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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 that diversified away local liquidity shortfalls, allowing the bank to maintain 49 percent higher credit growth from 1929 to 1933 than competing banks. The bank's presence mitigated cites' property value contractions and strengthened their recovery through 1940. Linked individual data show that the bank's proximity to workers hastened the transition from agricultural employment to human-capital-intensive sectors in the 1930s, generating structural change 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, an exceptionally intense contraction by both historical and modern standards (Romer, 1993).[1] In the United States, local bank runs transformed into severe nationwide panics during the Great Depression in the absence of a lender of last resort (Friedman and Schwartz, 1963). Most places in the United States also lacked another financial shock absorber widespread in advanced economies, branch banking (Calomiris, 2000). Identifying how branch banking mitigated this financial crisis can contribute new insights into why the American Great Depression was so severe and how these now-common networks affect the economy.

This paper establishes that bank branching improved local credit and economic outcomes during the Great Depression. I first show how a large branch network in California alleviated a crucial driver of the crisis: unit banks' unwillingness to lend in the face of local shocks (Bernanke, 1983). I then link the pre-crisis presence of its branches to cities' property value growth and measures of structural transformation during the 1930s.[2] By demonstrating branching-driven credit facilitated economic development in this setting, this analysis establishes the impact of bank branching on economic activity during the Great Depression and shows how sectoral reallocation can abate the real effects of financial crises.[3]

I identify the local effects of branch banking using plausibly exogenous variation in branch locations across California cities at the start of the crisis. California featured the country's largest branch network, the bank now known as Bank of America, which expanded rapidly

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

[2] 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.

[3] A broad literature emphasizes that financial crises have high social costs because of their persistent 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, Schularick and Taylor, 2013; Claessens, Kose and Terrones, 2012; Peek and Rosengren, 2000; Baron, Verner and Xiong, 2021; Xu, 2022). See Frydman and Xu (2023) for a recent review of this literature.

in the 1920s to cover roughly half of California cities in 1929. Detailed narrative evidence suggests that regulatory resistance undermined the bank's ability to target locations during its expansion. Various pre-trend and balance tests support this interpretation. For example, property value growth, industrial employment shares, and loan-deposit ratios were statistically indistinguishable in cities with and without Bank of America branches in the baseline sample. I show the importance of branch banking by comparing cities' 1930s development based on the presence or absence of Bank of America branches in 1929.

To assess the consequences of bank branch networks, I draw on regulatory reports, court documents, congressional hearings, and census microdata. Historical banking records are sufficiently detailed that I compare Bank of America branches' balance sheets to those of other banking offices over time. Recently uncovered archival information on annual per capita property values allows me to measure annual changes in economic activity at the city level. I complement these banking office and city data with a longitudinal employment data set, which I constructed by applying automated record-linking techniques to workers in the 1930 and 1940 censuses (Ruggles et al., 2024; Abramitzky, Boustan and Eriksson, 2012). This microdata panel approach permits identification 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. From 1929 to 1933 Bank of America branches cut lending by 28 percentage points less on average than unit banks in the same city, despite the banks' similarity on a variety of pre-1930 variables.[4] The exception to this pattern is the top ventile of city deposit growth during the crisis, which proxies for locations with relatively little banking instability. These and other regression approaches show that Bank of America branches' lending was more resilient than that of similar unit banks except where local bank runs were extremely mild.

Second, I find that Bank of America's geographic diversification insulated its branches

[4] A unit bank is a bank which has only one location while a branch network has multiple offices.

from local banking shocks during the financial crisis. I do so by comparing Bank of America branches' balance sheets in 1933 to those of other branch networks operating in the same city. Relative to other offices operating in the same city, Bank of America branches had higher loan-asset ratios at branches with smaller deposit bases or greater banking instability. Bank of America also moved funds for use elsewhere in its network from larger branches, unlike other branch networks. By subsidizing its illiquid branches' credit with internal capital market transfers from more stable markets, Bank of America smoothed away local shocks and continued to lend in a way that unit banks and smaller branch networks could not.

Third, Bank of America's heightened local lending generated substantial benefits for cities' economic growth throughout the 1930s. Local projections indicate that per capita property values in Bank of America-branched cities grew by 11 percentage points more than cities without bank branches between 1929 and 1933. Extending this analysis through the remainder of the decade shows that cities with Bank of America branches in 1929 experienced smaller contractions, earlier rebounds, and larger recoveries in per capita property values. There is no evidence of differential growth from 1923 to 1929 in 1929 Bank of America locations. These findings are not affected by adjustments for other bank networks' presence, branch location selection on pre-Depression observables, or time-varying financial, monetary, or fiscal policy shocks. Branching improved local economic conditions during the Great Depression, with gains occurring during both the 1929—33 recession and post-1933 recovery phases.

Fourth, following individual workers between censuses reveals that Bank of America's presence promoted structural change in nearby labor markets during the 1930s. Specifically, Bank of America-branched labor markets saw declines in agricultural employment between 1930 and 1940 relative to their non-treated counterparts. The microdata reveal that Bank of America-branched areas had declines in both entry and continuation probabilities between 1930 and 1940 in the agricultural sector relative to non-branched locations. In treated cities, manufacturing and service employment shares rose as the farm sector shrank. 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. Bank of America proximity only altered industrial composition during the Great Depression, when its credit supply was relatively high.

Fifth, I demonstrate that this 1930s structural transformation led to branched places having higher wages and more human capital in 1940 in the linked census data. Bank of America's presence increased the probability of remaining in the same occupational sector between 1930 and 1940 for non-farm workers and the probability of entering professional, managerial, clerical, or sales employment by 1940. I find that both channels, especially the latter, contribute to Bank of America-branched places having higher wages in 1940. Thus, bank branching facilitated economic development during the Great Depression, which persisted until 1940.

I contribute to the literature on the financial crisis during the American Great Depression by illustrating the links between bank branching and economic development. Prior work has revealed the drivers of the 1930s bank crisis: monetary policy failures, interbank lending contagion, and risky pre-crisis balance sheets (Friedman and Schwartz, 1963; Richardson and Troost, 2009; Mitchener and Richardson, 2019; Calomiris and Mason, 2003*a*). I complement this strand of research by showing bank branching could counteract these frictions. Moreover, I find that Bank of America's lending policy had long-lasting economic impacts, which builds on studies showing credit market disruptions greatly harmed the manufacturing sector in the early 1930s (Bernanke, 1983; Lee and Mezzanotti, 2017; Mladjan, 2019; Benmelech, Frydman and Papanikolaou, 2019; Nanda and Nicholas, 2014; Ziebarth, 2013; Jalil, 2014; Babina, Bernstein and Mezzanotti, 2023).[5] By looking over a longer time horizon, I show that local financial crisis severity also affected cities' economic growth and labor

[5] This paper identifies the impact of local banking shocks on industrial composition, in contrast to work analyzing the role of pre-1930 sectoral labor concentration, 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 work using time-series techniques to identify loan supply shocks' effects on aggregate variables (Breitenlechner, Mathy and Scharler, 2021; Chin, Warusawitharana et al., 2010).

market composition through 1940, possibly reinforcing established drivers of the recovery, like monetary aggregates and fiscal policy (Temin, 1976; Temin and Wigmore, 1990; Romer, 1992; Eggertsson, 2008; Jalil and Rua, 2016; Fishback, 2017).

My findings on sectoral reallocation add to a recent literature focused on the mechanisms underlying the persistent welfare costs of financial crises. Analyses of the Great Recession have linked lending conditions to changes in household and firm balance sheets, mostly finding that local credit crunches worsened economic declines and slowed recoveries (Chodorow-Reich, 2014; Greenstone, Mas and Nguyen, 2020; Giroud and Mueller, 2017; Mian, Rao and Sufi, 2013; Di Maggio and Kermani, 2017; Chen, Hanson and Stein, 2017). At the local level, the 2000s mortgage boom and bust translated into long-lasting employment declines (Mian and Sufi, 2014; Garcia, 2018; Bhattarai, Schwartzman and Yang, 2021; Mondragon, 2018). Firm responses to credit shocks led to lingering losses after 2007 as well, particularly through forgone investment and innovation (Garicano and Steinwender, 2016; Huber, 2018; Ridder, 2017). I complement these findings by uncovering an additional set of labor market mechanisms which underly comparably persistent local credit supply effects in the Great Depression.

I also highlight the mechanisms through which branch banking can provide economic stability during and after a severe financial crisis. Starting with Jayaratne and Strahan (1997), research has demonstrated that states that relax branch banking restrictions grow faster during economic expansions, which are often periods of high growth in credit and non-tradable employment (Mian, Sufi and Verner, 2020). Additionally, by moving funds across regions, branch banks can alter capital allocation, particularly in booms (Morgan, Rime and Strahan, 2004; Huber, 2021; Stein, 1997; Gilje, Loutskina and Strahan, 2016). I contribute to this literature by illustrating the range of benefits provided by internal capital markets during a financial crisis. In addition, these internal transfers explain how the first large-scale branch network in the United States could better diversify risk than other banks in the Great Depression and improve economic outcomes, complementing cross-country historical studies

(Calomiris, 2000; Grossman, 1994; Bordo, Rockoff and Redish, 1994) on bank branching and work on unit banks' response to Bank of America specifically (Carlson and Mitchener, 2009).

Finally, this paper relates to research that illustrates how financial development eases labor market frictions and facilitates economic growth. Expanding bank branch networks increases financial inclusion and incomes in many settings.[6] But evidence is mixed on what parts of the skill distribution gain from financial inclusion. Although some research finds that bank branching reduces inequality while stimulating income growth (for example, Beck, Levine and Levkov (2010) and Célerier and Matray (2019)), recent studies by Ji, Teng and Townsend (2023) and Fonseca and Matray (2022) show that when a large bank opens a branch, it can widen labor market disparities as local average incomes rise, which Fonseca and Matray (2022) links to firms' increased demand for skilled workers. By following workers over time, I find evidence that a large bank's presence can increase wages through another skill-biased mechanism: sectoral reallocation. I show that Bank of America locations experienced structural change due to the movement of highly educated workers across sectors. This illustrates an additional 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.

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

2 Historical Background

My empirical strategy compares the Bank of America network's behavior to that of other California banks during the 1930s.[7] This approach 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 assumption, I outline how Bank of America expanded in the 1920s and how its network softened the severity of local financial crises in the 1930s.

2 .1 The Rise of Bank Branching

Although large bank branch networks are ubiquitous in the modern American financial system, they were rare 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's multi-city branching rules occupied a middle ground between the prohibition in most other states in the 1920s and 1930s and the current permissive 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. Instead, a bank could purchase another bank's stock and then ask regulators whether it could covert the acquired bank into a new branch. Together, these steps significantly constrained branch banking compared to today. Though multi-city branch network expansion was *de jure* legal in California before the Great Depression, only one bank attempted it: 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).[8] To do so in the face of *de novo* branch prohibitions, he first needed to find

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

[8] 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

banks to potentially 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 acquisitions to become Bank of America offices.[9] Upon receiving such offers, to discourage their stockholders from selling, many bankers vigorously promoted anti-takeover stock pools (Southworth, 1928). For this reason, Bank of America could not expand as desired simply by identifying targets and making purchase offers.

Other ex-ante unknown circumstances also shaped whether a potential acquisition turned into a branch. For instance, in San Luis Obispo, Bank of America bought roughly 45 percent of an existing bank's stock before that bank and other unit bankers in town got word of its intentions. To block Giannini's bid, the target bank coordinated the sale of its majority stake to a unit-bank competitor. Bank of America did not control enough stock to complete the acquisition until a major stockholder's widow, angered that her son had not inherited the stockholder's board seat, sold her shares to Giannini (James and James, 1954). In contrast, around the same time, the elderly president of a bank in nearby Santa Maria visited San Francisco in the hopes he could sell his bank to Bank of America and retire. The state superintendent refused to provide updated examinations, effectively 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 the chamber of commerce to justify a *de novo* branch permit. His application was rejected; the new bank superintendent had referred all Santa Maria-related banking matters to his former classmate, who was the attorney for the remaining unit bank

the Panic of 1907 between the eastern United States, controlled by single-city banks, and western Canada, dominated by branch banks, sparked his interest in branching as a way to maintain financial stability (Nash, 1992).

