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LOANS FOR THE "LITTLE FELLOW:"
CREDIT, CRISIS, AND RECOVERY IN THE GREAT DEPRESSION

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ABSTRACT

This paper identifies how bank branching benefited local economies during the Great Depression. Using archival data and narrative evidence, I show how Bank of America's branch network in 1930s California created an internal capital market to diversify away local liquidity shortfalls, allowing it to maintain 49 percent higher credit growth from 1929 to 1933 than competing banking offices. The bank's presence caused smaller city property value contractions and stronger recoveries through 1940. Linked individual data show the bank’s proximity hastened the transition away from agricultural employment and towards human capital-intensive sectors in the 1930s, generating industrialization and higher wages.

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A data appendix is available at http://www.nber.org/data-appendix/w31779

1 Introduction

The Great Depression remains the largest financial crisis in American history. Total lending fell by 26 percent in real terms from 1929 to 1933 in the United States, making it exceptionally intense compared to contractions in contemporary advanced economies and other American crises alike (Romer, 1993).[1] This crisis was also exceptional because it occurred in a financial sector largely devoid of the branch bank networks prevalent amongst its peers and in the modern context (Calomiris, 2000). The American banking sector lacked this otherwise common form of integration, and its resulting fragmentation is central to narratives of the financial crisis (Friedman and Schwartz, 1963). Identifying bank branching's financial and economic benefits in this period can therefore clarify why the American Great Depression was so severe.

To that end, this paper isolates how a large branch network improved on what Bernanke (1983) demonstrated was a crucial driver of the financial crisis, unit banks' willingness to lend. Then, I trace out the lingering economic consequences of this increase in financial intermediation by linking the pre-crisis presence of bank branching to cities' property value growth and industrialization during the 1930s. Examining this historical setting both establishes the persistent impact of branching-driven credit supply on economic activity during the Great Depression specifically and illustrates how sectoral reallocation can contribute to the real effects of financial crises more generally.[2]

I identify the effect of bank branching on Great Depression outcomes using plausibly exogenous variation in branch locations across California cities at the start of the crisis. This setting features the largest branch network in the country at the time, a bank we know now as Bank of America, which expanded rapidly in the 1920s to cover roughly half of California

[1]This calculation uses the 1929–33 change in $TLOANS$, deflated by CPI for all countries in Jordà et al. (2017).

[2]A broad literature emphasizes that financial crises have high social costs due to their lingering effects on output in a wide range of countries and time periods. (Krishnamurthy and Muir, 2017; Cerra and Saxena, 2008; Romer and Romer, 2017; Jordà et al., 2013; Claessens et al., 2012; Peek and Rosengren, 2000; Baron et al., 2021; Xu, 2022). See Frydman and Xu (2023) for a recent review of this literature.

cities in 1929. Detailed narrative evidence indicates that regulatory resistance undermined the bank's ability to select into specific locations during its expansion. A variety of pre-trend and balance tests support this interpretation. For example, property value growth, industrial employment shares, and loan-deposit ratios were statistically indistinguishable in places with and without Bank of America branches before the onset of the Great Depression in the baseline sample. Therefore I trace out the importance of bank branching by comparing cities' 1930s development based on the presence of Bank of America branches in 1929.

In order to assess bank branch network behavior and its economic consequences, this paper brings together regulatory reports, court documents, congressional hearings, census microdata, and bank balance sheets. I observe banking offices' locations and balance sheets over time due to the detail available in historical banking records. Then, I use recently uncovered archival information on annual per capita property values, which are highly correlated with decennial housing value changes, to measure the annual evolution of economic activity at the city level. I complement these city data with a longitudinal employment dataset, which I constructed by applying automated record linking techniques to workers in the 1930 and 1940 censuses (Ruggles et al., 2020; Abramitzky et al., 2012). This microdata panel approach permits examination of reallocation-based mechanisms, which would be invisible in more aggregated data.

First, I show that Bank of America branches provided more local financial intermediation than other banking offices during the crisis. Bank of America branches had 28 percentage point smaller lending cuts from 1929 to 1933 on average than unit banks, despite balance on a variety of pre-1930 variables and inclusion of city fixed effects. These differential contractions were present except in the top ventile of local deposit growth during the crisis, which proxies for locations with relatively little local banking instability. Across a variety of approaches, Bank of America network membership led to more resilient credit markets than the equivalent unit bank except when local bank runs were extremely mild.

Comparing branch networks' lending patterns indicates that Bank of America's geographic diversification, not other aspects of branch banking, insulated local credit supply. Using 1933 branch balance sheets, I illustrate that Bank of America branches had higher loan-asset ratios at smaller and worse-off branches and transferred more funds for use elsewhere in its network from larger and more liquid locations than other branch networks. These allocation differences derive from loans for a non-portable asset category, real estate. By subsidizing its illiquid branches' credit with internal capital market transfers, Bank of America smoothed away local shocks in a way that unit banks and smaller branch networks could not. Bank of America moved funds within its network to counteract local liquidity shortfalls, leading it to supply more credit than other institutions in the Great Depression.

This form of heightened local lending had substantial, lingering benefits for cities' economic growth throughout the 1930s. Local projections indicate that per capita property values in Bank of America-branched cities had grown by 21 percentage points more than in their non-branched counterparts between 1929 and 1924. This divergence derives from cities with Bank of America branches in 1929 having significantly smaller contractions, earlier rebounds, and larger recoveries in per capita property values. I find no evidence of differential growth from 1923 to 1929 based on 1929 Bank of America branch network locations, nor are these findings affected by adjustments for other bank networks, branch location selection on pre-treatment observables, or time-varying financial, monetary, or fiscal policy shocks. Branching-driven credit both softened the blow of the aggregate Great Depression and led to markedly stronger local economic conditions during the recovery.

Fourth, following workers between censuses reveals that Bank of America's presence created structural change in nearby labor markets during the 1930s. I regress the probability a worker is working in a given sector in 1940 on proximity to the 1929 Bank of America network to estimate the impact of bank branching on local employment controlling for pre-crisis individual and local labor market variables. Bank of America-branched towns' agricultural sectors shrunk by roughly half between 1930 and 1940 compared to their non-treated counterparts. These results are not driven by selective migration or pre-Depression labor market characteristics, nor are there similar patterns in a 1920—30 placebo regression. Together with Bank of America's elevated crisis real estate lending, this would be consistent with the bank's actions stabilizing household consumption and reducing the supply of farm labor compared to other places. Instead of entering farm labor, workers remained in the non-farm sector if near a 1929 Bank of America branch, stimulating manufacturing and service employment in the 1930s.

Bank branching induced this form of industrialization through two channels: higher sector-specific human capital and the movement of high human capital workers into non-agricultural employment. Analyzing occupational outcomes in an analogous fashion to industry employment shows that Bank of America's presence increased the probability of remaining in the same non-farm sector and entering professional, managerial, clerical, and sales employment by 1940. The latter occupations chiefly grew in treated places through the reallocation of high school graduates into white-collar work. By stimulating high human capital employment outside the farm sector, Bank of America-branched towns experienced heightened economic development during the Great Depression.

In the last part of the paper, I show that these sectoral composition effects can explain most of the 1940 wedge in economic activity between places with and without Bank of America branches in 1929. Using the same specification as in the other worker regressions, I show that much of the nine-log point wage premium for Bank of America branched labor markets in 1940 can be explained by the two human capital composition effects. Industrialization, here measured using the highly educated white collar employment share, explains most of the 1940 wage gap in a horse race. An analysis of a manufacturing establishment-level panel spanning 1929 to 1935 finds that wages, but not employment or marginal product per worker, rose in Bank of America-branched places after 1929, providing suggestive evidence that these mechanisms were at work during the crisis itself. The reallocation of workers outside of the agricultural sector played a sizeable role in turning local branch networks' crisis credit supply into persistently better economic outcomes throughout the 1930s.

Bank branching thus altered the structure and scope of economic growth in the Great Depression, linking existing scholarship on the financial crisis to work on the subsequent recovery in the 1930s. One recent strand of work on the Great Depression has shown that disruptions in credit access worsened manufacturing firms' employment and innovation during the recession (Lee and Mezzanotti, 2017; Mladjan, 2019; Benmelech et al., 2019; Nanda and Nicholas, 2014; Ziebarth, 2013; Jalil, 2014; Babina et al., 2023). Other researchers have highlighted how financial instability, particularly in regions with tight monetary policy, transmitted across banks' connections to induce bank failures, building on Friedman and Schwartz (1963) (Calomiris and Mason, 2003a; Richardson and Troost, 2009; Mitchener and Richardson, 2019). I bridge these bodies of work by illustrating the internal capital market mechanism through which bank branching counteracted uncertainty during the crisis as well as its real benefits over the rest of the decade.[3] This paper also shows that banks' crisis lending translated into earlier economic recoveries through its effects on industrialization, complementing the roles played by monetary aggregates and fiscal policy examined in prior work (Temin, 1976; Temin and Wigmore, 1990; Romer, 1992; Eggertsson, 2008; Jalil and Rua, 2016; Fishback, 2017). In particular, I emphasize that the links between local financial intermediation and local economic development are key for understanding how the crisis in the fractured American banking sector affected economic growth in the Great Depression.

These findings on sectoral reallocation also add to a recent literature focused on the mechanisms underlying the lingering welfare costs of financial crises. Analysis focused on the Great Recession has linked lending conditions to changes in household and firm balance sheets, mostly, but not uniformly, finding credit crunches led to worse recessions and slower recoveries (Chodorow-Reich, 2014; Greenstone et al., 2020; Giroud and Mueller, 2017; Mian et al., 2013; Di Maggio and Kermani, 2017; Chen et al., 2017). At a local level, the 2000s

[3]This paper identifies the impact of local banking shocks on industrial composition, in contrast to work analyzing the role of pre-1930 industrial labor demand, especially agriculture and manufacturing concentration, in explaining regional variation in Depression severity and migration patterns (Rosenbloom and Sundstrom, 1999; Wallis, 1989; Garrett and Wheelock, 2006; Boone and Wilse-Samson, 2021; Boyd, 2002; Delli Gatti et al., 2012) or existing papers using time series techniques to identify loan supply shocks' effects on aggregate variables (Breitenlechner et al., 2021; Chin et al., 2010).

mortgage boom and bust translated into durable employment declines (Mian and Sufi, 2014; Garcia, 2018; Bhattarai et al., 2021; Mondragon, 2018). Firm responses to credit shocks led to lingering losses in the recent crisis as well, particularly through investment and innovation (Garicano and Steinwender, 2016; Huber, 2018; Ridder, 2017). Beyond finding comparably persistent local credit supply effects in another context, the microdata in this paper illustrate an additional set of underlying labor mechanisms.

This study also spotlights how branch banking can provide economic stability during and after a severe financial crisis. Starting with Jayaratne and Strahan (1997), research has demonstrated that states which relax branch banking restrictions grow faster during periods of economic expansion, which are often periods of high credit and non-tradable employment growth (Mian et al., 2020). By moving funds across regions, another strand of the literature shows branch banks can alter capital allocation, particularly in booms (Morgan et al., 2004; Huber, 2021; Stein, 1997; Gilje et al., 2016). I contribute to this literature by illustrating the benefits provided by internal capital markets during a financial crisis. This paper shows how the first large-scale branch banking network in the country smoothed away local liquidity shocks during the Great Depression, complementing earlier cross-country studies' emphasis on the relative inability of the United States' unit bank-dominated system to diversify risk (Calomiris, 2000; Grossman, 1994; Bordo et al., 1994). I find that Bank of America improved banking services in the 1930s through diversification within its network, in addition to its pro-competitive effects on unit banks' portfolios as demonstrated by Carlson and Mitchener (2009).

Finally, this paper relates to work which illustrates how financial development eases labor market frictions and facilitates economic growth. Bank branch network expansion has increased financial inclusion and incomes across a wide array of settings and approaches.[4] However, evidence is mixed on what parts of the skill distribution gain from financial in-

[4]See Barajas et al. (2020) for a detailed recent review on the international impacts of financial inclusion. Berger and Roman (2018) provides a thorough discussion of the post-1970 American bank branching deregulation literature.

clusion. Although some research finds bank branching narrows inequality as it stimulates income growth (e.g. Beck et al. (2010) and Célerier and Matray (2019)), recent studies by Ji et al. (2023) and Fonseca and Matray (2022) show that opening of large banks' branches can also widen labor market disparities as local average incomes rise, which the latter paper links to firms' increasing demand specifically for skilled workers. By following workers over time, I find evidence that a large branch bank's presence can increase wages through another skill-biased mechanism, sectoral reallocation. This paper shows that Bank of America access accelerated structural change through the movement of highly educated workers, which illustrates a complementary linkage between local financial development, economic growth, and inequality.

