Financial Failure and Depositor Quality: Evidence from Building and Loan Associations in California

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Abstract

Flightiness, or depositor sensitivity to liquidity needs, can be an important determinant of financial distress. I leverage institutional differences—that attract depositors with varying flightiness—across building and loan associations in California during the Great Depression. A new type of plan, the Dayton plan, involved less restrictive savings plans and lower withdrawal penalties. Dayton plans in California were more likely to close during the Great Depression. Archival evidence on lending rates and returns supports the flightiness mechanism.

Keywords: Bank Failures, Banks, credit unions, and other financial institutions, Building and Loan, Great Depression

JEL Codes: N22, G23, G21

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1 Introduction

The failure of individual financial institutions is often associated with poor macroeconomic conditions and financial instability. Conventional explanations for failure include liquidity shocks due to the maturity mismatch of assets and liabilities (e.g. the model of Diamond and Dybvig 1983) or insolvency due to impaired assets. Yet both of these explanations are limited in incorporating the institutional details of how financial institutions structure their liabilities. For instance, commercial banks can vary the deposit rate or restrict access to liquidity via withdrawal limitations. Relying on low-cost funding may attract depositors that are ex-ante more susceptible to liquidity shocks—i.e. more "flighty." What appears across banks as surprise liquidity shocks is actually a function of their predetermined structures. Financial distress can be endogenous to the characteristics of depositors.

In this paper, I study the role of depositor flightiness using building and loan associations (B&Ls) in California during the Great Depression. B&Ls were lending institutions that specialized in loans against real estate, accounting for about one-third of the institutional residential mortgage market at their peak in the 1920s. During the Great Depression, there were a large number of closures via liquidation (both voluntary and involuntary) among B&Ls across the United States. Snowden (2003) attributes the decline to the combination of macroeconomic forces and B&Ls unique operating structure.

While B&Ls would specialize in mortgage lending throughout their history, they continually innovated on the liability side of their balance sheet. The two dominant plans during the late 1800s and early 1900s were the **serial** and **permanent** plans.[1] In California, these B&L plans issued withdrawable shares, a form of equity contract. Withdrawable shares were frequently structured into series, a form of forced savings plan for new members.[2] In addition, withdrawable shares featured penalties that made it difficult for members to access funds on short notice.

By the early 1900s, California B&Ls began to adopt the **Dayton** plan (named after the city in Ohio, where they originated), which did away with series and removed many aspects of the savings plan and withdrawal penalties. In California, instead of only withdrawable shares, Dayton plans frequently issued investment certificates, a debt contract. Investment certificates differed from withdrawable shares because withdrawal penalties were lower, so members could more easily access the full value of their funds, and there was a less rigid savings program. Investment certificates were comparable with certificates of deposit at commercial banks with a few additional restrictions common to B&Ls (Clark and Chase 1927).

The simultaneous existence in California of Dayton plans, which emphasized low-cost savings, and non-Dayton plans, which emphasized regular savings and higher withdrawal penalties, presents the key source of liability heterogeneity studied in this paper. Due to the gradual nature of B&L innovation, in some states there were periods of overlap during which there existed non-Dayton plans that looked more like "traditional" B&Ls and newer Dayton plans that were closer in spirit to commercial banks. This paper studies the state of California during the Great Depression, which was one of the states and time periods with the most overlap.

1. B&Ls originally started as temporary institutions where a few members would pool savings to make mortgage loans. This original B&Ls, known as the **terminating** plan, had only one "series" that members could participate in by purchasing shares, which were equity contracts in the B&L. Yet new members were often difficult to attract due to the planned closure of the institution plus the requirement of back-paying earlier savings.

2. These B&L plans would continuously create new series to accommodate new members. The key difference between the serial plan and permanent plan is that the serial plan would start new series that members could buy into, reducing the total amount of back-pay for new members, while the permanent plan allowed each individual to essentially start their own series, eliminating any need for back-pay.

I leverage variation across these two types of plans to understand whether member flightiness led to different rates of liquidation during the Great Depression.

B&Ls in the Great Depression offer an exceptional laboratory to study the effect of flightiness on financial distress. First, the proliferation over the past few decades of different types of derivatives and investments has complicated both sides of financial balance sheets, making it difficult to disentangle the relative effects of specific liabilities. B&Ls at this time had very simple liability structures that allow me to focus on the flightiness issue. Second, even if one could find a modern institution with a simple liability structure, it is equally challenging to find settings where the asset side of the balance sheet is relatively homogenous across institutions. Whether one looks historically or in the present day, the types of loans made by either commercial or investment banks vary based on sector (e.g. mortgage, commercial) or maturity. However, B&Ls in California had assets that were almost completely in real estate loans and, due partly to legal restrictions, very similar across institutions. Finally, the closure of B&Ls in this time period is also attractive to study because reverse causality is unlikely to be a major concern. B&Ls were unlikely to have caused the Great Depression. Field (2014) shows that the impact on the housing market during the Great Depression was comparatively small relative to the Great Recession but notes that while "[w]e have abundant historical evidence that commercial bank failures can pose a systemic threat to an economy, it is less clear that this would have been so with building and loans." Similarly, White (2014) finds little impact of the housing market in the 1920s on the financial system.

I begin by estimating a cross-sectional linear probability model to determine the effect of being a Dayton plan on the probability of closure. I rely in this specification on two measures of the Dayton plan: the reported plan of the B&L in the annual report, and an alternative measure that leverages the liability structure. As California Dayton B&Ls issued investment certificates, I also use an alternative measure that compares associations with relatively more investment certificates to those with relatively less.

Of the two types of B&L's, Dayton and non-Dayton, Dayton plans were much more likely to close using either measure. The results are robust to a number of alternative specifications that control for local economic conditions, competition from other B&Ls or commercial banks, and other potential balance sheet effects. In a quite restrictive specification, I condition on only counties with multiple B&Ls and include city fixed effects and find similar results. These results suggest there is something fundamental about plan type that predicts closure.

For the observed closure rates to be consistent with the flightiness hypothesis, non-Dayton plans should have higher costs for members to access savings. I estimate different measures of access costs for the two types of B&Ls. One measure of access costs is withdrawal penalties, which I define broadly as being unable to withdraw for full book value. I also look at dues, which were the required payments each member had to pay at regular intervals. I find that Dayton B&Ls were less likely to have withdrawal penalties and had lower dues on average. This result suggests that being a member at a non-Dayton B&L was costlier than at a Dayton B&L.

Pairing the balance sheet information with archival information hand recorded from the California State Archives (CSA) in Sacramento, California permits a deeper dive into the differences between the two types of B&Ls. Members should be willing to pay higher access costs only if returns were also higher. I leverage detailed archival data in unpublished annual reports. While these data are only available for the year 1931 and for a subset of B&Ls, they provide a glimpse into returns for members across institutions. I find that

returns were significantly higher for non-Dayton plans. This result is driven mainly by the difference in returns across the two types of instruments, as investment certificates had lower returns overall compared with withdrawable shares. Paired with the result on access costs, this suggests that non-Dayton plans had high access costs but attracted members via higher returns.

Finally, I present characteristics of the members of the institutions themselves. I show that the average wealth per member held in non-Dayton B&Ls was significant higher than that held in Dayton plans. I also show that during the Great Depression, members of Dayton plans were significantly more likely to pay costly fees to access their funds. These two results suggest that members were fundamentally different across the plan types, and therefore point toward flightiness as an important reason for closure.

I also provide a number of additional tests to show that the asset side of the balance sheets across plan types was very similar. Historically, B&Ls in California were required to lend against real estate. They followed national trends in providing long-term amortized loans that had proven popular among B&Ls in other states. Additionally, I show that the net borrowing cost for members was essentially the same, suggesting little discrimination among borrowers across plan types. Average loan sizes were also similar.