[9] 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 sales, suggesting substantial uncertainty surrounding expansion (Transamerica Corporation vs Federal Reserve Board, 1952). In the same hearings, bank presidents from all over California detailed unsuccessful purchase inquiries almost every other month for decades (Transamerica Corporation vs Federal Reserve Board, 1952). 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 Corporation vs Federal Reserve Board, 1952).

in town (James and James, 1954). Qualitative evidence indicates such situations were not unusual, though it is not possible to quantify their representativeness because California branch permit applications cannot be located.[10]

The state banking department had ultimate authority to decide whether branch networks could open new branches, as the above examples indicate. Regulators used this discretionary power to limit Bank of America's network in particular. Giannini's bank faced 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, some experts worried that branch networks would funnel rural deposits to urban borrowers, increase barriers to entry, and destroy local correspondent lending relationships (Preston, 1924).[11] Nativist sentiment also played a role in this opposition: some opposed 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, regulators leveraged authorization standards to limit Giannini's choice of expansion locations during most of the 1920s.[12]

Two regulatory developments briefly freed branch acquisition from interference by the anti-Bank of America coalition. Before 1927, national banks could not branch across city

[10]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, 1910–39). 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.

[11]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 U.S Congress Committee on Banking and Currency, 1930).

[12]Government officials had full authority over for these permits and faced little oversight, especially since the executive branch was generally opposed to bank branching (for example, President Warren G. Harding and his treasury secretary, Andrew Mellon) or Giannini specifically (for example, California governor William Stephens, who had been forced to repay overdue loans once Bank of America acquired his preferred bank) (Posner, 1956; Nash, 1992).

lines, which meant Bank of America had to be a state bank to expand geographically, despite California regulators' prejudices. Congress finally passed the McFadden Act in 1927, after two years of debate. The final version of the bill allowed national banks to have the same branch permissions as state banks did within their state of operation, but only for networks formed by the time of the bill's passage (eventually February 25, 1927).[13] Also in early 1927, a new chief state bank regulator forced his department to follow the letter of the law, not its own preferences, effectively permitting Bank of America to convert all its purchases into branches as Congress voted on the final version of the McFadden Act. According to other bankers, "[Bank of America] was out to acquire any bank that they [could]" to maximize the number of branches it could bring into the national bank system in this small window between the shift in state bank policy and the enactment of the McFadden Act (Board, 1952, p.381).

Figure 1 shows that Bank of America's network growth outstripped that of its competitors in the run-up to the McFadden Act. Though some acquisitions took until 1929 to open as Bank of America branches, 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). On the eve of the Great Depression, Bank of America was the third-largest bank in the United States, as measured by deposits, just 25 years after opening.[14]

The resulting network of 449 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). According to the bank's official history, this was "not the method [Gi-

[13]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.

[14]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 Treasury deemed the bank's dividends too large and halted the bank's branch acquisition until after World War II (James and James, 1954).

annini] 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).

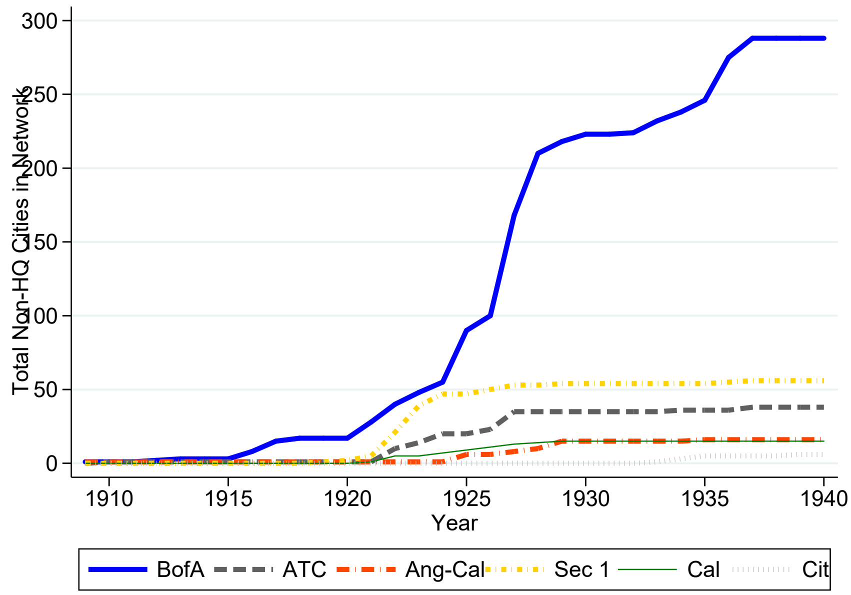
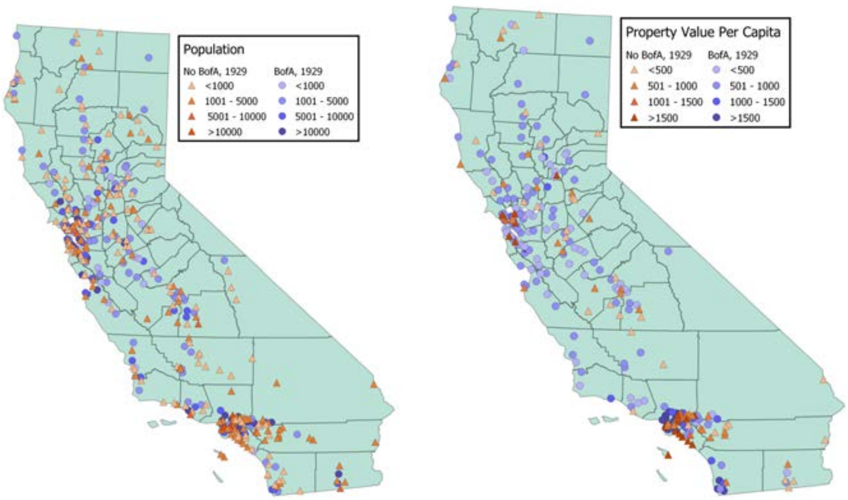


Figure 1: The Size of California Branch Bank Networks, 1909–40
Sources: California Bank branches: California State Banking Department (1910–39). All other branches: Transamerica Corporation vs Federal Reserve Board (1952). *Notes:* The non-Bank of America banks listed are the only other banks to operate 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.

Figure 2a maps these locations; circles mark places home to at least one Bank of America branch in 1929, and triangles represent cities without any. 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.



(a) Population (b) Property value per capita

Figure 2: City Characteristics and Bank of America's Network in 1929
Sources: Property values: California Board of Equalization (1923–40). Population: (Ruggles et al., 2024). Bank of America locations in 1929: Transamerica Corporation vs Federal Reserve Board (1952). Map files: Manson et al. (2024). *Notes:* Property value per capita is only available for incorporated cities and is measured using total assessed wealth per capita every year, as described further in Appendix B. Population includes all settled places in 1930, harmonized using the procedure in Appendix D.

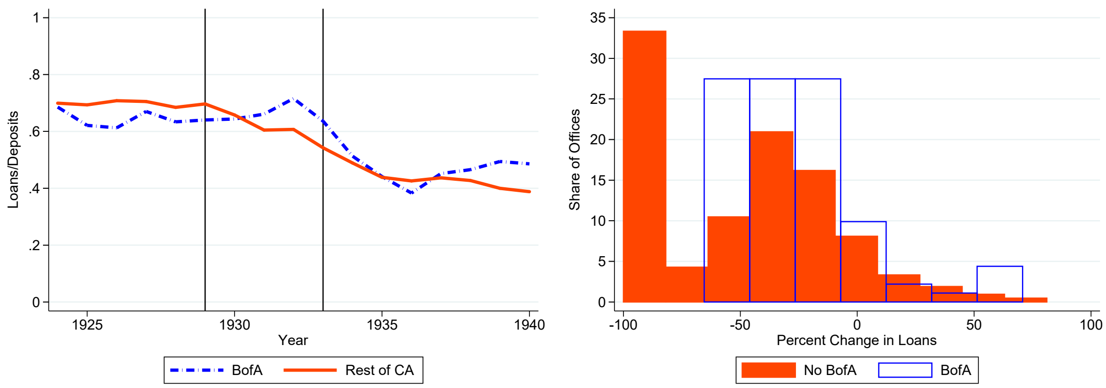
2 .2 California Banks in the 1930s

Once the Great Depression started, California suffered alongside the rest of the nation. Nominal personal income per capita contracted by 45 percent from 1929 to 1933 in California, in line with the national decline.[15] The labor market deteriorated over the same period, with one measure, the ratio of manufacturing employment to population, falling by about one-third (California Department of Industrial Relations, 1940). California's crisis was not driven by the largest cities; per capita retail sales fell 40 percent outside of Los Angeles and San Francisco Counties (Fishback and Kantor, 2018-11-18). Some Americans even returned to agricultural work for subsistence (Kuznets and Thomas, 1957; Boone and Wilse-Samson, 2021; Boyd, 2002).

Figure 3 shows that the banking sector experienced similarly strong contractions, with the exception of Bank of America. From its 1929 peak, lending in California fell 34 percent in nominal terms by 1933 (Transamerica Corporation vs Federal Reserve Board, 1952). The

[15]This statistic derives from the Bureau of Economic Analysis series $CACPI$ on FRED.

state average loan-deposit ratio fell from 0.70 in 1929 to 0.54 in 1933 as seen in Figure 3a. Bank of America's loan-deposit ratio held steady at 0.64 through 1933, making it an exception to the overall contraction.[16] After 1933, Bank of America's loan-deposit ratio fell below its pre-crisis level, leading the two ratios to converge, indicating Bank of America deviated from its competitors specifically during the financial crisis.[17]



(a) Aggregate Loan-Deposit Ratio Trends (b) Office Lending Growth, 1929–33

Figure 3: Differences in Credit Provision, 1924–40

Sources: Aggregate loan-deposit ratios: Transamerica Corporation vs Federal Reserve Board (1952). Unit bank lending in 1929 and 1933: Office of the Comptroller of the Currency (1910–39) and California State Banking Department (1910–39). Bank of America branch lending in 1929: 71st U.S Congress Committee on Banking and Currency (1930). Bank of America branch lending in 1933: Federal Reserve Board of Governors (1933). *Notes:* In Figure 3a, the BofA time series line plots Bank of America's ratio in each year, while the Rest of CA line is the average over all other banks operating in California in each year, including those in the 20 largest cities by population in 1929. The two vertical lines denote 1929 and 1933. In Figure 3b, I total up all lending for each bank in each city in 1929 and 1933 and construct the 1929—33 lending growth rate at the bank-city level. Loans exclude funds lent to the rest of the network or to other banks. Banking offices which fail are treated as having 0 lending in 1933. The histogram plots the distribution of 1929—33 lending growth rate outside the 20 most populous in the state in 1929 and also excludes all other branch networks due to a lack of data before 1933. See Appendix C.2 for more details on these data series.

Both qualitative and quantitative evidence suggests that Bank of America supplied more

[16] 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 total for the rest of California and increased Bank of America totals as banks changed hands (Transamerica Corporation vs Federal Reserve Board, 1952).

[17] 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 because of the bank's 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 out of caution or because of looser regulatory standards, Bank of America's post-1936 loan-deposit ratio ticked up as it 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 that post-1929 Bank of America-branched cities' property values do not converge to the pre-1929 network's trend.

credit all over the state than its competitors. Contemporary observers and the bank's newspaper advertisements reported that Bank of America would "open the financial floodgates" as the crisis worsened (Bank of America, 1932, p.4) (Blue Lake Advocate, 1932). Figure 3b demonstrates that far fewer Bank of America branches than unit banks had massive credit contractions in reality. On average, Bank of America branches cut lending by 26 percent from 1929 to 1933 outside the 20 most populous cities in the state, as compared to a 54-percent fall for unit banks.[18]

During the crisis, Bank of America offices benefited from the bank's combined balance sheet and geographic size advantages relative to other banks. Faced with limited access to outside liquidity and rising fears of bank runs, most banks cut lending to ensure they had cash on hand.[19] Measures of bank size, like assets and number of branches, predict smaller bank-level credit contractions in this setting, likely because larger banks could better mitigate risk.[20] The combination proved especially potent for Bank of America because it had substantial assets that it could redirect to branches experiencing liquidity shortfalls. For instance, at the nadir of the financial crisis in 1933, Bank of America chartered airplanes to fly gold from its headquarters to rural branches in danger of bank runs (Dana, 1947). Bank of America's widespread network structure thus allowed it to transfer funds across space, unlike other banks, increasing member locations' credit stability in a financial crisis.

Bank of America's contemporary reputation as the "bank for the little fellow" makes it

[18]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.

[19]Maintaining a cash buffer likely helped stave off bank failure, 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, 1910–39).

[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, competition in the local banking market, and branch network size finds particular explanatory power for network size. In 1929, Bank of America was large by both deposits and branch network size, as seen in Figure G1. Section G provides evidence that its 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 of Governors, 1933).

likely that many households gained from its Great Depression lending (Bankers Monthly, 1932, p.270).[21] For instance, Bank of America's real estate mortgage share of lending was unusually high despite the nationwide housing crisis (see Figure A2) (Wheelock, 2008; Fishback, Rose and Snowden, 2013).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 bank's corporate headquarters monitored its branches to ensure they lent broadly, not just to local elites, suggesting that non-real estate credit was also quite high (James and James, 1954). 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 local financial intermediation on a variety of outcomes in the 1930s.