In the next section, I provide background on this historical setting. In Section 3, I detail the data sources and identification strategy used in this paper. Section 4 explains how Bank of America's branch network insulated local banking markets during the financial crisis. In Section 5, I trace out the effect of this credit supply shock on cities' per capita property values throughout the 1930s. Then, to understand these results through a labor market lens, I use linked worker microdata in Section 6. Section 7 concludes.

2 Historical Background

Before investigating how bank branching affected local financial and economic outcomes in the Great Depression, I first provide background on the setting. The paper's empirical strategy compares the Bank of America network's behavior to that of other California banks during the 1930s.[5] This approach implicitly assumes that without Bank of America's presence, cities in its network would have had Great Depression experiences like those of non-networked cities. To support this assertion, I next outline how Bank of America expanded in the 1920s and how its network softened local financial crisis severity in the 1930s.

[5] The bank known now as Bank of America started as Bank of Italy in 1904. For the sake of expositional convenience, I will refer to the components of Bank of America National Trust and Savings Association, as it became known in 1930, as Bank of America throughout.

2 .1 The Rise of Bank Branching

Although large bank branch networks are ubiquitous in the modern American financial system, they were far rarer in the Great Depression. Branching restrictions were determined by state regulators and varied substantially in the first half of the twentieth century (Calomiris, 2000). California cross-city branching rules in the 1920s and 1930s occupied a middle ground between the strict prohibition in most other states at the time and the current branching model. The state's banking policy, at the time one of the most permissive in the nation, largely prohibited *de novo* or brand-new, branches outside a bank's headquarter city. Branch networks instead purchased existing banks' stock and converted these acquisitions into branch offices to expand, conditional on receiving regulatory approval. Together, these steps significantly constrained branch banking across space compared to today. Though cross-city branch network expansion was *de jure* legal in California before the Great Depression, only one bank attempted it, the bank now known as Bank of America.

In contrast to his peers, who were content to operate in a few neighboring California counties, Bank of America's founder, A.P. Giannini, declared that "nothing will deter [us] from lawfully benefiting the residents of any and every part of California" (James and James, 1954, p. 99).[6] To do so, he first needed to find potential banks to acquire. Giannini and his employees wrote letters and drove all over the state, offering to purchase existing unit banks in the hopes that state officials would permit any actual acquisitions to become Bank of America offices.[7] Upon receiving such offers, many bankers tried to discourage their stockholders

[6]A successful produce merchant before starting a bank in San Francisco in 1904, Giannini saw branching as a way to hurt his correspondent-oriented competitors, grow quickly, and provide better service to more customers (Federal Reserve System, 1931). The contrasts he observed in banking service in the wake of the Panic of 1907 between the single-city bank controlled eastern United States and branch-dominated western Canada sparked his interest in branching as a way to maintain financial stability in particular (Nash, 1992).

[7]In court testimony, Bank of America executives recalled writing letters or visiting unit banks every month for ten or more years before the bankers acquiesced to a sale, suggesting substantial expansion uncertainty (Transamerica Corporation vs Federal Reserve Board, 1953). In the same hearings, bank presidents from all over California detailed unsuccessful purchase inquiries occurring almost every other month for decades (Transamerica Corporation vs Federal Reserve Board, 1953). Similarly, Posner (1956) notes that Bank of America officials reported they took ten years to enter Monterey after the Monterey City Trust and Savings bank president refused to sell his shares in exchange for a vice president position at Bank of America. Testimony suggested that these purchase offers were, if anything, high relative to banks' value (Transamerica

from selling with anti-takeover flyers or stock pools with such vigor that a contemporary study suggested this action put bank employees' own preferences above company interests (Southworth, 1928). Due to such behavior, Bank of America could not guarantee its desired geographic expansion simply by identifying targets and making purchase offers.

Other ex-ante unknown circumstances also shaped whether a potential acquisition turned into a branch, as Bank of America's record in two adjacent California cities illustrates. In San Luis Obispo, Giannini's organization was able to buy roughly 45 percent of an existing bank's stock before unit bankers in town got word of its intentions. Block. To block Giannini's bid, the target bank coordinated the sale of its majority stake to a unit competitor. Bank of America did not control enough stock to complete the acquisition until a major stockholder's widow, angered at her son not inheriting a board seat, sold her shares to Giannini (James and James, 1954). In contrast, the elderly president of a bank in nearby Santa Maria visited San Francisco in the hopes he could sell his bank and retire around the same time. The state superintendent refused to provide updated examinations so Bank of America could complete the sale, stopping the transaction. Six months later, the now former superintendent acquired the bank in his new position with a rival branch network. As a last resort, Giannini submitted a petition from Santa Maria residents and chamber of commerce to justify a *de novo* branch permit. His application was rejected; the new superintendent had referred all Santa Maria-related banking matters over to his school classmate, who was the attorney for the remaining unit bank in town (James and James, 1954). Qualitative evidence indicates such situations were not unusual, though California branch permit applications cannot be located to quantify their representativeness.[8]

The state banking department had ultimate authority to decide if branch networks could open new branches, as the above examples indicate. Regulators used this discretionary power

Corporation vs Federal Reserve Board, 1953).

[8]The only available acceptance statistics come from a comparison of a former superintendent's memoirs and the state banking department's annual report. They indicate that even the most generous superintendent granted under one-third of applications (Wood, n.d.; California State Banking Department, various years). Federal officials similarly did not keep detailed records, but Posner (1956) notes that acquisitions were rejected because of advice from rival California branch bankers, for example.

over both acquisition-based and *de novo* branching permits to limit Bank of America's network in particular. Giannini's bank had plenty of opposition in the state banking department for both economic and personal reasons; one state banking superintendent recollected that "positively all of [the state regulators] were prejudiced against the Bank of Italy" (Wood, n.d., p.3). Based on observation of the Canadian branch bank system, many experts worried that branch networks would funnel rural deposits to urban borrowers, increase potential barriers to entry, and destroy local correspondent lending relationships (Preston, 1924).[9] Nativist sentiment also played a role in this opposition; some opposed to Bank of America's expansion because they believed that Giannini, the son of Italian immigrants, was an agent of the pope or Benito Mussolini (Posner, 1956; Chapman and Westerfield, 1942). Some regulators' antipathy was rooted in self-interest; as erstwhile bankers, they worried that the expansion of a large branch bank would threaten their own unit or branch banks. Whatever their individual motives, both state and national regulators leveraged authorization standards to limit Giannini's choice of expansion locations for most of the 1920s.[10]

In early 1927, two developments simultaneously relaxed the anti-Bank of America coalition's grip on Giannini's ability to expand. Starting in January 1927, the new chief state bank regulator forced his department to follow the letter of the law, not their own preferences, permitting Bank of America to convert its purchases into branches across the state. Second, Congress passed the McFadden Act in February 1927, which allowed national banks to have the same branch permissions as state banks did within their state of operation, but only for those networks formed by the bill's passage.[11] The McFadden Act would allow Bank

[9]Despite regulators' worries, in 1929, the Bank of America loan-deposit ratio was 0.68, quite close to the unit bank average of 0.66 in small cities (see Table C1) (71st Congress, 1930).

[10]Government officials had full responsibility for these permits with little oversight, especially since the executive branch was generally anti-bank branching (e.g. President Warren G. Harding and his Treasury secretary, Andrew Mellon) or anti-Giannini specifically (e.g. California governor William Stephens who had been forced to repay overdue loans once Bank of America acquired his preferred bank) (Posner, 1956; Nash, 1992).

[11]Compromises arising from the two-year debate on the McFadden Act limited the opening of branches after the bill's passage (Rajan and Ramcharan, 2016). If state laws allowed geographically widespread branching, as in California, national banks operating in that state could acquire as many branches as they wanted before February 25, 1927. After that date, no national bank could open non-headquarter city branches in cities smaller than 25,000 people, regardless of state law.

of America to first certify as many branches as the suddenly fair California state regulators would allow and then switch to a national bank charter, but only if the bank could do all of this before the signing of the law.

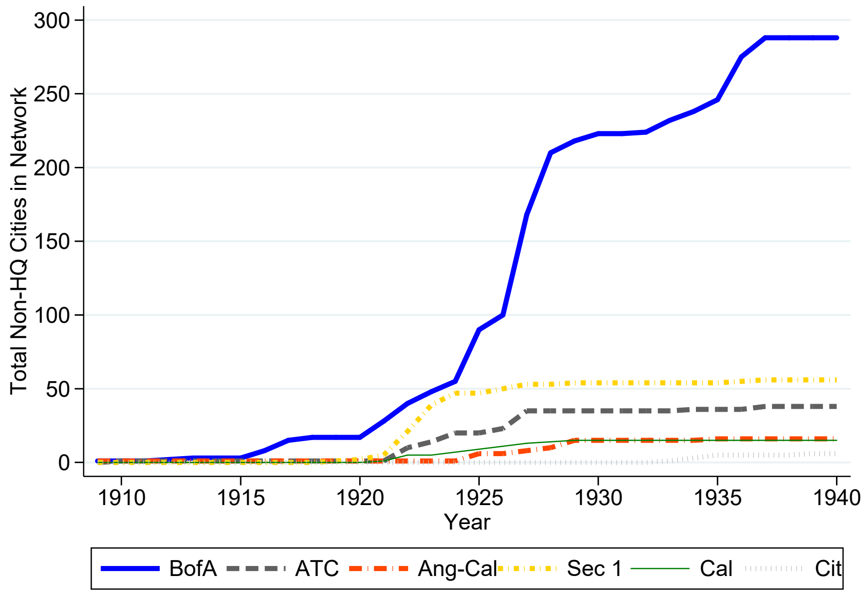
Seeing an opportunity to escape the uncertainties of state bank regulation with a large branch network intact, "[Bank of America] was out to acquire any bank that they [could]" in the months before the McFadden Act became law, according to their competitors (Board, 1952, p.381). After years of comparable growth, Bank of America's expansion rapidly outstripped that of its competitors in the run-up to the passage of the McFadden Act, as can be seen in Figure 1. Giannini persuaded state and national regulators to certify this massive bank consolidation on February 19, 1927, beating out the enactment of the McFadden Act by less than a week (Federal Reserve System, 1931).[12] Upon getting word that his branch permits were finally approved, Giannini exulted that the bank leadership "consider[ed] ourselves fortunate to get what we have in a short space of time" (Bonadio, 1994, p.109). After a final set of acquired banks officially entered the network as branches in 1929, Bank of America became the third-largest bank in the United States by deposits just 25 years after opening.[13] According to the bank's official history, this was "not the method [Giannini] would have chosen to expand his banking operations in California [but] it was what he had to resort to" in order to establish a statewide branch bank network given regulatory constraints (James and James, 1954, p.169).

The resulting state spanning network of 467 total branches in 218 towns was exceptional for its time. Bank of America's network included half the cities in California and almost half of the non-headquarter city branches in the nation, leading rivals to call it a "huge financial octopus" (Bonadio, 1994, p.57). Figure 2a maps this locations; circles mark places home to at least one Bank of America branch in 1929 and triangles are cities without any Bank

[12]Crucially, the previously anti-branching Comptroller of the Currency broke a Federal Reserve deadlock to approve a national bank charter for Bank of America as Congress voted on the bill (Posner, 1956).

[13]Expansion paused during the banking crisis but was allowed following the passage of the Glass-Steagall Act in 1933, largely through the newly legal *de novo* process, as seen in Figure A1. In 1937, the US Treasury deemed the bank's dividends too large, and halted the bank's branch acquisition until after World War II (James and James, 1954).