It is important to emphasize that B&Ls did not fail in the conventional sense. While deposits at commercial banks were debt contracts, which banks were required to repay on demand, withdrawable shares issued by B&Ls were *equity* contracts. These members of B&Ls were therefore investors in the institution, with the value of their investment supposedly linked to the success of the B&Ls. California was no exception, with liquidation requiring the vote of two-thirds of total members. However, this paper is interested in the role of ex-ante differences in liquidity needs by depositors. I argue that the propensity to liquidate was not different across the institutions due to the fact that the share of borrowing members was similar. While the distinction between commercial banks and B&Ls is important, I discuss in the last section of the results of this paper on the importance of liability structure can be used to inform the theoretical literature on bank failure.

Related Literature

The idea that liquidity shocks cause bank failure goes back at least as far as Diamond and Dybvig (1983). Liquidity shocks have also been used to motivate financial contagion (Allen and Gale 2000) or fickle international capital flows (Caballero and Simsek 2020). Liquidity can also be seen as disciplining the behavior of bank management, such as in Diamond and Rajan (2001) or Calomiris and Kahn (1991). More recently, the Great Recession has revitalized work on bank distress, both in the domestic context (e.g. Ivashina and Scharfstein 2010; Shin 2009) and in the international context (e.g. Ivashina, Scharfstein, and Stein 2015). My paper suggests that liquidity shocks are endogenous to banking structure. I discuss further how my paper can help better understand such models in Section 6.

A second, smaller strand of the literature has directly examined depositor heterogeneity. O'Grada and White (2003) study the Emigrant Industrial Savings Bank and show that the effect of the runs during the panics in the mid-1800s depended on whether depositors were more informed. Using depositor level data in India, Iyer and Puri (2012) and Iyer, Puri, and Ryan (2016) also show that depositor relationships with the bank matter. Beshears et al. (2020) randomly allocate withdrawal penalties and find that high penalties attract more committed depositors. My paper builds on this work and suggests that depositors are aware of the institutional structure of the banks they use.

A small set of papers have also studied early withdrawals in time deposits relative to demand deposits. While

a number of these papers are focused on the sensitivity of interest rates to market interest rates, others have studied the relative importance of bank risk, finding a similar pattern as in this paper that higher withdrawal fees are associated with higher returns (Bikker and Gerritsen 2018). The relative growth of nonbank financial institutions in the first half of the 20th century led to a number of articles emphasizing that interest rate differentials alone could not explain this phenomenon. The role of time deposits vs. savings deposits (Smith 1959) and commercial banks and savings banks (Alhadeff and Alhadeff 1958) have been explored to argue that the availability of savings as an important factor.

Finally, this paper also contributes to a large literature using the Great Depression to understand how and why banks fail. Bank failures during this time period have been found to be due to insolvency (Calomiris and Mason 1997; Postel-Vinay 2016) or illiquidity (Blickle, Brunnermeier, and Luck 2019; Richardson and Troost 2009). The building and loan sector, studied in detail in this paper, has received increased attention in recent years. Work by Snowden (1997), Snowden (2003), Fleitas, Fishback, and Snowden (2018), Fishback et al. (2018), Rose and Snowden (2013), and Price and Walter (2019) has established the importance of B&Ls in the institutional mortgage lending market in the United States in the first half of the 20th century as well as their lasting influence on the structure of the residential mortgage contract. Other papers on non-traditional financial institutions include Mitchener and Richardson (2013), who study non-member country banks in the Great Depression and find a large role for financial contagion to cities. I also contribute to better understanding the development of California's financial sector. An attractive feature of studying commercial banks in California during the Great Depression is the state's allowance of branch networks. Recent work examining California's experience with branch banking include Carlson and Mitchener (2009) and Quincy (2019).

2 Historical Background

2.1 Evolution of Buildings and Loans in the United States

B&L's were one of the most important lenders in the U.S. institutional home mortgage market over the first few decades of the 20th century.[3] B&Ls were marketed as safe vehicles for savings, which permitted them to grow quickly.[4] Figure 1 plots mortgage debt held by B&Ls for all single-family residential structures in both millions of dollars and as a share of the total amount of institutional mortgage debt. During the 1910s, B&Ls took on an increasingly larger share of institutional mortgage debt. Their importance peaked at just over 33% in the 1920s before collapsing during the Great Depression. The number of B&Ls in the country also doubled in the 1920's, from 5,869 in 1920 to 11,777 in 1930, with assets per association nearly doubling over that same time period (Bodfish 1935).

This first B&L in the United States, the Oxford Provident Association in Frankfort PA, followed what was known as the *terminating plan*. A group of households would get together and put forward funds for initial stock purchases in the association and commit to future saving. These funds were then auctioned to these members, and the member who bid the highest for funds would obtain a mortgage loan from the association, The amount bid, the "premium," was discounted from the gross amount the household was able to borrow. This mortgage was accompanied by periodic repayments towards interest, amortization, and installment

3. For more in-depth historical overviews of B&L institutions, see Clark and Chase (1927), Bodfish (1935), Riegel and Doubman (1927), and Snowden (1997), among others.

4. Pieplow (1931) called Building and Loan Associations "the safest, most convenient, and fairest earning institution that we have to aid a person who really desires to save and invest money."

on stock payments. As members saved and borrowers repaid, new members would then become borrowers. However, payments pre-specified the end date of the last mortgage payment, following which the institution was liquidated.

As the plan was inherently temporary, which ran counter to goals of long-term savings, B&Ls soon took on two related forms called the *serial plan* and the *permanent plan*. These plans allowed for several series of "withdrawable shares" to be issued, each maturing at different times. The serial plan, which came first, allowed different series of withdrawable shares to be issued at regular intervals so that new members no longer had to back-pay larger amounts of funds the later they entered the association. Instead, members would be on equal footing with others from the same series. Another innovation of the permanent plan was that it allowed investors to purchase withdrawable shares without paying prohibitively large back-payments to catch up to earlier members. In other words, members implicitly began their own new series when they joined. However, members still had to commit to a long-term savings plan, and these associations frequently had high withdrawal penalties.

Taking this idea to the limit, B&Ls eventually developed into a form known colloquially as the *Dayton plan*. Institutions using this plan allowed individuals to make payments whenever they pleased rather than at a regular interval. There were typically lower withdrawal penalties, and members could usually withdraw money on request (Pieplow 1931). Dayton plans were most common in Ohio (hence the name Dayton) and a few other states in the country, including California. Dayton B&Ls frequently issued some sort of debt contract rather than relying solely on withdrawable shares. The Dayton B&Ls in Ohio actually accepted deposits, which led to the observation that the Dayton B&Ls were "open to the charge of being savings banks, a term frequently applied as a stigma" (Clark and Chase 1927). On the lending side, the premium on loans was eliminated for Dayton plans.

There were therefore two broad classes of B&Ls operating during the 1920s: Dayton plans, which were more closely related to commercial banks and catered to short-term investors, and non-Dayton plans (serial and permanent plans), which required more of a commitment by members. Both plans specialized in local real estate by permitting only its members to borrow. Table 1, taken from Clark and Chase (1927), shows the distribution in 1923 for the United States as a whole. Terminating plans were almost completely eliminated, accounting for less than 1% of the total. Serial or permanent plans accounted for 87%, while Dayton plans accounted for a little over 11%.

By 1935, the federal government had implemented a number of new laws targeting the B&L industry that made it possible for B&Ls to "federalize," or join the Federal Home Loan Bank system (in the same manner as commercial banks could become Federal Reserve banks). Snowden (2003) discusses how these laws helped create the savings and loan industry that would come to persist for the following decades.

