

BRANCH BANKING AND THE TRANSFORMATION OF BANKING IN CALIFORNIA

Mark Carlson
Board of Governors,
Federal Reserve System

and

Kris James Mitchener*
Assistant Professor
& Dean Witter Fellow
Department of Economics
Santa Clara University
& Faculty Research Fellow, NBER

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Since California was a pioneer in the development of intrastate branching, we use its experience during the 1920s and 1930s to assess the effects of the expansion of large-scale branch-banking networks on competition and the stability of banking systems. Using a new database of individual bank balance sheets and branch establishment, we examine the characteristics that made a bank a more likely target of a takeover, how competing unit banks responded to the presence of branch banks, and how branching networks affected the probability of survival of banks during the Great Depression. We find that well-capitalized banks and those displaying characteristics of more profitable institutions were the most likely targets for acquisition. We show that unit banks responded to the expansion in branch banking by changing their operations in ways consistent with efforts to increase efficiency and profitability. Our analysis indicates that, as a result, unit banks competing with branch bank networks, especially the Bank of America, were more likely to survive the Depression than banks that were not facing such competition. Thus, our results suggest that branch banking improves the stability of banking systems by promoting consolidation, increasing competition, and forcing banks to become more efficient.

* Carlson: Federal Reserve Board; 20th and Constitution Ave, NW; Washington DC 20551; Mark.A.Carlson@frb.gov. Mitchener: Department of Economics, Santa Clara University and NBER; 500 El Camino Real; Santa Clara, CA 95053; kmitchener@scu.edu. We thank Justin Jones, Tai-Yu Chen, and Annalisa Yenne for valuable research assistance, and the Dean Witter Foundation for financial support. We also thank Cydney Hill and Bank of America's archives for assistance with supplemental information on BofA's branches. The views presented in this paper are solely those of the authors and do not necessarily represent those of the Federal Reserve System or its staff.

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I. Introduction

The recent deregulation of interstate branching in the United States due to interstate agreements and the Riegle-Neal Interstate Banking and Branching Efficiency Act has unleashed a flurry of bank mergers and acquisitions as banks have sought to expand their scale and scope. The dramatic changes in the banking landscape has renewed interest in understanding how branch-banking networks affect competition among banks and the stability of the nation's banking system (Berger, Demsetz, and Strahan (1999) provide a detailed survey). Researchers have examined the characteristics that make banks targets for merger and acquisition as well as how such consolidation influences the behavior of competing banks. To a more limited extent, the literature has also explored how the wave of consolidation and the creation of larger banking networks affect systemic stability. Nonetheless, it is difficult to assess the long run affect of branching networks on the stability of the U.S. banking system, especially on the viability of smaller banks, using data from a consolidation process that is still underway. Moreover, a problem of observational equivalence exists: the recent dearth of bank failures may simply be due to the fact that there have been no large macroeconomic shocks to test how the emerging interstate branch banking system performs when it is stressed.¹

The current bank merger wave in US banking is not without historical precedent. The 1920s were also a period of banking consolidation and rapid expansion in branching (Alston, Grove, and Wheelock 1994, Carlson and Mitchener forthcoming, Wheelock 1993, and White 1985). Most notably, branch banking expanded dramatically in California as large banks purchased numerous smaller banks to create branching networks. Between 1922 and 1929, 48 percent of the banks in California that existed in 1922 were absorbed by other banks. This is comparable in scope to the recent period, during which 32 percent of the banks that existed in the United States in 1997 were

¹ According to NBER business cycle data, the last two business cycles have been among the shortest (8 months) and least severe in the postwar period.

purchased by other banks by 2004.² The expansion of branching in California in turn was due largely to A.P. Giannini, founder of Bank of America, whose branching policies made California the unrivaled leader in the branch banking movement of the 1920s. Due to the Bank of America's leadership, California's branching networks developed more quickly and more extensively than any other state during this decade (see Table 1). By the late 1920s, it had more depositors than any other bank in the United States. As Bank of America's branches blanketed the state, several other large banks were compelled to respond to Giannini's competitive threat by set up their own branching networks.

Using a new historical data containing information about balance sheets of individual commercial banks as well as bank mergers and branch establishment, we assess the expansion of branching in California, and identify which characteristics of banks and the communities in which they resided made them attractive targets for acquisition. We then examine how banks responded to increased competition from the large branch banking networks. Finally, using survival analysis we test how the expansion of branching affected the survivability of California banks during the Great Depression. Our study has several important implications for the literature on branch banking, competition, and stability. We are able to compare the current wave of consolidation and branch bank expansion with a previous era that shared similar characteristics, and provide a longer-run perspective on how consolidation, induced by branch banking, affects bank competition. Further, analyzing how the California banking system fared in the Great Depression offers a unique test of how the removal geographical restrictions on banking and the adoption of branch banking affects financial stability.

Our analysis also sheds light on notable debates regarding the banking system in the Great Depression. It has long been argued that the United States banking system was especially exposed to the shock of the Great Depression because of its unit banking structure (Friedman and Schwartz 1963, Calomiris 2000). This has led other scholars to explore the political economy dimensions of branch-banking restrictions (Economides,

² In California, the acquired banks represented about 35 percent of the banking systems assets in the 1920s whereas those that were taken over more recently represented around 40 percent of the assets of the US banking system in 1997. The amount of consolidation during the recent period may be overstated as these figures include some consolidation within holding companies, although some of the largest of these consolidations have been excluded.

Hubbard, and Pelia 1996). The empirical evidence on the effects of branch banking on financial stability, however, has presented somewhat of a puzzle. Studies using state level data find that states allowing branching had lower failures rates (Mitchener 2005, Wheelock 1995), while studies of individual banks find that branch banks were more likely to fail than other banks (Calomiris and Mason 2003, Carlson 2004). Carlson and Mitchener (forthcoming) offer a partial resolution to this puzzle by showing a connection between the expansion of branching and increased competition. Using state-level data, they show that, *ceteris paribus*, branch-banking states experienced more mergers and voluntary liquidations in their banking systems, and suggest that the competitive shakeout that occurred had salutary effects on the stability of these states' banking systems. They suggest that consolidation (induced by branch banking) improved stability, but they lack the micro-level data to test whether it is because weak banks were pruned from the system or because banks that were not taken over became more efficient. Because this paper utilizes detailed information on individual banks and branch locations, we are able to explore exactly how branch banking affected the banking system and provide a more thorough resolution to this empirical puzzle.

In this paper, we find that branches tended to be established in larger cities possibly because there were more business opportunities in these locations. Branches were also more likely to be established in communities where there were more banks and branches per capita. On the other hand, we find that Bank of America's strategy differed from other networks in that its geographical expansion was widespread and not simply centered around large cities. We also find that banks with more loans and securities (interest-earning assets) relative to total assets were more likely to be acquired, and interpret this result as evidence that is consistent with the view that more profitable banks were more likely to be taken over. These results are also consistent with Amel and Liang (1997), which finds that higher profits in a particular market lead to bank entry, and Stiroh and Strahan (2003), which suggests that banks enter markets by buying good banks and competing against poor performers; however, they differ from Wheelock and Wilson (2000), which finds that banks being purchased tended to have lower earnings and be less well capitalized.

We also find that banks that competed with branch banks, especially those that competed with the Bank of America, took measures to improve their profitability, likely in response to a change in the competitive environment. Relative to other assets, unit banks shifted their portfolios towards assets like loans, which typically earned higher returns. They also increased the share of demand deposits, relative to savings deposits, since these paid lower rates of interest to depositors. And they increased the size of their surplus in their net worth, which improved the protection offered to shareholders. These findings mirror those, using more recent data, of Jayaratne and Strahan (1998) and DeYoung, Hasan, and Kirchhoff (1998), which find that reductions in banking restrictions lead eventually to increased efficiency.

Finally, this paper sheds additional light on how the growth of these intrastate banking networks affected the survivability of banks during the Great Depression. Since the geographic scope of its branching network enabled it to compete in small communities throughout the state, we pay particular attention to how Bank of America's branches impacted stability. Our statistical evidence suggests that if Bank of America established a branch in a California town, it increased the odds that the other banks in that town survived the Great Depression. Thus, Giannini's assault on local geographic monopolies appears to have transformed California's banking system, forcing extant banks to improve their efficiency so that they could better cope with the macroeconomic shock of the Great Depression. This finding is important for two reasons. First it suggests that, following the current shakeout, the wave of consolidation will improve the stability of the banking system for both large and small banks. Second, it suggests that the banking system of the United States would have been less fragile in the 1930s had states allowed more branching, not necessarily because the branch banks would have been more diversified, but because the system would have consisted of more efficient banks.

The paper is organized as follows. Section 2 discusses the history and legal environment surrounding the growth of branch banking in California in the 1920s, with special emphasis on the Bank of America. Section 3 presents analysis of the factors that led towns and banks to be desirable for mergers. Changes in bank behavior following the addition of a branch nearby are discussed in Section 4. Section 5 discusses the effect of branching on the stability of the banking system. Section 6 concludes.

II. Branch Banking in the 1920s

A. Expansion in California

While branching had occurred on an *ad hoc* basis in California for some time, the banking act of 1909 prescribed a formal process by which banks could establish branches throughout the state, subject to the approval of the state bank superintendent.³ The use of branching started slowly and then increased rapidly in the 1920s (Figure 1). Two decades later, on the eve of the Depression, branch-banking activity was more extensive in California than in other state in the country. There were more branches than in any other state (Table 1), and the impact was felt statewide: unlike some other well-branched states, like New York and Michigan, the majority of the branches were established outside the city of the bank's parent institution or home office. By the end of the decade, California was the only state to have more branch offices than banks. California's rapid expansion of branching piqued regulators' interest in the 1920s, and fueled a debate over the merits of branch banking: "This makes us interested in seeing how branch banking has actually been working under American conditions, and California is supposed to be the field of greatest experience thus far."⁴

California's growth in branching relative to other states benefited from entrepreneurial talent and leadership as well as from an initially hospitable regulatory environment. State regulators saw it as their legal duty to enforce the banking act by defending the rights of any state bank interested in establishing branches. Moreover, an

³ Section 9 of the 1909 act stated that "No bank in this State...shall hereafter open or keep an office other than its principal place of business, without first having obtained the written approval of the superintendent of banks to the opening of such branch office, which written approval may be given or withheld in his discretion, and shall not be given by him until he has ascertained to his satisfaction that the public convenience and advantage will be promoted by the opening of such a branch office." House of Representatives, (1930, Volume 2, Part 2, pp.1342).