Figure 1: The Size of California Branch Bank Networks, 1909–1940



Sources: Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Transamerica Corporation vs Federal Reserve Board (1953), and author's calculations. The non-Bank of America banks listed are the only other banks to operate branches in at least four cities in 1929: from left to right, American Trust Company, Anglo-California National Bank, Security First National Bank, California Bank, and Citizens National Bank.

of America branches in 1929.[14] The darker the color, the larger the population in 1929. Particularly in the Central Valley, the agricultural region running down the middle of the state, cities with similar populations and locations had different levels of exposure to Bank of America at the start of the Depression. There is no clear geographic pattern to the bank's locations, as may be expected from the unusual expansion methods required in this context.

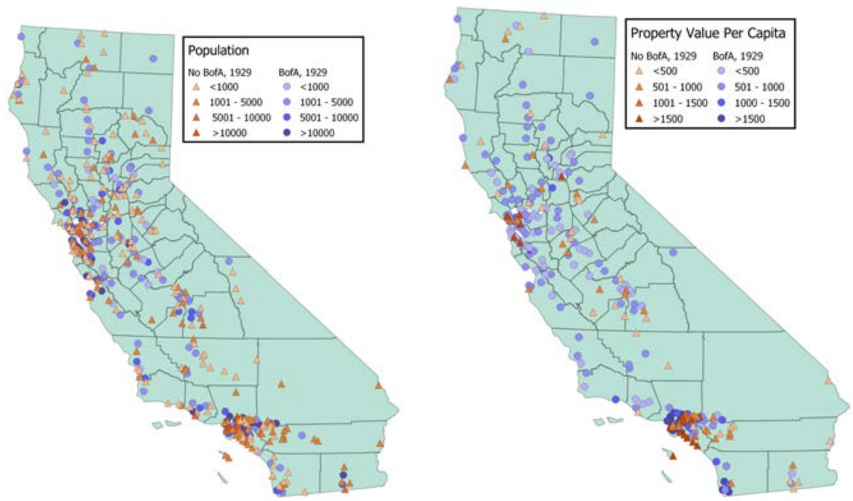
2 .2 California Banks in the 1930s

Once the Great Depression started, California suffered alongside the rest of the nation. The state suffered a 45 percent contraction in nominal per capita personal income from 1929 to 1933, in line with the national decline.[15] The labor market deteriorated over the same period,

[14]There is no difference between towns and cities under California law. Unless otherwise noted, I use city and town to refer to both incorporated and unincorporated inhabited places because both could contain banks.

[15]This statistic derives from the BEA series $CACPI$ on FRED.

Figure 2: 1929 City Characteristics and Bank of America Network



(a) Population (b) Property value per capita

Sources: Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Transamerica Corporation vs Federal Reserve Board (1953), Minnesota Population Center (2019), California Board of Equalization (various years), Durham (1998), and author's calculations. Property value per capita is only available for incorporated cities and is measured using total assessed wealth per capita every year. Population includes all settled places. For more details, see the data appendix.

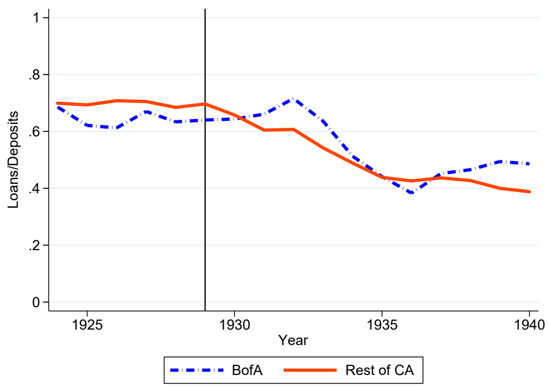
with one measure, the manufacturing employment to population ratio, falling by about one-third (California Department of Industrial Relations, 1940). The crisis was state-wide; per capita retail sales fell 40 percent outside of Los Angeles and San Francisco counties (Fishback and Kantor, 2018). As the economy faltered, some Americans returned to agricultural work for subsistence (Kuznets and Thomas, 1957; Boone and Wilse-Samson, 2021; Boyd, 2002). These abrupt changes in the level and composition of economic activity were mirrored by upheaval in the banking sector.

Most banks cut lending substantially and instead held cash as in fear of bank runs as financial uncertainty increased.[16] From its 1929 peak, lending in California fell 34 percent in nominal terms by 1933 (Transamerica Corporation vs Federal Reserve Board, 1953). The state average loan-deposit ratio fell from 0.70 in 1929 to 0.54 in 1933 during the bank-

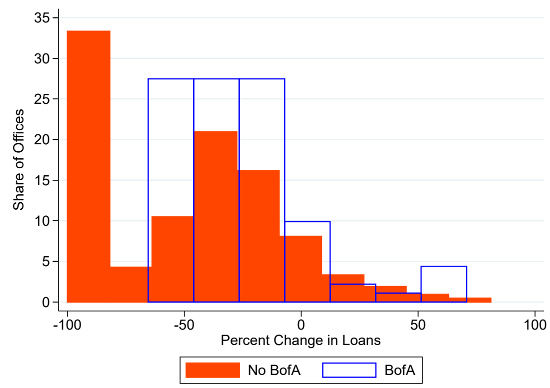
[16]Maintaining a cash buffer was likely helpful for staving off bank failure in this context, as California bank regulators identified cash withdrawals and local depressions as the two most important drivers of bank suspensions between 1929 and 1933 (California State Banking Department, various years).

ing crisis as seen in Figure 3a. Bank of America's loan-deposit ratio held steady at 0.64 during the crisis, making it an exception to the overall contraction.[17] After 1933, the two loan-deposit ratios once again converged to their pre-1929 relationship, indicating Bank of America deviated from its competitors specifically during the financial crisis.[18]

Figure 3: Differences in Credit Provision, 1924–1940



(a) Aggregate Loan-Deposit Ratio Trends



(b) Office Lending Growth, 1929–1933

Sources: Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Transamerica Corporation vs Federal Reserve Board (1953), 71st Congress (1930), Federal Reserve Board (various years), and author's calculations. The BofA time series line plots Bank of America's ratio in each year while the Rest of CA line is the average for all other banks operating in California in each year, including those in the 20 largest cities by population in 1929. For each banking office's 1929—33 lending change, I separately totaled up Bank of America branch and unit bank lending in 1929 and 1933 and constructed the percent change for each group. For more details, see text.

Individual Bank of America branches benefited from the bank's comparative lending stability during the financial crisis. Newspapers observed that Bank of America was making credit unusually available statewide (Blue Lake Advocate, 1932). As banking instability worsened, the bank advertised that it would "open the financial floodgates," an assertion

[17] I use loan-deposit ratios to factor in the rapid bank acquisition-based growth of Bank of America's loans and deposits in the 1920s, which mechanically reduced the rest of California aggregate and increased Bank of America totals as banks changed hands (Transamerica Corporation vs Federal Reserve Board, 1953).

[18] The Bank of America loan-deposit ratio is below the California average except during the financial crisis and 1937 to 1940. Some Giannini biographers assert that anti-branching regulators forcibly reined in Bank of America's propensity to lend, except in the crisis when the bank was deemed crucial for California's financial stability due to the bank's sheer geographic scope (Dana, 1947). Others report that Giannini preferred to practice "safety over profit" in good times to insure against downside risk (Bonadio, 1994, p.44). Either by cautious choice or regulatory approval, Bank of America's post-1936 loan-deposit ratio ticked up as they became the largest provider of federally insured mortgage loans in the nation (Nash, 1992). I address this potential confounding policy in Table A10 by showing post-1929 Bank of America branched cities' property values do not converge to the pre-1929 network's trend.

confirmed by the data in Figure 3b (Bank of America, 1932, p.4). Bank of America branches' lending fell 26 percent from 1929 to 1933 outside the 20 most populous cities in the state, as compared to a 50 percent fall for unit banks.[19]

Bank of America's state spanning branch network benefited its offices during the crisis in several ways. Regression analysis indicates large banks contracted credit less in this setting, so it is likely that Bank of America's substantial assets and diversified network insulated its branches' portfolios.[20] For instance, at the nadir of the financial crisis in 1933, Bank of America chartered airplanes to fly gold through winter storms to branches in danger of bank runs (Dana, 1947). This cross-location transfer contrasted with nearby unit banks, whose reliance on the suddenly moribund interbank market for external funds limited local liquidity (Mitchener and Richardson, 2019; Doti and Schweikart, 1991). The Bank of America's widespread network structure was unusual for the Great Depression but provided stability for its member locations.

Bank of America's contemporary reputation as the "bank for the little fellow" makes it likely that many of its crisis-era loans went to households (Bankers Monthly, 1932, p.270).[21]

[19]As discussed in the next section, I drop the 20 largest cities by population in 1929 except when using bank aggregates to minimize the chance local economic activity affected Bank of America's overall balance sheet. The largest city in the sample has a population of 26,782. Each of the remaining offices was small relative to the overall branch system; the office with the most outstanding loans in 1929, Salinas, had 1.2 percent of total lending.

[20]As discussed in Appendix G, modeling 1929—33 office-level lending growth for both Bank of America and unit banks using proxies for 1929 bank solvency, liquidity, profitability, local banking market competition, and branch network size finds particular explanatory power for the latter. In 1929, Bank of America was large by both deposits and branch network size, as seen in Figure G1. Section G provides evidence that Bank of America's branch network structure was key. Additionally, though Bank of America was a participant in the interbank market, it was not especially exposed to the interbank market meltdown detailed in Mitchener and Richardson (2020). Bank of America's share of liabilities due to other banks was roughly one quarter to a half that of other San Francisco banks throughout this period (Federal Reserve Board, various years).

[21]Data are limited on other categories pre-Depression but non-real estate loans captured lending for many purposes. Agriculture was capital-intensive and bank dependent in California as compared to the rest of the country; according to a contemporary agricultural economist, even small California farms needed an average of $20,000 in bank credit every year (Olmstead and Rhode, 2017; Nash, 1992). Sixty-nine percent of California outstanding farm mortgage lending in 1930 was by national and state banks, split roughly evenly (University of California College of Agriculture, 1930). California banks were also relatively large issuers of installment credit, suggesting households were reliant on them for durables purchases (Olney, 1999). For instance, from 1929 to 1933, Bank of America issued nearly $12 million in small personal loans to 200,000 borrowers (Bonadio, 1994). In this sample, firms were usually small, especially family-owned retail stores and manufacturers, so bank credit was likely crucial for funding inventory and working capital (Kidner, 1946; Department of Education, 1937; Mitchener and Wheelock, 2013). Available interest rate data indicate that

The bank's corporate headquarters monitored its branches to ensure they lent broadly, not just to local elites (James and James, 1954). As seen in Figure A2, Bank of America's real estate mortgage share of lending was unusually high despite the nationwide housing crisis (Wheelock, 2008; Fishback et al., 2013).[22] This institutional emphasis on real estate lending was by design; during the Depression, Giannini called real estate loans "sound savings bank practice" because mortgage lending was "the backbone of the country" (Nash, 1992, p.124). The remainder of this paper uses Bank of America's idiosyncratically acquired branch network before 1929 to capture the local effects of this difference in financial intermediation on a variety of outcomes in the 1930s.

3 Empirical Strategy

This paper directly links bank branching to local property values and labor markets during and after a financial crisis by assembling a unique set of historical sources. First, I observe banking office balance sheets in this setting, permitting me to contrast branch and unit bank behavior in the crisis. Tracing out the real impacts of these local financial shocks also requires information on each city's economic environment during the branch expansion period of the 1920s and the Depression of the 1930s. I have created a panel of annual city level financial and economic data spanning two decades to answer this question by merging some existing sources to newly uncovered archival records. In addition, I examine the labor market mechanisms behind these results using two longitudinal datasets on manufacturing

Bank of America's loan rates on commercial loans in 1928 and 1933 were in line with competitors in both rural and urban areas (Board of Governors, 1933).