2.2 California Building and Loans

The reported history of B&Ls in California traces back to 1893, when the first annual report of the Office of the Board of Commissioners of the Building and Loan Associations was issued and the Building and Loan Commission was created. The earliest reports only mention plan type in passing and focus instead on whether or not members planned to become borrowers.[5] By the third annual report in 1895, the Dayton

5. The 1893 report does not mention Dayton plans or Permanent/Serial plans. Instead, this report defines B&Ls based on their scope of operation (Local/National), and whether or not members plan to eventually become borrowers (Type of Premium). The latter distinguishes between the types of withdrawable shares issued by B&Ls: free shares (non-borrower) vs.

plan began to be used by two institutions in California. By 1900 in the seventh annual report, California was well aware of the transition from Permanent/Serial to Dayton: "...the old Terminating association was succeeded by the Serial and is now fast being succeeded by the Dayton."' By 1905, this number jumped to 24 officially listed. As described in detail by Haveman and Rao (1997), although the Dayton plan grew in popularity, the coexistence of these different types of B&Ls continued throughout this time period into the 1920s.

Non-Dayton B&Ls issued various forms of *withdrawable shares*, which were equity contracts featured elsewhere in the country (e.g., in New Jersey as discussed by Fleitas, Fishback, and Snowden 2018). There were two main forms of withdrawable shares: installment shares or full-paid shares. Installment shares created the forced savings plan, as individuals would commit to regular savings until their total savings reached the value of an individual withdrawable share. Full-paid shares allowed individuals to simply purchase the full value of an individual withdrawable share. Withdrawable shares typically had variable returns based on the dividends of the institution and featured higher withdrawal costs as shown later in this paper.

Dayton B&Ls in California were unique in that they issued *investment certificates*, which distinguished them from other Dayton plans elsewhere in the country. Along with having lower withdrawal penalties relative to withdrawable shares, investment certificates were a debt contract that featured a fixed rate of interest. These investment certificates were senior to withdrawable shares in the event of liquidation (Stanford Law Review 1950; Bodfish 1935). Clark and Chase (1927) view these certificates as comparable with certificates of deposit, as they make it "possible to withdraw money quickly and take it elsewhere." This made it easier to attract new members. Unlike withdrawable shares, California B&Ls were required to keep a reserve on hand for investment certificates of 10% for any amount up to $1 million with an additional percentage that scales with the amount issued (e.g., 3% for any amount in excess of $5 million). This reserve could be composed of a standard reserve fund and/or what was known as "guarantee stock."

Guarantee stock was another development in the evolution of both Dayton and non-Dayton plans. Guarantee-stock plans allowed some members to purchase non-withdrawable stock in the institution, which was essentially the initial capital. This allowed the institution to begin making a higher volume of loans more quickly and guarantee some form of interest or dividend payouts for investment certificates and withdrawable shares, respectively. The institution could use this guarantee stock as a reserve for investment certificates and could also presumably respond more easily to withdrawal requests for both investment certificates and withdrawable shares by having some capital on hand. In California, most B&Ls had guarantee stock by the end of the 1920s. While dividends were not guaranteed, guarantee-stockholders would typically receive excess earnings beyond those allotted to other liabilities.[6]

The general shift towards Dayton plans reflects a financial environment motivated towards an efficient movement of funds in the face of large migration into California.[7] Haveman and Rao (1997) and Haveman, Rao, and Paruchuri (2007) argue that the shift towards the Dayton plan was due to values related to the

pledged shares (borrower). Importantly, this "premium" is not a characteristic of Dayton plans, suggesting that all B&Ls in California still operated as Permanent/Serial plans.

6. Clark and Chase (1927) emphasize that "[t]he presence of the capital of the guarantee stockholders (a fund which remains permanently in the association business), the lending operations are not greatly affected either by the entrance or withdrawal of the temporary funds. If losses should occur before the contract with the temporary investors is completed, they could be absorbed by the guarantee stockholders. Installment shares, investment certificates, ... can be issued by such associations with full assurance that the earnings contracted for can be paid."

7. Haveman and Rao (1997) outline the evolution of plan type in California and discuss its causes. Founding accounted for three-fourths of composition changes compared with transitioning to a new type.

Progressive movement. A desire for efficiency pushed B&Ls from club-like non-Dayton plans to bureaucratic Dayton plans. This change was propagated by internal migration and immigration into California, which expanded the size of local financial networks and reduced the ability to build long-term relationships. Dayton plans, attractive due to their low withdrawal fees and ease of access, began to grow. This general shift towards efficiency is similar to the overall transformation of California banking. As described by Doti and Schweikart (1991), a substantial portion of early banking along the frontier was highly localized. By the early 1900s, following a series of panics and dishonest bankers, state regulation began taking form and bank examiners began conducting regular examinations, thereby streamlining bank reporting. Doti and Schweikart (1991) argue that these examinations created opaque reports from the perspective of the depositor. Depositors increasingly relied upon the specialists' determination of banking safety (even if such specialists were potentially unqualified and received the job due to political connections).

Taken together, both the Progressive movement described in Haveman and Rao (1997) and the increasing reliance on specialists as in Doti and Schweikart (1991) suggest an important role for flightiness. First, shifting towards more efficient banking systems may have attracted newer members and depositors. These newcomers may not have been financially savvy and relied more on external regulators for safety. Second, as individual members grew wary of their fellow members or understood less about their local institutions, they may have been more likely to wish to withdraw funds in the event of a bad shock.

To withdraw funds in California, members would formally request to do so in writing with at least 30 days notice. The member would receive some amount up to the full value of what he paid in, although withdrawal values (especially for withdrawable shares) were frequently less than the book value. B&Ls were then required to use up to 50% of receipts in a given month to respond to withdrawal requests. In California, associations were required to pay all withdrawal requests on file within a year or all receipts would go towards withdrawals. This was also true for investment certificates, which were similar to deposits in that they represented debt. If withdrawals were not paid out within two years, the state commissioner would have the power to liquidate the B&L according to the 1929 Civil Code.

In California, the different plan types were evident in their advertisements. non-Dayton plans would state the overall return and in some cases directly emphasize the forced savings component. The left panel of Figure 4 shows for the Guarantee Building and Loan Association in San Bernardino, a non-Dayton plan in my sample that closed in 1930, both the savings plan component ("save $10 every month for but six and a half year") as well as the overall return ("[e]very dollar has earned 8 per cent return"). Compare this to the Dayton plan advertisements. The right panel of Figure 4 shows an advertisement for the Guaranty Building and Loan Association in San Jose, a Dayton plan in my sample that did not close. One of the key features of their investment plan is the advertised ability to withdraw essentially on demand. Advertisements such as these were documented in a B&L post-mortem, with the Select Committee of the California Assembly for the Purpose of Investigating the Building and Loan Situation in the State of California noting that "...a definite relationship between advertising and present conditions exists ... those associations most active in advertising for new investors are those associations which are today suffering..." (Dawson et al. 1935). Even Commissioner Louis C. Drapeau noted in 1935 that "[t]he impressions that building and loan associations offered high interest on savings invested with them, and that investors could have their money returned to them at their demand, were eagerly accepted and believed by the average investor" (Drapeau 1935).

Figure 2 shows the development of total assets and the total number of associations for reporting B&Ls from 1920-1934. As elsewhere in the country, during the 1920s the number of associations and the total number

of assets were on the rise. The number of associations peaked in 1929 with 233 associations, whereas the total value of assets peaked in 1930 with $513,110,594.58. Like elsewhere, there was strict regulation limiting California B&Ls to mortgage loans.[8] Figure 3 maps the location of B&Ls in California. The location of B&Ls unsurprisingly tracks the population of the state as a whole.[9] The right panel of Figure 3 shows the distribution by plan type. Dayton plans were more common in the state as a whole but were not obviously overrepresented in any specific location.