3 Empirical Strategy

I develop an empirical approach that compares bank, city, and worker outcomes based on Bank of America's 1929 branch network locations. This requires assembling data from a unique set of historical sources at the worker, banking office, and city level. First, I observe banking office balance sheets, permitting me to contrast branch and unit bank behavior in the crisis. Second, I trace out the real impact on these shocks by creating a panel of annual city-level financial and economic data spanning the branch expansion period of the 1920s and during the Depression of the 1930s. In addition, I examine the labor market mechanisms behind these results using two longitudinal datasets on manufacturing establishments and workers. Finally, I provide evidence in support of this identification strategy.

[21] Appendix F.2 provides more evidence on banks, especially Bank of America, being major credit issuers for firms, households, and farms in 1930s California.

3 .1 Banking Markets

I build a banking market panel for every city in California in the 1920s and 1930s using information from 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 gather opening and closing dates for all California banks and branches from yearly reports of California State Banking Department (1910–39) and Office of the Comptroller of the Currency (1910–39), which I cross-reference with branch-opening dates from Transamerica Corporation vs Federal Reserve Board (1952). I am therefore able to measure cities' exposure to Bank of America in every year over two decades.[22]

I supplement the *bank* balance sheets above with a recently uncovered set of *branch* balance sheets.[23] I transcribed Bank of America branches' 1929 loan and deposit information as reported in congressional hearings (71st U.S Congress Committee on Banking and Currency, 1930). Then, I collected full branch balance sheets in 1933 from Federal Reserve Board of Governors (1933) and Office of the Comptroller of the Currency (1933) for all California national banks.[24] Unlike modern versions, these branch balance sheets report loans, deposits, and interbank and intrabank network transfers separately for each office.

Combining the unit and branch bank sources yields banking office data on 1929–33 lend-

[22]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.).

[23]Although the California superintendent of banks recognized that the spread of bank branching made bank-level reports inaccurate for local conditions at the time, the superintendent did not rectify the problem. 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, which the superintendent 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 U.S Congress Committee on Banking and Currency, 1930).

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

ing growth rates and a cross-section of balance sheet variables in 1933. Some of my analysis uses the city-aggregated version of these variables and branch-corrected city-level deposit data in 1928 and 1933 (Transamerica Corporation vs Federal Reserve Board, 1952). Further details on the construction of these data can be found in Appendix C.

3 .2 City Economic Development

To understand the economic implications of bank branching in this period, I collected data that match the geography of Depression-era banking markets and are observed frequently enough to identify changes in local economic activity. I use a new panel of nominal total property values as of March 1 in each year for all incorporated California cities from 1923 to 1940, which I gathered from archival reports authored by California Board of Equalization (1923–40). These 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 every year.[25] Since the median population of a Bank of America-branched city in 1930 was under 4,000 people, one advantage of the property value data is their lack of a minimum city population threshold. I divide this total property value in every city in every year by population from Bleemer (2016) to adjust for changes in city boundaries. For more detail on the property value per capita constriction process, see Appendix B.

These data are similar to home values but observed at a higher frequency. Cities ranks' in 1930 and 1940 property value per capita and median home value levels, are highly correlated, as are the decadal changes (see Table B1). Using these city-level property value per capita data permit me to separate potential effects of Bank of America's expansion in the 1920s from both the financial crisis and its aftermath in the 1930s, unlike decennial census data. I find that property value per capita and annual city-level average home values also produce similar trends, though the latter data are not available in most cities. I build on both theoretical and empirical work in urban economics, for example, Roback (1982), to argue

[25] The state government strove to make these assessments as accurate as possible because they were the basis for school funding in this period.

that this panel dataset of asset values, like similar housing value data, captures meaningful differences in economic activity across cities during the 1920s and 1930s.

For ease of interpretation, Appendix B provides a comparison between income and asset-based measures of economic activity in the 1930s. Confirming evidence on other Great Depression cities, I find that real estate values show a much weaker recovery than income-based measures in this setting (Fishback and Kollmann, 2014; Rose, 2022). The size of the average California county-level contraction in property values and retail sales per capita are similar. However, the post-crisis recovery is much smaller for real estate values than for income-related series, particularly in the worst-hit real estate markets.

I supplement these annual data with labor and demographic information from the 1920, 1930, and 1940 censuses (Ruggles et al., 2024). The census data also capture unincorporated communities, which were sizable in California and home to 40 Bank of America branches in 1929.[26] This collection of census and state governmental 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 construct longitudinal datasets on both worker and firm employment to map Bank of America's presence to labor markets in the Great Depression.[27] To address compositional changes in labor markets during the 1930s, I create a linked panel of individuals' from the 1930 and 1940 population census digitized by Ruggles et al. (2024, 2021). Due to a lack of

[26]According to a survey by the California State Chamber of Commerce, 56 unincorporated towns had populations of over 1,000 people in 1927. Unincorporated communities ranged 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 that was not in an incorporated city. This yields information for 8,439 enumeration sheets out of 30,388 candidates.

[27]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 worker and firm characteristics that 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 Appendixes B and C.3 show, is not common in this setting but captures the contemporary formulation of banking market boundaries.

consistent individual identifiers, I apply automated machine linking to match men between the ages of 25 and 65 living in California in 1940 to their corresponding 1930 records. I consider a 1930 record and a 1940 record to be matched if they are the only ones in each census to report an individual born in the same state with the same birth years and standardized first and last names, established in Abramitzky et al. (2022*b*) as NYSIIS-standard links. The resulting sample includes 32 percent of 1940 potential matches. Appendix E shows that the labor market results are robust to using other linking methods to adjust for selection into the dataset.

This process results in a worker-level panel on employment, income, education, and home values with one observation close to the start of the shock (1930) and one after it (1940). I assign Bank of America branch treatment to all individuals living within a five-mile radius of a city centroid in 1940 with a pre-Depression Bank of America branch, following research on the granularity of local credit markets (Petersen and Rajan, 2002; Nguyen, 2019).[28] Fifty-four percent of the population-weighted sample of 210,856 men are treated.

I complement these decennial outcomes using biennial manufacturing establishment-level data from 1929 to 1935 The biennial Census of Manufacturing microdata cover wages, employment, and productivity from 1929 to 1935 for establishments in 23 industries and were first made available by Vickers and Ziebarth (2018-08-07).[29] More detailed information on the construction of each dataset can be found in Appendixes B, C, D, and E.

[28]I geocode individuals in 1930 and 1940 using city of residence using Manson et al. (2024) definitions and crosswalks I constructed using Morse, Weintraub and Kehs (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 and is 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 to drop non-incorporated place observations because of the coarseness of 1920 enumeration district definitions. Appendix D describes the spatial aspects of this dataset further.

[29]For details on how these data were collected, see Vickers and Ziebarth (2018-08-07). Appendix D in this paper explains how I standardized this dataset's city identifiers.

3 .4 Identification

To measure the local effect of bank branching during the Great Depression, I compare trends in economic outcomes in places with (treated) and without (control) Bank of America offices in 1929. Therefore cities having all other banking offices serve as the no-branching Depression counterfactual to Bank of America, as I do not observe treated places in the 1930s in the absence of treatment. Two main identifying assumptions must hold in this approach. First, Bank of America-branched and non-branched places must not be hit by different shocks after 1929. Second, treatment cannot indirectly affect control groups, because then the control group does not approximate a no-treatment counterfactual and the estimated partial equilibrium effect does not reflect the aggregate effect. I defend each of these two assumptions in turn.

Identification assumes that Bank of America did not expand into cities which would have experienced different Great Depression trends than control cities even without the bank's presence. This becomes more plausible if pre-1929 characteristics which predict other Depression-era disruptions do not vary by treatment status. The historical record in Section 2 suggests that the treatment-control comparison may be valid, as hostile regulators and unit bank stockholders' motives could potentially create negative (for example, taking advantage of asymmetric information) and positive (if future gains to branch banking were high) selection into Bank of America's bank acquisition and entry. I next formally test whether Bank of America's 1929 branch locations' characteristics were similar to those of non-branched cities to provide quantitative evidence in favor of this assumption.

I test for balance on a variety of observable dimensions at the onset of the Great Depression in Table 1. The difference in means between treated cities, which had at least one Bank of America branch in 1929, and control cities, which had only other banks, is in Column 3.[30] The t-statistics in Column 4 are mostly quite small, with varying signs, but population

[30]The percent change variables require consistent town identifiers in the 1920 and 1930 censuses and in the 1920s California Board of Equalization (1923–40) reports, lowering sample size. Loan-deposit ratios in 1929 exist only for Bank of America branches and unit banks, so cities with other branches are excluded

clearly is not balanced across all California cities. Therefore I drop the 20 largest cities in California by 1929 population because their branch status was likely not random and they were so large that their economic conditions may have affected Bank of America's overall lending allocation.[31] I eliminate these cities from the estimation sample and control for population going forward to minimize 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.[32] Figure A3 also finds no evidence of a trend in property values around Bank of America's arrival in a generalized difference-in-differences approach. 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 those characteristics, or correlated unobservable ones, are confounding the link between Bank of America's 1929 network and economic effects in the 1930s.

The second main identifying assumption is that bank branching affected only those cities with branches during the Great Depression. This partial equilibrium approach can provide insights into the effects of bank branching on economic activity only if Bank of America did not also affect control cities' banking markets during the crisis. As formalized by Herreño (2023), the key parameter governing banking market spillovers is borrowers' ability to switch

from those comparisons.

[31] 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.

[32] 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. Value per capita	1013.8	3325.1	-277.7	-0.594	-0.489	224
Homeownership Rate	0.502	0.0989	0.00679	0.488	0.323	224
Ag. Emp. Share	0.132	0.109	0.0157	1.027	-0.743	224
Mfg. Emp. Share	0.125	0.118	-0.00478	-0.288	0.240	224
Self Emp. Share	0.0617	0.0211	0.00446	1.514	-0.322	224
ENT Skill Emp. Share	0.307	0.0950	-0.0218	-1.643	-0.915	224
Median Occscore	0.0369	0.576	-0.0523	-0.646	-0.769	224
Unemployment Rate	0.0411	0.0200	0.000241	0.0855	0.509	224
Loans/Deposits	0.661	0.263	-0.0241	-0.591	-0.682	187
%Δ Population	1.034	1.948	-0.267	-0.927	0.847	205
Δ Ag Emp. Share	-0.0569	0.105	-0.0242	-1.559	-1.409	205
%Δ Occscore	0.160	0.395	-0.0216	-0.368	0.264	205
%Δ Prop. Val. per capita	0.137	0.295	-0.0394	-0.915	-0.468	211
Population	5139.2	28017.2	-6077.7	-1.550		

Sources: Property value per capita: California Board of Equalization (1923–40) and Bleemer (2016). City-level loans and deposits: Transamerica Corporation vs Federal Reserve Board (1952), Office of the Comptroller of the Currency (1910–39), California State Banking Department (1910–39), and 71st U.S Congress Committee on Banking and Currency (1930). Home ownership, population, and labor market information: Ruggles et al. (2024). Bank locations: Transamerica Corporation vs Federal Reserve Board (1952), Office of the Comptroller of the Currency (1910–39), and California State Banking Department (1910–39). *Notes:* All housing, population, and labor market information measured in levels in 1930 and in changes betwen the 1920 and 1930 censuses. Bank balance sheet and location information is as of 1929. Property value data in levels are from 1929 with growth rates measured between 1923 and 1929. All values are in current dollars. The sample in Columns 1-4 includes all 244 California incorporated cities with banks in 1929, except for loan/deposit data (which are not available for cities with other branch networks in 1929) and the variables in changes (which drops out cities lacking earlier observations). Column 4 is a two-sided t- test for equality of each outcome's mean between cities with and without Bank of America branches in 1929. Columns 5 and 6 exclude the 20 most populous cities in the state in 1929. Column 5 is a regression of outcome on BofA 1929 dummy with 1930 population as a control, dropping the 20 most populous cities. For details on banking data availability, see Appendix C.2. For background on defining labor market shares, see Appendix E.2.

lenders when credit falls.[33] If credit supply falls for one group and they cannot find a new lender, then these treated borrowers cannot affect the control groups' access to credit and the identification assumption holds. At a micro level, this was true in the Great Depression, as borrowers had considerable trouble finding willing lenders (Bernanke, 1983; Benmelech, Frydman and Papanikolaou, 2019; Quincy, 2022). New lending relationships were quite slow to form, especially across markets, because banks relied on soft information to evaluate borrowers.[34] These frictions likely limited borrowers' ability to relocate to other cities to form new lending relationships, kept banking markets local in the short run, and limited spillovers between treated and control cities. Although this estimation strategy cannot recover the aggregate effect of bank branching, it speaks to Bank of America's direct impact on cities in its network subject to the above assumptions.