[22] This 1933 real estate lending differential is also found earlier in the crisis; in 1931 real estate mortgages made up 55 percent of Bank of America's total lending, compared to 28 percent for other San Francisco-headquartered Federal Reserve member banks, 46 percent for Los Angeles banks, and 22 percent in the rest of the state (Fishback et al., 2013; Federal Reserve Board, various years). I use 1931 because it is the earliest Depression year for which I observe real estate lending for all of these categories for all member banks in the data (Federal Reserve Board, various years). Overall, California banks were more involved in real estate finance than in other states because state law did not restrict it and the McFadden Act relaxed national bank mortgage restrictions as well. Another source of real estate lending in other parts of the United States (see Snowden (2003)), building and loan societies, had a correlation of 0.09 with city lending overall, and -0.06 in Bank of America-treated cities. I also show these institutions do not drive the baseline city outcomes.

establishments and workers. Finally, in this section, I use these data to support an empirical approach which compares bank, city, and worker outcomes based on Bank of America's 1929 branch network locations.

3 .1 Banking Markets

I build my banking market panel for every city in California in the 1920s and 1930s using information reported in congressional hearings, court documents, and archival regulatory reports. These data track the type of bank present in each place over time, as well as each banking office's balance sheet behavior. Expanding on data originally digitized by Carlson and Mitchener (2009), I use opening and closing dates for all California banks and branches from California State Banking Department (various years) and Office of the Comptroller of the Currency (various years) yearly reports, which I cross-reference with Transamerica Corporation vs Federal Reserve Board (1953) branch opening dates. I am therefore able to measure cities' exposure to Bank of America in every year over two decades.[23]

A recently uncovered set of branch balance sheets supplement the bank equivalents reported in the above sources.[24] I transcribed Bank of America branches' 1929 loan and deposit information reported in congressional hearings (71st Congress, 1930). Then, I collected full branch balance sheets in 1933 via Federal Reserve Board (various years) for all California national banks.[25] Crucially for this paper, the branch balance sheets report loans, deposits,

[23]Cities, not counties, appear to be the correct contemporary banking market definition in this setting. As discussed further in Appendix C, Federal Reserve and California bank officials' comments on Bank of America's branching applications indicate that they considered each city to be its own banking market in this period (Delano, 1945; Wood, n.d.).

[24]Although the California Superintendent of Banks recognized that the spread of branch banking made bank level reports inaccurate for local conditions at the time, they did not rectify the situation. For example, Bank of America operated in over 200 cities but since its headquarters were in San Francisco, all branches' loans and deposits are counted as part of San Francisco County totals, a situation the California Superintendent of Banks called "grossly misleading" (California State Banking Department, 1930, p.4). The sole extant evidence on branch level lending before the onset of the Depression was presented by Bank of America executives to Congress in 1931 (71st Congress, 1930).

[25]I am limited to the following networks based on what is available through the Federal Reserve archives: Anglo-Californian Bank (9 balance sheets), Citizens National Bank of Riverside (4), Citizens National Bank of Los Angeles (36), First National Bank of Bakersfield (1), First National Bank of Glendale (2), First National Bank of San Diego (5), Seaboard National Bank (4), and Security First National Bank (123). For

and interbank and intrabank network transfers separately for each office.

These unit and branch bank sources yield banking office data on 1929–33 lending growth rates and a cross-section of balance sheet variables in 1933. Some analysis uses the city-aggregated version of these variables, as well as branch-corrected city deposit data in 1928 and 1933 (Transamerica Corporation vs Federal Reserve Board, 1953). Further detail on the construction of these data can be found in Appendix C.

3 .2 City Economic Development

To understand the real implications of bank branching, I collected data which both match the geography of contemporary banking markets and are observed frequently enough to identify changes in local economic activity. This paper uses a new panel of nominal total property values as of March 1 in each year for all incorporated California cities from 1923 to 1940 from archival reports authored by California Board of Equalization (various years). These annual data tally the total dollar value of all commercial, agricultural and residential assets, including land, structures, and capital, held by all individuals and non-financial firms for each city.[26]

These data are correlated with measures of economic well-being and capture crucial aspects of the empirical strategy. Unlike other datasets used to study this period, property values were collected annually throughout the 1920s and 1930s for both large and small cities. To separate out potential effects of Bank of America's expansion in the 1920s from both the financial crisis and its aftermath in the 1930s, it is important to analyze economic trends both before and after the onset of the Depression at an annual frequency. Since the median population of a Bank of America-branched city in 1930 was under 4,000 people, another

a bank to appear in this sample, it must have at least one branch in 1933 and be a national bank in that year.

[26]The state government strove to make these assessments as accurate as possible because they were the basis for school funding in this period. For a more detailed background on these property value definitions, see Appendix B. I supplement this information with annual city population estimates from Bleemer (2016) over the same period to control for the entrance and exit of cities due to annexation or change in incorporation status.

advantage of the property value data is its lack of minimum city population threshold. The resulting data series is highly correlated with the city median home value distribution in the 1930 and 1940 census microdata, which yield similar results for decadal city level changes overall (see Table B1), and annual changes where available. As in work by Fishback and Kollmann (2014) and Rose (2022), I find that the decline in housing-adjacent measures is similar to that of income-related series, but that the post-crisis recovery is much smaller for real estate values, particularly at the extremes of each variable. More details on these comparisons can be found in Appendix B. Therefore, I build on both theoretical and empirical work in urban economics, e.g. Roback (1982), to argue this panel dataset on asset values, through its similarity to housing values, captures meaningful differences in economic activity during the 1920s and 1930s across cities.

I supplement these annual data with labor and demographic information from the 1920, 1930, and 1940 censuses (Ruggles et al., 2020). The census data also capture unincorporated communities, which were sizeable in California, and were home to 40 Bank of America branches in 1929.[27] This collection of sources captures non-financial characteristics for all inhabited parts of California as Bank of America expanded its network in the 1920s and its lending in the 1930s.

3 .3 Labor Market and Wage Outcomes

I bring together longitudinal data on both firms and workers to map Bank of America's presence to labor markets in the Great Depression.[28] The biennial Census of Manufacturing

[27]According to a survey done by the California State Chamber of Commerce, 56 unincorporated towns had populations of over 1,000 people in 1927. Unincorporated communities ranged in size from 100 to 66,800 people (State Chamber of Commerce, 1928). I account for these areas by digitizing the "unincorporated town" field of each 1930 census return which was not in an incorporated city. This yielded information for 8,439 enumeration sheets out of 30,388 candidates.

[28]Longitudinal data have three major advantages in this setting. Observing workers near the start of the crisis and after the onset of recovery allows me to parse the determinants of the aggregate shifts in labor market composition separately along both entry and exit margins. Also, in the absence of loan level data, I use these microdata to control for pre-crisis worker and firm characteristics which may have affected both labor decisions and their direct exposure to the credit supply shock. Finally, they can be aggregated to the city level, which as Appendix B and C show, is not common in this setting but captures the contemporary

microdata were made available by Vickers and Ziebarth (2018) and cover wages, employment and productivity from 1929 to 1935 for establishments in 23 industries.[29]

I complement these short-run firm effects with individual data on employment, income, education, and home values for workers in all sectors of the economy reported by employees in the 1930 and 1940 population censuses digitized by Ruggles et al. (2020). To address compositional changes in labor markets during the 1930s, I use automated machine linking to create a matched dataset of individuals living in California in the 1940 census with the corresponding 1930 records. In the worker panel, one observation is one working age man, and includes information on city of residence, wage and salary income, industry, occupation, and demographic characteristics from the 1930 and 1940 censuses. I restrict my sample to men living in California who were between 25 and 65 in 1940 to capture likely 1930 and 1940 labor market participants. I consider a 1930 record and a 1940 record to be matched if they are the only ones in each year to report an individual born in the same state with the same standardized first and last names, and birth years, established in Abramitzky et al. (2020) as NYSIIS-standard links. The resulting sample finds 33 percent of possible men. While there is some evidence of positive selection into linking, as is common in these procedures, I show in Appendix E that the labor market results are robust to using other linking methods.

This process results in a panel with one period close to the start of the shock and one after it. I assign Bank of America branch treatment to all individuals living within a five-mile radius of a city centroid with a pre-Depression Bank of America branch in 1940 following research on the granularity of local credit markets (Petersen and Rajan, 2002; Nguyen, 2019).[30] Fifty percent of the population-weighted sample of 222,071 men are treated. More

formulation of banking market boundaries.

[29]For details on how these data were collected, please see the documentation in Vickers and Ziebarth (2018). Appendix D in this paper explains how I standardized this dataset's city identifiers.

[30]I geocode individuals in 1930 and 1940 using city of residence using Minnesota Population Center (2019) definitions and crosswalks I constructed using Morse et al. (n.d.) and Durham (1998). This distance cutoff allows for some spatial spillovers while still capturing the fineness of local banking markets. In effect, this is a no-defiers assumption about relationship lending borne out in modern data (Brevoort and Hannan, 2006). For this definition to be incorrect, lenders would have to issue more credit to borrowers outside their city than inside it. In Section 6, I provide evidence for this assumption with geocoded individual level data. In the analogously defined 1920–30 linked population census sample used for robustness in Section 6, I have

detailed information on the construction of each dataset can be found in Appendixes B, C, D, and E.

3 .4 Identification

I compare banking office, city, and worker outcomes over time based on bank branching network locations in 1929. This approach measures the treated groups' growth relative to that of control units, differencing out any characteristics which affect both groups over time. If the latter general equilibrium forces counteracted the estimated partial equilibrium treatment effect, then a cross-sectional variation-based strategy would not be informative because it would overstate the actual aggregate effect. As formalized by Herreño (2023), these concerns become minimal when firms are unable to substitute easily either into internal financing or across external finance options, limiting potential contaminating spillovers in general equilibrium. Benmelech et al. (2019) and Quincy (2022) provide evidence these two financial frictions affected the largest firms and ex ante similar households in the American Great Depression, bolstering the hypotheses first advanced by Bernanke (1983).[31] It is therefore unlikely that treated agents' decisions in financial and labor markets created countervailing general equilibrium effects. These conclusions suggest that cross-sectional variation in local financial crisis severity can provide insight into the dynamics of the broader Great Depression.

This approach is also appropriate only so long as Bank of America's expansion was not systematically related to city characteristics. It is not clear from the historical record if Bank of America consistently ex ante more or less profitable. As described in Section 2, unit banks' stockholders had to agree to Bank of America's acquisition, suggesting both negative (e.g. taking advantage of asymmetric information) and positive (if future gains to branch banking

to drop non-incorporated place observations due to the coarseness of 1920 enumeration district definitions. Appendix D describes the spatial aspects of this dataset further.

[31] The labor supply elasticity must also imply nominal wage rigidity which Eichengreen and Sachs (1985) show held across countries in the 1930s. Additionally, to the extent there are lingering negative spillovers to control units in this setting (e.g. Quincy (2022)), aggregate effects may be larger than in the cross-section.

were high) selection into selling, making branch network balance an empirical question. If cities' observables are similar, then it would be less likely that those characteristics, or correlated unobservable ones, created systematic differences between branched and unbranched cities not actually induced by branch banking.

I test for balance on a variety of observable dimensions at the onset of the Great Depression in Table 1. The difference between means for treated and control cities is in Column 3.[32] The t-statistics in Column 4 are mostly quite small, with varying signs, but population clearly is not balanced across all California cities. Therefore I drop the 20 largest cities in California by 1929 population because 1) their branch status was likely not random and 2) they were so large that their economic conditions may have affected Bank of America's lending allocation.[33] I will eliminate these cities from the estimation sample going forward and control for population going forward to address these concerns.

Column 5 drops the 20 largest cities in 1929 and finds evidence for similarity between treated and control cities when controlling for population. Several summary measures of occupational and industrial composition are balanced by treatment in the estimation sample; occupational scores were similar in branched and non-branched places, as was the mix of industries. Between 10 and 15 percent of employment was in each of manufacturing, agriculture, services, and retail trade.[34] Figure A3 also finds no evidence of a trend in property values around Bank of America's arrival in a generalized difference-in-difference approach.

[32]Please note that the percent change variables require consistent town identifiers in the 1920 and 1930 censuses and in the 1920s California Board of Equalization (various years) reports, lowering sample size. Loan-deposit ratios in 1929 exist only for Bank of America branches and unit banks, so towns with other branches excluded from those comparisons.

[33]Because these cities were so large, they were especially likely to be branching targets and potentially affect state-level trends. In fact, five of them served as headquarters for the bank during the 1920s, indicating their desirability. Figure H1 plots the propensity of all cities in California to have a Bank of America branch using Equation 3 in 1929 for non-branched cities, branched cities in the core sample, and the twenty largest cities in California by population. There is a clear difference in the probability of treatment for the third category.