The explosive growth in B&Ls in California began to attract notice, and California state officials also started considering additional regulation.[10] Although B&Ls continued to increase in size through 1930, new commissioner Charles Whitmore wrote to the governor that "Loan commitments by associations showed a decline for the year of 38 per cent" (Building and Loan Commissioner 1930). However, he did not see any cause for concern, writing that "conditions in many parts of the state show signs of returning normality, and more and better loans are now being offered for association investment."

The 1930s would be hard for B&'s, as the total number operating in California declined from 233 total associations in 1929 to 178 associations in 1934.[11] In the 1932 annual report, new commissioner Friend W. Richardson, wrote that "[t]he year 1932 was the most critical in the history of building and loan associations" (Building and Loan Commissioner 1933) Through 1934, the number of associations and the total amount of assets was on steady decline, as was common throughout the country. The relatively high closure rates of Dayton plans, which relied more on these investment certificates, was noted by contemporaries. In the Minority Report by the California Legislature, Chairman Frederick Peterson notes that "complaints were directed against stock organizations - particularly those ... affiliated with companies dealing in pass book and investment securities." His recommendation was the elimination of this system, emphasizing that B&Ls had led investors to see passbooks and investment certificates as deposits (Peterson 1935).

2.3 Do B&Ls Fail?

B&Ls were fundamentally different institutions than commercial banks. Commercial banks' main source of liabilities were depositors that owned debt contracts in the commercial bank. In the event that a bank couldn't pay out depositors, then the bank could be forced to close. However, for B&Ls the withdrawable shares they issued were in fact *equity* contracts. This meant that along with involuntary liquidation mentioned earlier, shareholders could choose to voluntarily liquidate the B&L or merge with another association.

The voluntary liquidation option has been studied in the New Jersey context by Fleitas, Fishback, and

8. For example, Title XVI of the California Civil Code in 1929 required loans to be secured by a "first mortgage or deed of trust upon unencumbered real estate having an appraised value of not less than 25% in excess of the face of the loan" (with some exceptions). As of 1917, borrowers could repay the loan at any time. If a borrower couldn't pay his or her debts, the B&L could, after a period of 6 months, issue him a notice of default in writing. If the borrower didn't repay his or her debts within 2 months, he or she is in default, and the association may, by law, purchase the property. No other restrictions were in place according to law, and associations were free to set other terms.

9. Additionally, many cities did not have more than one B&L. Conditional on having at least one B&L, approximately two-thirds of cities have exactly one. However, assuming B&Ls competed with commercial banks for savings, then the number of banking institutions per city is likely much higher. An important assumption in this paper is that B&Ls of a specific type are not "the only game in town" for savings.

10. In the 1929 annual report to the Governor of California, California State Commissioner George Walker wrote that while "Building and loan laws have been materially strengthened during the last few years, ... additional power should be granted your commissioner. Because of the advertised profitability of the building and loan business, promoters and others are endeavoring to organize new associations in every part of the state regardless of the fact that in many sections the business is already overdone" (Building and Loan Commissioner 1929).

11. Following this year, it is difficult to track the total number operating. B&Ls were allowed to federalize, and the state commissioner did not compile statistics on federalized B&Ls due to newly passed legislation.

Snowden (2018). In New Jersey, voluntary liquidation occurred when two-thirds of members, either borrowing or non-borrowing, voted to liquidate. They find that the probability of liquidation rose when there was a higher share of non-borrowers. The same laws were in place in California. Paragraphs 83 and 87 of the 1891 California B&L act dictated that "dissolution" can also be either involuntary (if the association commits a crime or "unsafe practice") or voluntary. In 1911, the commissioner was given the power to "revoke the license of any ... association ... [whose] solvency whereof may have become imperiled..." In California, voluntary dissolution always required a two-thirds majority, as in New Jersey.

Alternatively, members could theoretically sell their withdrawable shares (or investment certificates) in informal secondary markets. Rose (2014) studies the markets in New Jersey but finds that these secondary markets were common throughout the country. There is evidence that these markets existed in California, as he finds that as late as 1934, share prices in San Francisco were 50 cents on the dollar. However, Rose (2014) finds that these markets were not fully mature until the late 1930s, making it unlikely that members could easily sell shares during the early stages of the Great Depression.

The closure of a B&L was a complex affair. Whether an association chose to vote to close or to engage in a lengthy court battle to prove insolvency meant that, in some cases, years could go by before a result was determined. The analysis in this paper relies on the fact that closures were not necessarily quick but were driven by the surprise shock of the Great Depression and occurred by 1935.

3 Data

I draw on historical data on B&Ls in California. I focus on California for a number of reasons. First, California has a non-trivial share of non-Dayton and Dayton plans, unlike almost every other state in the country. Second, the amount of money invested, in terms of assets per member, was higher relative to the United States as a whole. In 1923, assets per member in California were $1,014.22 compared with $486.96 for the United States (Clark and Chase 1927). Members in California presumably relied more heavily on B&Ls as a source of investment making the B&L choice salient. Third, data availability makes California B&Ls attractive to study. Annual balance sheet and profit and loss data is available from the Annual Reports of the State Building and Loan Commissioner. Additionally, select underlying micro data from the annual reports has survived to provide additional insight into how B&Ls operated during the Great Depression. Finally, California's Building and Loan League was active in preventing so-called "National" B&Ls, or B&Ls headquartered outside of the state of California, from entering. Thus, nearly every B&L operated almost exclusively in California, limiting the effect of external factors in determining closure rates.

3.1 Public Annual Reports Data

I use the appendices to the 1927, 1929, 1930, and 1935 annual reports to construct a cross-section of B&L balance sheets in California. The focus on these years is due both to data availability and economic history. First, the 1927 annual reports explicitly stated whether the institution was a Dayton plan. Data availability in 1927 was also at its highest. Along with balance sheets, which were available every year, the 1927 annual reports also have data on member contracts such as dues, withdrawal value, and dividends. The 1929 annual reports provide baseline characteristics observed just prior to the onset of the Great Depression, avoiding

any effects from depressed aggregate economic conditions.[12] This implicitly assumes that the onset of the Great Depression was sufficiently unexpected that the decision to start and operate a B&L by 1929 was independent of this aggregate shock. I use the cash-flow statements from the 1927 and 1930 annual reports, as the 1929 annual report does not include this information. I obtain the operating status from the 1935 annual report, which includes the effect of the Great Depression and limits the effect of federal programs, such as the Federal Home Loan Bank System, that may affect decisions to remain open.

An example of a balance sheet for a Dayton B&L is displayed in Figure 6a. Starting from the top of the figure, there is demographic information about the B&L, such as the number of members/investors and shares (which appear to include both withdrawable shares and investment certificates). In the middle of the page there is balance sheet data. On the asset side, the large reliance on real estate loans is clearly visible. On the liability side, we can see the importance of investment certificates (listed as the third item). Finally, at the bottom of the page, one can see clearly that the association is labeled "Dayton Plan." There is also additional data on dues and withdrawal value. Figure 6b presents a non-Dayton plan. The key difference is the reliance on withdrawable shares in liabilities, rather than investment certificates, and the listing of individual series at the bottom of the page. From the 1929 annual report, I record the complete balance sheet of each B&L. From the 1927 annual reports, I record the total number of members, the total number of shares, dues per certificate or withdrawable share, and any description of withdrawal value. While dues per share could differ across series for non-Dayton plans, in practice they did not.