⁴ House of Representatives, (1930, Volume 1, p.18).

amendment to the act facilitated branching by enabling mergers to occur with no additional capital.⁵

Another feature that made California particularly ripe for the expansion of branching in the 1920s was its diversity of crops and industrial production. Unlike many Midwestern states, agricultural cycles were not coincident in timing in California. With harvests and plantings for various crops occurring at different times of the year, geographically-dispersed branching systems were well-suited to shifting funds from one area or region to another in order to maximize the utilization of existing bank capital.⁶

B. The Bank of America

At the forefront of the California branching movement was A.P. Giannini, founder of the Bank of America, who through purchase and *de novo* branch creation had established the largest branching network in the state and the largest bank on the Pacific Coast by 1929 (Figure 2 shows the share of California branches owned by the Bank of America).⁷ Some competing branching networks began to emerge in 1921 when Giannini's pioneering efforts to establish branches were adopted by other leading bankers in the state: Henry Robinson, P.E. Bowles, J.F. Sartori, and Edward Elliot. However, the branching network of the Bank of America was considerably larger in scale than those of the other institutions (Table 2).⁸ More importantly, the scope of the Bank of America's branching network was much broader (Figures 3-6). While the other large banks

⁵ Minimum capital requirements for banks with branches were higher than those without branches and each additional branch raised the required minimum. However, if a bank already had the minimum required amount of capital, no additional capital needed to be posted. In many cases, the absorbed unit bank's capital, while it functioned as a unit bank, was higher than what was required to operate it as a branch.

⁶ Some also argued that important agricultural centers like the San Joaquin and Imperial Valleys had seasonal demand for funds that exceeded what could be supplied by local banks. For a discussion of these points, see "Branch Banking is a Live Wire Subject," *Los Angeles Times*, July 1, 1922, p.17, "Branch Banking," *Los Angeles Times*, December 4, 1922, p.114, "California Bank Merger with \$200,000,000 in Resources," *Wall Street Journal*, July 3, 1922, p.4, and "Branch Banking in California," *Wall Street Journal*, September 22, 1923, p.4.

⁷ Giannini's original bank was the Bank of Italy, founded in 1904. In the 1920s, he established other institutions, such as Bank of America and Liberty Bank. These were consolidated into Bank of America in 1927, which was in turn part of the Transamerica holding company. For ease of exposition, we use the name Bank of America to refer to all Giannini institutions collectively unless it is necessary to refer to a specific one.

⁸ It should be noted that the Bank of America had head offices in two cities. The nationally chartered Bank of Italy was headquartered in San Francisco while the state-chartered Bank of America was headquartered in Los Angeles.

remained clustered around major cities, the Bank of America covered almost the entire state. The willingness of the Bank of America to enter smaller towns can also be seen by looking at the distribution of its branches by town size (Table 3).

As the Bank of America was the only institution to establish a truly statewide presence and penetrate deeply into the interior of the state, many of the changes in the state's banking environment were primarily a result of this institution's branching strategy. The anecdotal evidence suggests that the expansion of the Bank of America did indeed have a profound impact on the California banking system, introducing competition to localities which were previously geographic monopolies. James and James (1954) report that the Bank of America was able to offer lower loan rates than the smaller banks of the central valley. Bonadio (1994) indicates that the average rate of interest in towns would decline following the establishment of a Bank of America branch. Thus, the expansion of the Bank of America would have forced these other banks to change their behavior in order to survive.

C. Response of other bankers

The growth in branching was not without its opponents. Changing attitudes of state and federal regulators toward branching and resistance from unit bankers hampered efforts by the branch bankers, especially Giannini, to establish intrastate branching networks. In 1917, the California banking statute was amended and branching outside the home-office city required the approval of the Superintendent of California Banks. During the 1920s, some California bank supervisors used their discretionary authority to restrict the geographic spread of branching across the state by informally dividing it into two regions, North and South, and limiting banks to setting up branches only in the region in which they were headquartered. Such restrictions may have been implemented at the behest of California's unit bankers. In 1922, unit bankers, worried by the competitive threat of an expanding number of branching networks in the state, formed the California League of Independent Bankers (CLIB) as a lobbying organization aimed at the "preservation of unit banking." Calling branching the "menace of the hour," they

regularly canvassed the state legislature to abolish all non-home-office-city branches.⁹ According to Bonadio (1994, p.86) nearly all of the state's more than 500 independent bankers had joined this group by 1922, with league members taking vows "never sell out to Giannini." Other groups joined their voices, arguing that the growth of branch banking was leading to a monopoly of the moneyed interests, "Branch banking emanates from the minds of a few city bankers. It enables a few city men to control the banking assets of the state."¹⁰

Although CLIB did not succeed in their ultimate goal, in 1923 the state-banking department adopted several rulings aimed at limiting the growth in branching. No branch could be established outside the home-office city via consolidation or purchase unless both banks were at least three years old and the Superintendent found the branch to be for public convenience and advantage. More important for the location of branch expansion was the "*de novo* rule," which went into effect in 1921 under State bank Superintendent Jonathan Dodge. It limited the establishment of a new branch outside the "principal place of business," except by discretion of the state superintendent of banks. This restricted Giannini's plans for expansion of his San Francisco-based banks into the southern half of the state. Between 1923 and June 1925, the Superintendent issued 103 permits to Los Angeles banks for *de novo* banks in LA, but only one was granted to the Bank of Italy (headquartered in northern California) and this branch was already being processed when the ruling was announced. The *de novo* rule, was favored by most of the southern California branch bankers, who wanted to keep Giannini's network from expanding into the southern California market and competing head-to-head.¹¹ Bankers like Giannini thus pursued growth through an aggressive merger and acquisition strategy. He began to use the Bancitaly Corporation (headquartered in Los Angeles) and a second, newly-formed bank holding company, Americommercial, to purchase Los Angeles-based banks build a branching empire in Southern California. After two additional applications to establish branches were denied, the Bank of Italy filed suit in 1926 to overturn the "*de novo* rule,"

⁹ The first two articles of association of CLIB stated, "We believe that branch banking is economically wrong, monopolistic in nature, and un-American in principle...We view with alarm the growth of branch banking in California as permitted under our present law." (Chapin Hall, "Daily Trade Talk," *Los Angeles Times*, November 28, 1922, p.110.

¹⁰ Quote of Carlos Hardy, Los Angeles attorney, appearing in *Coast Banker*, Nov. 1922, p. 501.

¹¹ See "Giannini Arouses Bankers," Earle E. Crowe, *Los Angeles Times*, March 14, 1925, p.15.

arguing that the California Banking Act did not permit the superintendent of banking to restrict branch location (Westerfield, 1939). Although the rule was not changed, new personnel in the California banking department after the suit was filed enforced this rule less rigidly for the rest of the decade, and Bank of Italy (along with the related companies of Transamerica and Bank of America) was able to further expand in Southern California.

III. The Decision to Establish a Branch

Although the 1909 Banking Law permitted it, branching initially grew slowly in California; as statewide branching was without precedent, Bank of America deemed it “prudent to ‘make haste slowly,’” and only opened 23 branches up to 1919.¹² Since widespread networks did not emerge until 1921 for banks other than the Bank of America, we use 1922 as the departure date for this study.

During the 1920s there was a massive consolidation of California banks through merger and acquisition. As noted earlier, roughly one-half of the banks in existence in 1922 had been purchased or had merged with another bank by the end of 1929. Moreover, most of the expansion of branching networks outside the city of the bank’s home office (typically San Francisco or Los Angeles) was done through acquisition (Table 4). The number of mergers was spread relatively evenly over time, although there was a spike in mergers during 1927. Acquisitions of banks by town size also tended to reflect the distribution of banks at the start of the period (Table 5).

This section investigates the characteristics that made banks and more likely to be targets for acquisition by examining all the purchases of banks during the period 1922-1929. We focus on the banks were in existence in 1922. Since we are interested in the targets for acquisition, we test how bank balance-sheet information and locational characteristics are related to the time until the bank was taken over. Before carrying out our empirical analysis of acquisitions, however, we relate this to the issue of branching by briefly discussing the relative merits of expanding through acquisition rather than *de novo* branching.

¹² House of Representatives (1930, Volume 2, Part 2, p.1342).

A. Acquisition vs. de novo expansion

Legal restrictions on *de novo* branching played a significant role in pushing banks to expand through merger and acquisition. Even though these could sometimes be circumvented, there were additional reasons why banks may have preferred to expand through a strategy of merger and acquisition. First, it was cheaper (in terms of fixed costs) to acquire an existing facility than build a branch from scratch. Second, by taking over a previously existing bank, the acquiring bank was able to draw on the managerial experience and long-term lending of the existing bank and their specialized lending relationships. The Bank of America explicitly based its branch expansion strategy on acquisition rather than establishing *de novo* branches because Giannini believed that rural communities would be more willing to accept an outside bank if it took over the operations of an existing bank. Explaining the strategy of Bank of America to Congress in 1930, James Bacigalupi, Vice Chairman of the holding company, stated:

It was reasoned that the prudent way to enter an outside community was to purchase an established bank, because otherwise it could only be hoped, at the outset, to attract a few disgruntled depositors and before sufficient good business could be worked into, principally that which theretofore could find no accommodation there on account of the smaller capital and limited resources of the local banks, it would be years. Then, again, the bank would inevitably be confronted with the necessity of building a brand new local staff for the branch office – not the easiest thing in modern banking. Subsequent experience of the Bank of Italy demonstrated the soundness of this reasoning. By purchasing a good bank – and, almost without exception, such have been the banks which it has purchased – it acquired a staff, an advisory board, and local stockholders who were interested in the locality and familiar with local people, values, and conditions.¹³

Bacigalupi further testified that Bank of America consistently established branches through the purchase of existing banks in every community it entered, with only one notable exception, Sacramento, where “it was found impossible to purchase a bank and, as result of popular petition, led by the chamber of commerce of that city, the then superintendent of banks granted Bank of Italy a permit to open a brand new office, a so-

¹³ House of Representatives (1930, Volume 2, Part 2, p.1341).

called *de novo* branch.”¹⁴ The Bank of America’s decision to purchase banks rather than create *de novo* branches, and its policy of retaining the existing management to run the newly formed branch may have been aimed at ensuring better-quality local lending.¹⁵ As Berger and Udell (2002) emphasize, small local banks may be inherently better at resolving agency problems associated with relationship lending. Relationship lending requires that banks gather information beyond what is readily available in financial statements of firms; such information is gathered through repeated contact with the firm and by observing its behavior on past loans and business with the bank. By employing the key executives of the former independent unit bank as branch managers and loan directors, Bank of America and other branching networks that pursued a similar strategy may have been attempting to reduce the oversight problems a large bank would otherwise face in relationship lending, and better manage the “soft” data associated with the character and reliability of its borrowers.¹⁶

Banks were purchased either by acquiring their assets or by establishing holding companies with the explicit purpose of buying other banks. The Bank of America frequently employed the latter method and created the Stockholders Auxiliary Corporation (a holding company wholly owned by the shareholders of the bank) to acquire banks for its branching system.¹⁷

As Table 4 further elucidates, the growth in branch outside the home-office city took place largely by purchasing existing banks. *De novo* branches were largely confined to the largest cities of the state, especially San Francisco and Los Angeles, where the Bank of America already had substantial operations and merely expanded into areas

¹⁴ House of Representatives (1930, Volume 2, Part 2, p.1341).

