.090**	0.121***	0.091**	-0.273***	-0.222***	-0.253***	-0.215***	-0.202***	-0.204***
	[0.037]	[0.035]	[0.036]	[0.050]	[0.046]	[0.043]	[0.018]	[0.018]	[0.018]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50806	50806	50806	50806	50806	50806	50806	50806	50806
R-squared	0.752	0.756	0.764	0.694	0.702	0.712	0.126	0.137	0.140
	(Capital+Surplus)/Assets			(Cash+Due from Bank)/Assets			Bonds and Stocks/Assets		
Crop Price Index	-0.023***	-0.022***	-0.022***	0.011**	0.014***	0.026***	-0.038***	-0.034***	-0.013***
	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]	[0.006]	[0.007]	[0.007]	[0.005]
Fed Member		0.009***	-0.005		0.003	0.043***		-0.031***	-0.020*
		[0.003]	[0.007]		[0.003]	[0.010]		[0.011]	[0.011]
Fed Member * Crop Price Index			0.007*			-0.022***			-0.002
			[0.004]			[0.006]			[0.006]
Double Liability		0.008**	0.003		0.040***	0.062***		0.046***	0.060***
		[0.004]	[0.004]		[0.004]	[0.005]		[0.004]	[0.005]
Double Liability * Crop Price Index			0.003			-0.020***			-0.009***
			[0.002]			[0.004]			[0.003]
Min Cap>$10,000		-0.005	-0.005		-0.002	-0.004		-0.001	0.061***
		[0.003]	[0.004]		[0.004]	[0.007]		[0.003]	[0.007]
Min Cap>$10,000 * Crop Price Index			0.002			0.002			-0.038***
			[0.002]			[0.003]			[0.004]
Insured Bank		-0.002	0.029***		-0.005	-0.013**		0.000	0.007*
		[0.002]	[0.003]		[0.003]	[0.006]		[0.002]	[0.004]
Insured Bank * Crop Price Index			-0.022***			0.008**			-0.008***
			[0.002]			[0.004]			[0.003]
Crop Price Index * Yr=1918	-0.060***	-0.062***	-0.054***	0.076***	0.071***	0.069***	0.114***	0.105***	0.115***
	[0.006]	[0.006]	[0.006]	[0.012]	[0.012]	[0.012]	[0.016]	[0.016]	[0.014]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50806	50806	50806	50806	50806	50806	50806	50806	50806
R-squared	0.401	0.402	0.407	0.178	0.181	0.184	0.188	0.201	0.233

Notes: The table presents the results of an OLS regression. The dependent variable is provided in the column heading. Each observation is a bank and each bank is observed every two years. Only state-chartered financial institutions (i.e., commercial banks, trust companies, and savings banks) that were established before 1914 are included in the regression. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with a city over 25,000 persons, fewer than 250 farms, or fewer than 15,000 improved farm acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county, and the number of state banks in the county. Standard errors clustered by county are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 5: Effect of Crop Price Shock on National Bank Balance Sheets (1908-1920)