Using the reported plan type from the 1927 annual report should represent well the operations of the B&L, particularly how the managers aimed to attract new members. However, this measure ignores the fact that many B&Ls issued both withdrawable shares (typical of non-Dayton plans) and investment certificates (typical of Dayton plans). I construct an alternative measure by considering only the observed liability structure of the balance sheet. B&Ls reported "withdrawable shares" separately from "investment certificates." I calculate the share of investment certificates relative to the sum of investment certificates and withdrawable shares in 1929 for a given B&L. I discretize this measure by comparing it to the median value across B&Ls. I call this the "liabilities" measure of the Dayton plan. Figure 5 shows, for Dayton and non-Dayton plans, the ratio of investment securities to the sum of investment securities and shares, meant to capture how much a B&L's standard liabilities are in one or the other. [13] The preferred specification is to use the reported measure rather than the liabilities measure, as this probably more accurately captures the managerial decisions of how to attract new members, but I present results using both measures.

From the 1935 annual report I record the operating status of B&Ls and the date in which the institution ceased operating. The reasons for ceasing operations are classified as one of the following: absorbed, removed, consolidated, transferred, merged, revoked, federalized, and liquidated (both voluntary and involuntary). I count as closures those listed as absorbed, liquidated, transferred, and consolidated.[14] If the business is listed

12. Prior to 1931, fiscal years were not uniform. The reports were filed at the end of the calendar year. The fiscal years are mostly the December of the prior year or the June of the current year, with approximately half of each.

13. While a large share of each type specialize as expected, there are a number of B&Ls that do not. Non-Dayton plans having a large share of investment certificates is likely due to plans changing over time to take advantage of new plan forms. The number of B&Ls that endogenously change plan type is not a driving force in the overall composition. Haveman and Rao (1997) find that the majority of changes in composition is due to entry. Interestingly, there are also a significant number of plans that were originally Dayton plans have very low shares of investment certificates (in some cases they have none). It is difficult to know exactly why such institutions exist. One reason may be because the annual reports did not separate investment certificates until the 1908 annual report. These institutions were likely always Dayton plans, but perhaps never changed the reporting of the investment certificates. Alternatively, over time Dayton plans may have preferred the traditional method of issuing series and so switched their liabilities structure.

14. absorbed, consolidated, and transferred occur when a B&L is bought by another B&L. I treat this as a closure as,

as removed, I list them as open, as these represent relocations or name changes. I drop B&Ls that closed prior to 1929. There are 55 closures from the 1927 listing of B&Ls in my sample. This number rises to 76 closures when using the liabilities measure, which relies on 1929 balance sheets (and so includes B&L's started in 1927, 1928, and 1929).[15]

The final sample contains 164 non-federalized B&Ls active in 1927 in 1927 and 205 non-federalized active in 1929. In California in 1927, there were significantly more Dayton plans than non-Dayton plans. This is true not only in the state as a whole, but also within counties. From Figure 3, which shows the distribution of B&Ls and their type, we can see that the majority of counties with at least one B&L also have at least one of each type.

3.2 Archival Data

I hand-record surviving archival data available from the CSA in Sacramento, California. I use raw copies of the detailed balance sheet data submitted by the B&Ls that were maintained by the Los Angeles office.[16] These recordings form the basis of the reported balance sheets in the annual reports. Along with the publicly available information, they also include additional statistics such as lending rates and member returns.

These unpublished recordings contain a wealth of useful information.[17] I observe the reported interest on mortgage lending, either the average or in some cases simply a list or range of interest rates on loans currently outstanding. There are also details on the average rate of interest on investment certificates. These archival reports are only available at 5-year intervals for a limited number of B&L's (specifically, 1926, 1931, and 1936). I focus on the 1931 annual reports, which is the earliest year for which a substantial number of B&Ls have surviving balance sheet data.[18] I hand match these data to the 1927 and 1929 balance sheet data. I am only able to match around half of the sample. For the remainder, the B&Ls either closed before 1931 or the reports did not survive.

3.3 Summary Statistics

Summary statistics for the set of 205 non-federalized B&Ls with 1929 balance sheet information are reported in Table 2. This table includes merged city or county level data from a variety of other sources.[19] Of the 164 institutions with 1927 balance sheet information, approximately three-quarters report as Dayton plans. Of the 204 institutions with balance sheet data in 1927, around 37% of B&L's close according to my definition. The average number of members and assets are around 1,400 and $2 million respectively, although the largest B&L's have 9,000 members and $30 million in assets in 1929.

according to the 1910 annual report, "The larger volume of assets, coupled with a good reserve, attracts the attention of the public, commands respect, and attracts more and better business." I interpret this statement as saying the institutions would have closed if not consolidated with a larger enterprise. Closed is either due to involuntary or voluntary liquidation. Transferred implies that assets were shifted to another B&L. As the B&Ls where the assets are transferred are not started in the same year the transfer occurs, these do not seem to be simple relocations, which are listed separately. Rather, this appears to be something closer to a sale of the institution.

15. Table B4 shows the distribution of closure codes by plan type, and most are either absorptions, transferals, or liquidations by the commissioner. Table B5 shows the distribution of closures across time, and most closures occur in 1929-1931 as expected.

16. The CSA has records organized by either the San Francisco or Los Angeles office. The San Francisco office consists of records only since 1968. The Los Angeles office has some records dating back as early as the 1900s.

17. An example of member returns is given in Figure B3.

18. There are some reports in 1926 for an extremely limited number of B&Ls. There is balance sheet information on surviving 1936 annual reports. However, survivor bias concerns are magnified even more. Additionally, any institutions that were federalized no longer report balance sheets to the state regulators.

19. See Appendix A for a detailed list of sources.

To better understand the difference across institutions, a balance table for non-Dayton and Dayton plans is given in Table 3. Some key differences stand out. First and foremost, non-Dayton B&Ls were older. This is not unexpected; the historical development of B&Ls and the relatively recent development of the Dayton plan development predicts this age difference. Second, turning to the balance sheets, Dayton plans were larger in terms of both assets and members. Third, unsurprisingly, the composition of balance sheets differs as Dayton plans relied overwhelmingly more on investment certificates in their liabilities (including guarantee stock), while non-Dayton plans relied more heavily on withdrawable shares. Both make up more than half of their liabilities on average. If anything, Dayton B&Ls had more liquidity available in terms of cash ratios. Part of this was due to the legal requirements on maintaining reserves when issuing investment certificates. However, there is no significant difference among institutions in terms of real estate owned. Dayton plans were also more likely to be located in larger cities with more commercial banks.

In the appendix, I show which factors play a predictive role in determining B&L plan choice.[20] Age is by far the most important predictor of the Dayton plan. In all cases, the age variable is highly significant. Conditional on age, of the observable local variables only log population is marginally significant. This result is consistent with the argument in Haveman and Rao (1997) that Progressive values and the desire for more efficient institutions in response to immigration led to the adoption of the Dayton plan.

4 Closure Rates

I first show that the probability of closure for Dayton B&Ls was higher relative to non-Dayton B&Ls. I estimate the following regression model by ordinary least squares (OLS)

$$Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i \tag{1}$$

where $Closure_i$ is a dummy variable equal to 1 if B&L i closes between 1929 and 1935, $Dayton_i$ is a dummy variable equal to 1 if the institution is a Dayton plan, X_i is a vector of controls at the B&L level, and ε_i is the error term. The coefficient of interest, β, represents the relative increase in closure rates for Dayton plans compared with non-Dayton plans. This coefficient is hypothesized to be positive, indicating that Dayton B&Ls were more likely to close. I show results using both the reported and liabilities measures.