4 Branching and Local Financial Intermediation

As a first step towards analyzing whether bank branching improved local outcomes during the Great Depression, this section illustrates that Bank of America branches had better lending outcomes than other banking offices. First, I show that Bank of America branches cut lending less from 1929 to 1933 than other banking offices. Then, I demonstrate this was due to Bank of America's unique geographically diversified branch network.

4 .1 Local Credit Growth

Table 2 shows that 1929 Bank of America branches cut lending less than other banking offices during the financial crisis of the early 1930s.[35] Total outstanding credit fell by 49

[33] Herreño (2023) also notes that the labor supply elasticity must also imply nominal wage rigidity, which Eichengreen and Sachs (1985) show held across countries in the 1930s. Additionally, if there are negative spillovers to control units in this setting (for example, Quincy (2022)), aggregate effects may be larger than in the cross-section.

[34] See Appendix C.3 for archival evidence of these lending practices.

[35] I have to exclude non-Bank of America branch networks from this analysis because I cannot observe their banking office-level balance sheets in 1929. I also must omit 29 banking offices in Figure 3b due to missing city deposit growth data, hence the difference in average credit growth.

percentage points from 1929 to 1933 in non-Bank of America banking offices outside the 20 most populous cities in the state, but lending fell much less in Bank of America branches (Table 2, Column 1). Column 2 demonstrates that Bank of America branches' 23-percentage point smaller decline in this sample is robust to the inclusion of 1929 portfolio information as a proxy for banking office-level credit demand differences in the spirit of Calomiris and Mason (2003*a*). 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.

Bank of America branches were especially likely to cut lending less than other banking offices when local banking instability was high. One key measure of local bank instability in this setting is deposit losses because banking panics induced depositors to withdraw deposits and put pressure on banks to contract lending (Friedman and Schwartz, 1963). I test whether Bank of America reacted differently to local banking instability than other banking offices by adding in a control for the growth rate of city-level deposits from 1928 to 1933 and interacting it with the Bank of America indicator in Column 3.[36] The interaction term between the Bank of America indicator and local deposit growth is negative, which implies that Bank of America was even more likely to lend than other banks as deposit losses worsened, all else constant. Comparing the city deposit growth coefficient with the combined Bank of America and deposit growth coefficients indicates that Bank of America lent more than other branches except in the top ventile of deposit growth. This result also holds in Table 2, Column 4 where I compare Bank of America branches' credit responses to those of their direct competitors using city fixed effects to absorb any potential local shocks creating 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-

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

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

	Office loan growth				City loan growth
BofA	0.23	0.21	-0.14	-0.38	0.17
	(0.05)	(0.04)	(0.09)	(0.17)	(0.06)
Log loans, 1929		0.061	0.034	0.039	-0.047
		(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			0.75		
			(0.17)		
BofA $\times$ %Δ dep			-0.86	-1.61	
			(0.23)	(0.47)	
Constant	-0.49	-1.22	-0.54	-0.91	-0.014
	(0.05)	(0.40)	(0.35)	(0.66)	(1.01)
City FE				X	
R-sq	0.08	0.10	0.23	0.51	0.18
N	269	269	269	181	126

Sources: Total city-level deposits 1928 and 1933: Transamerica Corporation vs Federal Reserve Board (1952). Banking office balance sheet information: see Figure 3b. City-level controls: see Table 1. *Notes:* The column header describes whether the outcome is the 1929-33 lending growth rate at the bank-city level or if loans are aggregated to the city level in 1929 and 1933 before constructing the percent change. All cities with unit banks or Bank of America branches outside the top 20 by population in 1929 included so long as city-level deposit data were reported. Loans exclude funds lent to the rest of the network or to other banks. All controls are at the bank-city level except the 1928–33 deposit growth rate, which includes deposits held at all banking offices in a city in each year. Column 4 restricts to the 177 banking offices in cities at least one Bank of America office and one unit bank in 1929. Column 5 aggregates lending in 1929 and 1933 to the city level and adds controls for 1920–30 changes in agriculture and manufacturing employment shares, 1920–30 population and median occscore growth, 1922–29 lending growth, 1929 log total loans and loan-deposit ratios, and the 1930 unemployment rate, as well as the 1930 self-employed, white-collar service, agriculture and manufacturing employment shares, as defined in Table 1. See Appendix C.2 for more information on banking office balance sheets and Appendix E.2 for more detail on the census employment data. Standard errors clustered at county level.

level lending growth in the Depression. The final column in Table 2 combines all Bank of America branch and unit banking data operating within the same city. Even when factoring in channels that have been 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 1929–33 period, a 36-percent difference at the sample mean (Calomiris and Mason, 2003*a*; Romer, 1990; Hausman, Rhode and Wieland, 2019).[37] 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 Depression-era economic shocks (see Table A7).[38] This suggests that Bank of America branches' elevated lending, especially outside the most stable banking markets, likely explains the city-level variation in credit growth, not an omitted variable such as credit demand or economic resilience. In the following analysis I interpret Bank of America's presence as boosting local credit supply during the financial crisis.

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 that unit banking does not. Because multi-city branch networks reduce lending frictions across space, they could move funds across locations to avoid cutting lending during a local bank run (Allen and Gale, 2000). This mechanism is consistent with the fact that 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 diver-

[37]The Bank of America treatment includes both the direct branch-level exposure and more aggregated 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.

[38]These estimates represent the bounds on a treatment effect adjusted for omitted variable bias based on the assumption that selection on unobservables is proportional to selection on observables to formalize the intuition behind coefficient stability across regression specifications.

sification, rather than 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. Unlike in 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 most populous cities in California were otherwise comparable to non-branched cities but instead note that they could be important funding sources or destinations for all other cities.

First, I provide direct evidence that branch banks moved funds across space in this setting. California branching offices were able to transfer funds to lend elsewhere in the network, overcoming the weakness of contemporary external capital markets explored in Mitchener and Richardson (2020). Branch banks could choose to turn each branch's deposits into, among other things, loans at that office or loans elsewhere in the network. Both Bank of America and other branch offices which received internal capital flows had higher loan-asset ratios than other branches in 1933 (see Table A1).

Table 3 contrasts the kinds of lending opportunities branch networks generated with internal transfers. Table 3, Columns 1 and 2 compares the share of assets diverted to other locations within each network at Bank of America branches versus other offices. The Bank of America indicator is negative and significant, suggesting it moved less money on average out of each office. However, when adding an interaction with log branch deposits, a proxy for branch size, in Column 2, the sign reverses. The more deposits collected at a banking office, the more Bank of America transferred those funds elsewhere in the network compared to other branch banks. Together, these results imply that Bank of America differed from other branch networks because it moved money out of larger branches instead of smaller ones.

Table 3, Columns 4 and 5, show that the reverse pattern held for lending. Bank of America branches had significantly higher loan-asset shares, especially in smaller branches. The magnitudes of these loan-asset share coefficients are the same size but opposite in sign as the internal transfer-asset share in the first two columns of the table. There are no such patterns across other asset categories in Table A2, suggesting within-network transfers could

Table 3: The Effect of Local Liquidity on 1933 Branch Lending and Internal Capital Transfers

	Due from network/Assets			Loans/Assets		
1(BofA)	-0.126 (0.0157)	-1.186 (0.500)	0.855 (0.530)	0.131 (0.0207)	1.179 (0.402)	-0.316 (0.373)
Log(deposits)	-0.0820 (0.00600)	-0.114 (0.0174)	-0.0723 (0.0252)	0.0752 (0.00628)	0.107 (0.0143)	0.0902 (0.0161)
Log(dep) x BofA		0.0767 (0.0367)	-0.0517 (0.0307)		-0.0759 (0.0291)	0.0156 (0.0206)
$\geq$ median withdrawals $\times$ BofA			-2.446 (0.738)			1.770 (0.578)
Log(dep) $\times$ withdrawals			-0.0502 (0.0359)			0.0210 (0.0233)
Log(dep) $\times$ withdrawals $\times$ BofA			0.156 (0.0458)			-0.110 (0.0351)
Constant	1.722 (0.0296)	2.129 (0.134)	2.092 (0.0323)	-0.841 (0.0701)	-1.243 (0.143)	-1.226 (0.0707)
R-sq	0.36	0.38	0.41	0.27	0.29	0.31
N	256	256	256	256	256	256

Sources: National bank branch-level balance sheets: Federal Reserve Board of Governors (1933). 1928–33 city-level deposit growth: Transamerica Corporation vs Federal Reserve Board (1952). *Notes:* Each column is a regression of the share of branch assets in a specific category on indicators for log branch-level deposits, a Bank of America indicator, log average savings account size, an indicator for being the headquarters office, and city fixed effects. Due from network denotes the amount of branch assets transferred elsewhere within the branch network. Loans exclude funds lent to the rest of the network or to other banks. The HQ indicator is one if the office is the headquarters of the network according to the call reports. Log average account size is defined as the total amount of savings deposits divided by the number of savings account holders at that branch, which is then logged, and is zero for offices with no savings deposits. Columns 2 and 4 interact log branch deposits and the Bank of America indicator in a difference-in-difference speciification. Columns 3 and 6 make this a triple-difference specification by interacting branch deposits, whether the branch is a Bank of America branch, and an indicator for the city having a lower than median deposit growth rate between 1928 and 1933 compared to all California cities, called withdrawals in the table. All national bank branch balance sheets in California in 1933 included. See Appendix C.2 for details on these data. Standard errors are clustered at the county level.

fuel the relatively high amounts of credit outstanding at Bank of America branches. Unlike other branch networks, Bank of America supplemented 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).

Next, I show that Bank of America used internal transfers out of well-funded branches to lend in the offices most in need of funds in a triple-difference specification, suggesting Bank of America used its internal capital markets to diversify away local liquidity shocks. In Table 3, Columns 3 and 6, 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, holding constant other city shocks by including city fixed effects. The triple-difference term measures whether branch size influenced how differently Bank of America reacted to a severe bank run than other branch networks. While the triple interaction coefficient is statistically significant for both outcomes, the one for loan shares is negative and the one for internal transfers is positive. Again, there are no such effects on other asset categories (see Table A3). Moreover, the Bank of America loan share results are driven by lending on real estate, 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 local liquidity shocks with its between-branch transfers. These results also can explain why branch banks were not overall more generous lenders than unit banks in the Great Depression, as shown in Calomiris and Mason (2003*b*) and Carlson (2004): not all branch networks used their network to smooth out local banking shocks. A branch network that was diversified like Bank of America, however, could offset some of the aggregate financial crisis through its internal capital markets.

In sum, Bank of America differentiated itself from both unit banks and other branch networks by lending more during the Great Depression, especially when local bank runs were severe. Unlike other branch networks, Bank of America fueled lending in hard-hit areas by transferring funds from branches not experiencing localized instability. Illiquid Bank of America branches thus benefited from access to deposits in much larger cities, which its competitors did not (or could not, in the case of unit banks). Together these results demonstrate that internal capital markets facilitated bank branches' diversification and local financial intermediation during the Great Depression.

5 The Effect of Branching on 1930s Local Growth

5 .1 Baseline Estimates

If bank branching benefited cities' economies during the Great Depression, then one would expect to see that cities in the Bank of America network had relatively high 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 log difference in property value per capita from 1929 to each year, from 1924 to 1940 , as a function of Bank of America branch status in 1929.[39] 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. 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 $\mathcal{C}$:

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

Time-varying control variables include a quadratic in city population and one lag of log 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.[40] The coefficient

[39] As with any impulse response function, this approach measures the cumulative growth path of the dependent variable over time in response to an exogenous shock, but unlike a vector autoregression, it is agnostic about the structure of the data-generating process. Here the counterfactual growth path is captured by the non-Bank of America cities, which appear similar on observables before 1929 but do not receive the local credit shock generated by bank branching.

[40] Because the property value data are not available until 1923, including lags restricts the estimation sample to 1924 onward.