[34]The appendix demonstrates that the workforce was evenly divided into skilled, agricultural, professional, sales and unskilled work in 1930. Other census variables in 1920 and 1930 are balanced on treatment as discussed in Tables H2 through H7. In Appendix H, I further test for other banking, economic, and demographic predictors of cities entering Bank of America's network during its expansion from 1922 to 1929 in an extension of the city selection regression in Carlson and Mitchener (2009).

Table 1: 1930 City Summary Statistics and Balance Table

	Mean	SD	$\overline{NoBofA} - \overline{BofA}$	Unconditional T	Conditional T	N
Prop. Val. p.c.	1013.8	3325.1	-277.7	-0.594	-0.487	224
Homeownership Rate	0.502	0.0990	0.00648	0.466	0.286	224
Ag. Emp. Share	0.131	0.109	0.0162	1.062	-0.675	224
Mfg. Emp. Share	0.127	0.120	-0.00641	-0.380	0.0872	224
Self Emp. Share	0.0615	0.0213	0.00472	1.585	-0.168	224
ENT Skill Emp. Share	0.307	0.0954	-0.0213	-1.594	-0.848	224
Median Occscore	0.0369	0.576	-0.0523	-0.646	-0.768	224
Unemployment Rate	0.0411	0.0200	0.000230	0.0818	0.497	224
Loans/Deposits	0.661	0.263	-0.0241	-0.591	-0.675	187
%Δ Population	1.027	1.950	-0.258	-0.893	0.886	205
Δ Ag Emp. Share	-0.0590	0.112	-0.0213	-1.293	-1.049	205
%Δ Occscore	0.159	0.395	-0.0200	-0.341	0.338	205
%Δ Prop. Val. p.c.	0.137	0.295	-0.0394	-0.915	-0.465	211
Population	5136.1	28017.7	-6073.4	-1.549		244

Sources: Transamerica Corporation vs Federal Reserve Board (1953), Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Ruggles et al. (2020), California Board of Equalization (various years), and 71st Congress (1930). Outcomes measured in decadal census except property value, population, and loan-deposit ratio which are from 1929. Values are expressed in current dollars. All California incorporated cities with banks or branches in 1929 outside the top 20 most populous are included in the Conditional column and number of observations, except population. T statistic tests for equality of means based on 1929 BofA branch locations either overall or conditioning on population. Conditional t refers to regression of outcome on BofA 1929 dummy with 1930 population as a control, dropping the 20 most populous cities. For details on definitions, see the main text and data appendix. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

As suggested by the historical narrative, there are few statistically significant observable differences between cities based on Bank of America locations in 1929, minimizing the chance that other systematic differences between cities confound the link between Bank of America's 1929 network and economic effects in the 1930s.

4 Branching and Local Financial Intermediation

For branch offices to have improved financial intermediation during the Great Depression, they must have both lent more and done so by virtue of their network membership. This section provides evidence that Bank of America's offices issued more credit compared to both unit and other branch banks operating nearby. Then, I provide evidence that this was due to Bank of America's unique use of internal capital markets to promote diversification.

4 .1 Local Credit Growth

First, I formalize the link between Bank of America's banking office locations in 1929 and local credit during the financial crisis of the early 1930s. Statewide, the average Bank of America branch cut lending by 28 percentage points less from 1929 to 1933 than the average unit bank, which I now test in a regression framework in Table 2, clustering standard errors at the county level. On average, total outstanding credit fell by 48 percentage points, which Bank of America branches offset by 22 percentage points, as displayed in Column 1. Though Table 1 shows city-level balance on Bank of America exposure for a range of variables, perhaps Bank of America branches faced different credit demand during the crisis than unit banks, which could have affected local lending growth independent of branching. Column 2 provides evidence against this by including 1929 portfolio information as a proxy for ex ante credit demand differences. The Bank of America indicator remains large, positive, and statistically significant at the 1 percent level, indicating that the average Bank of America office lent more than a comparable unit bank in a period of aggregate financial uncertainty.

Table 2: The Effect of Bank of America on Local Credit, 1929–33

	Office loan growth				City loan growth
BofA	0.22***	0.21***	-0.13	-0.37**	0.17**
	(0.05)	(0.05)	(0.09)	(0.17)	(0.06)
Log loans, 1929		0.055*	0.033	0.039	-0.045
		(0.03)	(0.02)	(0.05)	(0.07)
Loans/deposits, 1929		-0.11	-0.11	-0.10	0.27
		(0.07)	(0.07)	(0.17)	(0.20)
%Δ deposits, 1928–33			0.74***		
			(0.19)		
BofA × %Δ dep			-0.85***	-1.61***	
			(0.25)	(0.47)	
Constant	0.48***	-1.13**	-0.53	-0.91	-0.031
	(0.05)	(0.44)	(0.35)	(0.67)	(1.00)
City FE				X	
R-sq	0.08	0.09	0.21	0.50	0.18
N	263	263	263	177	126

Sources: Transamerica Corporation vs Federal Reserve Board (1953), Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Federal Reserve Board (various years), 71st Congress (1930) and author's calculations. Standard errors clustered at county level. All cities with banks outside the top 20 by population in 1929 included. Lending in each year is the sum of all credit issued by a given bank in that city in that year. Deposits include all commercial banking offices in 1928 and 1933 in a city. Column 4 restricts to the 177 banking offices in cities at least one Bank of America office and one non-Bank of America office in 1929. Column 5 aggregates everything to the city level and adds controls for 1920–30 sectoral growth, 1929 lending, and 1930 sectoral allocation. For more details on the data, see the text. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Column 3 next tests whether Bank of America branches lent more in the face of local banking instability by adding in 1928—33 city deposit growth in a difference-in difference approach.[35] The more negative this variable is, the greater the pressure depositor withdrawals placed on banks to contract lending, hence the positive coefficient on local deposit growth. In contrast, the interaction term between the Bank of America indicator and local deposit growth is negative. Unlike unit banks, which reduced their lending following local deposit withdrawals, Bank of America branches had higher credit growth where there were larger bank runs in the area. Combining the coefficients suggests that Bank of America branches lent more than unit banks except in the top ventile of deposit growth. This result also holds when using city fixed effects in Column 4 to compare Bank of America branches' credit responses to those of their direct competitors absorbing any potential local shocks confounding the banking runs. Except where deposit contractions were particularly mild, Bank of America branches lent more than other banking offices during the Depression.

Bank of America's presence in 1929 also translated into meaningful differences in city-level lending growth in the Depression. The final column in Table 2 aggregates the branch data to the city level. Even when factoring in channels which were previously linked to Depression severity, such as 1929 levels of lending, agriculture, and manufacturing, cities with Bank of America branches had 17 percentage point smaller credit contractions during the 1929 to 1933 period, a 35 percent difference at the sample mean (Calomiris and Mason, 2003a; Romer, 1990; Hausman et al., 2019).[36] Appendix F demonstrates that these banking office and city level effects hold using a variety of approaches, including Oster (2019) adjustments for selection on unobservables and propensity score matching on predictors of real sector Depression-era shocks (see Table A7).[37] This suggests that Bank of America branches'

[35]This variable includes all bank deposits in a city in each year, reflecting shocks which weaken depositors' confidence in the local banking sector. I use this variable as I otherwise cannot observe non-Bank of America networks' branch-level information until 1933.

[36]The Bank of America treatment includes both the direct branch-level exposure and more aggregate feedback effects, including unit banks' increased stability across cities (Carlson and Mitchener, 2009). These results are robust to examining either multi-office or one-office cities, displayed in Tables F1 and F2, so this externality does not drive the baseline conclusion.

[37]These estimates represent the bounds on a omitted variable bias-adjusted treatment effect using the

elevated lending, not an omitted variable such as credit demand or economic resilience, likely explains the city-level variation in credit growth, especially outside of the most stable banking markets. Therefore I will interpret Bank of America's presence as benefiting local credit supply during the financial crisis in the following analysis.

4 .2 Internal Capital Markets and Diversification

For bank branching to insulate lending during a financial crisis, the network's structure must insure offices against banking instability in a way which unit banking does not. Because multi-city branch networks reduce lending frictions across places, they could move in funds from another location to avoid cutting lending during a local bank run (Allen and Gale, 2000). This mechanism would be consistent with the fact Bank of America lent more than unit banks except when deposit losses were close to zero as well as anecdotal evidence that Bank of America transferred funds to stave off bank runs (see Appendix G). To test whether diversification, as opposed to other aspects of branch banking, can explain why Bank of America lent more than unit banks, I compare Bank of America's 1933 asset allocation to that of other branch networks.

First, I provide direct evidence that branch banks did use their internal capital markets to fuel lending in this setting.[38] Regardless of the bank doing the transferring, branches receiving internal capital flows had substantially higher loan-asset ratios than other branches in 1933 (see Table A1). Despite the weakness of contemporary external capital markets explored in Mitchener and Richardson (2020), these results show that branch networks' internal capital markets redirected funds internally to lend elsewhere.

Branch networks all used this transfer method, but they did not apply it to generate the same kinds of lending opportunities. Table 3 Columns 1 and 4 contrasts the share of

assumption that selection on unobservables is proportional to selection on observables to formalize the intuition behind coefficient stability across regression specifications.

[38] Unlike the rest of the analysis, I include all California cities in this subsection to observe how funds moved within entire networks. I do not argue that the 20 largest cities in California were otherwise comparable to non-branched cities. However, belonging to the same bank network as these large cities likely benefited the places in the main analysis due to the internal capital markets mechanism described here.

Table 3: Local Liquidity, Branch Lending, and Internal Capital Transfers, 1933

	Due from network			Loans		
1(BofA)	-0.126***	-1.186**	0.858	0.131***	1.179**	-0.319
	(0.0157)	(0.500)	(0.492)	(0.0207)	(0.402)	(0.339)
Log(Deposits)	-0.0820***	-0.114***	-0.0727***	0.0752***	0.107***	0.0907***
	(0.00600)	(0.0174)	(0.0247)	(0.00628)	(0.0143)	(0.0163)
Log(Dep) x BofA		0.0767*	-0.0508*		-0.0759**	0.0146
		(0.0367)	(0.0279)		(0.0291)	(0.0181)
Large withdrawals × BofA			-2.436***			1.760***
			(0.708)			(0.549)
Log(Dep) × withdrawals			-0.0493			0.0200
			(0.0354)			(0.0231)
Log(Dep) × withdrawals × BofA			0.155***			-0.108***
			(0.0436)			(0.0332)
Constant	1.722***	2.129***	2.096***	-0.841***	-1.243***	-1.227***
	(0.0296)	(0.134)	(0.0295)	(0.0701)	(0.143)	(0.0769)
R-sq	0.36	0.38	0.41	0.27	0.29	0.31
N	256	256	256	256	256	256

Sources: Federal Reserve Board (various years), Transamerica Corporation vs Federal Reserve Board (1953), and author's calculations. All national bank branch balance sheets in California in 1933 included. Standard errors are clustered at county level. City fixed effects restrict the sample to cities with at least two offices in the dataset. Omitted controls include city fixed effects, log average account size, and a indicator for being the headquarters office. Large withdrawals defined as that city having lower than sample median deposit growth from 1928 to 1933. All other variables as of 1933. The HQ indicator is one if the office is the headquarters of the network according to the call reports. Average savings account is defined as the total amount of savings deposits divided by the number of savings account holders at that office and is zero for offices with no savings deposits. All variables measured at office level except the deposit withdrawal indicator. See data appendix for more details on the data. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

assets diverted to other locations in the network to the share of assets being lent at each branch in 1933 as a function of a Bank of America indicator, the size and customer base at each branch, and city fixed effects. Bank of America branches have a 13-percentage point higher loan-asset ratio than other branches, which is almost exactly offset by offset by a lower propensity for intra-bank lending, or lending to the rest of its network. As in the unit bank comparisons, the average Bank of America branch had more credit outstanding than offices belonging to other branch networks.