In a causal sense, the identifying assumption in this model is that the decision of whether or not to use the Dayton plan, or issue relatively more investment certificates, is uncorrelated with other determinants of closure that would be included in the error term ε_i. Some threats to this assumption are observable and can be directly controlled for. First, the size of B&Ls may be an indicator of distress. If larger B&Ls are more diversified or more efficient, then the coefficient β may be biased, as Dayton B&Ls were on average slightly larger. To account for this possibility, I include log assets as controls in X_i. Second, the age of the institution is frequently found to be an important determinant of closure. I use age group dummies to account for this concern.[21] A third threat to identification is the vulnerability of the B&L due to the maturity mismatch of the balance sheet. While I have already argued that the structure of the asset side of the balance sheet is similar for both types of B&Ls, liquidity ratios differed across institutions. For example, all plans were

20. I regress the self-reported Dayton variable on B&L age as well as a number of other local indicators. I estimate this regression via OLS, probit, and logit. Table B6 shows the results.

21. I bin the ages into decades: ages 1-4, 5-10, 11-20, 21-30, 31-40, and 40+. The 1-10 bin had the largest number of B&Ls, so I further divided it into 1-4 and 5-10 to have two bins of approximately equal sizes. This second subdivision does not affect the results.

required to hold reserves against the outstanding value of investment certificates. This would naturally imply that Dayton plans, which issued more investment certificates, had higher liquidity ratios. I include the cash ratio as a control to account for this possibility.

Another set of threats to identification is local economic conditions, such as the size of the local population or commercial bank competition. Local banking competition may push B&Ls to take the Dayton plan. This competition may also result in higher closure rates if banking panics spread locally. This would bias the estimate of β upwards. I include both the log population and the log number of commercial banks in the city as controls to account for this possibility. I also show the results are robust to the inclusion of city fixed effects.

The estimates of β support the hypothesis that Dayton plans did close at higher rates. Table 4 reports the results from estimating Equation (1) via OLS.[22] The first column reports results from the bivariate regression of closure on only the reported Dayton measure (without any controls). The point estimate of 0.224 (SE: 0.07) implies that Dayton institutions had higher closure rates on the order of around 22 percentage points. The second column includes B&L size and balance sheet controls. The coefficient β changes only slightly to 0.238 (SE: 0.08) but remains significant both economically and statistically. In the third column, I include the age dummies and the coefficient estimate again remains broadly unchanged but note that the standard errors widen due to the high correlation between age and plan type. Finally, the fourth column reports results including the local controls and the point again but remains of similar magnitude and is significant. I repeat this ordering in the last four columns using the liabilities measure of Dayton plan and a similar pattern emerges.

The results are robust to a number of different specifications and sample selection decisions. Table 5 re-estimates the benchmark specifications under alternative specifications. The first column simply replicates the third column of Table 4 for convenience. The second (sixth) column includes city fixed effects. The third column restricts the results to counties with at least one of each type of B&L present (while still including city fixed effects), and the estimate is unchanged. Finally, the fourth column drops the two largest counties: San Francisco and Los Angeles (still including city fixed effects). Although Los Angeles had a large number of closing Dayton plans, that the results are robust to dropping these cities is strong evidence of the importance of plan type. The next four columns focus on the liabilities measure. A similar pattern emerges, and the results are highly significant with the city fixed effects across all specifications.

The results in this section strongly support the hypothesis that Dayton plans had closure rates that were significantly higher than non-Dayton plans. In the next section, I dig deeper into the mechanism driving this result by using information on access costs, returns, and measures of liquidity needs. Before proceeding, I discuss a number of robustness checks regarding the stability of the results when including additional controls. I then briefly discuss a number of additional checks available in the appendix.

Robustness Checks

In the appendix, I investigate the stability of the coefficient estimate subject to other controls in order to address various identification concerns.[23] I show that the results are not sensitive to balance sheet measures

22. Results are robust to using probit or logit specifications.

23. See Appendix C. Along with real estate owned and the concentration index mentioned in this paragraph, I also show that the results are robust to the inclusion of other measures of borrower characteristics, asset-side variables, and additional local controls.

of borrower quality. If Dayton plans borrowers were more ex-ante likely to default in general, then the differential closure rates I identify may simply be due to the impairment of assets. Real estate owned shares is a useful proxy for default risk. As emphasized by Fleitas, Fishback, and Snowden (2018), this asset includes foreclosed property taken on by the B&L. The results are robust to the inclusion of this control. I also show that the ownership structure of the B&L is not a concern. Fleitas, Fishback, and Snowden (2018) discuss how B&Ls in New Jersey could close with a 2/3 majority vote by shareholders and stockholders. The regulations on closure were similar in California. I construct a "concentration index", which is the sum of withdrawable shares and guarantee stock as a share of assets. This measure captures how much the B&L relied on voting members. Including this measure does not affect the point estimate.

I explore a number of additional robustness checks in the appendix. I show that dropping either involuntary closures or consolidations and transfers does not significantly affect the results. Dropping involuntary closures homes in on the liquidity decision by focusing on whether members would be willing to liquidate the institution to access funds. Dropping consolidations and transfers is a robustness check on the classification of closure codes. I also examine the decision to federalize. B&Ls that may have liquidated might instead choose to federalize instead. Due to the distress faced by B&Ls during the Great Depression, U.S. federal policy in the 1930s allowed B&Ls to federalize and join the Federal Home Loan Bank system, created in 1932. In the appendix I show that treating federalization as either closure or as an independent outcome in a multinomial logit framework does not affect the results. I also show that the results are not sensitive to survivor bias on the part of non-Dayton plans that survive earlier recessions.

5 Costs, Returns, and Lending Rates

In this section, I investigate why there were higher closure rates at Dayton plans by focusing on the characteristics of the B&L plans' liability structures. I first show suggestive evidence that non-Dayton B&Ls had higher access costs and higher withdrawal penalties for members. To account for higher costs, I then leverage the archival data to show that non-Dayton B&Ls attracted members by offering higher returns, but that lending rates loan characteristics were largely equal across the institutions. Taken together, I argue this framework resulted in having members that were less flighty (ex-ante less likely to need to access their funds during a shock). As additional evidence, I use reported withdrawal fees during the Great Depression to show that liquidity needs seemed higher at Dayton plans. For brevity, I focus on the reported measure in the tables that follow.[24]

5.1 Access Costs: Withdrawal Fees and Dues

I begin by comparing the withdrawal penalties across plans in California. As elsewhere, in California, withdrawal penalties could first be in the form of timing restrictions or fees. The first page of the 1927 annual report notes that "many associations in the past have advertised that money might be withdrawn at will by the investor, and the public has come to expect it," suggesting that in some cases individuals tended to believe they could withdraw on demand, with little to no penalty. In California, withdrawal of both withdrawable shares and investment certificates were subject to up to 30 days advance notice. Withdrawal fees in California were more lax than in other parts of the country. Clark and Chase (1927) note that Califor-

24. Results using the liabilities measure are available in the appendix. The results are qualitatively, and in most cases quantitatively, similar.

nia is one of only two states that does not permit forfeiture of principal when investors withdraw either installment shares or investment certificates. Instead, entrance fees or withdrawal fees are charged. Clark and Chase (1927) note that these fees may be high enough to effectively reduce the principal if an investor withdraws too early.

Withdrawal penalties were not explicitly listed in the 1927 balance sheets. Instead, information regarding the value of withdrawals was presented. Clark and Chase (1927) state that "[a]ssociations using the Dayton plan ... customarily repay to withdrawing members the full book value of their investment." This statement suggests that withdrawal fees are low, but that whether a member receives book value is a good measure of withdrawal cost. The appendix to Clark and Chase (1927) also describes withdrawal fees as "Deductions from book value when shares are withdrawn before maturity." Relative to book value, profits were more variable and were paid out only on specific dates.[25] The 1891 annual report in California also found that the average amount of profits paid out was only 50% of the total accrued, suggesting this is a good measure of withdrawal penalties.