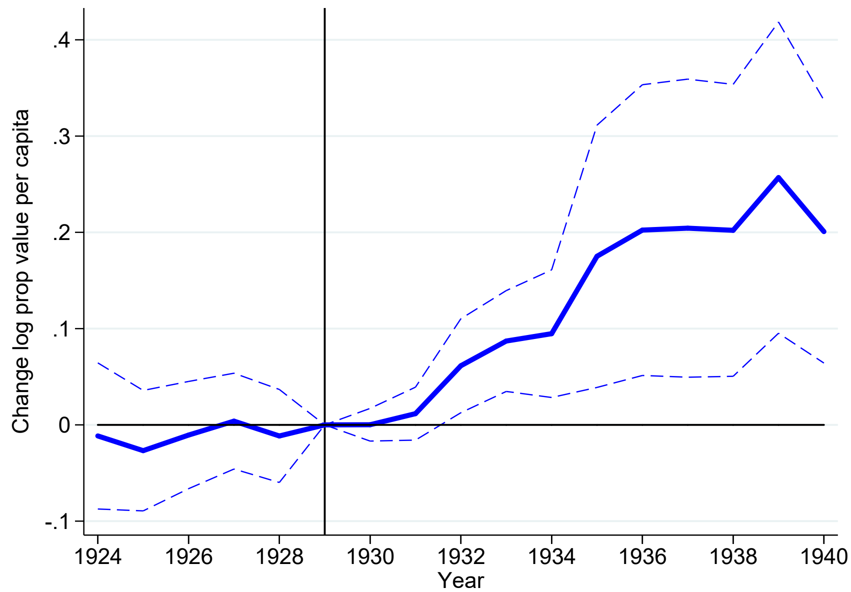


Figure 4: Baseline Estimates of the Bank of America Effect on Per Capita Property Values
Sources: Property value per capita: California Board of Equalization (1923–40) and Bleemer (2016). Bank of America locations in 1929: Transamerica Corporation vs Federal Reserve Board (1952). *Notes:* Thick lines 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. Sample includes all cities outside the top 20 most populous in 1929. Standard errors are clustered at the county level.

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. For reasons described in Section 3.4, I drop the 20 most populous cities in the state in this analysis as well.

Figure 4 displays the baseline estimates of Bank of America's presence during the Great Depression as the solid blue line. The dashed blue lines are 90 percent confidence intervals. There is no statistically significant difference in the path of per capita property value growth until after the onset of the Great Depression, confirming the balance on pre-1930 observables. The Bank of America coefficient hovered around 0 in the years before 1930 with t-statistics 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 America-branched cities and non-branched cities began to widen after 1930, it was not significant at conventional levels until 1932, at which

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)	(0.13)	(0.12)	(0.12)	(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	0.11	2.07	5.68	8.21	6.16	4.64	4.74	4.45	4.41	6.58	5.65
p-value	(0.74)	(0.16)	(0.02)	(0.01)	(0.02)	(0.04)	(0.03)	(0.04)	(0.04)	(0.01)	(0.02)
N	224	224	224	224	224	224	224	224	224	224	224

Sources: See Figure 4. *Notes:* Each column is a separate local projection estimation of Equation 1, regressing log property alue per capita from 1929 to each year on the two mutually exclusive indicators displayed above and demeaned controls. 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.

point a persistent gap opened between cities. The effects continued to grow into 1933, when the California banking crisis was most intense.[41] The Bank of America coefficient reached 9 percentage points in 1933, roughly eight times the cumulative pre-Depression effect and outside the 90 percent confidence interval before 1929. Strikingly, as recovery set in, this statistically significant difference continued to grow until 1939. The 20-percentage-point difference in property value growth established by March 1935 remained even in 1940. Having credit access improved Bank of America-branched cities' growth paths during the worst of the financial crisis, and these effects lasted up to the eve of World War II.

5 .2 Local Business Cycles

Next, I examine whether bank branching affected local business cycle patterns, not just overall growth rates. To do so, I compare cities' contractions in per capita property values (how much they fell relative to 1929), recovery speeds (when did they surpass their 1929 level), and recovery sizes (by how much did they surpass their 1929 level). Instead of including a

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

constant term in my local projections, I 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 Bank of America's presence softened but did not eradicate the impact of the Depression. On average, regardless of a city's branch status, per capita property values declined at a statistically significant rate during the banking crises of the early 1930s, but cities with Bank of America branches saw less severe declines. On average, Bank of America branches' 28 percentage point smaller credit contractions (Figure 3b) induced per capita property value declines that were 11 percentage points lower from 1929 to 1933.

This initial divergence in per capita property values during the financial crisis compounded when Bank of America-branched cities rebounded more strongly after 1933 but other cities did not. After the financial environment stabilized, per capita property values grew in places with higher crisis-time credit supply, rebounding above pre-Depression levels by 1935. In contrast, there was no such recovery in other places: the gap between treated and control cities nearly doubled between 1934 and 1935. Other California 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-branched and other cities after 1931.[42] Instead, cities in the Bank of America network saw significantly smaller contractions, a stronger initial rebound, and a steeper recovery in per capita property values.

To establish that these reduced-form effects are the product of Bank of America's lending behavior 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, its location selection criteria, or any correlated city characteristics. I separately

[42] 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.

construct local projections across a variety of subsamples to minimize the probability that bank failures, deposit runs, regulatory differences associated with being a national bank (for example, liability structure or discount window access), or local pro-competitive effects are driving the results in a series of checks displayed in Table A9 (Carlson and Mitchener, 2009; Aldunate et al., 2021; Anderson, Barth and Choi, 2019; Mitchener and Richardson, 2013; Richardson and Troost, 2009). Then, I demonstrate in Table A10 that other branch banks' presence in 1929 or post-1929 Bank of America branches fail to replicate the baseline 1929 Bank of America network result using a simple location indicator or the branches' 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 or other 1930s shocks 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 (both levels and growth rates).[43] An alternative identification strategy propensity score matching cities using California's branch approval requirements before Bank of America's rapid 1920s expansion in Table A7 also finds similar results.[44] Finally, Table A10 shows the Oster (2019) bounds are quite narrow in the baseline specification, providing some further evidence against the threat of unobservables contaminating the Bank of America effect. 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 with the financial environment, 1920s economic growth, and 1930 industrial structure but correlated with the bank's network

[43] The sources for these data are Fishback and Kantor (2018-11-18), ?, Ager et al. (2020), and Ruggles et al. (2024).

[44] 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. These variables reflect differences in banks' acquisition costs and cities' need for larger banks (what the state called public convenience and advantage) at the start of the state's acquisition only branch legal regime. Other matching criteria also show the same results for both property value per capita or city-level lending growth.

starting in 1929.

6 Structural Change and Wages in the Recovery

6 .1 Sectoral Reallocation in the 1930s

This section documents that the industrial and occupational composition of male employment diverged substantially by 1940 based on 1929 Bank of America exposure, as with per capita property values. I use longitudinal census microdata to absorb characteristics such as workers' aptitude for switching sectors. I quantify the Bank of America effect on cities' 1940 labor markets using residents' reported wage income, 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 ($\mathcal{C}$), 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).[45] 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.[46] I again

[45]I categorize these sectors using the first digit of each worker's assigned occupational and industrial employment as coded by Ruggles et al. (2024). Sample occupational categories include farmer, farm laborer, manager, and sales worker. Industry 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.

[46]This weighting scheme leverages worker-level data to target city-level outcomes. It effectively identifies the effect of Bank of America's presence on the average city's labor composition while still adjusting for individuals' 1930 characteristics.

omit the 20 most populous cities in California in 1929 from the analysis. The coefficient of interest is β_1, which measures the difference in 1940 employment composition between locations within five miles of Bank of America's network in 1929 and those farther away (the control group).[47]

Table 5 reports the effect of Bank of America exposure on a series of mutually exclusive 1940 industry indicator variables at the worker level. Panel A reports the Bank of America effect on cities' employment share in each industry while Panels B and C leverage the worker-level panel aspect of the data to split the overall effect into employees staying versus entering the sector between 1930 and 1940.

Cities with Bank of America branches in 1929 had markedly different industrial composition in 1940 than areas farther away from Bank of America branches at the start of the Great Depression. Bank of America-branched cities' 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, and just under 50 percent of the average city's agricultural and mining employment share in 1940 in this sample, also listed in the table for reference. 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's sectoral employment share. Bank of America-branched labor markets had stronger demand for non-agricultural workers as well as access to the only financial institution using its internal capital market to sustain mortgage lending during the financial crisis (see Table A2). This suggests that Bank of America's higher credit supply led consumers to purchase more non-essential goods (e.g. (Romer, 1990; Olney, 1999)), which stimulated households' consumption and local labor demand and therefore the industrial composition of employment.[48]

[47]This 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 measure based on relationship lending.

[48]As in more modern periods, the most-affected industries were dependent on local demand, which is

Decomposing these results by workers' 1930 employment sector 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 agricultural and mining sector was much lower in Bank of America-branched cities 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 employment sector in the rest of the private sector, especially in services and manufacturing.[49] Panel B indicates a third source of divergence: workers in Bank of America-branched places entered retail employment more than the rest of California. In Table A15, I benchmark these sectoral reallocation effects using an analogously defined 1920–30 linked sample via Abramitzky et al. (2022*a*) and find that the above structural change effects are Depression-specific.[50] Alongside persistently higher economic growth, as seen in the previous section, labor markets with Bank of America branches reduced commodity sector employment and increased entry into manufacturing and service employment, consistent with definitions of structural transformation (Herrendorf, Rogerson and Valentinyi, 2014).

consistent with the story above (Kidner, 1946; Department of Education, 1937; Mian, Sufi and Verner, 2020; Fonseca and Matray, 2022). Appendix F.2 provides more evidence on banks' credit issuance in this setting.

[49] Although both Great Recession and Great Depression evidence suggest that more severe financial crises altered innovation, 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 (for example, canning materials for peach processing) or state-level non-durable demand (for example, car tires) (Rhode, 1995).

[50] Splitting the sample by Bank of America proximity in 1930 suggests that selective migration alone cannot also explain these results. See Tables A12, A11, A14, and A13.

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

Sector Emp. Share	Ag./Mining 0.228	Mfg./Cons. 0.290	Trans./Util. 0.075	Trade 0.168	Gov. 0.037	Services 0.145
A: Overall Effect						
BofA	-0.110	0.00709	0.0122	0.0463	0.00912	0.0287
	(0.0169)	(0.0104)	(0.00887)	(0.00546)	(0.00269)	(0.00451)
R-sq	0.26	0.12	0.15	0.14	0.10	0.17
N	210856	210856	210856	210856	210856	210856
B: Not In Sector, 1930						
BofA	-0.100	0.00273	0.00470	0.0359	0.00634	0.0209
	(0.0143)	(0.00912)	(0.00420)	(0.00522)	(0.00256)	(0.00434)
R-sq	0.14	0.06	0.02	0.06	0.02	0.07
N	155207	161581	194025	185084	206406	185679
C: In Sector, 1930						
BofA	-0.122	0.0293	0.0759	0.125	0.159	0.105
	(0.0222)	(0.0170)	(0.0398)	(0.0170)	(0.0241)	(0.0136)
R-sq	0.13	0.11	0.17	0.12	0.29	0.13
N	55630	49258	16805	25756	4436	25157

Sources: Bank of America locations in 1929: Transamerica Corporation vs Federal Reserve Board (1952). Census data: Ruggles et al. (2024) and **?**. *Notes:* Each cell is the β_1 coefficient found by estimating Equation 2 on the probability an individual works in the column's sector in 1940 for men between ages of 25 and 65 living in California in 1940 who I link back to their 1930 census records. 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. The Bank of America indicator is 1 if within five miles of 1929 BofA location in 1940, constructed as described in Appendix D.2. All other variables defined as in Appendix E.2. Standard errors clustered at 1940 county level. Regressions weighted by the inverse of population for each man's geographic unit in 1940. Men living in 1940 in the 20 most populous cities in California in 1929 are excluded from the sample.

6 .2 The Role of Human Capital

Bank branching accelerated structural change by increasing 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 9.9-percentage point lower farm labor shares. In contrast to farming, the occupations that grew in Bank of America towns employed relatively highly educated workers.[51] Professional and managerial occupational employment was 2.6 percentage points higher, and sales and clerical work was 2.7 percentage points higher in Bank of America-branched cities, roughly one-eighth and one-quarter of the average city occupational share, respectively.

Both occupational upgrading and non-farm employment stability drive this shift in employment in the Bank of America network. Splitting 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 higher-skill 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. Other measures of occupational upgrading confirm that Bank of America-branched cities on average had higher occupational upgrading as well.[52]

[51]Completing 12 years of school was higher than the median education level (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 United States, California, and the sample cities. Table A6 reports the industrial composition of each occupational type for the same geographies to aid in combining those shares.

[52]Other longitudinal measures of occupational upgrading using the log change in $OCCSCORE$ find similar results, as displayed in Table A28. Increases in $OCCSCORE$ signify moving up the occupational ladder but do not capture changes in earnings within occupation. 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 differences comparison in Table A25 or when including 1920 sector information or 1920–30 occupational upgrading measures as individual-pre-trend approximations in Table A26.