	Ln(Assets)			Ln(Loans)			Loans/Assets		
Crop Price Index	-0.033*	-0.054***	-0.190***	-0.007	-0.030	0.020	0.014*	0.012	0.133***
	[0.017]	[0.017]	[0.057]	[0.023]	[0.023]	[0.068]	[0.008]	[0.008]	[0.020]
Fed Member * Crop Price Index			0.142**			-0.044			-0.123***
			[0.064]			[0.078]			[0.023]
Double Liability		-0.027	-0.051**		-0.098***	-0.086***		-0.034***	-0.013
		[0.017]	[0.023]		[0.024]	[0.031]		[0.006]	[0.009]
Double Liability * Crop Price Index			0.034**			0.004			-0.019***
			[0.017]			[0.022]			[0.006]
Min Cap>$10,000		0.102***	0.150***		0.121***	0.219***		0.014**	0.042***
		[0.013]	[0.025]		[0.017]	[0.032]		[0.006]	[0.010]
Min Cap>$10,000 * Crop Price Index			-0.041***			-0.073***			-0.017***
			[0.015]			[0.019]			[0.006]
Deposit Insurance		-0.044***	-0.128***		-0.012	-0.125***		0.015***	0.002
		[0.013]	[0.021]		[0.016]	[0.026]		[0.004]	[0.008]
Deposit Insurance * Crop Price Index			0.055***			0.072***			0.008
			[0.016]			[0.021]			[0.007]
Crop Price Index * Yr=1918	0.290***	0.321***	0.270***	0.154***	0.187***	0.202***	-0.074***	-0.072***	-0.030
	[0.044]	[0.043]	[0.044]	[0.056]	[0.055]	[0.055]	[0.018]	[0.018]	[0.018]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14651	14651	14651	14651	14651	14651	14651	14651	14651
R-squared	0.776	0.778	0.781	0.708	0.712	0.718	0.133	0.142	0.153
	(Capital+Surplus)/Assets			(Cash+Due from Bank)/Assets			Bonds and Stocks/Assets		
Crop Price Index	0.010***	0.011***	0.007	-0.020***	-0.020***	-0.093***	0.005	0.007	-0.037**
	[0.003]	[0.003]	[0.012]	[0.006]	[0.006]	[0.015]	[0.006]	[0.006]	[0.015]
Fed Member * Crop Price Index			0.008			0.077***			0.041**
			[0.013]			[0.018]			[0.017]
Double Liability		0.004	0.007*		0.006	-0.002		0.029***	0.013*
		[0.003]	[0.004]		[0.004]	[0.006]		[0.006]	[0.008]
Double Liability * Crop Price Index			-0.004			0.008*			0.013**
			[0.003]			[0.005]			[0.005]
Min Cap>$10,000		-0.003	-0.008*		0.002	-0.009		-0.015***	-0.030***
		[0.002]	[0.004]		[0.004]	[0.008]		[0.004]	[0.008]
Min Cap>$10,000 * Crop Price Index			0.004*			0.005			0.011**
			[0.002]			[0.005]			[0.005]
Deposit Insurance		0.007***	0.023***		-0.013***	-0.028***		-0.002	0.027***
		[0.003]	[0.004]		[0.004]	[0.007]		[0.003]	[0.006]
Deposit Insurance * Crop Price Index			-0.011***			0.011**			-0.020***
			[0.003]			[0.005]			[0.005]
Crop Price Index * Yr=1918	-0.069***	-0.070***	-0.068***	0.111***	0.112***	0.084***	-0.043***	-0.047***	-0.059***
	[0.007]	[0.007]	[0.007]	[0.013]	[0.013]	[0.014]	[0.015]	[0.015]	[0.015]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14651	14651	14651	14651	14651	14651	14651	14651	14651
R-squared	0.506	0.507	0.511	0.190	0.192	0.196	0.128	0.137	0.150

Notes: The table presents the results of an OLS regression. The dependent variable is provided in the column heading. Each observation is a bank and each bank is observed every two years. Only OCC-chartered financial institutions (i.e., national banks) that were established before 1914 are included in the regression. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with a city over 25,000 persons, fewer than 250 farms, or fewer than 15,000 improved farm acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county, and the number of state banks in the county. Standard errors clustered by county are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 6: Determinants of Bank Closure (1920-1924)