¹⁵ See also the comments by Giannini (House of Representatives 1930, Volume 2, Part 2, p.1544).

¹⁶ For evidence that large banks typically face a disadvantage in relationship lending aimed at small, opaque firms see Berger, Kashyap, and Scalise (1995). For evidence that non-BofA branching networks also retained management, see “New Bank Merger is Announced,” *Los Angeles Times*, March 11, 1922, p.113 and “Porterville Bank Merger Effective,” *Los Angeles Times*, January 5, 1924, p.16, and “California Bank Merger,” *Wall Street Journal*, September 11, 1926.

¹⁷ The banking act of California did not permit banks to purchase the stock of another bank directly, but Section 31 permitted banks to purchase the assets of another bank. This was the method of direct consolidation employed by Bank of America and other branching networks in California. The bank holding company was a convenient corporate entity used to maneuver around regulatory restrictions on banking activities; for example, the Stockholders Auxiliary Corporation was used as an insurance agent and broker and to dispense of “problem” assets of banks (House of Representatives (1930, Volume 2, Part 2, p.1343).

where it recognized new business activities.¹⁸ Nearly 80% of the branches created in small towns were done so through acquisition of an existing bank rather than by constructing new branch offices. The remainder of this section thus focuses on understanding the decisions related to bank acquisition rather than the establishment of *de novo* branches.

B. Analysis of City and County Characteristics

We first examine which city and county characteristics were important in a bank's decision to establish a branch. All else equal, banks likely preferred to establish branches in areas where business opportunities were plentiful. For example, studies examining entry into foreign markets have found that banks prefer to enter markets in countries with higher economic growth prospects (Focarelli and Pozzolo 2002). With the boom in California agriculture during this period, banks may have sought out locations that would facilitate loans to farms and growing agro-businesses. Competition from other banks may also have affected expansion decisions. Proximity to a major city may have been preferred, as it would have facilitated close contact with the bank's headquarters, or banks may have sought to diversify their activities geographically by expanding away from the large cities.

In order to examine the factors that led one city to be preferred over another, we estimate factors that affected the time it took for a branch to be established in a town. We consider three different specifications: (1) the time until any bank established a branch in the town, (2) the time until the Bank of America established a branch, and (3) the time until a bank other than the Bank of America established a branch. Since we use the time until an event occurs as our dependent variable, we use survival analysis. This technique allows us to fully utilize information about the order in which branches were established in different cities and to update the independent variables as they change.¹⁹

¹⁸ During our sample period, 65% of *de novo* branching was in San Francisco and Los Angeles and 85% of it was in cities with populations greater than or equal to 20,000. See House of Representatives (1930, Volume 2, Part 2, p.1361) for a further discussion of this point.

¹⁹ We typically report the results as time ratios. A time ratio indicates the fraction of the baseline time that an observation with one unit of the independent variable is expected to last. For instance, if the coefficient on a dummy variable is 0.75, then when the dummy is one, that effect decreases the expected survival time

The cities used in this analysis are those that were incorporated in 1920 and had population information reported in the 1920 Census. We construct measures of the city's size, importance, and proximity to large cities (either San Francisco or Los Angeles). We include several measures of the level of bank competition, including whether there is a national bank in the town, whether the town is served by a single bank, and the number of financial institution in the city per capita.²⁰ We also examine a variety of county level factors. These include items related to income and employment as well as the importance of agriculture in the county. Anecdotal information from Bonadio (1994) suggests that the Bank of America often targeted areas with heavy Italian populations, so we include the share of the population consisting of Italian immigrants. Further, Secrist (1930) suggests that banking practices differed between the Northern and Southern parts of the state, so we also include a dummy for whether the county is in the Northern half of the state.²¹

Data on branch location were primarily collected from Comptroller of Currency *Annual Report and Statements of Conditions* and the *Annual Report* of the Superintendent of Banks of the State of California; however, we supplemented this information with data from Rand McNally (various years) as well with internal records from the Bank of America's archives. Data on city attributes, such as size and county seat status, were collected from Rand McNally (1922), U.S. Department of Commerce (1920), and California State Department of Finance (2004). Proximity to a major metropolitan area might affect decisions regarding branching as well as the competitive environment, so we collected the distances from principle California cities (Los Angeles or San Francisco), using "as the crow flies" distances based on programming and data from the U.S. Geological Survey.²² A town is considered "near" a large city if it is within 15 miles of that city. Other county characteristics (such as population, employment/unemployment, farm size, industry mix) are from U.S. Department of Commerce (1920, 1930).

to 75% of non-new bank. More generally, a time ratio less than one indicates that the explanatory variable decreases survival time. Statistical significance is therefore based on whether the coefficient is different from 1.0.

²⁰ All measures of bank competition are updated as they change. Town population is from the start of our sample period and is treated as a constant over the remainder of the period.

²¹ Secrist notes that, on average, banks in the Northern part of the state had fewer loans as a share of assets and a lower ratio of demand deposits to total deposits. The reason for these differences are not discussed.

²² We use information from <http://www.indo.com/distance/>, which is based on the "geod" program – a part of the "PROJ" system available from the U.S. Geological Survey.

For municipality m , we estimate the following equation:

$$(1) \text{ Time until a branch is established}_m = f\{ \beta_1 \text{Log population}_m + \beta_2 \text{County seat}_m + \\ \beta_3 \text{Near a large city}_m + \beta_4 \text{Log distance to nearest large city}_m + \beta_5 \text{National bank in city}_m + \\ \beta_6 \text{One banking institution}_m + \beta_7 \text{Banking institutions per capita}_m + \\ \beta_8 \text{County population density}_m + \beta_9 \text{County Income per capita}_m + \\ \beta_{10} \text{Share of county income from agriculture}_m + \beta_{11} \text{County Employment rate}_m + \\ \beta_{12} \text{Share county population that is Italian}_m + \beta_{13} \text{Share county population that is literate}_m + \\ \beta_{14} \text{County is in the Northern part of the state}_m \},$$

where t indicates that the city characteristic changes over time. (No t subscript indicates that the variable is fixed at its 1922 value).

As table 6 shows, we find that large towns were more desirable locations for establishing branches than smaller towns, possibly because these locations offered more business opportunities. We also find that cities with a higher number of banks per capita were more desirable locations for branches. Towns far from the large cities appeared to have been attractive only to the Bank of America. This is also confirmed by examining Figures 3-7. Even on the East Coast, where banking had a much longer history, Giannini's creation of a larger bank through the purchase of existing banks was seen as trendsetting during the 1920s; he was also well known for his expansion strategy of purchasing banks in small communities in order to expand the size of his operations. "Mr. Giannini, beginning in San Francisco, bought out small banks in the cities and towns of San Francisco, and made the banking service in the little country towns which he served equal to that in San Francisco."²³ On the other hand, other banks sought to keep branches near San Francisco and Los Angeles, possibly to maintain more direct control over the branches' activities.²⁴ Moreover, other branching networks appeared to prefer to branch in the southern part of the state, which was growing more quickly in population than the

²³ Quoted in an article discussing the bank mergers at the national level during the 1920s. ("New Slogan in Banking Field: Movement for 'Bigger and Fewer' Institutions Seen as Gaining," *Los Angeles Times*, April 4, 1929.)

²⁴ The *Coast Banker*, February 1925, p.202, suggests that branch banks in Los Angeles were purchasing banks in order to further "consolidate the banking resources of large institutions in Los Angeles with those of outlying communities in Southern California." And the *Los Angeles Times* reported in 1922 that branch bank expansion was now "at a flood tide," with seventeen new branches being added by Los Angeles Trust & Savings Bank, Citizens Trust and Savings Bank, and Security Trust and Savings Bank ("Extension of Branch Bank Idea," *Los Angeles Times*, May 7, 1922, p.112.)

northern part in the 1920s.²⁵ Trade publications from the 1920s suggest that a considerable amount of branching competition resulted in the southern part of the state.²⁶ These banks also avoided setting up branches in agricultural communities. In contrast, the Bank of America has no appreciable tendency to prefer branching in either the north or south or to prefer agricultural regions to other regions. The lack of regional preferences and draw of far-flung cities might reflect the strong desire of Giannini to establish a very broad scope of activity for his bank.

C. Analysis of Bank Characteristics

We now examine which characteristics of banks made them more or less attractive for acquisition. We collected balance sheet data on all California commercial banks in 1922 and at the end of the decade in 1929 using information for national banks contained in the Comptroller of Currency *Annual Report and Statements of Conditions* and information on state-chartered banks from the *Annual Report* of the Superintendent of Banks of the State of California. The data are similar to those used in other studies examining bank failures in the 1930s (Calomiris and Mason 1997, Carlson 2004, etc.). From these sources and the Bank of America's archives, we also gathered data on all changes in the competitive environment for California banks between 1922 and 1933 – bank openings, mergers, acquisitions, *de novo* branches, voluntary liquidations, and bank failures. These data enable us to examine the effects of branching in towns, cities, counties, and across the state, and to draw inferences on how its growth reshaped the competitive landscape and the stability of California banks during the Great Depression.

Some of the balance sheet characteristics we use reflect profitability, such as ratios of interest earning assets to total assets or demand deposits to total deposits, other characteristics reflect the soundness of the bank, such as ratios of capital or surplus to

²⁵ For example, many bankers believed that Southern California in the 1920s was particularly well suited to branch banking because there were new crops that matured every month, which necessitated elastic provision of working capital and currency provision. See Chapin Hall, "Business, Financial Markets, Investment – Daily trade talk," *Los Angeles Times*, August 5, 1922, p.16.