This lending difference can be explained by Bank of America's unique willingness to transfer deposits out of large offices and make loans in small ones. Adding in an interaction between Bank of America membership and log branch deposits in Table 3 Columns 2 and 5 reveals that Bank of America disproportionately moved funds out of larger branches compared to other branch networks. This use of internal capital markets exactly offset higher lending in Bank of America branches with fewer deposits on hand. Table A2 shows that this pattern holds without city fixed effects or when focusing on the two largest branch networks in the state to minimize concerns about size-based confounders. Unlike other branch networks, Bank of America subsidized lending in smaller offices with funds from larger ones, indicating its pro-"little fellow" reputation also operated across space in the crisis (Bankers Monthly, 1932, p.270).[39]

Table 3 Columns 3 and 6 present evidence that Bank of America's internal transfers reflected its diversification. I interact log branch deposits, the Bank of America indicator, and an indicator for cities with greater than median local deposit losses from 1928 to 1933 in a triple difference regression, holding constant other city shocks with city fixed effects. The triple-difference term reflects how Bank of America adjusted asset allocation in small versus large branches with severe bank runs. While both triple interaction coefficients are statistically significant, the one for loan shares is positive and the one for internal transfer is negative. In other words, Bank of America transferred money away less and lent more where

[39] This difference in transfer behavior can explain why there are positive real benefits associated with receiving Bank of America's internal capital transfers but not those of other branch banks as in Table A1.

it had few deposits on hand and banking instability was high. The Bank of America loan share results are driven by real estate lending, a non-portable asset hit hard by the Depression (see Table A3), which is also consistent with the hypothesis that Bank of America tried to smooth out local shocks with its cross-branch transfers. Bank of America leveraged its uniquely large network to lend more than competing unit banks or other branch networks, demonstrating the importance of internal capital markets for local financial intermediation during the Great Depression.

5 The Effect of Branching on 1930s Local Growth

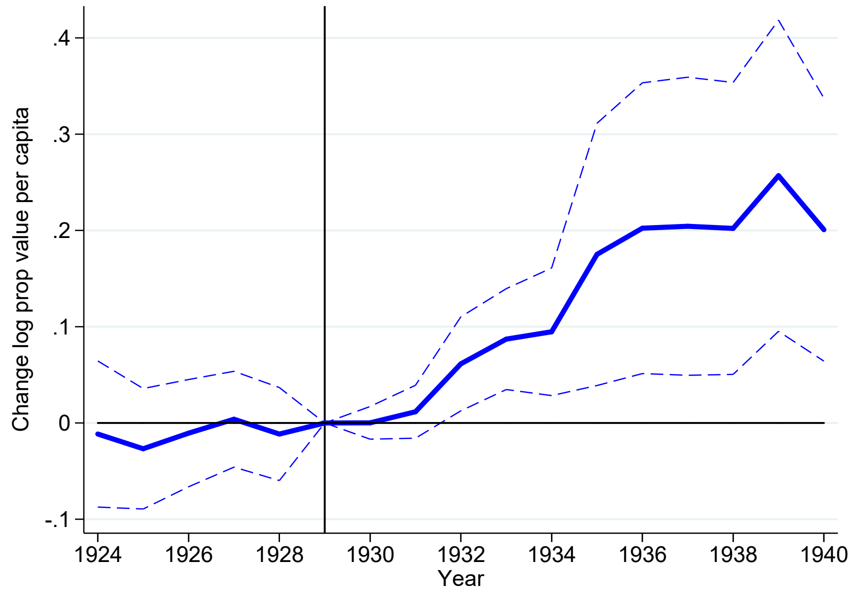
5 .1 Baseline Estimates

If having branch banks benefited cities' real economies during a financial crisis, then I expect to see that places in the Bank of America network on the eve of the Great Depression had higher average per capita property value growth throughout the 1930s. I construct empirical impulse responses of city property values per capita to bank branching using local projections (Jordà, 2005). Specifically, I model the cumulative change in this economic activity variable from 1929 to each year, from 1924 to 1940, as a function of Bank of America branch status in 1929.[40] This procedure yields estimates of the year-by-year response to the differential lending shock from 1929 to 1933 as proxied by Bank of America's network locations in 1929, conditional on 1929 population. As a baseline, I estimate, for $h = -5, ..., 11$ years from 1929 the cumulative effect of Bank of America branch status for a given city c in county $\mathcal{C}$:

$$\log y_{c,1929+h} - \log y_{c,1929} = \beta_0 + \beta_1 BOFA_{c,1929} + \gamma X_{c,h} + \epsilon_{\mathcal{C}c}. \quad (1)$$

[40]Like any impulse response function, this approach measures the growth path of the dependent variable over time in response to an exogenous shock, but unlike a vector autoregression, is agnostic to the structure of the data-generating process. Here the counterfactual growth path to the local credit shock is captured by the non-Bank of America cities, which appear similar on observables before 1929. In contrast to a difference-in-difference approach, local projections, and impulse response functions more generally, allow for a multi-year shock to have dynamic effects which cumulate over time, conditional on the preceding responses.

Figure 4: Baseline Estimates of the Bank of America Effect on Per Capita Property Values



Sources: Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Transamerica Corporation vs Federal Reserve Board (1953), California Board of Equalization (various years), Bleemer (2016), and author's calculations. Standard errors clustered at the county level. Thick lines plot the β_1 coefficients from Equation 1 and thin lines are 90% confidence intervals. In each year, the dependent variable is the log change in property value per capita from 1929 to that year.

Time-varying control variables include a quadratic in city population and one lag of assessed property value per capita in the baseline specification. These data were collected by county assessors, so I cluster the standard errors at the county level.[41] The coefficient of interest, β_1, measures the effect of a 1929 Bank of America branch on the evolution of property values per capita conditional on these controls.

I display the baseline estimates of Bank of America's presence during the Great Depression as the solid blue line in Figure 4. The dashed blue lines are 90% confidence intervals. Confirming the balance on 1930 observables, there is no statistically significant difference in the path of per capita property value growth until after the onset of the Great Depression. The Bank of America coefficient hovered around 0 in the years before 1930 with t-statistics

[41]Because the property value data are not available until 1923, including lags restricts the estimation sample to 1924 onward. Results are robust to simultaneously adjusting for autocorrelation and persistent city shocks as recommended in Ramey (2016).

Table 4: Bank of America's Network and City Property Value Per Capita Growth

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
BofA	-0.02*	-0.03**	-0.08***	-0.17***	-0.20***	0.09	0.06	0.09	0.11	0.10	0.15*
	(0.01)	(0.01)	(0.02)	(0.03)	(0.03)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)
No BofA	-0.02*	-0.05***	-0.16***	-0.28***	-0.32***	-0.12	-0.16	-0.12	-0.10	-0.16	-0.06
	(0.01)	(0.01)	(0.04)	(0.05)	(0.06)	(0.12)	(0.13)	(0.11)	(0.11)	(0.10)	(0.11)
Difference	0.00	0.02	0.08	0.11	0.12	0.20	0.22	0.22	0.21	0.26	0.21
F-test	0.10	2.04	5.23	8.21	6.26	5.18	5.30	6.11	6.08	8.49	6.80
p-value	(0.76)	(0.16)	(0.03)	(0.01)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)
N	224	224	224	224	224	224	224	224	224	224	224

Sources: Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Transamerica Corporation vs Federal Reserve Board (1953), California Board of Equalization (various years), Bleemer (2016), and author's calculations. Each column is a separate local projection estimation of Equation 1 with demeaned controls and the two mutually exclusive indicators above. All California incorporated cities with banks or branches in 1929 outside the top 20 most populous are included. County-clustered standard errors in parentheses. Difference is calculated as the BofA coefficient minus the NoBofA coefficient at each horizon. F-test and p-value refer to an F-test of equality of BofA and NoBofA coefficients at each horizon For details on definitions, see the main text and data appendix. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

between -0.70 and 0.13. These pre-1930 trends suggest cities in Bank of America's network in 1929 and their non-branched counterparts were on similar trajectories until the Depression began.

Although the gap between Bank of American branched cities and non-branched cities began to widen after 1930, it was not significant at conventional levels until 1932, at which point a lingering gap opened between cities. The contemporaneous effects continued to grow into 1933, when the California banking crisis was most intense.[42] The Bank of America coefficient reached 9 percentage points in 1933, roughly eight times the cumulative pre-Depression effect and outside the 90% confidence interval before 1929. Strikingly, as recovery set in, this statistically significant difference persisted. The 18-percentage point difference in property value growth established by March 1935 existed even in 1940. Having credit access improved Bank of America branched cities' growth paths during the worst of the financial

[42] California implemented a banking holiday the week before the national holiday in 1933 when bad weather endangered agricultural loans (Starr, 1996).

crisis, but these effects lasted up to the eve of World War II.

5 .2 Per Capita Property Growth Dynamics

I compare the impulse response in levels for treated and control cities to put this effect in better perspective. Instead of including a constant term, I re-estimate Equation 1 with the change in log property value per capita from 1929 to each year from 1930 to 1940 with two mutually exclusive binary variables, $BOFA_{c,1929}$ and $NOBOFA_{c,1929}$, and demeaned time-varying controls. These two coefficients, along with an F-test for coefficient equality, are displayed for each year in Table 4. I find credit softened but did not eradicate the impact of the Depression, as in Calomiris and Mason (2003a). On average, no matter a city's branch status, per capita property values declined at a statistically significant rate during the banking crises of the early 1930s; cities with Bank of America branches had less severe declines in property value per capita. On average, Bank of America branches' 28 percentage point smaller credit contractions induced per capita property value declines which were 11 percentage points lower from 1929 to 1933.

This initial divergence in per capita property values during the financial crisis immediately compounded when Bank of America branched cities rebounded more strongly. After the financial environment stabilized in late 1933, per capita property values grew in places with higher crisis credit supply, rebounding above pre-Depression levels by 1935. In contrast, there is no evidence of a similarly robust recovery in other places; the gap between treated and control cities nearly doubled in magnitude between 1934 and 1935. Smaller per capita property value contractions experienced due to Bank of America's presence were followed by earlier economic recoveries in those cities.

This strong growth in Bank of America cities contrasted with per capita property value stagnation in the rest of the state. Non-Bank of America-branched cities' post-1929 growth remained negative and statistically insignificant even as Bank of America-branched cities continued to grow into the late 1930s. An F-test of equality between coefficients on $BOFA_{c,1929}$

and $NOBOFA_{c,1929}$, also displayed in Table 4, rejects the hypothesis that property value growth was the same, on average, in Bank of America and non-Bank of America cities after 1931.[43] Instead, cities in the Bank of America network had significantly smaller contractions, a stronger initial rebound, and a steeper recovery in per capita property values.

To establish these reduced-form effects are the product of a Bank of America lending shock during the financial crisis, I present evidence that Bank of America's branching network did not change cities' 1930s growth patterns through its pre-1929 or post-1933 policies, location selection criteria, or any correlated city characteristics. I separately construct local projections across a variety of subsamples to minimize the probability that bank failures, deposit runs, regulatory differences (e.g. liability structure or discount window access) associated with being a national bank, or local pro-competitive effects drive the results in a series of checks displayed in Table A9 (Carlson and Mitchener, 2009; Aldunate et al., 2021; Anderson et al., 2019; Mitchener and Richardson, 2013; Richardson and Troost, 2009). Then, I demonstrate in Table A10 that indicators for other branch banks' presence or post-1929 Bank of America branches fail to replicate the baseline 1929 Bank of America network result using a bank presence indicator or their observed internal capital market transfers (see Table A1). Similarly, an event study on local property values around Bank of America branch openings in Figure A3 suggests that Bank of America did not spur financial development and growth outside of the crisis. The baseline effects are not affected by a variety of non-financial variables correlated with credit demand in Table A8 such as New Deal per capita spending, long-run industrialization trends, housing wealth-based customer differences within or across cities, region fixed effects, or a variety of other city controls in both levels and growth rates to absorb shocks such as Dust Bowl migration to the Central Valley.[44] For a factor to confound the association between persistent per capita property value growth in the 1930s and 1929 Bank of America locations' heightened credit supply, it would have to be uncorrelated

[43] Table B1 finds similar results for 1930—40 median home value growth in the estimation sample and when adding in unincorporated places and the 20 largest cities.

[44] The sources for these data are Fishback and Kantor (2018), Quincy and Gray (2022), Ager et al. (2020), and Ruggles et al. (2020).

with the financial environment, 1920s economic growth, and 1930 industrial structure but correlated with the bank's network starting in 1929.