	Probability of Closing						
	State Banks				National Banks		
	All Banks			Banks Est. Before 1914	All Banks		Banks Est. Before 1914
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ΔLand Value Per Acre 1910-20	0.108***	0.105***	0.022	0.016	0.083***	0.063**	0.020
	[0.020]	[0.020]	[0.040]	[0.045]	[0.030]	[0.030]	[0.030]
ΔMortgage Debt 1910-20	-0.006	-0.008	-0.012	-0.015	-0.002	-0.003	0.009
	[0.010]	[0.009]	[0.010]	[0.010]	[0.014]	[0.014]	[0.013]
ΔImproved Acres 1910-20	0.005	0.001	-0.003	-0.006	0.053***	0.048***	0.049***
	[0.009]	[0.009]	[0.009]	[0.010]	[0.015]	[0.015]	[0.017]
Ln(Mortgage Debt Per Acre)	-0.006	-0.011	-0.005	-0.003	0.007	0.008	-0.007
	[0.012]	[0.012]	[0.012]	[0.013]	[0.017]	[0.017]	[0.016]
ΔLoans 1914-20				0.018**			0.019
				[0.008]			[0.015]
Fed Member			0.004	-0.002			
			[0.047]	[0.047]			
Fed Member *ΔLand Value Per Acre 1910-20			-0.000	0.020			
			[0.055]	[0.058]			
Double Liability * ΔLand Value Per Acre 1910-20			0.047	0.027			
			[0.048]	[0.053]			
Min Cap.>$10,000 * ΔLand Value Per Acre 1910-20			0.016	0.022			
			[0.034]	[0.036]			
Insured Bank			-0.029	-0.028			
			[0.027]	[0.026]			
Insured Bank * ΔLand Value Per Acre 1910-20			0.082**	0.087**			
			[0.035]	[0.038]			
Ln(Assets)		-0.049***	-0.050***	-0.046***		-0.029***	-0.016
		[0.006]	[0.007]	[0.007]		[0.010]	[0.010]
Loans/Assets		0.122***	0.129***	0.138***		0.075	-0.009
		[0.040]	[0.040]	[0.045]		[0.061]	[0.062]
(Capital+Surplus)/Assets		-0.081	-0.079	-0.135*		-0.093	-0.259*
		[0.056]	[0.056]	[0.073]		[0.105]	[0.149]
Cash/Assets		-0.295***	-0.294***	-0.358***		-0.183*	-0.293***
		[0.063]	[0.063]	[0.073]		[0.107]	[0.103]
Entered in 1918		-0.034***	-0.033***			-0.021	
		[0.012]	[0.012]			[0.019]	
Entered in 1916		-0.067***	-0.066***			-0.040***	
		[0.010]	[0.010]			[0.014]	
Entered in 1914		-0.051***	-0.050***			-0.028	
		[0.011]	[0.011]			[0.018]	
Entered in 1912		-0.048***	-0.047***	0.013		-0.038***	-0.011
		[0.012]	[0.012]	[0.016]		[0.014]	[0.021]
Entered in 1910		-0.065***	-0.063***	-0.007		-0.046***	-0.023
		[0.010]	[0.010]	[0.014]		[0.014]	[0.020]
Entered in 1908 or Earlier		-0.083***	-0.081***	-0.007		-0.081***	-0.036
		[0.013]	[0.013]	[0.013]		[0.026]	[0.026]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10041	10041	10041	7857	2540	2540	2153
R-squared	0.096	0.128	0.130	0.125	0.107	0.142	0.131

Notes: The table presents the marginal effects from a Probit regression. The dependent variable is an indicator variable for whether the bank closed before 1924. Each observation is a bank in 1920. The column headings denote which banks are included in the regressions. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with a city over 25,000 persons, fewer than 250 farms, or fewer than 15,000 improved farm acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county, the number of state banks in the county, the logarithm of the county's size in square miles, average rainfall in the county, the standard deviation of rainfall in the county, and distances to Mississippi River, Atlantic Ocean, Great Lakes, and Pacific Ocean. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 7: Determinants of Bank Closure With Measures of the Bust (1920-1924)