²⁶ For example, see "Branch Banking in Action: A Practical View," by J. Dabney Day, President, Citizens National Trust and Savings Bank, Los Angeles in *Coast Banker*, Feb.20, 1929, vol.42, p.173 and "The Branching Expansion Slows Down," Howard Whipple, President, CLIB, June 1925, p.104.

assets and excess capital to total capital,²⁷ and some characteristics reflect the liquidity of the bank, such as the cash to deposit ratio. All else equal, one might expect acquiring banks to prefer to takeover sound and profitable banks, but perhaps those that are less efficient. For example, Berger and Humphrey (1992) and Piloff and Santomero (1998) have emphasized that acquiring banks tend to be more cost efficient than targeted banks on average. As the head of the Bank of America testified to Congress, part of their expansion strategy for purchasing banks in the 1920s was to streamline costs and reduce overhead expenses.²⁸ However, some historians (Bonadio 1994) writing on California's consolidation in the 1920s have suggested that regulators may have encouraged the large branch networks to take over *failing* banks. We also include a variety of other attributes that might affect whether a bank is a desirable target for acquisition. These attributes include the age of the bank (as older banks might be more loathe to give up an established reputation or may have developed better relationship-banking skills), whether the bank had branches (which might make the bank more difficult to digest), and the bank's charter status (which might affect the ease of regulatory approval).²⁹ We also include the geographical factors that we found in the previous section to have influenced the desirability of the bank's location. We test whether these different factors affect the time until the bank was taken over using duration analysis. Our estimation procedure parallels recent work analyzing the factors that contributed to the failure of banks during the Depression (Calomiris and Mason 2003, Carlson 2004), which also use duration analysis. Thus, for bank i , we estimate the equation:

$$(2) \text{ Time until merger}_i = f\{ \beta_1 \text{Log assets}_i + \beta_2 \text{Interest bearing assets to total assets}_i + \\ \beta_3 \text{Capital to assets}_i + \beta_4 \text{Surplus to assets}_i + \beta_5 \text{Excess capital ratio}_i + \beta_6 \text{Cash to deposits}_i + \\ \beta_7 \text{Demand deposits to total deposits}_i + \beta_8 \text{State bank indicator}_i + \beta_9 \text{Branch bank indicator}_i +$$

²⁷ Excess capital is capital held by the bank beyond what it is legally required to hold.

²⁸ James Balcigalupi's testimony to the House of Representatives (1930, Volume 2, Part 2, p.1341).

²⁹ Further there were regulatory differences that affected the attributes of the banks beyond what is immediately obvious from the top line balance sheet numbers. For instance, California's banking law was also relatively unique in that it required state banks to completely segregate commercial, savings, and trust departments. State bankers aggressively advertised this difference in organizational structure in an attempt to gain a competitive advantage over national banks in the state and attract more deposits. They publicized the idea that savings depositors would be safer in their banking system if runs occurred because they would not have to line up alongside commercial depositors to withdraw their deposited funds. Consequently, California had a higher percentage of savings deposits relative to total deposits than the nation as a whole: 64% versus 44% in 1925 (Westerfield, 1939).

$$\beta_{10}\text{Log age of bank}_i + \beta_{11}\text{Federal Reserve Memeber}_i + \beta_{12}\text{Trust Dept}_i + \beta_{13}\text{Log city population}_i + \\ \beta_{14}\text{Near a large city}_i + \beta_{15}\text{Log distance to large city}_i + \beta_{16}\text{National bank in town}_{it} + \\ \beta_{17}\text{Banking institutions per capita}_{it} + \beta_{18}\text{Share of county income from agriculture}_i + \\ \beta_{19}\text{County in north of state}_i \},$$

where t indicates that the characteristic changes over time. We look separately at all acquisitions, those by the Bank of America, and those by other branching networks.

Table 7 indicates several factors were important in determining which banks were targeted for acquisition during the 1920s. Banks with more interest earning assets as a share of total assets tended to be acquired faster. This is consistent with more profitable banks being preferred, as interest income is one of the principle sources of bank income. There was some tendency for state banks to have been more attractive than national banks.

As was the case with branch location, the preferences of Bank of America and those of other branching networks appear to differ. The Bank of America appears much more willing than other banks to acquire existing branch banks. Other banks appear to have preferred to take over older banks, which may have been more stable as well as banks with more cash relative to deposits. The Bank of America had no such preferences.

When we control for bank-specific characteristics, the location factors appear similar to what we found before. Banks, in particular the Bank of America, preferred to acquire banks in more populated cities. As before, non-Bank of America institutions seemed to prefer acquiring banks located near large cities. The Bank of America was more likely to acquire banks in the northern part of the state than were other banks. As we noted above, the competing branching networks around Los Angeles were keen to delay Giannini's entry into their market, and lobbied state regulators to restrict the growth of his empire in the southern part of the state. This finding is consistent with the fact that he initially faced strong opposition from rival banks.

That branch banks preferred to takeover banks that displayed indicators of financial strength is not surprising as these would be the easiest to digest and absorb into an existing network of branches. These results are consistent with Stiroh and Strahan (2003), which suggests that banks enter markets by buying good banks and competing against poor performers; however, they differ from Wheelock and Wilson (2000), which

finds that banks being purchased tended to have lower earnings and be less well capitalized. Our finding is also consistent with the conclusions of contemporaneous policymakers examining California's experience. For instance, the Federal Reserve reports that, "There is, of course, every reason to believe that the great majority of the unit banks absorbed by the branch operating banks of California were in sound condition when taken over. Those in financial difficulty were undoubtedly the exception rather than the rule (1932, Vol. 8, p.103)." Although newspaper accounts often played on the drama of taking over troubled banks during the 1920s (for example, Bank of Italy and Pacific Southwest Trust and Saving's bank purchase of troubled Valley Bank of Fresno), there are nevertheless many accounts from the period suggesting that, in general, branching networks preferred strong banks.³⁰

As a sensitivity test, we examined whether the acquiring banks sought out different characteristics in banks in communities of different sizes. For example, the banks making the acquisitions may have been more focused on the balance sheet characteristics of banks in large cities, but more interested in the community characteristics of smaller towns. Instead, as Table 8 shows, we find the opposite. The branching banks appear to be concerned with the financial strength of balance sheets in small towns. We find that the characteristics of acquired banks in smaller towns closely follow those of all banks noted above (perhaps not surprising since these make up a vast majority of the acquired banks). Additionally, we note that the capital structure may have played a role. We find some evidence that banks with more capital relative to assets, or banks with capital above the legal requirement were more likely to be acquired.

IV. Changes in Bank Behavior Resulting from Consolidation

We now turn to examining the effects this wave of consolidation had on competition in local banking markets. In particular, we examine whether banks in towns

³⁰ For example, when the Bank of America moved into the Imperial Valley, the *Los Angeles Times* reported that its first acquisition was the First Bank of El Centro, "one of the strongest financial institutions in the rapidly developing Imperial Valley." ("Business News of Busy Marts," *Los Angeles Times*, February 25, 1923, p.II10). BofA's expansion into Kern county took place by acquiring "one of the substantial institutions of San Joaquin Valley." ("Bank of Italy Invades Kern," *Los Angeles Times*, August 26, 1921, p.I18)

where a merger took place changed their behavior in response to the fact that they now faced competition from a branch-banking institution – what is often called the external market effect. The banking literature suggests that the dynamics of banking ought to change with the introduction of branching as it increases competition and breaks down local monopolies. The increase in competition generated by branching networks occurs over both quantity (customers) and price; the remaining firms may respond by changing their behavior and improve the efficiency of their operations.

Branching networks had a number of advantages that allowed them to compete on price and offer loans at lower rates than the previously extant unit banks. As noted earlier, branch networks generally combined the advantages of small banks (retaining local management and maintaining lending relationships) with the scale economies of larger banks (additional expertise from the central office, standardization of accounting and auditing methods, and reduced overhead costs). Further, branch networks could shift deposits between branches to take advantage of favorable lending opportunities. Newspaper accounts from the period indicate that large branching institutions, especially the Bank of America, actively competed on price, by offering lower loan rates than competing unit banks; Giannini argued that he had reduced loan rates in small towns to 7 percent, which was anywhere from two to five percentage points lower than what had previously prevailed.³¹ This practice is similar to recent bank behavior as noted by Berger, Rosen, and Udell (2001), who find lower rates in markets dominated by large banks.

Branching networks also competed on quantity. As is widely discussed in the economics literature, legal limits to single borrowers, which are based on capital and surplus, may restrict the ability of smaller banks to lend to larger customers.³² All else equal, since branched banks were generally much larger in size than unit banks, they could move into a location and capture the business of large customers who may have otherwise gone to a bank outside of the municipality to borrow. This advantage was well

³¹ House of Representatives (1930, Volume 2, Part 2, pp.1547, 1556). See also “Future Fields of Branch Banking,” *Coast Banker*, February 1924, p.153.

³² The limit can be lifted if a smaller bank partners with a larger bank.

known by regulators and bankers during the period.³³ Finally, branch banks also carried out campaigns to lure depositors from other institution; one way of luring customers was by offering services, such as selling securities and trust services that smaller banks did not necessarily provide.³⁴

Competition over price, quantity, and products may have elicited rival firms to change their management or organizational practices, reduce costs, increase revenues, reduce risk, or improve their product mix in response to the presence of branching networks. To test the reactions of other financial service providers, we examine whether there were more pronounced changes in the balance sheets of banks facing competition from branch banks than in other banks during the 1920s. We analyze the external effects of consolidation and branch expansion by regressing the change in various balance sheet ratios between 1922 and 1929 on initial bank characteristics, changes in town characteristics, and whether a branch had been established in the town in which the unit bank resides.³⁵ Since it may take time for the bank to change its behavior in response to the establishment of a branch, we include separate indicators for establishing a branch during the first six years of the sample period and during the last year of the sample period. We examine the effects of competing with any branch bank, the Bank of America, and any branching bank other than the Bank of America. For non-branching bank i , we estimate the following equation:

$$(3) \text{ Change in the balance sheet ratio}_i = f\{ \beta_1 \text{ Branch established early in the period}_i + \beta_2 \text{ Branch established in town in last year of the sample period}_i + \beta_3 \text{ Fed Member}_i + \beta_4 \text{ Log Age}_i + \beta_5 \text{ Trust Dept}_i + \beta_6 \text{ State bank}_i + \beta_7 \text{ Population growth rate in town 1922-1929}_i + \beta_8 \text{ Log distance to large city}_i + \beta_9 \text{ Town near a large city}_i + \beta_{10} \text{ Share of county income from agriculture}_i + \beta_{11} \text{ County in northern part of the state}_i \}.$$

³³ For example, see the comments of Will C. Wood, Superintendent of California State Banking, *Coast Banker*, August 20, 1927, "Mr Wood Analyzes McFadden Act" and comments and data from James Balcigalupi's testimony to the House of Representatives (1930, Volume 2, Part 2, p.1392).