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

Sector Emp. Share	Prof./Mgr. 0.203	Farming 0.185	Nonfarm Lab. 0.096	Sales/Cler. 0.120	Craft/Op. 0.348	Service 0.048
A: Overall Effect						
BofA	0.0258	-0.0987	0.00481	0.0267	0.0233	0.0123
	(0.00606)	(0.0158)	(0.00516)	(0.00361)	(0.0106)	(0.00325)
R-sq	0.20	0.30	0.07	0.15	0.19	0.09
N	210856	210856	210856	210856	210856	210856
B: Not In Sector, 1930						
BofA	0.0178	-0.0793	0.00327	0.0204	0.0121	0.00973
	(0.00560)	(0.0145)	(0.00439)	(0.00276)	(0.00955)	(0.00308)
R-sq	0.07	0.13	0.05	0.05	0.10	0.01
N	181244	168105	184700	186694	153484	204999
C: In Sector, 1930						
BofA	0.0888	-0.132	0.0150	0.100	0.0515	0.0974
	(0.0150)	(0.0219)	(0.0149)	(0.0183)	(0.0146)	(0.0270)
R-sq	0.13	0.15	0.10	0.10	0.08	0.18
N	29602	42733	26134	24146	57350	5827

Sources: See Table 5. *Notes:* Each cell is the β_1 coefficient found by estimating Equation 2 on the probability an individual works in the column's sector in 1940 for men between ages of 25 and 65 living in California in 1940 who I link back to their 1930 census records. 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. The Bank of America indicator is 1 if within five miles of 1929 BofA location in 1940, constructed as described in Appendix D.2. All other variables defined as in Appendix E.2. Standard errors clustered at 1940 county level. Regressions weighted by the inverse of population for each man's geographic unit. Men living in 1940 in the 20 most populous cities in California are excluded from the sample.

Together, these results indicate that branching-driven credit supply shifted employment towards higher-skill positions at the expense of farming.

If high school graduates flowed into jobs requiring highly-educated workers, this would suggest human capital, not skill mismatch, rose as the sectoral employment share increased. I study the probability of being in professional, managerial, clerical, or sales employment in 1940 in a difference-in-differences modification of Equation 2 in which the key interaction is between Bank of America proximity in 1940 and whether a given worker graduated from high school by 1940. These sectors were the only ones in 1940 in which the median worker had completed high school, so I refer to them as high-education jobs. Table 7 splits the estimation sample based on whether a worker changed his one-digit industry or occupation sector from 1930 to 1940 to test whether educated switchers or stayers specifically drove the overall occupational shifts towards high-education jobs. The Bank of America indicator is no longer consistently economically and statistically significant across all four columns. In contrast, the Bank of America-high school graduate interactions are all positive, large, and precisely estimated, highlighting the joint impact of job stability and educated 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 (Table A23). Bank of America's presence translated into higher human capital employment as it induced structural change during the 1930s.

Table 7: Bank of America and 1940 High-Education Occupations

	Same Occ	Change Occ	Same Ind	Change Ind
BofA	0.01	0.04	-0.01	0.04
	(0.01)	(0.01)	(0.01)	(0.01)
HS Graduate	0.18	0.16	0.14	0.17
	(0.01)	(0.01)	(0.01)	(0.01)
BofA x HS	0.09	0.07	0.06	0.08
	(0.02)	(0.01)	(0.01)	(0.01)
R-sq	0.44	0.16	0.51	0.16
N	76254	134586	81710	129124

Sources: See Table 5. *Notes:* This table adds an indicator for whether a worker is a high school graduate with Bank of America proximity in 1940 in a difference-in-differences modification of Equation 2. The dependent variable is an indicator for whether an individual works in white collar, clerical, or sales occupations in 1940. These are the only occupations in which median worker had a high school diploma in 1940. Each column splits the linked census sample by whether or not the worker is in the same sector in 1940 as 1930. 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. The Bank of America indicator is 1 if within five miles of 1929 BofA location in 1940, constructed as described in Appendix D.2. High school graduation defined as reporting 12 or more years of educational attainment in the 1940 census. All other variables defined as in Appendix E.2. Standard errors clustered at 1940 county level. Regressions weighted by the inverse of population for each man's geographic unit. Men living in 1940 in the 20 most populous cities in California are excluded from the sample.

6 .3 Explaining the 1940 Bank of America Wage Premium

As a final step, Table 8 shows how this branching-driven labor market reallocation translated into wage differences across cities in 1940. I regress 1940 log wage and salary income on proximity to a 1929 Bank of America branch 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 8 log points higher in Bank of America-branched cities in 1940, as seen in Column 1.[53] This result suggests three ways that Bank of America's presence induced structural change and higher wages in the 1930s, which robustness checks show were specific to the Depression decade.[54]

First, 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 (1990) and Chodorow-Reich and Wieland (2020). I benchmark the size of this effect on income by adding to Equation 2 an indicator for workers staying in the same occupation group ($Sector_i$) and an interaction between staying in a sector and Bank of America proximity. Table 8, Column 2 shows a joint benefit for staying in one's sector and for being in a Bank of America-branched place, equivalent to about one-third 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 is contributing to the overall wage differential. However, the overall 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 sizable in this specification, indicating that a substantial portion of the wage premium cannot be explained by employment stability.

I next examine whether the specific form of sectoral reallocation documented in Tables

[53]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 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).

[54]Table A28 demonstrates that Bank of America proximity increased home values only in 1940 and occupation-based earnings for 1940 but not 1930 (Table A25). Income data are not available before 1940.

Table 8: BofA Wage Premium

	Overall	Stay Occ	1940 Ed. NT Share	Triple-Difference
BofA	0.08**	0.07**	-0.05	0.01
	(0.02)	(0.02)	(0.04)	(0.05)
$Sector_i$		0.09***		-0.04
		(0.02)		(0.04)
BofA x $Sector_i$		0.03		-0.09*
		(0.02)		(0.04)
$ENTShare$			1.08***	1.49***
			(0.30)	(0.35)
BofA x $ENTShare$			0.71*	0.21
			(0.34)	(0.37)
ENT Share x $Sector_i$				-0.61
				(0.37)
BofA x ENT Sh x $Sector_i$				0.72
				(0.38)
R-sq	0.27	0.27	0.28	0.28
N	142377	142377	142377	142377

Sources: See Table 5. *Notes:* This table estimates Equation 2 with log wage and salary income reported in the 1940 census as the outcome variable. 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. The sample includes all men between ages of 25 and 65 living in California and reporting positive income in 1940 who I link back to their 1930 census records. Column 2 interacts an indicator for whether a man stayed in the same occupational sector between 1930 and 1940 with the Bank of America indicator in a difference-in-difference modification of Equation 2. Column 3 interacts the 1940 city ENT employment share with the Bank of America indicator in a difference-in-difference modification of Equation 2. Column 4 interacts an indicator for whether a man changed occupational sectors between 1930 and 1940, the 1940 ENT employment share, and the Bank of America indicator in a triple-difference modification of Equation 2. The Bank of America indicator is 1 if within five miles of 1929 BofA location in 1940, constructed as described in Appendix D.2. The ENT share is the 1940 city employment share of service and retail high education jobs defined in Table 7. All other variables defined as in Appendix E.2. Standard errors clustered at 1940 county level. Regressions weighted by the inverse of population for each man's geographic unit. Men living in 1940 in the 20 most populous cities in California are excluded from the sample.

6 and 5 contributed to the cross-sectional difference in wages in 1940. I leverage the fact that workers in Bank of America branches were especially likely to enter educated non-tradable work to capture this type of structural change in Table 8, Column 3 (ENT_c).[55] The Bank of America coefficient loses significance in this specification, but the structural change interaction term is both statistically and economically significant. Multiplying the interaction coefficient by the 1940 difference in median educated non-tradable employment shares between treated and control places (0.06) yields an effect size equal to 52 percent of the overall wage premium.

Although the above channels separately explain part of the wage differential, I now show that structural transformation was a crucial component of this 1940 income gap due to workers changing sectors. I conduct a triple-difference version of Equation 2 using the 1940 white-collar-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 wage return to participating in structural transformation in a less severe financial crisis, controlling for the direct effects of the other channels. As displayed in Table 8, Column 4, the interaction term is both large and statistically significant, while neither Bank of America proximity nor its interaction with the white collar non-tradable sector share are. In this horse race, sectoral reallocation clearly contributed to higher incomes in Bank of America-treated labor markets in 1940, perhaps because it was driven by highly educated workers as Table 7 indicates.

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 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

[55] I define educated-non-tradable employment as any occupation-industry pair at 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.

pre-crisis economies of scale instead of structural change (Acemoglu, Akcigit and Kerr, 2016; Greenstone, Hornbeck and Moretti, 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 the idea that bank branching had 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, educated workers moved up the occupational ladder, accelerating structural change and raising local wages.

7 Conclusion

According to Bank of America founder A.P. 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 has shown that Bank of America leveraged its unique state-spanning internal capital market 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 and monetary policy frictions by providing a way to transfer liquidity across locations and maintain credit supply.

I established 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 the branch network. Cities in this network by 1929 then began recovering more quickly. 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 1929 to 1940. Together, these results provide direct, city-level evidence that bank branching had a economically significant effect on both the contraction and recovery phases of the Great Depression.

By leveraging detailed historical data, I showed that branching-based lending stability accelerated structural change during the Depression. Workers in Bank of America-branched towns differentially left agriculture and entered the service and manufacturing sectors between 1930 and 1940. This shift came about through both employment stability, which increased sector-specific human capital, and sectoral reallocation, which derived from movement out of farming and into white-collar jobs. A decomposition found that both channels can explain much of the 8-log point wage premium in Bank of America-branched places in 1940. Although this approach cannot quantify the aggregate effect of bank branching, these results show that Bank of America used its network structure to lend more, which generated persistent economic gains, especially for educated workers.

References

71st U.S Congress Committee on Banking and Currency. 1930. "Volume 2, Part 11, May 6, 7, and 8, 1930." Vol. 2, 1537. https://fraser.stlouisfed.org/title/branch-chain-group-banking-1187/volume-2-part-11-3460. accessed on 6-7-2024.

Aaronson, Daniel, Daniel Hartley, and Bhashkar Mazumder. 2021. "The effects of the 1930s HOLC" redlining" maps." *American Economic Journal: Economic Policy*, 13(4): 355–92.

Abramitzky, Ran, Boustan Leah, Katherine Eriksson, Santiago Pérez, and Myera Rashid. 2022*a*. "Census Linking Project 1920-1930 Crosswalk Version 2.0 [dataset]." Harvard Dataverse [distributor], https://doi.org/10.7910/DVN/JCNEX2. accessed on 6-7-2024.

Abramitzky, Ran, Boustan Leah, Katherine Eriksson, Santiago Pérez, and Myera Rashid. 2022*b*. "Census Linking Project 1930-1940 Crosswalk Version 2.0 [dataset]." Harvard Dataverse [distributor], https://doi.org/10.7910/DVN/VMXOOR. accessed on 6-7-2024.

Abramitzky, Ran, Leah Platt Boustan, and Katherine Eriksson. 2012. "Europe's Tired, Poor, Huddled Masses: Self-Selection and Economic Outcomes in the Age of Mass Migration." *American Economic Review*, 1832–1856.

Acemoglu, Daron, Ufuk Akcigit, and William Kerr. 2016. "Networks and the macroeconomy: An empirical exploration." *NBER Macroeconomics Annual*, 30(1): 273–335.

Ager, Philipp, Katherine Eriksson, Casper Worm Hansen, and Lars Lønstrup. 2020. "Data for: "How the 1906 San Francisco earthquake shaped economic activity in the American West"." Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]. https://www.openicpsr.org/openicpsr/project/119841/version/V1/view. accessed on 6-7-2024.

Aldunate, Felipe, Dirk Jenter, Arthur G Korteweg, and Peter Koudijs. 2021. "Shareholder liability and bank failure."

Allen, Franklin, and Douglas Gale. 2000. "Financial contagion." *Journal of Political Economy*, 108(1): 1–33.

Anderson, Haelim, Daniel Barth, and Dong Beom Choi. 2019. "Does Increased Shareholder Liability Always Reduce Bank Moral Hazard?"

Atack, Jeremy, Fred Bateman, and Mary Eschelbach Gregson. 1992. ""Matchmaker, Matchmaker, Make Me a Match" A General Personal Computer-Based Matching Program for Historical Research." *Historical Methods: A Journal of Quantitative and Interdisciplinary History*, 25(2): 53–65.

Babina, Tania, Asaf Bernstein, and Filippo Mezzanotti. 2023. "Financial Disruptions and the Organization of Innovation: Evidence from the Great Depression." *The Review of Financial Studies*, hhad023.

Bailey, Martha J, Connor Cole, Morgan Henderson, and Catherine Massey. 2020. "How well do automated linking methods perform? Lessons from US historical data." *Journal of Economic Literature*, 58(4): 997–1044.

Bankers Monthly. 1932. "Why A.P. Giannini Returned."

Bank of America. 1932. "Back to Good Times." LIX(135).

Bank of America. 1942. *The Bankamerican way; a handbook for employees & officers of Bank of America National Trust and Savings Association.* San Francisco.