	Probability of Closing							
	State Banks				National Banks			
	All Banks		Banks Est. Before 1914		All Banks		Banks Est. Before 1914	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔLand Value Per Acre 1910-20	0.065***	0.041	0.056**	0.023	0.049	0.076**	0.012	0.038
	[0.023]	[0.028]	[0.025]	[0.030]	[0.033]	[0.037]	[0.032]	[0.039]
ΔLand Value Per Acre 1920-25	-0.027	0.017	-0.027	0.027	-0.046	-0.113**	-0.035	-0.099
	[0.046]	[0.053]	[0.051]	[0.057]	[0.035]	[0.055]	[0.035]	[0.063]
ΔLand Value 1910-20 * ΔLand Value 1920-25		-0.069		-0.090**		0.091		0.083
		[0.042]		[0.045]		[0.065]		[0.069]
ΔMortgage Debt 1910-20	-0.009	-0.007	-0.012	-0.010	-0.003	-0.004	0.008	0.008
	[0.009]	[0.010]	[0.010]	[0.010]	[0.014]	[0.014]	[0.013]	[0.013]
ΔImproved Acres 1910-20	0.005	0.003	0.002	-0.001	0.054***	0.059***	0.052***	0.056***
	[0.009]	[0.009]	[0.010]	[0.010]	[0.016]	[0.017]	[0.017]	[0.018]
Ln(Mortgage Debt Per Acre)	-0.013	-0.013	-0.009	-0.009	0.005	0.005	-0.009	-0.009
	[0.012]	[0.012]	[0.013]	[0.013]	[0.017]	[0.017]	[0.016]	[0.016]
ΔLoans 1914-20			0.018**	0.018**			0.019	0.018
			[0.008]	[0.008]			[0.015]	[0.015]
Fed Member	0.022	0.016	0.030	0.030				
	[0.030]	[0.029]	[0.036]	[0.034]				
Fed Member *ΔLand Value Per Acre 1920-25	0.044	0.035	0.036	0.039				
	[0.047]	[0.045]	[0.055]	[0.050]				
Double Liability * ΔLand Value Per Acre 1920-25	-0.034	-0.024	-0.003	0.011				
	[0.057]	[0.057]	[0.063]	[0.062]				
Min Cap.>$10,000 * ΔLand Value Per Acre 1920-25	0.004	0.003	-0.019	-0.017				
	[0.046]	[0.045]	[0.049]	[0.048]				
Insured Bank	-0.023	-0.020	-0.017	-0.013				
	[0.026]	[0.026]	[0.026]	[0.026]				
Insured Bank * ΔLand Value Per Acre 1920-25	-0.108**	-0.100*	-0.096*	-0.087				
	[0.053]	[0.052]	[0.057]	[0.055]				
Ln(Assets)	-0.048***	-0.049***	-0.045***	-0.045***	-0.029***	-0.028***	-0.016	-0.016
	[0.007]	[0.007]	[0.007]	[0.007]	[0.010]	[0.010]	[0.010]	[0.010]
Loans/Assets	0.122***	0.120***	0.136***	0.133***	0.071	0.069	-0.011	-0.014
	[0.040]	[0.040]	[0.045]	[0.045]	[0.061]	[0.061]	[0.062]	[0.062]
(Capital+Surplus)/Assets	-0.084	-0.084	-0.142*	-0.144**	-0.104	-0.106	-0.270*	-0.269*
	[0.056]	[0.056]	[0.073]	[0.073]	[0.106]	[0.106]	[0.149]	[0.149]
Cash/Assets	-0.290***	-0.292***	-0.350***	-0.355***	-0.184*	-0.195*	-0.293***	-0.295***
	[0.062]	[0.062]	[0.073]	[0.073]	[0.107]	[0.107]	[0.102]	[0.102]
Entered in 1918	-0.034***	-0.034***			-0.022	-0.023		
	[0.012]	[0.012]			[0.019]	[0.019]		
Entered in 1916	-0.067***	-0.067***			-0.041***	-0.040***		
	[0.010]	[0.010]			[0.013]	[0.013]		
Entered in 1914	-0.051***	-0.051***			-0.028	-0.029*		
	[0.011]	[0.011]			[0.018]	[0.017]		
Entered in 1912	-0.050***	-0.050***	0.012	0.011	-0.039***	-0.040***	-0.011	-0.011
	[0.011]	[0.011]	[0.016]	[0.016]	[0.014]	[0.014]	[0.021]	[0.021]
Entered in 1910	-0.064***	-0.064***	-0.007	-0.007	-0.047***	-0.047***	-0.024	-0.024
	[0.010]	[0.010]	[0.014]	[0.014]	[0.013]	[0.013]	[0.019]	[0.019]
Entered in 1908 or Earlier	-0.084***	-0.083***	-0.008	-0.008	-0.083***	-0.085***	-0.036	-0.036
	[0.013]	[0.013]	[0.013]	[0.013]	[0.026]	[0.026]	[0.026]	[0.026]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10041	10041	7857	7857	2540	2540	2153	2153
R-squared	0.131	0.131	0.125	0.125	0.143	0.145	0.131	0.132