³⁴ Bankers from the 1920s referred to the additional services a parent institution could provide through its branch banks as "equipment services." These included the purchase and sale of exchange, bonds and commercial paper, acceptances, credit departments, letters of credit, collection of drafts, and research and specialists for advising on real estate and commodity markets. See John E. Barber, "Branch Banking in California," *Los Angeles Times*, October 5, 1922, p.IV7.

³⁵ Banks competing with a branch in the beginning of the sample period are not included in the analysis.

The results shown in Tables 9-11 suggest that banks facing competition from branch banks took steps to increase their profitability. For instance, these banks increased the share of loans on their balance sheet and decreased their holdings of securities; loans typically earn a higher rate of return than securities. This change may not be surprising if the interest rate banks were able to charge on loans decreased following the entrance of a branch bank, as reported in contemporary anecdotes. To compete, banks might respond by rebalancing their portfolios to promote greater earnings.

Banks competing with the Bank of America appeared to make additional changes. These institutions increased the share of demand deposits relative to total deposits. Demand deposits were generally lower cost deposits (Secrist 1930), so this change in behavior is also consistent with efforts to increase efficiency and profitability. Banks competing with the Bank of America also appear to decrease the ratio of net worth relative to assets and boost the share of the bank's surplus in its net worth. These actions would increase the rate of return that these banks could offer shareholders and raise the level of protection of shareholder's investment.

Our findings that banks took steps to increase profitability mirror the anecdotal reports published at the time. The *Coast Banker*, a newspaper covering banking on the Pacific coast reported that:

Cooperation is strengthening the independent banks in their competition with chain and branch banking systems was the view expressed by T.C. Scroggs, vice president, National Bank of Commerce, Los Angeles...speakers stressed the point that the rivalry between the two systems was resulting in more efficient management of independent banks (Vol. 44, Feb 20, 1930, p.97).

These results are also similar to findings of research analyzing recent changes in the banking system following consolidation. This work (Berger and Hannan 1998; Dick 2004; Deyoung, Hasan, and Kirschoff 1998) finds that in the 1990s, banks facing less competition were less efficient, and that when competition was introduced, efficiency eventually improved.

V. How did Competition with Branches Affect the Stability of the Banking System?

We have thus far verified that the 1920s were broadly similar with studies examining the more recent wave of consolidation. We now turn to analyzing the long-run effects of bank stability and assess how competition from a branching institution affected the survival of banks following the onset of the Great Depression. The relation between competition and stability is somewhat unclear. Competition could decrease stability by depriving banks of monopoly profits that might support them during difficult times. Alternatively, and consistent with the evidence from Section IV, the increased efficiency brought about by competition could better enable smaller banks to deal with economic difficulties and thereby increasing stability. We provide a test of this relationship by observing whether the establishment of a branch in the town is associated with an increase or decrease in the expected survival time of a bank and use an estimation procedure similar to that used when looking at the time until merger. Since bank failures in California were sparse until 1930, we focus on the interval between June 1929 and either the time at which a bank failed or March 1, 1933 (prior to the government-mandated bank holiday). We also include a variety of balance sheet and location characteristics found in other analysis to affect survival time as well as the county unemployment rate in 1929 to control for the severity of economic distress at the start of the period. These characteristics are similar to the ones used previously, except here they are the 1929 values rather than the 1922 values. We consider how time to failure was affected by (1) the presence of any branches, (2) the presence of a Bank of America branch, (3) or the presence of any non-BofA branches. For bank i , we estimate the equation:

$$(4) \text{ Time until failure}_i = f \{ \beta_1 \text{Branch established in town}_{it} + \beta_2 \text{Log assets}_i + \beta_3 \text{Loans to assets}_i + \beta_4 \text{Securities to assets}_i + \beta_5 \text{Capital to assets}_i + \beta_6 \text{Surplus to assets}_i + \beta_7 \text{Excess Capital ratio}_i + \beta_8 \text{Cash to deposits}_i + \beta_9 \text{Demand deposits to total deposits}_i + \beta_{10} \text{State bank indicator}_i + \beta_{11} \text{Branch bank indicator}_i + \beta_{12} \text{Log age of bank}_i + \beta_{13} \text{Federal Reserve Memeber}_i + \beta_{14} \text{Trust Dept}_i + \beta_{15} \text{Log city population}_i + \beta_{16} \text{Near a large city}_i + \beta_{17} \text{Log distance to large city}_i + \beta_{18} \text{Banking institutions per capita}_{it} + \beta_{19} \text{Share of county income from agriculture}_i + \beta_{20} \text{County unemployment rate}_i \},$$

where t indicates that the characteristic changes over time.

The results shown in Table 12 are consistent with the notion that competition increases stability. We find that banks facing competition from the Bank of America had an expected survival time one and half times longer than banks not facing similar competition. Thus it appears that the benefits of increased efficiency exceeded the loss of monopoly profits. Somewhat surprisingly, we do not find a similar effect from competition from other banks. This may reflect the impact of the Bank of America on more banks, as its branching network was considerably larger than those of other banks. As noted in the previous section, banks competing with the Bank of America made more extreme changes in behavior to increase efficiency. This might also account for the greater impact of the Bank of America on stability.

Other variables are generally in line with previous research. We find the capital structure affected bank survival. Banks with more capital in excess of legally required capital and banks with a greater surplus survived longer. Higher capital-to-asset ratios were associated with reduced survival times. Carlson (2004) finds a similar result and speculates that since this is the book value rather than market value of capital, its ability to protect investors is limited.³⁶ Somewhat surprisingly, we find that larger banks appear less likely to survive than other banks.

³⁶ Capital in excess of the regulatory minimum is also a book value number. However, one might expect that, as it provides some indication about the willingness of investors to take risk and protect the soundness of the bank, it might be a better proxy for the adequacy of the bank's capital.

V. Conclusions

In this paper, we examine the 20th century's first episode of the development of large-scale branch banking networks and how they transformed the banking system in California. Similar to the recent wave of bank mergers in the United States, we find that consolidation in California in the 1920s occurred as the branching institutions took over more profitable banks. We find that the remaining banks changed their behavior in response to branching networks in ways that are consistent with increased efficiency. Those banks forced to compete with the statewide branching network of the Bank of America appear to have made more dramatic changes than other banks.

The transformation of the California banking system had important implications for the state as the Great Depression took hold. We find evidence that the banks competing with the Bank of America were better able to survive the economic shock of the Great Depression, in part because they had been forced to become more efficient. This finding confirms the hypothesis of Carlson and Mitchener (2005) that an important benefit of branch banking, and an important reason states allowing it fared better in the 1930s, is its ability to extend the disciplinary power of competition. This result further suggests that the current wave of consolidation, also induced, in part by the extension of branching, will likely strengthen the banking system of the United States and buffer it from future macroeconomic shocks in the long run.

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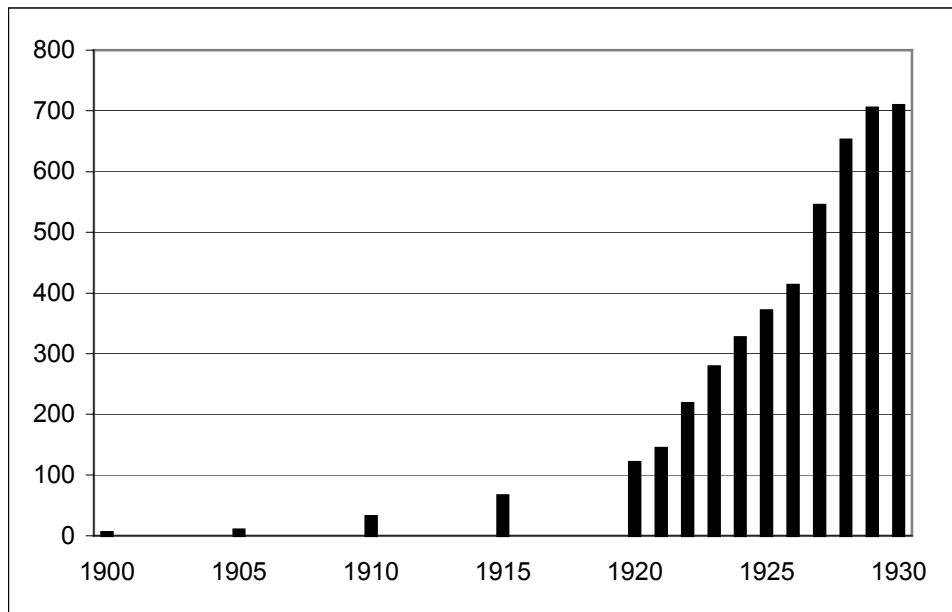
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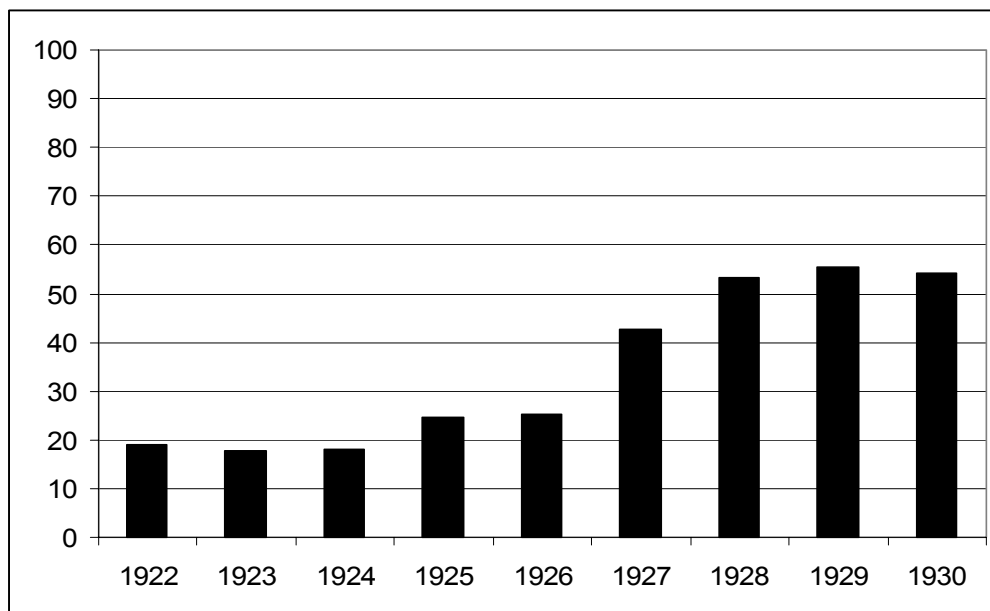
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Figure 1
Number of Branches in California



Source: Federal Reserve (1931).