Barajas, Adolfo, Thorsten Beck, Mohammed Belhaj, and Samy Ben Naceur. 2020. "Financial inclusion: what have we learned so far? What do we have to learn?" *IMF Working Papers*, 2020(157).

Baron, Matthew, Emil Verner, and Wei Xiong. 2021. "Banking crises without panics." *The Quarterly Journal of Economics*, 136(1): 51–113.

Beck, Thorsten, Ross Levine, and Alexey Levkov. 2010. "Big bad banks? The winners and losers from bank deregulation in the United States." *The journal of finance*, 65(5): 1637–1667.

Benmelech, Efraim, Carola Frydman, and Dimitris Papanikolaou. 2019. "Financial frictions and employment during the Great Depression." *Journal of Financial Economics*.

Berger, Allen N, and Gregory F Udell. 2002. "Small business credit availability and relationship lending: The importance of bank organisational structure." *The Economic Journal*, 112(477): F32–F53.

Berger, Allen N, and Raluca A Roman. 2018. "Finance and the real economy: Evidence from the US." *Handbook of finance and development*, 261–288.

Bernanke, Ben S. 1983. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *American Economic Review*, 73(3): 257–276.

Bhattarai, Saroj, Felipe Schwartzman, and Choongryul Yang. 2021. "Local scars of the US housing crisis." *Journal of Monetary Economics*, 119: 40–57.

Bleemer, Zachary. 2016. "Data from: Role Model Effects Of Female Stem Teachers And Doctors On Early 20th Century University Enrollment In California." Center for Studies in Higher Education, UC Berkeley. https://escholarship.org/uc/item/8nq0z4wb. Data obtained through personal correspondence with author on 2017-10-25.

Blue Lake Advocate. 1932. "Home Loans By Bank Stimulating Building."

Board, Federal Reserve. 1952. "Clayton Act Proceeding: Transamerica Corporation." *Federal Reserve Bulletin*, 38(4): 111–133.

Board of Governors. 1933. "Customers Rates on Small Loans Survey 5/11/33." https://fraser.stlouisfed.org/archival-collection/records-federal-reserve-system-1344/customers-rates-small-loans-survey-5-11-33-469246. accessed on 6-7-2024.

Bonadio, Felice A. 1994. *AP Giannini: Banker of America.* Univ of California Press.

Boone, Christopher DA, and Laurence Wilse-Samson. 2021. "Structural Change and Internal Labor Migration: Evidence from the Great Depression." *The Review of Economics and Statistics*, 1–54.

Bordo, Michael D, Hugh Rockoff, and Angela Redish. 1994. "The US banking system from a northern exposure: Stability versus efficiency." *The Journal of Economic History*, 54(2): 325–341.

Boyd, Robert L. 2002. "A "migration of despair": unemployment, the search for work, and migration to farms during the Great Depression." *Social Science Quarterly*, 83(2): 554–567.

Breitenlechner, Max, Gabriel P Mathy, and Johann Scharler. 2021. "Decomposing the US Great Depression: How important were loan supply shocks?" *Explorations in Economic History*, 79: 101379.

Brevoort, Kenneth P, and Timothy H Hannan. 2006. "Commercial lending and distance: evidence from Community Reinvestment Act data." *Journal of Money, Credit and Banking*, 1991–2012.

Bureau of the Census. 1930. "Instructions to Enumerators." *https://www.census.gov/history/pdf/1930instructions.pdf*.

California Board of Equalization. 1923–40. "Biennial Report of the State Board of Equalization."

California Board of Equalization. 1945. "Assessors Handbook for Appraisal of Urban Real Estate."

California Building and Loan Commission. 1929. "Annual Report of the Building and Loan Commissioner of the State of California." California State Printing Office. https://hdl.handle.net/2027/uiug.30112061242290.

California Building and Loan Commission. 1933. "Annual Report of the Building and Loan Commissioner of the State of California." https://hdl.handle.net/2027/uc1.c005987769.

California Department of Industrial Relations. 1940. "Handbook of California Labor Statistics."

California State Banking Department. 1910–39. "Annual Report of the Superintendent of Banks of the State of California."

California State Banking Department. 1930. "State Banking Department Bulletin."

Calomiris, Charles W. 2000. *US Bank Deregulation in Historical Perspective.* Cambridge University Press.

Calomiris, Charles W, and Joseph R Mason. 2003*a*. "Consequences of bank distress during the Great Depression." *American Economic Review*, 93(3): 937–947.

Calomiris, Charles W, and Joseph R Mason. 2003*b*. "Fundamentals, panics, and bank distress during the Depression." *American Economic Review*, 93(5): 1615–1647.

Carlson, Mark. 2004. "Are branch banks better survivors? Evidence from the depression era." *Economic Inquiry*, 42(1): 111–126.

Carlson, Mark, and Kris James Mitchener. 2009. "Branch banking as a device for discipline: Competition and bank survivorship during the Great Depression." *Journal of Political Economy*, 117(2): 165–210.

Célerier, Claire, and Adrien Matray. 2019. "Bank-branch supply, financial inclusion, and wealth accumulation." *The Review of Financial Studies*, 32(12): 4767–4809.

Cerra, Valerie, and Sweta Chaman Saxena. 2008. "Growth dynamics: the myth of economic recovery." *American Economic Review*, 98(1): 439–57.

Chapman, John M., and Ray B. Westerfield. 1942. *Branch Banking: Its Historical and Theoretical Position in America and Abroad.* Harper and Brothers.

Chen, Brian S, Samuel G Hanson, and Jeremy C Stein. 2017. "The decline of big-bank lending to small business: Dynamic impacts on local credit and labor markets." National Bureau of Economic Research.

Chin, Alycia, Missaka Warusawitharana, et al. 2010. "Financial Market Shocks during the Great Depression." *The BE Journal of Macroeconomics*, 10(1): 1–27.

Chodorow-Reich, Gabriel. 2014. "The employment effects of credit market disruptions: Firm-level evidence from the 2008–9 financial crisis." *Quarterly Journal of Economics*, 129(1): 1–59.

Chodorow-Reich, Gabriel, and Johannes Wieland. 2020. "Secular labor reallocation and business cycles." *Journal of Political Economy*, 128(6): 2245–2287.

Claessens, Stijn, M Ayhan Kose, and Marco E Terrones. 2012. "How do business and financial cycles interact?" *Journal of International Economics*, 87(1): 178–190.

Correia, Sergio. 2016. "Linear Models with High-Dimensional Fixed Effects: An Efficient and Feasible Estimator." Working Paper.

Dana, Julian. 1947. *AP Giannini, Giant in the West.* Prentice-Hall.

Delano, Preston. 1945. "Bank of America National Trust & Savings Association Branch Applications." Vol. Box 21 Folder 5 Item 1, Marriner S. Eccles Papers. https://fraser.stlouisfed.org/archival-collection/marriner-s-eccles-papers-1343/bank-america-national-trust-savings-assn-branch-applications-469034. accessed on 6-7-2024.

Delli Gatti, Domenico, Mauro Gallegati, Bruce C Greenwald, Alberto Russo, and Joseph E Stiglitz. 2012. "Mobility constraints, productivity trends, and extended crises." *Journal of Economic Behavior & Organization*, 83(3): 375–393.

Department of Education, California . 1937. "Occupational trends in California with implications for vocational education." 5.

Di Maggio, Marco, and Amir Kermani. 2017. "Credit-induced boom and bust." *The Review of Financial Studies*, 30(11): 3711–3758.

Division of Labor Statistics and Law Enforcement. 1941. "Labor in California."

Durham, David L. 1998. *California's Geographic Names: A Gazetteer of Historic & Modern Names of the State.* Word Dancer Press.

Eggertsson, Gauti B. 2008. "Great Expectations and the End of the Depression." *American Economic Review*, 98(4): 1476–1516.

Eichengreen, Barry, and Jeffrey Sachs. 1985. "Exchange rates and economic recovery in the 1930s." *The Journal of Economic History*, 45(4): 925–946.

Federal Reserve Board of Governors. 1933. "Call Reports." Government Printing Office. https://fraser.stlouisfed.org/archival-collection/call-reports-1349. accessed on 6-7-2024.

Federal Reserve System. 1931. "Branch Banking in California."

Federal Writing Project. 1939. *California: a guide to the Golden State.* https://archive.org/details/californiaguidet00federich/californiaguidet00federich/. accessed on 6-7-2024.

Feigenbaum, James J. 2018. "Multiple measures of historical intergenerational mobility: Iowa 1915 to 1940." *The Economic Journal*, 128(612): F446–F481.

Fishback, Price. 2017. "How successful was the New Deal? The microeconomic impact of New Deal spending and lending policies in the 1930s." *Journal of Economic Literature*, 55(4): 1435–85.

Fishback, Price, and Shawn Kantor. 2018-11-18. "New Deal Studies [dataset]." Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], https://doi.org/10.3886/E101199V1-152543. accessed on 6-7-2024.

Fishback, Price, and Trevor Kollmann. 2014. "New multicity estimates of the changes in home values, 1920-1940." In *Housing and mortgage markets in historical perspective.* 203–244. University of Chicago Press.

Fishback, Price V, Jonathan Rose, and Kenneth Snowden. 2013. "Well worth saving." In *Well Worth Saving.* University of Chicago Press.

Fonseca, Julia, and Adrien Matray. 2022. "The real effects of banking the poor: Evidence from Brazil." National Bureau of Economic Research.

Friedman, Milton, and Anna Jacobson Schwartz. 1963. *A Monetary History of the United States, 1867-1960.*

Frydman, Carola, and Chenzi Xu. 2023. "Banking Crises in Historical Perspective." National Bureau of Economics Research.

Garcia, Daniel. 2018. "Employment in the Great Recession: How Important Were Household Credit Supply Shocks?" *Journal of Money, Credit and Banking.*

Garicano, Luis, and Claudia Steinwender. 2016. "Survive another day: Using changes in the composition of investments to measure the cost of credit constraints." *Review of Economics and Statistics*, 98(5): 913–924.

Garrett, Thomas A, and David C Wheelock. 2006. "Why did income growth vary across states during the Great Depression?" *The Journal of Economic History*, 66(2): 456–466.

Gilje, Erik P, Elena Loutskina, and Philip E Strahan. 2016. "Exporting liquidity: Branch banking and financial integration." *The Journal of Finance*, 71(3): 1159–1184.

Giroud, Xavier, and Holger M Mueller. 2017. "Firm leverage, consumer demand, and employment losses during the Great Recession." *Quarterly Journal of Economics*, 132(1): 271–316.

Goldin, Claudia Dale, and Lawrence F Katz. 2009. *The race between education and technology.* Havard University Press.

Greenstone, Michael, Alexandre Mas, and Hoai-Luu Nguyen. 2020. "Do credit market shocks affect the real economy? Quasi-experimental evidence from the Great Recession and 'normal' economic times." *American Economic Journal: Economic Policy*, 12(1): 200–225.

Greenstone, Michael, Richard Hornbeck, and Enrico Moretti. 2010. "Identifying agglomeration spillovers: Evidence from winners and losers of large plant openings." *Journal of Political Economy*, 118(3): 536–598.

Grossman, Richard S. 1994. "The shoe that didn't drop: explaining banking stability during the Great Depression." *The Journal of Economic History*, 54(3): 654–682.

Haines, Michael R. 2010. "Historical, demographic, economic, and social data: the United States, 1790–2002 [dataset]." *Ann Arbor, MI: Inter-university Consortium for Political and Social Research.*

Hausman, Joshua K, Paul W Rhode, and Johannes F Wieland. 2019. "Recovery from the Great Depression: The Farm Channel in Spring 1933." *American Economic Review*, 109(2): 427–72.

Herrendorf, Berthold, Richard Rogerson, and Akos Valentinyi. 2014. "Growth and structural transformation." *Handbook of economic growth*, 2: 855–941.

Herreño, Juan. 2023. "The aggregate effects of bank lending cuts." *Unpublished working paper, Columbia University.*

Huber, Kilian. 2018. "Disentangling the Effects of a Banking Crisis: Evidence from German Firms and Counties." *American Economic Review.*

Huber, Kilian. 2021. "Are bigger banks better? Firm-level evidence from Germany." *Journal of Political Economy*, 129(7): 2023–2066.

Jalil, Andrew J. 2014. "Monetary intervention really did mitigate banking panics during the Great Depression: Evidence along the Atlanta Federal Reserve District border." *The Journal of Economic History*, 74(1): 259–273.

Jalil, Andrew J, and Gisela Rua. 2016. "Inflation expectations and recovery in spring 1933." *Explorations in Economic History*, 62: 26–50.

James, Marquis, and Bessie Rowland James. 1954. *Biography of a bank: the story of Bank of America NT & SA.* Harper.