For Dayton plans, withdrawal values were listed in the 1927 annual report as either "Full Book Value" or "Dues plus Profits." I treat Dues plus Profits as a withdrawal penalty. Non-Dayton plans explicitly listed the withdrawal value for each share series, as shown at the bottom of Figure 6b. If this withdrawal value was less than the listed book value, then I consider this a withdrawal penalty under the definition by Clark and Chase (1927). In no case is the total withdrawal value less than dues, so the penalty is on the returns rather than the principal itself.

I compare withdrawal costs using the benchmark regression specification as in Table 4 but set the outcome variable to be a dummy equal to 1 if an institution has withdrawal penalties.[26] The first column of the top panel of Table 6 shows that Dayton plans were significantly less likely to have withdrawal penalties (after controlling for B&L and local controls), being lower by around 50%, using the reported measure, conditional on observable B&L characteristics.

I next analyze costs as proxied by dues. Dues are what is owed at each meeting for forced savings plans. The traditional Dayton plan, as in Ohio, would not have any dues listed, but in California there could be forced savings plans even for investment certificates. For my purposes, I am interested in whether these dues were different between Dayton and non-Dayton B&Ls. If the dues structure is lower at Dayton plans relative to non-Dayton plans, then this means that the forced savings plan for Dayton plans was less restrictive, which I consider to be a lower cost. Dayton plans listed the dues per share (or per certificate) per month, and this appeared to be the same amount for all members. Non-Dayton plans listed dues per share for each series, as shown in Figure 6b.[27] I compare dues directly in the second column. Dues per share were around 10 cents lower for Dayton plans according to the reported measure, or just over half of a standard deviation.

Comparing only dues per share leaves out the fact that members of non-Dayton B&Ls may hold fewer shares in total. This would mean that the *total* amount of dues paid could be the same across institutions. To account for this possibility, I examine the number of withdrawable shares and certificates per member. The third column shows that Dayton B&Ls had significantly lower log shares per member. In the last column, I show that a measure of total cost of dues per member (or the product of columns two and three) is

25. One would have to hold their savings in the institution until at least those dates to make a return. This contrasts with book value, which would not be subject to dividend dates.

26. In this section, I control for age by using a dummy if the institution was incorporated prior to 1920. Due to the smaller sample, some previous age bins had very few associations so I elect to pool them.

27. For these non-Dayton plans, each series could theoretically have different costs. In practice this was not the case.

approximately $6 less for Dayton institution compared with non-Dayton institutions. Since Dayton plan total costs were only around $4.75 per member, then non-Dayton plans essentially had three to four times the cost, all else equal.

In sum, the detailed data on withdrawal penalties and costs, when paired with the historical narrative, provide indicative evidence that accessing funds was more difficult at Dayton plans. In addition, members at Dayton plans had higher costs of membership, not only because they held more shares on average but in part due to Dayton plans charging lower dues.

5.2 Archival Data: Investor Return and Borrower Characteristics

Having presented evidence that access costs were higher at non-Dayton B&Ls, I now use the archival data to study returns and lending rates. The detailed annual statements in the archives provide information unavailable in the publicly available reports that help to answer this question.[28]

I begin by showing that returns were higher at non-Dayton plans. The first column of the middle panel of Table 6 shows regression results of the observed investor rates on a dummy variable equal to 1 if an institution is listed as a Dayton plan, again controlling for B&L and local controls.[29] Dayton plans were associated with returns that were lower by around 23 basis points. In the bottom panel, using the liabilities results in lower returns by about 14 basis points. Relative to variation in lending rates, this difference is economically meaningful. Returns, on average, were around 6 percent with a standard deviation of 37 basis points, so the result is approximately one-third to two-thirds of a standard deviation.[30]

High returns alone do not imply that investors are being compensated exclusively for giving up liquidity access. First, high returns could compensate members for their time screening or monitoring loans issued. This is unlikely to be the case. Even if the withdrawal fee is a screening tool for potential borrowers, it only matters for the share of members that do actually plan to borrow. For the remaining members, this fee purely affects liquidity access. While the early history of B&Ls in the 1800s involved members that were specifically looking to finance a home, by the 1920s and 1930s advertisers were clearly stressing joining B&Ls for purely savings reasons. In fact, as shown in the next column, the ratio of borrowers to members was if anything *lower* at Dayton plans, although the results are mixed depending on the definition used.

Second, one may be concerned that returns reflect a risk premium and compensate members for actually extending lower-quality loans. The third column of the middle panel of Table 6 shows that lending rates were similar or even higher at Dayton plans by around 30 basis points. However, it is likely that the *net* lending rates were more equal than this simple comparison suggests. Dayton plans had eliminated the premium (the amount, bid by the borrower, by which the gross value of the loan was reduced). Dayton plan members and borrowers likely internalized the premium, reflecting it in the lending rate rather than the net amount

28. Table B7 compares summary statistics for B&Ls that do and do not have available micro data. Observable characteristics are similar. However, the sample of B&Ls with micro data is smaller and has lower closure rates. This is expected due to using 1931 data, and so results using these data should be interpreted with caution due to potential issues of survivor bias. For the exercises using these data, I use all B&Ls (whether or not they federalized) in order to improve statistical power.

29. Returns are calculated as the weighted average of returns for investment certificates and withdrawable shares, where weights are given by the relative share of each. Returns for the instrument itself is given by the simple average of the reported returns if more than one is listed.

30. In unreported results, I check whether this is driven by composition differences (Dayton plans having more low-return investment securities) or if Dayton plans simply paid out lower returns. For plans with both investment certificates and withdrawable shares, I regress the return for the specific security on plan type. The results are mixed and depend on which definition is used, and so I elect not to report them. Hence, the main result is likely driven by composition differences.

borrowed. Finally, average loan sizes are roughly similar across the institutions, as shown in the last column. Loans do not appear to have been riskier simply because they were bigger, as shown in the last column.

It is important to reiterate that all lending rates and returns are as of 1931 due to data availability. The regulatory landscape during the Great Depression significantly changed due to the passage of the Building and Loan Act in 1931, which made data collection a priority. Using 1931 excludes B&Ls that closed in the late 1920s, many of which were Dayton plans. One concern is that the Dayton plans that closed had offered high interest rates on investment certificates that they were unable to pay out, and thus closed. Unfortunately, given the data restrictions, I cannot exclude this as a possible explanation.

5.3 Member Liquidity Needs

I now argue that the potential liquidity needs of members was higher for those at Dayton plans than non-Dayton plans. I have already shown evidence that members at Dayton plans held fewer withdrawable shares or investment certificates than those at non-Dayton plans. If par values were similar and individuals invested the same share of wealth at B&Ls across type, then this would suggest that Dayton plan members were of lower wealth than members at non-Dayton plans. Unfortunately, it is not immediately clear what the par value per share is from the available data, and without information on member characteristics it is even less clear whether investment behavior differs across plan type.

A straightforward way to observe liquidity needs is to ask whether members were willing to pay costly fines, fees, or penalties to either access funds or stop regular savings plans during the Great Depression. Why would fees be a good way to measure liquidity needs? Clark and Chase (1927) describe such fees as being an important tool to ensure regular savings. They note that "[i]t is well known that fees, fines, and forfeitures were originally designed to encourage persistence in saving" (Clark and Chase 1927). If such fees are in place to encourage thrift, then it follows that whenever members are willing to pay it is to deviate from savings plans due to liquidity needs.