Finally, I show that these results do not change when instead matching cities using California's branch capital-based conversion and "public convenience and advantage" approval requirements before Bank of America's rapid 1920s expansion in Table A7. I compare cities' economic growth during the 1930s by propensity score matching their probabilities of Bank of America branch acquisition calculated using quadratics in 1922 population, the average capital and assets of the cities' banks in 1922, and the total number of banking offices in 1922.[45] This alternative empirical strategy finds similar cumulative log property value per capita growth from 1929 to 1940 for Bank of America-branched towns in terms of magnitude and statistical significance, supporting the narrow Oster bounds in Table A10.[46] Therefore, I interpret the lending effects of Bank of America's presence as driving these results on cities' per capita property values. Access to a Bank of America branch during the early 1930s softened the blow of the financial crisis and led to a stronger non-financial recovery.

6 Industrialization and Wages in the Recovery

6 .1 Structural Change in the 1930s

This section documents that industrial and occupational composition of male employment diverged substantially by 1940 based on 1929 Bank of America exposure, as was the case with per capita property values. I use longitudinal census microdata to absorb characteristics like workers' New Deal eligibility or aptitude for switching sectors, for example. I quantify the Bank of America effect on cities' 1940 labor markets using residents' reported wage income,

[45] I use 1922 as a reference point because it marks the year of the *de novo* rule which largely limited expansion to acquisition. This also represents the information set of both regulators and bankers at the start of the expansion.

[46] I also find similarly large overall Bank of America effects when matching cities based on 1923–29 property value per capita growth or 1930 census variables proxying for other 1930s potential shocks to test whether the average lack of significance in pre-1929 growth trends masks movement in the treatment coefficient or the city credit growth variable and confirm the baseline.

occupation, and industry, controlling for 1930 labor market information. Specifically, for individual i in city c in 1940, I estimate the following regression for labor outcome Y:

$$
\begin{aligned}
Y_{i,c} = \gamma_0 + \beta_1 BOFA_{c,1929} + \gamma_1 X_i + \gamma_2 X_c \\
+ \lambda_{\mathcal{C}} + \lambda_{j,1930} + \lambda_{o,1930} + \epsilon_{\mathcal{C}c}.
\end{aligned}
\tag{2}
$$

This specification measures the effect of Bank of America branches' presence in 1929 on male employment and wages after the Depression while controlling for regional labor market differences with 1940 county of residence fixed effects ($\mathcal{C}$) and 1930 city population (X_c), workers' 1930 occupation and industry sectors (λ_o and λ_j), and a host of individual 1930 demographic controls (X_i).[47] Standard errors are clustered at the 1940 county level. Finally, I weight each observation by the inverse of the 1940 local population to make these results directly comparable with those estimated at the city level in the previous section. The coefficient of interest is β_1, which measures the difference in labor market outcomes between locations within five miles of Bank of America's network in 1929 and those which were farther away.[48]

Table 5 reports the effect of Bank of America exposure on a series of mutually exclusive 1940 industry indicator variables at the worker level. Because the sector probability regressions are weighted by the inverse of 1940 place population, the β_1 coefficient can be interpreted as the difference in each sector's share in employment between treatment and control cities. For example, in Panel A Column 2, β_1 measures the difference in cities' manufacturing share based on Bank of America's 1929 network locations while Panels B and C

[47]I categorize these sectors using the first digit of each worker's assigned 1940 occupational and industrial employment coded by Ruggles et al. (2020). Sample occupational categories include farmer, farm laborer, manager, and sales worker. For industry group, example groups include mining, durable manufacturing, and personal services. City-level balance on Bank of America exposure for these outcomes in 1920 and 1930 can be found in Appendix H.2.

[48]This geographic measure of nearness to Bank of America lending captures the importance of soft information for relationship lending, as in Berger and Udell (2002), but also allows workers to have some choice in where they work. The following results are robust to other geographic cutoffs, as displayed in Figure A4. The decline in the effect of Bank of America as the distance cutoff increases indicates that the local financial stability benefits were geographically concentrated, validating this relationship lending-based measure.

split the sample based on workers' 1930 manufacturing status.[49]

Cities with Bank of America branches in 1929 had markedly different industrial composition in 1940 than those areas farther away from Bank of America branches at the start of the Great Depression. Bank of America branched places' primary sector employment plummeted in relation to other California cities. Workers in cities with Bank of America branches had an 11-percentage point lower probability of working in the commodity sector, just under 50 percent of the sample mean agriculture and mining employment share in 1940, also listed in the table for reference. Instead, more stable lending in the crisis translated into a higher share of men working in the retail and service industries, with the difference averaging roughly one quarter of the sample sector employment share. Since Bank of America was the only financial institution using its internal capital markets to sustain real estate lending (see A2), these results would be consistent with Bank of America insulating household demand during the financial crisis. Branch-exposed households could avoid reducing consumption for non-essential goods due to credit availability, which would keep local labor demand high, especially outside the agricultural sector (Romer, 1990; Olney, 1999).[50]

Decomposing these results by workers' 1930 sector of employment in Table 5 Panels B and C indicates three major sources of the difference in 1940 labor market shares by industry. First, the probability of being in the primary sector was much lower in Bank of America-branched places between 1930 and 1940 through both lower rates of entry (Panel B) and higher rates of exit (Panel C). Second, higher 1930s credit growth corresponded to a higher probability of remaining in one's 1930 sector of employment in the rest of the private sector, especially in services and manufacturing.[51] Panel B indicates a third source of divergence;

[49]Stratifying by Bank of America proximity in 1930 suggests that selective migration alone cannot explain these results. See Tables A12, A11, A14, and A13.

[50]Figure A2 indicates real estate loans differentiated Bank of America lending from other banks' policies in the crisis. Aggregate data in Federal Reserve Board (various years) show that Bank of America was more likely to make non-farm real estate loans, but not business loans in this period. I cannot rule out that small business owners used mortgage loans for financing, as they did depend on banks for credit (Mitchener and Wheelock, 2013). As in more modern periods, the most-affected industries were dependent on local demand, which is consistent with the story above (Kidner, 1946; Department of Education, 1937; Mian et al., 2020; Fonseca and Matray, 2022).

[51]Although there is both Great Recession and Great Depression evidence that more severe financial crises

Table 5: Effect of 1929 Bank of America Network on Industrial Employment Shares, 1940

Sector Emp. Share	Ag./Mining 0.226	Mfg./Cons. 0.288	Trans./Util. 0.075	Trade 0.168	Gov. 0.037	Services 0.148
A: Overall Effect						
BofA Proximity	-0.107***	0.00817	0.0120	0.0457***	0.00581	0.0315***
	(0.0164)	(0.0106)	(0.00898)	(0.00529)	(0.00351)	(0.00522)
R-sq	0.25	0.11	0.12	0.13	0.09	0.17
N	222071	222071	222071	222071	222071	222071
B: Not In Sector, 1930						
BofA Proximity	-0.0946***	0.00253	0.00640	0.0353***	0.00502	0.0237***
	(0.0148)	(0.00956)	(0.00518)	(0.00482)	(0.00315)	(0.00515)
R-sq	0.13	0.06	0.02	0.05	0.02	0.08
N	170623	186348	208510	198213	218273	197347
C: In Sector, 1930						
BofA Proximity	-0.131***	0.0505***	0.0662*	0.140***	0.0850**	0.0994***
	(0.0206)	(0.0174)	(0.0383)	(0.0185)	(0.0370)	(0.0140)
R-sq	0.11	0.11	0.19	0.09	0.28	0.14
N	51435	35698	13534	23848	3786	24701

Sources: Transamerica Corporation vs Federal Reserve Board (1953), Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Ruggles et al. (2020), Morse et al. (n.d.), and author's calculations. Standard errors clustered at 1940 county level. Other explanatory variables in these regressions are a quadratic in age, 1930 city of residence population, fixed effects for 1940 county, birthplace, and 1930 industry and occupation groups, and dummies for having an eighth grade education, 1930 marital and rural status, and reporting race as white. Only men between ages of 25 and 65 living in California in 1940 included. Proximity is 1 if within five miles of 1929 BofA location in 1940. Regressions weighted by the inverse of population for each man's geographic unit. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Bank of America-branched places had higher entry into retail employment than the rest of California. In Table A15, I benchmark these sectoral reallocation effects using an analogously defined 1920-30 linked sample and find that the above Depression-specific structural change effects go through. Labor markets with Bank of America branches thus reduced commodity sector employment and generated industrialization through both employment stability and

altered innovation activities, I do not see evidence of entry into manufacturing sector employment in Bank of America-branched places (Nanda and Nicholas, 2014; Huber, 2018). This may be because California manufacturing in the 1930s was either tied to commodity export demand (e.g. canning materials for peach processing) or state-level non-durable demand (e.g. car tires) (Rhode, 1995).

increased entry into the non-primary sector during the 1930s.

6 .2 The Role of Human Capital

This credit-driven acceleration in industrialization also enriched local labor markets' use of human capital. I demonstrate this occupational shift by estimating the effect of 1940 Bank of America proximity on indicators for working in mutually exclusive occupational categories in Table 6 estimated using Equation 2. Overall, places with Bank of America branches during the Great Depression had 9.5 percentage point lower farm labor shares. Professional and managerial occupational employment was 2.5 percentage points higher and sales and clerical work was 2.8 percentage points higher in Bank of America-branched cities, roughly one-eighth and one-quarter of the average city occupational share, respectively. In contrast to farming, the occupations which grew in Bank of America towns were on average relatively highly educated, according to contemporary educational attainment data in Table A4.[52]

Both education and employment stability drive this exit from agriculture in the Bank of America network. Stratifying the 1940 occupational indicator regressions by workers' 1930 sector illustrates the relative importance of staying in the same sector, which raised job-specific human capital, and reallocation into high education jobs. The results in Panel C show that local credit access induced more employment stability except in the case of farmers and laborers. Most of the overall occupational composition divergence instead stems from differences in which sectors workers entered, displayed in Panel B. There was a much higher propensity to enter professional, managerial, clerical, and sales work in Bank of America-branched places. These sectors were the only ones in 1940 in which the median worker had completed high school, though results are robust to using other definitions of occupational upgrading.[53] Together, these results indicate that branching-driven credit supply induced a

[52]In this context, completing 12 years of school was higher than the median (Goldin and Katz, 2009). Tables A4 and A5 disaggregate average educational attainment, calculated using $HIGRADE$ in the 1940 census, for each occupational and industrial category, respectively, in 1940 for the overall United States, California, and the sample cities specifically. Table A6 reports the industrial composition of each occupational type for the same geographies to aid in combining those shares.

[53]Other longitudinal measures of occupational upgrading using the log change in $OCCSCORE$, since

Table 6: Effect of 1929 Bank of America Network on Occupational Employment Shares, 1940

	Prof./Mgr.	Farming	Nonfarm Lab.	Sales/Cler.	Craft/Op.	Service
Sector Emp. Share	0.204	0.183	0.096	0.121	0.347	0.050
A: Overall Effect						
BofA Proximity	0.0248***	-0.0952***	0.00315	0.0278***	0.0209*	0.0146***
	(0.00630)	(0.0155)	(0.00510)	(0.00367)	(0.0109)	(0.00372)
R-sq	0.19	0.29	0.06	0.13	0.18	0.10
N	222071	222071	222071	222071	222071	222071
B: Not In Sector, 1930						
BofA Proximity	0.0185***	-0.0763***	0.00425	0.0211***	0.0109	0.0117***
	(0.00607)	(0.0146)	(0.00453)	(0.00297)	(0.00999)	(0.00352)
R-sq	0.08	0.13	0.04	0.05	0.10	0.02
N	196400	179560	174843	199807	169819	216348
C: In Sector, 1930						
BofA Proximity	0.0841***	-0.134***	-0.00271	0.115***	0.0554***	0.101***
	(0.0161)	(0.0212)	(0.0101)	(0.0189)	(0.0154)	(0.0257)
R-sq	0.12	0.15	0.09	0.10	0.08	0.20
N	25657	42496	47204	22248	52223	5700

Sources: Transamerica Corporation vs Federal Reserve Board (1953), Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Ruggles et al. (2020), Morse et al. (n.d.), and author's calculations. Standard errors clustered at 1940 county level. Other explanatory variables in these regressions are a quadratic in age, 1930 city of residence population, fixed effects for 1940 county, birthplace, and 1930 industry and occupation groups, and dummies for having an eighth grade education, 1930 marital and rural status, and reporting race as white. Only men between ages of 25 and 65 living in California in 1940 included. Proximity is 1 if within five miles of 1929 BofA location in 1940. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

shift in employment composition towards high education jobs, largely outside the primary sector.