Jaremski, Matthew, and David C Wheelock. 2020. "Banking on the boom, tripped by the bust: Banks and the World War I agricultural price shock." *Journal of Money, Credit and Banking*, 52(7): 1719–1754.

Jayaratne, Jith, and Philip E Strahan. 1997. "The benefits of branching deregulation." *Economic Policy Review*, , (Dec): 13–29.

Jenkins, Robert. 1983. "Procedural History of the 1940 Census of Population and Housing." *https://www.census.gov/history/pdf/1940proceduralhistory-12617.pdf*.

Ji, Yan, Songyuan Teng, and Robert M Townsend. 2023. "Dynamic Bank Expansion: Spatial Growth, Financial Access, and Inequality." *Journal of Political Economy*, 131(8): 000–000.

Jordà, Òscar. 2005. "Estimation and inference of impulse responses by local projections." *American Economic Review*, 95(1): 161–182.

Jordà, Òscar, Moritz Schularick, and Alan M Taylor. 2013. "When credit bites back." *Journal of Money, Credit and Banking*, 45(s2): 3–28.

Jordà, Òscar, Moritz Schularick, and Alan M Taylor. 2017. "Macrofinancial history and the new business cycle facts." *NBER Macroeconomics Annual*, 31(1): 213–263.

Kashyap, Anil K, and Jeremy C Stein. 1995. "The impact of monetary policy on bank balance sheets." Vol. 42, 151–195, Elsevier.

Kashyap, Anil K, and Jeremy C Stein. 2000. "What do a million observations on banks say about the transmission of monetary policy?" *American Economic Review*, 90(3): 407–428.

Kidner, Frank Le Roy. 1946. *California business cycles.* University of California Press.

Krishnamurthy, Arvind, and Tyler Muir. 2017. "How credit cycles across a financial crisis." National Bureau of Economic Research.

Kuznets, Simon Smith, and Dorothy Swaine Thomas Thomas. 1957. *Population redistribution and economic growth: United States, 1870-1950.* Vol. 3, American philosophical society.

Lee, James, and Filippo Mezzanotti. 2017. "Bank Distress and Manufacturing: Evidence from the Great Depression."

Leuven, Edwin, and Barbara Sianesi. 2018. "PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing."

Long, Jason, and Joseph Ferrie. 2013. "Intergenerational occupational mobility in Great Britain and the United States since 1850." *American Economic Review*, 103(4): 1109–37.

Manson, Stephen, Jonathan Schroeder, David Van Riper, Katherine Knowles, Tracy Kugler, Finn Roberts, and Stephen Ruggles. 2024. "IPUMS National Historical Geographic Information System: Version 18.0 [dataset]." Minneapolis, MN: IPUMS, https://doi.org/10.18128/D050.V18.0. accessed on 6-7-2024.

Margo, Robert A. 1993. "Employment and Unemployment in the 1930s." *Journal of Economic Perspectives*, 7(2): 41–59.

McNally, Rand. 1929–33. "Bankers' Directory."

McWilliams, Carey. 1999. *California: The great exception.* Univ of California Press.

Mian, Atif, Amir Sufi, and Emil Verner. 2020. "How Does Credit Supply Expansion Affect the Real Economy? The Productive Capacity and Household Demand Channels." *The Journal of Finance*, 75(2): 949–994.

Mian, Atif, and Amir Sufi. 2014. "What explains the 2007–2009 drop in employment?" *Econometrica*, 82(6): 2197–2223.

Mian, Atif, Kamalesh Rao, and Amir Sufi. 2013. "Household balance sheets, consumption, and the economic slump." *Quarterly Journal of Economics*, 128(4): 1687–1726.

Mitchener, Kris James, and David C Wheelock. 2013. "Does the structure of banking markets affect economic growth? Evidence from US state banking markets." *Explorations in Economic History*, 50(2): 161–178.

Mitchener, Kris James, and Gary Richardson. 2013. "Does "skin in the game" reduce risk taking? Leverage, liability and the long-run consequences of New Deal banking reforms." *Explorations in Economic History*, 50(4): 508–525.

Mitchener, Kris James, and Gary Richardson. 2019. "Network contagion and interbank amplification during the Great Depression." *Journal of Political Economy*, 127(2): 465–507.

Mitchener, Kris James, and Gary Richardson. 2020. "Contagion of Fear." National Bureau of Economic Research.

Mladjan, Mrdjan. 2019. "Accelerating into the abyss: Financial dependence and the Great Depression."

Mondragon, John. 2018. "Household credit and employment in the Great Recession."

Morgan, Donald P, Bertrand Rime, and Philip E Strahan. 2004. "Bank integration and state business cycles." *The Quarterly Journal of Economics*, 119(4): 1555–1584.

Morse, Stephen P., Joel D. Weintraub, and Daniel R. Kehs. n.d.. "One Step ED Descriptions [dataset]." https://stevemorse.org/census/ed2040.php. accessed on 6-7-2024.

Nanda, Ramana, and Tom Nicholas. 2014. "Did bank distress stifle innovation during the Great Depression?" *Journal of Financial Economics*, 114(2): 273–292.

Nash, Gerald D. 1992. *AP Giannini and the Bank of America.* University of Oklahoma Press.

Nguyen, Hoai-Luu Q. 2019. "Are credit markets still local? evidence from bank branch closings." *American Economic Journal: Applied Economics*, 11(1): 1–32.

Office of the Comptroller of the Currency. 1910–39. "Annual Report of the Comptroller of the Currency." https://fraser.stlouisfed.org/title/annual-report-comptroller-currency-56. accessed on 6-7-2024.

Office of the Comptroller of the Currency. 1933. "Individual Statements of Condition of National Banks." Government Printing Office. https://fraser.stlouisfed.org/title/85/item/33304. accessed on 6-7-2024.

Olivetti, Claudia, and M Daniele Paserman. 2015. "In the name of the son (and the daughter): Intergenerational mobility in the united states, 1850-1940." *American Economic Review*, 105(8): 2695–2724.

Olmstead, Alan L, and Paul W Rhode. 2017. "A History of California Agriculture."

Olney, Martha L. 1999. "Avoiding default: The role of credit in the consumption collapse of 1930." *Quarterly Journal of Economics*, 114(1): 319–335.

Oster, Emily. 2019. "Unobservable selection and coefficient stability: Theory and evidence." *Journal of Business & Economic Statistics*, 37(2): 187–204.

Ostrolenk, Bernhard. 1930. *The Economics of Branch Banking.* Harper and Brothers.

Peek, Joe, and Eric S Rosengren. 2000. "Collateral damage: Effects of the Japanese bank crisis on real activity in the United States." *American Economic Review*, 90(1): 30–45.

Petersen, Mitchell A, and Raghuram G Rajan. 2002. "Does distance still matter? The information revolution in small business lending." *The Journal of Finance*, 57(6): 2533–2570.

Posner, Russell. 1956. "State politics and the Bank of America, 1920-1934." PhD diss. University of California, Berkeley.

Preston, Howard H. 1924. "Recent developments in branch banking." *The American Economic Review*, 14(3): 443–462.

Quincy, Sarah. 2022. "Income Shocks and Housing Spillovers: Evidence from the World War I Veterans' Bonus." *Journal of Urban Economics*, 132: 103494.

Quincy, Sarah. 2024. "Replication data for: Loans for the "Little Fellow:" Credit, Crisis, and Recovery in the Great Depression." American Economic Association [publisher], Inter-university Consortium for Political and Social Research [distributor]. https://doi.org/10.3886/E199265V1. accessed on 6-7-2024.

Rajan, Raghuram G, and Rodney Ramcharan. 2016. "Constituencies and legislation: The fight over the McFadden Act of 1927." *Management Science*, 62(7): 1843–1859.

Rhode, Paul W. 1995. "Learning, capital accumulation, and the transformation of California agriculture." *The Journal of Economic History*, 55(4): 773–800.

Richardson, Gary, and William Troost. 2009. "Monetary intervention mitigated banking panics during the Great Depression: quasi-experimental evidence from a Federal Reserve district border, 1929–1933." *Journal of Political Economy*, 117(6): 1031–1073.

Ridder, Maarten de. 2017. "Investment in productivity and the long-run effect of financial crisis on output."

Roback, Jennifer. 1982. "Wages, rents, and the quality of life." *Journal of Political Economy*, 90(6): 1257–1278.

Romer, Christina D. 1990. "The great crash and the onset of the Great Depression." *Quarterly Journal of Economics*, 105(3): 597–624.

Romer, Christina D. 1992. "What Ended the Great Depression?" *The Journal of Economic History*, 52(4): 757–784.

Romer, Christina D. 1993. "The Nation in Depression." *Journal of Economic Perspectives*, 7(2): 19–39.

Romer, Christina D, and David H Romer. 2017. "New evidence on the aftermath of financial crises in advanced countries." *American Economic Review*, 107(10): 3072–3118.

Rose, Jonathan D. 2022. "Reassessing the magnitude of housing price declines and the use of leverage in the Depressions of the 1890s and 1930s." *Real Estate Economics*, 50(4): 907–930.

Rosenbloom, Joshua L, and William A Sundstrom. 1999. "The sources of regional variation in the severity of the Great Depression: evidence from US manufacturing, 1919–1937." *The Journal of Economic History*, 59(3): 714–747.

Ruggles, Steven, Matt A. Nelson, Mathew Sobek, Catherine A. Fitch, Ronald Goeken, J. David Hacker, Evan Roberts, and J. Robert Warren. 2021. "IPUMS Ancestry Full Count Data: Version 3.0R [dataset]." Minneapolis, MN: IPUMS, https://doi.org/10.18128/D014.V3.0R. accessed on 6-7-2024.

Ruggles, Steven, Sarah Flood, Matthew Sobek, Daniel Backman, Annie Chen, Grace Cooper, Stephanie Richards, Renae Rodgers, and Megan Schouweiler. 2024. "IPUMS-USA Version 15.0 [dataset]." Minneapolis, MN: IPUMS, https://doi.org/10.18128/D010.V15.0. accessed on 6-7-2024.

Schwartz, Charles F, and Robert E Graham. 1956. "Personal Income by States since 1929: A supplement to the Survey of Current Business."

Snowden, Kenneth A. 2003. "The transition from Building and Loan to Savings and Loan, 1890-1940." *Finance, intermediaries and economic development*, 157–208.

Southern California Association of Governments. 2017. "Profile of the Unincorporated Area of Los Angeles County." *http://www.scag.ca.gov/documents/unincarealosangelescounty.pdf*.

Southworth, Shirley Donald. 1928. *Branch banking in the United States.* McGraw-Hill.

Starr, Kevin. 1996. *Endangered Dreams: The Great Depression in California.* Oxford University Press.

State Chamber of Commerce. 1928. *Economic Survey of California Counties.* California Development Association.

Stein, Jeremy C. 1997. "Internal capital markets and the competition for corporate resources." *The Journal of Finance*, 52(1): 111–133.

Temin, Peter. 1976. *Did monetary forces cause the Great Depression?* Norton New York.

Temin, Peter, and Barrie A Wigmore. 1990. "The end of one big deflation." *Explorations in Economic history*, 27(4): 483–502.

Topel, Robert. 1990. "Specific capital and unemployment: Measuring the costs and consequences of job loss." Vol. 33, 181–214, Elsevier.

Transamerica Corporation vs Federal Reserve Board. 1952. *Appendix on petition to review and set aside orders entered by the Board of Governors of the Federal Reserve System and on application for leave to adduce additional evidence.* Vol. 1-14. UC Berkeley Library.

University of California College of Agriculture. 1930. "Economic Problems of California Agriculture." , (504).

US Geographic Names Information System. n.d.. "GNIS Domestic Names [dataset]." U.S. Geological Survey. https://edits.nationalmap.gov/apps/gaz-domestic/public/search/names. accessed on 6-7-2024.

Vickers, Chris, and Nicolas L Ziebarth. 2018-08-07. "United States Census of Manufactures, 1929–1935 [dataset]." Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]. https://www.icpsr.umich.edu/web/ICPSR/studies/37114/versions/V1. accessed on 6-7-2024.

Wallis, John Joseph. 1989. "Employment in the Great Depression: New data and hypotheses." *Explorations in Economic History*, 26(1): 45–72.

Wheelock, David C. 2008. "The federal response to home mortgage distress: Lessons from the Great Depression." *Federal Reserve Bank of St. Louis Review*, 90(3): 133.

Wood, Will C. n.d.. *Recollection of the Bank of America merger.* Vol. Box 366 Folder 1, California State Library.

Xu, Chenzi. 2022. "Reshaping global trade: the immediate and long-run effects of bank failures." *The Quarterly Journal of Economics*, 137(4): 2107–2161.

Ziebarth, Nicolas L. 2013. "Identifying the effects of bank failures from a natural experiment in Mississippi during the Great Depression." *American Economic Journal: Macroeconomics*, 5(1): 81–101.