Notes: The table presents the marginal effects from a Probit regression. The dependent variable is an indicator variable for whether the bank closed before 1924. Each observation is a bank in 1920. The column headings denote which banks are included in the regressions. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with a city over 25,000, fewer than 250 farms, or fewer than 15,000 improved farm acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county, the number of state banks in the county, the logarithm of the county's size in square miles, average rainfall in the county, the standard deviation of rainfall in the county, and distances to Mississippi River, Atlantic Ocean, Great Lakes, and Pacific Ocean. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 8: Determinants of the Agricultural Boom (1910-20)

	Change in Ln(Farm Land Value Per Acre)		
	(1)	(2)	(3)
ΔCrop Price Index 1910-19	0.173	0.231***	0.157
	[0.107]	[0.070]	[0.104]
Number of State Banks	-0.069***	0.004**	-0.066***
in 1910	[0.022]	[0.002]	[0.021]
Number of National Banks	0.177***	0.015***	0.173***
in 1910	[0.045]	[0.004]	[0.044]
State Banks in 1910*	0.047***		0.046***
ΔCrop Price Index 1910-19	[0.015]		[0.014]
National Banks in 1910*	-0.107***		-0.102***
ΔCrop Price Index 1910-19	[0.029]		[0.028]
ΔState Bank Loans		0.010**	0.011**
1910-20		[0.005]	[0.005]
ΔNational Bank Loans		0.008***	0.008***
1910-20		[0.002]	[0.002]
County-Level Controls?	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes
Observations	1199	1199	1199
R-squared	0.453	0.457	0.467

Notes: The table presents the results of an OLS regression. The dependent variable is the percentage change in farm land value per acre 1910-20. Each observation is a county. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with a city over 25,000, fewer than 250 farms, or fewer than 15,000 improved farming acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county, the number of state banks in the county, the logarithm of the county's size in square miles, average rainfall in the county, the standard deviation of rainfall in the county, distances to Mississippi River, Atlantic Ocean, Great Lakes, and Pacific Ocean, and the percentage of unimproved land in the county. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 9: Determinants of the Agricultural Bust (1920-25)

	Change in Ln(Farm Land Value Per Acre)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ΔFarm Land Value 1910-20	-0.314***	-0.316***	-0.306***	-0.311***	-0.298***	-0.305***	-0.322***
	[0.037]	[0.038]	[0.037]	[0.039]	[0.041]	[0.041]	[0.041]
ΔCrop Price Index 1919-25	0.259***	0.296***	0.295***	0.297***	0.292***	0.292***	0.289***
	[0.061]	[0.054]	[0.053]	[0.054]	[0.053]	[0.053]	[0.053]
Number of State Banks in 1920	0.011	-0.001	0.002	0.003	0.002	0.001	0.000
	[0.008]	[0.001]	[0.001]	[0.003]	[0.002]	[0.002]	[0.001]
Number of National Banks in 1920	-0.025	-0.001	0.000	-0.001	-0.000	-0.001	-0.002
	[0.017]	[0.003]	[0.003]	[0.004]	[0.003]	[0.003]	[0.003]
State Banks in 1920 * ΔCrop Price Index 1919-25	0.011						
	[0.008]						
National Banks in 1920 * ΔCrop Price Index 1919-25	-0.022						
	[0.015]						
ΔState Bank Loans 1910-20		0.002					
		[0.003]					
ΔNational Bank Loans 1910-20		0.000					
		[0.001]					
Number of State Bank Closures 1920-25			-0.015***				
			[0.004]				
Number of National Bank Closures 1920-25			0.006				
			[0.009]				
Predicted Number of State Bank Closures 1920-25 (With 5% Cutoff)				-0.004			
				[0.002]			
Predicted Number of National Bank Closures 1920-25 (With 5% Cutoff)				0.001			
				[0.004]			
Predicted Number of State Bank Closures 1920-25 (With 10% Cutoff)					-0.005**		
					[0.002]		
Predicted Number of National Bank Closures 1920-25 (With 10% Cutoff)					0.002		
					[0.006]		
Predicted Number of State Bank Closures 1920-25 (With 15% Cutoff)						-0.005**	
						[0.002]	
Predicted Number of National Bank Closures 1920-25 (With 15% Cutoff)						0.006	
						[0.007]	
Predicted Number of State Bank Closures 1920-25 (With 20% Cutoff)							-0.005*
							[0.003]
Predicted Number of National Bank Closures 1920-25 (With 20% Cutoff)							0.013
							[0.009]
County Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1247	1247	1247	1247	1247	1247	1247
R-squared	0.621	0.620	0.624	0.620	0.621	0.621	0.625