Figure 2
Percentage of California Branches Controlled by the Bank of America



Source: *Annual Report of the Superintendent of Banks of the State of California* (various years), Rand McNally (various years), *Comptroller of Currency Annual Report and Statements of Conditions* (various years), and internal records of the Bank of America.

Figure 3
Extent of Branching by Bank of America in 1929



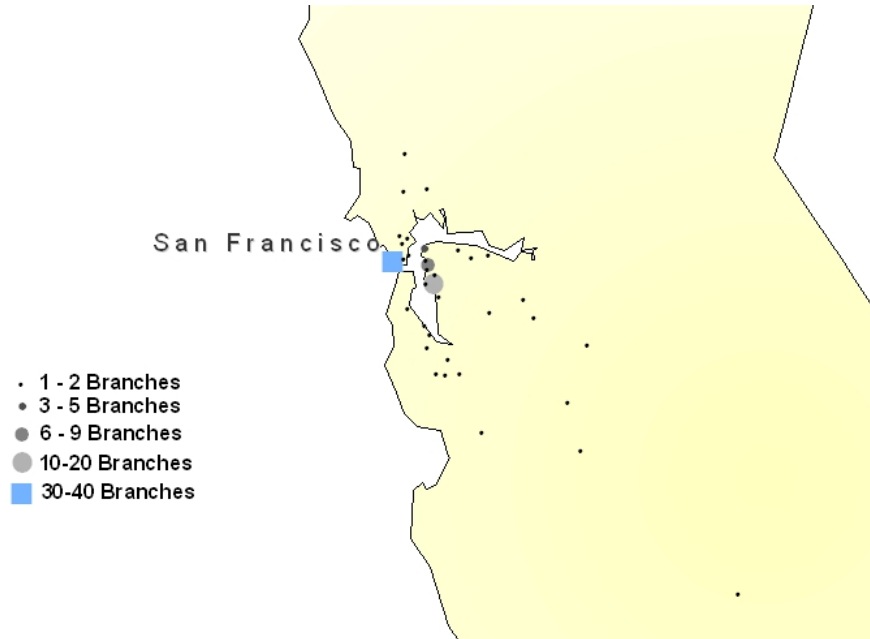
Source: *Annual Report* of the Superintendent of Banks of the State of California (various years), Rand McNally (various years), Comptroller of Currency *Annual Report and Statements of Conditions* (various years), and internal records of the Bank of America.

Figure 4
Extent of Branching by Security-First National Bank in 1929



Source: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report and Statements of Conditions* (various years).

Figure 5
Extent of Branching by American Trust Bank in 1929



Source: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report and Statements of Conditions* (various years).

Figure 6
Extent of Branching by California Bank in 1929



Source: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report and Statements of Conditions* (various years).

Table 1
Branches in the United States in 1929

| | California | New York | Michigan | North Carolina | Rest of the United States | United States Total |
|---|------------|----------|----------|----------------|---------------------------|---------------------|
| Branches in city of the bank's home office | 314 | 662 | 434 | 11 | 872 | 2293 |
| Branches outside the city of the bank's home office | 538 | 0 | 0 | 66 | 452 | 1056 |
| Total branches | 852 | 662 | 434 | 77 | 1324 | 3349 |

Notes and Sources: New York and Michigan have the most total branches after California whereas North Carolina has the most branches outside the city of the bank's home office after California. Federal Reserve (1931).

Table 2
Branches in California in 1929

| | Bank of America | Security Trust | American Bank | California Bank | All other banks | Total California |
|--------------------------|-----------------|----------------|---------------|-----------------|-----------------|------------------|
| Home Office branches | 55 | 53 | 34 | 17 | 75 | 234 |
| Outside home-office city | 388 | 84 | 63 | 16 | 55 | 606 |
| Total Branches | 443 | 137 | 97 | 33 | 130 | 840 |

Sources: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), and internal records of the Bank of America.

Table 3
Branches by Size of Municipality for the 4 Largest Branching Banks in 1929

| Town Population | Bank of America | | Security Trust | | American Bank | | California Bank | |
|-----------------|-----------------|------------------|----------------|------------------|---------------|------------------|-----------------|------------------|
| | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total |
| Under 500 | 22 | 5.0 | 2 | 1.5 | 2 | 2.1 | 1 | 3.3 |
| 500-1,000 | 31 | 7.1 | 4 | 3.1 | 2 | 2.1 | 1 | 3.3 |
| 1,000-2,500 | 52 | 11.9 | 14 | 10.8 | 7 | 7.4 | 2 | 6.7 |
| 2,500-5,000 | 46 | 10.6 | 5 | 3.8 | 8 | 8.4 | 1 | 3.3 |
| 5,000-10,000 | 53 | 12.2 | 17 | 13.1 | 10 | 10.5 | 3 | 10.0 |
| 10,000-25,000 | 27 | 6.2 | 15 | 11.5 | 5 | 5.3 | 1 | 3.3 |
| 25,000-50,000 | 25 | 5.7 | 6 | 4.6 | 3 | 3.2 | 4 | 13.3 |
| 50,000-100,000 | 22 | 5.0 | 9 | 6.9 | 9 | 9.5 | 0 | 0.0 |
| 100,000+ | 158 | 36.2 | 58 | 44.6 | 49 | 51.6 | 17 | 56.7 |
| Total | 436 | 100 | 130 | 100 | 95 | 100 | 30 | 100 |

Source: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), and internal records of the Bank of America. The four largest branching networks are those shown in table 2.

Table 4
Branch Establishment: *De Novo* versus Merger or Acquisition (M&A)

| Year | Los Angeles | | San Francisco | | Other Large Cities | | Small Cities | | Total | |
|-------|----------------|-----|----------------|-----|--------------------|-----|----------------|-----|----------------|-----|
| | <i>De Novo</i> | M&A | <i>De Novo</i> | M&A | <i>De Novo</i> | M&A | <i>De Novo</i> | M&A | <i>De Novo</i> | M&A |
| 1923 | 27 | 3 | 16 | 3 | 16 | 5 | 9 | 29 | 68 | 40 |
| 1924 | 30 | 3 | 10 | 2 | 10 | 3 | 6 | 19 | 56 | 27 |
| 1925 | 17 | 3 | 12 | 0 | 2 | 4 | 2 | 33 | 33 | 40 |
| 1926 | 21 | 4 | 5 | 1 | 5 | 1 | 2 | 14 | 33 | 20 |
| 1927 | 24 | 6 | 31 | 5 | 21 | 13 | 12 | 57 | 88 | 81 |
| 1928 | 4 | 2 | 11 | 4 | 10 | 4 | 12 | 21 | 37 | 31 |
| 1929 | 5 | 5 | 3 | 2 | 2 | 1 | 2 | 11 | 12 | 19 |
| 1930 | 2 | 0 | 3 | 0 | 0 | 0 | 4 | 6 | 9 | 6 |
| 1931 | 2 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 6 | 1 |
| 1932 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 1 |
| Total | 133 | 27 | 91 | 17 | 69 | 31 | 52 | 191 | 345 | 266 |

Note: Large cities are defined a population greater than or equal to 20,000 in 1922.
Sources: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), internal records of the Bank of America, and California State Department of Finance (2004).

Table 5
Distribution of Banks by Town Size (1922) and M&A Activity from 1922 to 1929

| Town Population | Banks | | Mergers & Acquisitions | |
|-----------------|--------|------------------|------------------------|------------------|
| | Number | Percent of Total | Number | Percent of Total |
| Under 500 | 55 | 8.0 | 22 | 4.6 |
| 500-1,000 | 92 | 13.3 | 41 | 8.6 |
| 1,000-2,500 | 161 | 23.3 | 83 | 17.4 |
| 2,500-5,000 | 119 | 17.2 | 96 | 20.2 |
| 5,000-10,000 | 73 | 10.6 | 71 | 14.9 |
| 10,000-25,000 | 57 | 8.3 | 39 | 8.2 |
| 25,000-50,000 | 30 | 4.3 | 19 | 4.0 |
| 50,000-100,000 | 32 | 4.6 | 28 | 5.9 |
| 100,000+ | 71 | 10.3 | 77 | 16.2 |
| Total | 690 | 100 | 476 | 100 |

Source: *Annual Report* of the Superintendent of Banks of the State of CA (various years), Rand McNally (various years), Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), and internal records of the Bank of America.

Table 6
City and County Characteristics and the Selection of Branch Location

Dependent Variable: Time until a branch is established in the municipality.

| | By Any Bank | By the Bank of America | By a bank other than the Bank of America |
|--------------------------------------|---------------------|------------------------|--|
| Log Town Population | 0.25 *** (0.07) | 0.57 *** (0.07) | 0.12 *** (0.08) |
| County Seat | 1.02 (0.42) | 0.92 (0.16) | 1.16 (1.01) |
| Near a Large City | 0.17 *** (0.10) | 0.70 (0.17) | 0.05 ** (0.06) |
| Log Distance to Large City | 0.69 * (0.14) | 0.84 * (0.08) | 0.53 (0.26) |
| National Bank in Town | 1.35 (0.50) | 0.99 (0.15) | 6.07 * (5.65) |
| One Bank in Town | 1.15 (0.40) | 1.05 (0.18) | 3.94 (3.61) |
| Banking Institutions per capita | 0.63 ** (0.13) | 0.75 *** (0.07) | 0.70 (0.39) |
| Population Density | 1.04 (0.05) | 0.98 (0.02) | 1.05 (0.09) |
| Income per Capita | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.00) |
| Share County Income from Agriculture | 2.87 (2.24) | 0.97 (0.34) | 52.69 ** (88.99) |
| Employment Rate in County | 12.00 (47.00) | 3.28 (5.85) | 50.00 (65.00) |
| Share of County Pop that is Italian | 1.02 (0.09) | 0.97 (0.04) | 0.81 (0.18) |
| Share of County Pop that is Literate | 0.89 (0.09) | 1.02 (0.05) | 0.92 (0.22) |
| County in the North of the State | 0.84 (0.32) | 0.85 (0.16) | 8.47 ** (7.84) |
| Gamma | 0.86 (0.07) | 0.44 (0.04) | 1.74 (0.20) |
| Observations | 165 | 210 | 182 |
| Failures | 104 | 126 | 57 |
| Log-Likelihood | -232.0 | -201.8 | -195.5 |

Notes and Sources: Estimated using survival analysis and employing a log-logistic distribution. Coefficients are time ratios (see footnote 15). The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors are in parentheses. Data on mergers as well as branch and bank activity are from *Annual Report* of the Superintendent of Banks of the State of CA (various years), *Rand McNally* (various years), *Comptroller of Currency Annual Report* and *Statements of Conditions* (various years). City populations are from the California State Department of Finance (2004) County-level information is from U.S. Department of Commerce (1920). Large city is defined as either San Francisco or Los Angeles, whichever is nearer.