Moreover, this 1930s occupational flow into white collar work was concentrated among

pre-1940 income data do not exist, are displayed in Table A28. This variable is available in both censuses and ranks occupations based on the median income associated with that occupation in 1950. Increases in *OCCSCORE* signify moving up the occupational ladder but do not capture changes in earnings within occupation. Living near a 1929 Bank of America branch is associated with a 6.5 percentage point increase in *OCCSCORE* from 1930 to 1940, which is roughly equivalent to moving from being a pipe fitter to being an insurance agent. These labor market patterns remain stable across several pre-trend assumptions, for example the *OCCSCORE* growth results are unchanged in a 1920—30 city difference-in difference comparison in Table A25 or when including 1920 sector information or 1920—30 occupational upgrading measures as individual level pre-trend approximations in Table A26.

highly educated workers in Bank of America-branched towns. I analyze the probability of being in white collar, clerical, or sales employment in 1940 in a difference-in-difference modification of Equation 2 where the key interaction is between Bank of America proximity in 1940 and whether a given worker graduated high school by 1940. Table 7 stratifies the estimation sample based on whether a worker changed his one-digit industry or occupation sector from 1930 to 1940 to test whether switchers or stayers specifically drove the overall occupational shifts. The Bank of America indicator is no longer consistently economically and statistically significant across all four columns. In contrast, the interaction terms are all positive, large, and precisely estimated, highlighting the joint impact of job stability and worker inflows in the overall change in employment shares. Additional results indicate that these high-education job switches were largest in the service sector, as seen in Table A22 and specific to the 1930s decade (Table A23).[54] High school graduates differentially contributed to occupational change in Bank of America places, generating a form of structural transformation which was not occurring in non-branched labor markets during the Great Depression.

6 .3 Explaining the 1940 Bank of America Wage Premium

As a final step, I examine how this branching-driven labor market reallocation translated into wage differences across cities in 1940. I regress 1940 log wage and salary income on the proximity to a 1929 Bank of America branch in Table 8 using the same set of controls as in Equation 2, again weighted to the city level to translate these individual effects into a more aggregate measure. Overall, wage and salary incomes were 9 log points higher in Bank of America-branched cities in 1940, as seen in Column 1.[55] The above results suggest two ways that Bank of America's presence induced structural change and higher wages in the 1930s,

[54] A subset of occupations drive this structural change; magnitudes are significantly smaller when using an indicator for non-tradable employment as in Table A21.

[55] The 1940 census only asked about wage and salary income, so business owners reported no income. Therefore, I restrict the estimation of the income coefficient to men reporting a nonzero income as is common in 1940 income regressions (Feigenbaum, 2018). These results are robust to dropping 1940 emergency workers as displayed in Table A29 (Margo, 1993).

Table 7: Bank of America and Reallocation Into High-Education Jobs

	Same Occ	Change Occ	Same Ind	Change Ind
BofA Proximity	0.01	0.04***	-0.01**	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)
HS Graduate	0.17***	0.18***	0.14***	0.18***
	(0.01)	(0.01)	(0.01)	(0.01)
BofA x HS	0.10***	0.07***	0.06***	0.09***
	(0.02)	(0.01)	(0.01)	(0.01)
R-sq	0.47	0.17	0.53	0.17
N	72893	149152	75598	146450

Sources: Transamerica Corporation vs Federal Reserve Board (1953), Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Ruggles et al. (2020), Morse et al. (n.d.), and author's calculations. Dependent variable is an indicator for being in a high-education occupation in 1940, defined as those occupations where the median worker had a high school diploma in 1940: white collar, clerical, and sales occupations. Standard errors clustered at 1940 county level. Other explanatory variables in these regressions are a quadratic in age, 1930 city of residence population, fixed effects for 1940 county, birthplace, and 1930 industry and occupation groups, and dummies for having an eighth grade education, 1930 marital and rural status, and reporting race as white. Changing occupation and industry dummies are 1 if the worker changes occupation or industry group, respectively, between 1930 and 1940. Only men between the ages of 25 and 65 living in California in 1940 included. Proximity is 1 if within five miles of a 1929 BofA location in 1940. Regressions weighted by the inverse of population for each man's geographic unit. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

which robustness checks show were specific to the Depression decade.[56] The labor market composition results illustrate that structural change occurred through both employment stability and sectoral reallocation. Next, I explore which of these potential industrialization mechanisms drive the Bank of America wage premium.

Table 8: BofA Wage Premium

	Overall	Stay Occ	1940 Ed. NT Share	Occ Triple-Difference
BofA Proximity	0.09***	0.07***	-0.07*	0.02
	(0.02)	(0.02)	(0.04)	(0.04)
$Sector_i$		0.04**		0.00
		(0.02)		(0.03)
BofA x $Sector_i$		0.04**		-0.13***
		(0.02)		(0.03)
$Sector_c$			1.05***	1.39***
			(0.23)	(0.26)
BofA x $Sector_c$			0.94***	0.30
			(0.26)	(0.26)
ENT Share x $Sector_i$				-0.45**
				(0.22)
BofA x ENT Sh x $Sector_i$				0.89***
				(0.23)
R-sq	0.27	0.27	0.28	0.28
N	149945	149945	149945	149945

Sources: Transamerica Corporation vs Federal Reserve Board (1953), Office of the Comptroller of the Currency (various years), California State Banking Department (various years), Ruggles et al. (2020), Morse et al. (n.d.), and author's calculations. Standard errors clustered at 1940 county level. Other explanatory variables in these regressions are a quadratic in age, 1930 city of residence population, fixed effects for 1940 county, birthplace, and 1930 industry and occupation groups, and dummies for having an eighth grade education, 1930 marital and rural status, and reporting race as white. Only men between the ages of 25 and 65 living in California in 1940 included. Proximity is 1 if within five miles of 1929 BofA location in 1940. In Column 2, the individual sector variable is an indicator for remaining in one's 1930 sector, and otherwise it is an indicator for leaving one's 1930 sector. The two city employment variables are defined as the 1940 city employment share of service and retail high education jobs. Regressions weighted by the inverse of population for each man's geographic unit. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Bank of America's presence induced some workers to stay in the same sector in 1940 as in 1930, potentially increasing sector-specific human capital and wages, as proposed by Topel

[56] Table A28 demonstrates that Bank of America proximity increased home values only in 1940 and occupation-based earnings as well for 1940 but not 1930 (Table A25).

(1990) and Chodorow-Reich and Wieland (2020). I benchmark the size of this effect on income by adding an indicator for workers staying in the same occupation group ($Sector_i$) as well as an interaction between staying in a sector and Bank of America proximity to Equation 2. Table 8 Column 2 shows there is a joint benefit for staying in one's sector and for being in a Bank of America-branched place, equivalent to about 40 percent of the overall wage premium. To the extent that men in Bank of America-branched towns remained in high paying jobs off the farm, this mechanism contributes to the overall wage differential. However, the probability of remaining in one's occupation was no different based on Bank of America proximity, as seen in Table A28, and the Bank of America wage coefficient remains sizeable in this specification, indicating that a substantial portion of the wage premium cannot be explained by this channel alone.

Building on the high school graduate-based sectoral reallocation results in Table 7, I also examine the role played by this form of cross-sector structural change in the cross-sectional difference in wages in 1940. To capture this channel, I add the 1940 white collar non-tradable employment share ($Sector_c$) into the regression in Column 4 of Table 8.[57] The Bank of America coefficient loses significance in this specification while the industrialization measures are both statistically and economically significant. Multiplying the interaction coefficient by the 1940 difference median educated non-tradable employment shares between treated and control places (0.06) yields an effect size equal to 62 percent of the overall wage premium.

Although the above channels separately explain some part of the wage differential, I next show that reallocation-based structural transformation was a crucial component of this 1940 income gap. I conduct a triple-difference version of Equation 2 using the 1940 educated non-tradable sector share ($Sector_c$) and indicators for Bank of America proximity and moving sectors ($Sector_i$) between 1930 and 1940. The triple interaction measures the

[57]I define white collar non-tradable employment as any occupation-industry pair fitting in the intersection of the service, retail and wholesale trade industries and professional, managerial, sales, and clerical occupations. About 70 percent of non-tradable employment was in these jobs in both 1930 and 1940, so the occupational composition did not change in these industries during the decade.

wage return to switching workers into the industrializing sector in a less-severe financial crisis, controlling for the direct effects of each of the other channels. As displayed in Table 8 Column 5, the interaction term is both large and statistically significant while the Bank of America proximity nor educated non-tradable share interaction are. In this horse race, industrialization clearly contributed to higher incomes in Bank of America-treated labor markets in 1940.

I examine three additional pieces of evidence to test the robustness of this conclusion. First, consistent with the notion that the overlap between skill and sectoral change was crucial, the results are unchanged when using industrial sector definition instead of occupation (Table A24). Additionally, I find no evidence that wages were unusually high for workers in the largest industry in each city ($Sector_c$) in 1930, so it is unlikely these results are the product of pre-crisis economies of scale instead of structural change (Acemoglu et al., 2016; Greenstone et al., 2010). Finally, I find that Bank of America's presence increased wages after 1931 using average wages reported in manufacturing establishment microdata from 1929 to 1935 in Table A30 in lieu of a worker panel dataset during the crisis. There are no statistically distinguishable effects on employment or output per worker, suggesting that these wage increases were not driven by increased labor demand or increased productivity specifically within the manufacturing sector. Instead, these results are in line with bank branching having a strong impact on wages across sectors during the financial crisis itself which then persisted. The worker data illustrate that as credit-rich cities specialized less in agriculture, workers moved into high education employment, accelerating local industrialization and raising wages.

7 Conclusion

According to Bank of America founder AP Giannini, loans were intended to "aid all the functions of business" (Dana, 1947, p.328). His bank continued to make those loans during the Great Depression even when other banks balked. This paper shows Bank of America leveraged its unique state-spanning internal capital markets to offset local liquidity shortfalls. Bank and branch balance sheets demonstrate that this form of diversification translated into 28 percentage point smaller lending contractions from 1929 to 1933 compared to California unit banks. Despite its contemporary reputation as unsafe, branching proved beneficial relative to traditional American banks in a period of economic volatility by providing a way to transfer liquidity across locations and maintain credit supply.

I establish the real effects of this lending policy on California cities using a variety of newly collected archival sources at the city, firm, and worker level. After years of similar pre-trends, per capita property values in Bank of America branched cities contracted by 11 percentage points less from 1929 to 1933 than those in cities outside its network. Cities in this branch network by 1929 then began recovering more quickly. In total, per capita property values grew in areas with Bank of America branches by 15 percent during the decade, while those in non-branched cities did not grow at all from 1930 to 1940. Together, these results provide direct, city level evidence that bank branching had a qualitatively significant effect on both the contraction and recovery phases of the Great Depression.

I next show that branching-based lending stability translated into speedier industrialization during the Depression by leveraging the detailed nature of historical data. Workers in Bank of America branched towns left agriculture and entered the service and manufacturing sectors between 1930 and 1940. This shift in industrial composition came about through both employment stability, increasing sector-specific human capital, and sectoral reallocation, which I show was driven by movement into high education jobs. A decomposition finds that both forms of human capital accumulation can explain much of the 1940 nine-log point wage premium in Bank of America branched places. Local lending generated persistent economic growth by stimulating structural change, especially in these human capital-intensive sectors.

These findings on economic activity and labor reallocation in the 1930s indicate a significant role for variation in bank policy in shaping local responses to the Great Depression. Because no other state allowed branching on the scale of Bank of America's network, other parts of the United States likely experienced 1930s growth patterns more like California cities which did not have a Bank of America branch. This paper emphasizes that the design of the United States financial system can impact economic development well after the onset of a crisis through this channel, though future research is needed to quantify its aggregate effects.

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