Notes: The table presents the results of an OLS regression. The dependent variable is the percentage change in farm land value per acre 1910-20. Each observation is a county. Only counties located in the Midwest, Great Plains, or South with consistent bank-level data published are included. The sample also excludes locations with a city over 25,000, fewer than 250 farms, or fewer than 15,000 improved farming acres. County-level controls include the logarithms of county population and manufacturing output per person, the fraction of county population living in a city or town of 2,500 or more persons, the fractions of county population that are non-white, illiterate, or 15 years of age or younger, the number of national banks in the county, the number of state banks in the county, the logarithm of the county's size in square miles, average rainfall in the county, the standard deviation of rainfall in the county, distances to Mississippi River, Atlantic Ocean, Great Lakes, and Pacific Ocean, and the percentage of unimproved land in the county. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A1: Summary Statistics

	Mean	Std Dev.
County-Level		
ΔCrop Price Index 1910-1919	159.1%	14.5%
ΔCrop Price Index 1919-1925	-103.3%	21.0%
Biennial Rate of State Bank Entry (1908-1920)	11.1%	25.2%
Biennial Rate of National Bank Entry (1908-1920)	4.4%	17.6%
ΔMortgage Debt 1910-1920	93.5%	54.7%
ΔImproved Acres 1910-1920	6.6%	32.4%
Ln(Mortgage Debt Per Acre) in 1920	1.50	0.74
ΔLand Value Per Acre 1910-1920	69.5%	28.7%
ΔLand Value Per Acre 1920-1925	-34.9%	25.2%
# of State Banks in 1910	6.046	4.508
# of National Banks in 1910	1.778	1.893
# of State Banks in 1920	7.973	5.534
# of National Banks in 1920	2.037	2.124
# of State Banks Closed 1920-1924	1.116	1.564
# of National Banks Closed 1920-1924	0.184	0.521
Bank-Level		
Ln(Assets) in 1920	12.705	0.890
Ln(Loans) in 1920	12.345	0.889
Loans/Assets in 1920	0.714	0.135
(Capital+ Surplus)/ Assets in 1920	0.157	0.077
(Cash+ Due from Bank)/Assets in 1920	0.139	0.079
Bonds and Stocks/Assets in 1920	0.090	0.104
Fed Member Dummy in 1920 (State Banks Only)	5.3%	22.5%
Insured Bank Dummy in 1920 (State Banks Only)	28.5%	45.1%
ΔLn(Assets) 1914-1920	76.3%	39.4%
ΔLn(Loans) 1914-1920	76.9%	48.7%
ΔLoans/Assets 1914-1920	0.005	0.122
Δ(Capital+Surplus)/Assets 1914-1920	-0.083	0.080
Δ(Cash+ Due from Bank)/Assets 1914-1920	-0.040	0.090
ΔBonds and Stocks/Assets 1914-1920	0.034	0.081
%Closed Between 1920-1924	11.1%	31.5%
Minimum State Bank Capital $10,000 or Below	39.2%	48.8%
Double Liability Requirement	81.3%	39.0%
Deposit Insurance Active in State	31.3%	46.4%

Notes: The table provides summary statistics for samples used in regressions. County-level data include all counties in the sample whether or not they had a bank. Bank-level data include all banks in the sample.