Table 7 - Factors Affecting the Desirability of Individual Banks as Acquisition Targets

Dependent Variable: Time until the bank is taken over

| | All Banks | Bank of America | Any Other Bank |
|---|---------------------|---------------------|--------------------|
| Log assets | 1.05 (0.14) | 1.00 (0.10) | 1.15 (0.29) |
| Interest bearing assets to total assets | 0.97 *** (0.01) | 0.98 *** (0.01) | 0.96 * (0.02) |
| Capital to Assets | 0.99 (0.01) | 0.99 (0.01) | 0.99 (0.03) |
| Surplus to Assets | 1.02 (0.02) | 0.99 (0.02) | 1.12 ** (0.06) |
| Excess Capital | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.01) |
| Cash to Deposits | 0.99 (0.01) | 1.01 (0.01) | 0.97 ** (0.02) |
| Demand Deposits to Total Deposits | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.01) |
| State Bank | 0.58 * (0.18) | 0.85 (0.21) | 0.36 (0.23) |
| Branch Bank | 0.70 (0.58) | 0.42 * (0.20) | .99 (.999) |
| Log Age of Bank | 0.91 (0.09) | 1.08 (0.07) | 0.62 ** (0.13) |
| Federal Reserve Member | 1.29 (0.35) | 1.20 (0.25) | 1.22 (0.64) |
| Trust Department | 1.10 (0.38) | 1.44 (0.43) | 0.58 (0.37) |
| Log Town Population | 0.89 * (0.05) | 0.92 * (0.04) | 0.90 (0.10) |
| Near Large City | 0.55 ** (0.16) | 0.86 (0.20) | 0.36 * (0.20) |
| Log Distance to Large City | 0.91 (0.08) | 0.93 (0.06) | 0.99 (0.19) |
| National Bank in City | 0.73 (0.15) | 0.87 (0.13) | 0.72 (0.32) |
| Banking Institutions per capita (town) | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.00) |
| Share County Income from Agriculture | 0.99 (0.01) | 0.99 (0.01) | 1.00 (0.02) |
| County in the North of the State | 1.02 (0.15) | 0.84 * (0.09) | 1.72 * (0.56) |
| Gamma | 0.77 (0.04) | 0.45 (0.03) | 0.39 (0.03) |
| Observations | 554 | 554 | 554 |
| Failures | 279 | 154 | 125 |
| Log-Likelihood | -668.9 | -346.8 | -444.4 |

See notes at end of tables.

Table 8 – Characteristics of Bank Acquisitions by City Size

Dependent Variable: Time until the bank is taken over

| | Small Cities (those with less than 20,000 people) | | | Large Cities (those with more than 20,000 people) | | |
|---|--|---------------------|--------------------|--|--------------------|--------------------|
| | All Banks | Bank of America | Any Other Bank | All Banks | Bank of America | Any Other Bank |
| Log assets | 0.81 (0.15) | 1.02 (0.14) | 0.55 (0.22) | 1.12 (0.29) | 0.69 (0.20) | 1.87 (0.80) |
| Interest bearing assets to total assets | 0.97 *** (0.01) | 0.98 *** (0.01) | 0.96 (0.02) | 0.98 (0.03) | 1.00 (0.02) | 0.98 (0.05) |
| Capital to Assets | 0.97 * (0.02) | 0.99 (0.01) | 0.95 (0.03) | 0.99 (0.05) | 0.96 (0.04) | 1.03 (0.08) |
| Surplus to Assets | 1.04 (0.03) | 0.99 (0.02) | 1.19 ** (0.08) | 1.02 (0.07) | 1.02 (0.07) | 1.01 (0.11) |
| Excess Capital | 1.00 (0.00) | 0.99 ** (0.00) | 1.01 (0.01) | 1.00 (0.01) | 1.01 (0.01) | 1.00 (0.01) |
| Cash to Deposits | 0.98 ** (0.01) | 1.00 (0.01) | 0.96 ** (0.02) | 1.02 (0.02) | 1.04 * (-0.03) | 0.98 (-0.04) |
| Demand Deposits to Total Deposits | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.01) | 0.98 * (0.01) | 0.99 (0.01) | 0.99 (0.01) |
| State Bank | 0.55 * (0.20) | 0.84 (0.23) | 0.39 (0.28) | 0.82 (0.58) | 0.99 (0.56) | 0.53 (0.67) |
| Branch Bank | 0.57 (0.62) | 0.43 (0.28) | .99 (.999) | 0.68 (0.86) | 0.42 (0.39) | .99 (.999) |
| Log Age of Bank | 0.94 (0.10) | 1.07 (0.08) | 0.69 (0.17) | 0.80 (0.20) | 0.97 (0.20) | 0.56 (0.25) |
| Federal Reserve Member | 1.11 (0.36) | 1.20 (0.30) | 0.90 (0.59) | 1.63 (0.79) | 1.23 (0.51) | 1.92 (1.58) |
| Trust Department | 1.84 (1.02) | 1.25 (0.50) | 2.02 (2.26) | 0.60 (0.32) | 1.85 (0.96) | 0.17 ** (0.15) |
| Log Town Population | 0.82 ** (0.08) | 0.83 ** (0.06) | 0.90 (0.19) | 0.84 (0.32) | 1.18 (0.35) | 0.57 (0.40) |
| Near Large City | 0.67 (0.21) | 0.81 (0.20) | 0.71 (0.43) | | | |
| Log Distance to Large City | 0.97 (0.10) | 0.97 (0.08) | 1.10 (0.26) | 0.88 (0.21) | 0.88 (0.18) | 0.93 (0.39) |
| National Bank in Town | 1.05 (0.23) | 1.02 (0.16) | 1.34 (0.67) | | | |
| Banking institutions per capita (town) | 0.99 ** (0.00) | 0.99 * (0.00) | 1.00 (0.00) | 1.00 (0.01) | 1.00 (0.01) | 1.00 (0.02) |
| Share County Income from Agriculture | 1.47 (0.48) | 0.95 (0.23) | 3.25 * (2.27) | 1.01 (0.02) | 1.01 (0.01) | 1.01 (0.03) |
| County in the North of the State | 1.09 (0.18) | 0.83 * (0.10) | 2.26 ** (0.87) | 0.93 (0.39) | 1.05 (0.34) | 1.14 (0.91) |
| Gamma | 0.74 (0.04) | 0.43 (0.03) | 1.23 (0.12) | 0.78 (0.09) | 0.46 (0.08) | 1.11 (0.18) |
| Observations | 452 | 452 | 452 | 102 | 102 | 102 |
| Failures | 220 | 127 | 93 | 59 | 27 | 32 |
| Log-Likelihood | -520.7 | -277.1 | -336.6 | -134.5 | -57.6 | -98.6 |

See notes at end of tables.

Table 9
The Effect of Branch-Bank Entry on Rival Bank Behavior

Dependent Variable: Balance-sheet characteristics listed in column heading

| | Loans to Assets | Securities to Assets | Net Worth to Assets | Surplus to Net Worth | Demand Deposits to Total Deposits |
|---|----------------------|----------------------|---------------------|----------------------|-----------------------------------|
| Intercept | -0.93 (5.71) | 4.15 (5.23) | -1.53 (2.33) | 8.54 * (5.04) | 4.64 (6.82) |
| Any Bank adds a branch early in the sample period | 0.06 ** (0.02) | -0.03 (0.02) | -0.02 * (0.01) | 0.03 (0.02) | 0.02 (0.03) |
| Any Bank adds a branch in last year of the sample | -0.02 (0.06) | 0.04 (0.06) | -0.03 (0.03) | 0.08 (0.05) | 0.00 (0.07) |
| Federal Reserve Member | -0.03 (0.06) | 0.02 (0.05) | 0.03 (0.02) | 0.04 (0.05) | -0.01 (0.07) |
| Log Age of Bank | -0.01 (0.01) | -0.02 * (0.01) | 0.04 *** (0.01) | -0.05 *** (0.01) | 0.01 (0.02) |
| Trust Department | 0.04 (0.10) | 0.01 (0.09) | -0.02 (0.04) | 0.02 (0.08) | -0.13 (0.11) |
| State Bank | 0.01 (0.06) | 0.03 (0.05) | -0.01 (0.02) | 0.07 (0.05) | 0.02 (0.07) |
| Population Growth Rate (city) | -0.03 ** (0.01) | 0.03 *** (0.01) | 0.00 (0.00) | -0.01 (0.01) | -0.02 (0.01) |
| Log Distance to Nearest Large City | -0.04 *** (0.01) | 0.03 ** (0.01) | -0.01 * (0.01) | -0.04 *** (0.01) | 0.01 (0.02) |
| Near a Large City | 0.08 (0.06) | -0.06 (0.05) | 0.02 (0.02) | -0.15 *** (0.05) | -0.07 (0.07) |
| Share County Income from Agriculture | 1.06 (5.73) | -4.18 (5.25) | 1.43 (2.34) | -8.25 * (5.05) | -4.80 (6.84) |
| County in the North of the State | 0.03 (0.02) | -0.02 (0.02) | 0.03 *** (0.01) | 0.02 (0.02) | -0.03 (0.03) |
| Observations | 192 | 192 | 192 | 192 | 192 |
| F-Statistics | 3.24 | 2.12 | 7.6 | 4.23 | 1.14 |
| Adjusted R-squared | 0.11 | 0.06 | 0.27 | 0.16 | 0.01 |

Notes and Sources: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors are in parentheses. Data on balance sheets, trust status, and branching activity are from the *Annual Report* of the Superintendent of Banks of the State of California (various years) and *Comptroller of Currency Annual Report* and *Statements of Conditions* (various years), with information on branching activity supplemented using internal records of the Bank of America. Federal Reserve membership and age of bank are from Rand McNally (1922). City population is from the California State Department of Finance (2004) supplemented by data from Rand-McNally. Income shares are from U.S. Department of Commerce (1920). Designation of county as being in northern or southern part of state is based on Secrist (1930).

Table 10
The Effect of Bank of America's Branches on Rival Bank Behavior

Dependent Variable: Balance-sheet characteristics listed in column heading

| | Loans to Assets | Securities to Assets | Net Worth to Assets | Surplus to Net Worth | Demand Deposits to Total Deposits |
|---|----------------------|----------------------|----------------------|----------------------|-----------------------------------|
| Intercept | 2.12 (4.98) | -1.64 (4.60) | -1.64 (4.60) | 4.32 (4.52) | 4.76 (5.58) |
| BofA adds a branch early in the sample period | 0.07 *** (0.02) | -0.05 *** (0.02) | -0.05 *** (0.02) | 0.03 * (0.02) | 0.07 *** (0.02) |
| BofA adds a branch in last year of the sample | 0.07 * (0.04) | -0.04 (0.03) | -0.04 (0.03) | 0.05 * (0.03) | -0.04 (0.04) |
| Federal Reserve Member | -0.06 (0.05) | 0.05 (0.05) | 0.05 (0.05) | 0.07 (0.05) | -0.01 (0.06) |
| Log Age of Bank | -0.02 (0.01) | -0.01 (0.01) | -0.01 (0.01) | -0.05 *** (0.01) | 0.01 (0.01) |
| Trust Department | 0.03 (0.06) | -0.01 (0.06) | -0.01 (0.06) | 0.08 (0.06) | -0.07 (0.07) |
| State Bank | -0.01 (0.05) | 0.05 (0.05) | 0.05 (0.05) | 0.10 ** (0.04) | 0.04 (0.06) |
| Population Growth Rate (town) | -0.03 ** (0.01) | 0.03 *** (0.01) | 0.03 *** (0.01) | -0.02 (0.01) | -0.03 ** (0.01) |
| Log Distance to Nearest Large City | -0.04 *** (0.01) | 0.03 ** (0.01) | 0.03 ** (0.01) | -0.03 ** (0.01) | 0.02 (0.02) |
| Near a Large City | 0.04 (0.05) | -0.03 (0.04) | -0.03 (0.04) | -0.08 ** (0.04) | -0.01 (0.05) |
| Share County Income from Agriculture | -1.94 (5.00) | 1.56 (4.62) | 1.56 (4.62) | -4.12 (4.54) | -4.97 (5.61) |
| County in the North of the State | 0.03 (0.02) | 0.00 (0.02) | 0.00 (0.02) | 0.02 (0.02) | -0.04 * (0.02) |
| Observations | 228 | 228 | 228 | 228 | 228 |
| F-Statistic | 4.43 | 2.98 | 9.32 | 4.3 | 2.16 |
| Adjusted R-squared | 0.14 | 0.09 | 0.29 | 0.14 | 0.05 |

Notes and Sources: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors are in parentheses. Data on balance sheets, trust status, and branching activity are from the *Annual Report* of the Superintendent of Banks of the State of California (various years) and Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), with information on branching activity supplemented using internal records of the Bank of America. Federal Reserve membership and age of bank are from Rand McNally (1922). City populations are from the California State Department of Finance (2004) supplemented by data from Rand McNally's. Income shares are from U.S. Department of Commerce (1920). Designation of county as being in northern or southern part of state is based on Secrist (1930).

Table 11
The Effect of non-Bank of America Branches on Rival Bank Behavior

Dependent Variable: Balance-sheet characteristics listed in column heading

| | Loans to Assets | Securities to Assets | Net Worth to Assets | Surplus to Net Worth | Demand Deposits to Total Deposits |
|--|----------------------|----------------------|---------------------|----------------------|-----------------------------------|
| Intercept | 0.94 (5.26) | 0.91 (4.83) | -1.17 (2.18) | 5.94 (4.73) | 2.77 (6.27) |
| Non-BofA bank adds a branch early in the sample period | 0.09 *** (0.03) | -0.07 ** (0.03) | -0.02 (0.01) | 0.02 (0.03) | -0.01 (0.04) |
| Non-BofA adds a branch in last year of the sample | | | | | |
| Federal Reserve Member | -0.02 (0.06) | 0.02 (0.05) | 0.03 (0.02) | 0.04 (0.05) | -0.01 (0.07) |
| Log Age of Bank | -0.01 (0.01) | -0.02 * (0.01) | 0.04 (0.00) | -0.05 (0.01) | 0.01 (0.01) |
| Trust Department | 0.03 (0.09) | 0.03 (0.09) | -0.02 (0.04) | 0.02 (0.08) | -0.12 (0.11) |
| State Bank | 0.01 (0.06) | 0.03 (0.05) | -0.01 (0.02) | 0.07 (0.05) | 0.01 (0.07) |
| Population Growth Rate (city) | -0.03 ** (0.01) | 0.03 *** (0.01) | -0.01 (0.00) | -0.01 (0.01) | -0.02 (0.01) |
| Log Distance to Nearest Large City | -0.04 *** (0.01) | 0.03 *** (0.01) | -0.01 (0.01) | -0.04 *** (0.01) | 0.01 (0.02) |
| Near a Large City | 0.07 (0.05) | -0.04 (0.05) | 0.02 (0.02) | -0.14 *** (0.05) | -0.07 (0.07) |
| Share County Income from Agriculture | -0.80 (5.28) | -0.95 (4.85) | 1.08 (2.19) | -5.65 (4.75) | -2.92 (6.30) |
| County in the North of the State | 0.05 ** (0.02) | -0.03 (0.02) | 0.02 * (0.01) | 0.03 (0.02) | -0.02 (0.03) |
| Observations | 203 | 203 | 203 | 203 | 203 |
| F-Statistics | 4.12 | 3.2 | 8 | 4.54 | 1.21 |
| Adjusted R-squared | 0.13 | 0.1 | 0.26 | 0.15 | 0.01 |

Notes and Sources: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors are in parentheses. Data on balance sheets, trust status, and branching activity are from the *Annual Report* of the Superintendent of Banks of the State of California (various years) and Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), with information on branching activity supplemented using internal records of the Bank of America. Federal Reserve membership and age of bank are from Rand McNally (1922). City populations are from the California State Department of Finance (2004) supplemented by data from Rand McNally's. Income shares are from U.S. Department of Commerce (1920). Designation of county as being in northern or southern part of state is based on Secrist (1930).

Table 12 – The Effect of the Branch Banks on Bank Failures, 1929-33

Dependent variable: time until failure.

| | Branch of any bank | Branch of the Bank of America | Branch of a bank other than BofA |
|--|---------------------|-------------------------------|----------------------------------|
| Branch Established in town | 1.26 (0.23) | 1.57 ** (0.31) | 1.04 (0.20) |
| Log Assets | 0.78 * (0.12) | 0.74 * (0.12) | 0.81 (0.12) |
| Loans to Assets | 1.00 (0.01) | 1.01 (0.01) | 1.00 (0.01) |
| Total Securities to Assets | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.00) |
| Capital to Assets | 0.96 ** (0.02) | 0.95 ** (0.02) | 0.96 * (0.02) |
| Surplus to Assets | 1.08 *** (0.03) | 1.08 *** (0.03) | 1.08 ** (0.03) |
| Excess capital ratio | 1.01 ** (0.00) | 1.01 ** (0.00) | 1.01 ** (0.00) |
| Cash to Deposits | 1.01 (0.01) | 1.01 (0.01) | 1.01 (0.01) |
| Demand Deposits to Total Deposits | 1.00 (0.00) | 1.00 (0.00) | 1.00 (0.00) |
| State Bank | 0.96 (0.47) | 0.99 0.48 | 0.93 0.46 |
| Branch Bank | 0.99 (0.22) | 0.99 (0.22) | 0.98 (0.22) |
| Log Age of Bank | 0.95 (0.09) | 0.93 (0.08) | 0.94 (0.09) |
| Federal Reserve Member | 1.36 (0.66) | 1.38 (0.66) | 1.33 0.65 |
| Trust Department | 1.28 (0.52) | 1.33 (0.54) | 1.22 (0.49) |
| Log City Population | 1.06 (0.06) | 1.03 (0.06) | 1.09 (0.06) |
| Near a Large City | 0.68 (0.17) | 0.69 (0.17) | 0.67 (0.17) |
| Log distance to Large City | 1.02 (0.11) | 1.02 (0.10) | 1.02 (0.11) |
| Banking Institutions per capita (town) | 0.99 (0.01) | 0.99 (0.01) | 0.99 (0.01) |
| Share County Income from Agriculture | 0.86 (0.14) | 0.85 (0.14) | 0.87 (0.14) |
| Unemployment Rate | 0.92 ** (0.04) | 0.92 ** (0.04) | 0.91 ** (0.04) |
| Gamma | 0.41 (0.05) | 0.92 (0.04) | 0.91 (0.04) |
| Observations | 325 | 325 | 325 |
| Failures | 70 | 70 | 70 |
| Log-Likelihood | -166.2 | -164.1 | -167 |

See notes at end of tables.

Additional Sources and Notes for tables.

Table 7 & 8: Estimated using survival analysis and employing a log-logistic distribution. Coefficients are time ratios (see footnote 16). The symbols (***) (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors are in parentheses. Data on balance sheets, trust status, and branching activity are from the *Annual Report* of the Superintendent of Banks of the State of California (various years) and Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), with information on branching activity supplemented using internal records of the Bank of America. Federal Reserve membership and age of bank are from Rand McNally (1922). City populations are from the California State Department of Finance (2004). County location based on Secrist (1930). All county level data are from U.S. Department of Commerce (1920), except for designation of northern or southern California banking market, which is based on Secrist (1930).

Table 12: Estimated using survival analysis and employing a log-logistic distribution. Coefficients are time ratios (see footnote 16). The symbols (***) (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors are in parentheses. Data on balance sheets, trust status, and branching activity are from the *Annual Report* of the Superintendent of Banks of the State of California (various years) and Comptroller of Currency *Annual Report* and *Statements of Conditions* (various years), with information on branching activity supplemented using internal records of the Bank of America. Federal Reserve membership and age of bank are from Rand McNally (1922). City populations are from the California State Department of Finance (2004) supplemented by data from Rand McNally's. Income shares and county-level characteristics are from U.S. Department of Commerce (1920, 1930). Designation of county as being in northern or southern part of state is based on Secrist (1930).