I use observed differences in fees and calculate the relative increase in fees paid during the Great Depression. In 1927 and in 1930, the profit and loss accounts on the annual statements included various measures of fees. As the categories listed are different in the two years I record, I define as fees any line item that uses the words "fines" or "fees." I then calculate the sum of all fees and divide by total assets in 1927. By dividing by assets in 1927, all changes are due to changes in fees and total assets exist simply to scale the outcome variable. One issue with this definition is that it includes fees paid by borrowers who are late on repayment, thereby including some measure of ex-post asset quality. However, as I have attempted to argue in this paper that asset quality is relatively similar across institutions, the difference in fees paid across institutions should largely reflect liquidity needs. Additionally, I can econometrically account for this difference in the analysis below.

I estimate the following regression:

$$Fees\_Assets_{it} = \alpha_i + \gamma_t + \lambda \left(DAYTON_i \times Year_t \right) + \varepsilon_{it}$$

where $DAYTON_i$ is a dummy equal to 1 if the institution is a Dayton plan, $Y1930_t$ is a dummy equal to 1 if the year is 1930. α_i and γ_t are association and time fixed effects, respectively.

The main coefficient of interest is λ, which represents the relative increase in fees during the Great Depression

for Dayton plans, relative to non-Dayton plans, compared with tranquil times (prior to the Great Depression). I hypothesize that $\lambda > 0$, which means that fees rose relatively more for Dayton plans relative to non-Dayton plans. This would imply that members at Dayton plans were willing to pay to withdraw their money, or at least stop using their savings plans, more than those at non-Dayton plans. I treat this as a test of liquidity because it implies that funds are more needed outside of a savings vehicle rather than inside.

This specification is a standard $2x2$ differences-in-differences. The identifying assumptions are parallel trends (the difference in the outcome would have been the same in the absence of treatment) and exogeneity of treatment. I have already argued in this paper that the decision to have a Dayton plan is orthogonal to the beginning of the Great Depression, and so plans should not have been chosen anticipating this event. As for parallel trends, it is not possible to provide pre-trends as there are no data in the pre-period. Even so, the parallel trends assumption is likely to hold. The specification allows for differential *levels* of fees across plan types. What would be problematic would be if Dayton plans are increasing or decreasing fees *over time* relative to non-Dayton plans. However, there is no evidence that Dayton B&Ls were disproportionately raising or lowering fees. If anything, Dayton plans would be lowering such fees to continue to compete with local banks, meaning any estimate of λ would likely be a lower bound.

This specification is an imperfect test of liquidity needs for two reasons. First, this is a test of ex-post liquidity needs, not ex-ante. The main hypothesis of this paper is that Dayton B&Ls attracted individuals with higher liquidity needs, thereby endogenizing the probability of closure. Second, it could be the case that members at Dayton plans simply lost their jobs or sources of income. While this could be seen as a liquidity shock, it could also be interpreted as a net worth shock on the part of members. Taken together, this test is only suggestive of liquidity needs assuming individuals understand the risks ex-ante. However, it is arguably the best test I could perform.

The last panel of Table 6 presents the results. The first column shows results using the reported measure for the 149 B&Ls with cash flow data in both 1927 and 1930, controlling for the same variables as in Table 4. The point estimate of 0.792 (SE: 0.24) on the interaction term suggests that there was a rise in fees as a share of total assets by approximately 0.79 percentage points. The second column shows results for the liabilities measure, and the point estimate is largely unchanged at 0.864 (SE: 0.32). This provides evidence that liquidity needs were an important difference between Dayton and non-Dayton B&Ls.

6 Discussion

6.1 The Flightiness Mechanism

How might closure have occurred in practice? First, Dayton plan members could have been more aggressive in requesting withdrawal. Given the rule in California that required institutions to pay out withdrawals within two years, such aggressive demands would result in liquidation, potentially by the commissioner, if demands occurred relatively quickly. Second, Dayton plans, which typically featured guarantee stock and non-voting investment certificates, may have elected to liquidate quicker as the equity value of the institution fell. The equity value may fall if either existing members' demand for liquidity raised the chances of insolvency, or if the B&L became unattractive to potential future members.

Both of these methods are likely to have occurred. Investment certificates, (along with assets as shown in Figure 2) peaked in 1930. However, closure rates only began to spike in 1930, suggesting two distinct waves.

Table 7 shows how closures evolved over the Great Depression in California across types of closure. The first wave, in 1929-1930, experienced high numbers of consolidations and transfers. The second wave, while investment certificates were declining after 1930, experienced a higher rate of involuntary closures. Both periods are indicative of flighty members, albeit for different reasons.

The first period, through 1930, saw a rush into investment certificates by members seeking safety and liquidity and the assumption that their investments would be easily withdrawable. Dayton plans, which marketed their investment certificates as precisely that, were happy to take the new members. The wave of consolidations and transfers may then represent a desire to reorganize B&Ls to take advantage of the high demand. Specifically, the consolidations and mergers resulted in chains of building and loans operating by one holding company. This transformation largely eliminated the "local contacts and local sympathies, which were originally important characteristics of building and loan associations" (Building and Loan Commissioner 1931). Flighty members, whose main focus was easy access to funds in the event of economic distress, were a symptom.

The period after 1930 featured involuntary withdrawals. The sharp increase in investment certificates in the first wave were the precondition for the next wave after 1930. In this period, flightiness directly determines closure for any of the three potential reasons mentioned earlier in this subsection. Indeed, splitting the sample into closures in 1929-1930 and closures after 1930 shows a strong effect in this latter period for Dayton plans.[31]

6.2 Relation to Bank Failure Theory

This paper provides empirical results that help inform the theoretical literature on bank failure. I find that bank liquidity shocks can be endogenous to the depositor base, which in turn is a function of the types of liabilities issued by the bank. Multiple equilibrium models that feature liquidity shocks, such as the benchmark model of Diamond and Dybvig (1983), typically assume that the probability of a liquidity shock is exogenous or at least that heterogeneity across depositors is orthogonal to the decision to withdraw funds. My results instead suggest an important role for depositor heterogeneity. One method of obtaining endogenous liquidity probabilities is to augment a bank failure model by allowing individuals to receive signals (e.g. Goldstein and Pauzner 2005). These models typically emphasize signals about the health of the bank or the economy. In contrast, my results suggest that signals may also be a function of the characteristics of depositors. Alternatively, there are models of banking panics with a risk-averse set of agents (Caballero and Simsek 2013) or models studying flight to safety (Caballero and Farhi 2018). My results contribute to this theoretical literature by stressing that heterogeneity across instruments determine whether an institution's liabilities are held by such risk-averse agents.

The choice of how to structure liabilities to take into account asymmetric information about the flightiness of investors also has empirical support in my study. Offering investment contracts that any investor could purchase could be problematic in the event of a bad shock if such contracts attract flighty investors. B&Ls in California essentially engaged in a form of price discrimination across institutions. High-return, high-cost B&Ls attracted investors less likely to force a closure, while low-return, low-cost B&Ls were more likely to close. Whether these closures are efficient is beyond the scope of this paper.

31. Appendix Table C11 re-estimates the closure regression restricting the closures to those either before or after 1930. I find that the effect persists in the second period under both measures, with a weaker estimate in the first period. Note that this exercise is mechanically downward biased as it drops B&Ls that closed in each subsample.

Whether these penalties are efficient is related to a separate but related class of models that studies how liquidity mismatch can be a commitment device (e.g. Calomiris and Kahn 1991). That depositors can easily withdraw funds may act as a check on the management practices of banks, especially if depositors respond to negative news by switching banks. It is not clear whether withdrawal penalties would reinforce or limit this channel. Because it is more difficult to withdraw, bank managers may be less likely to perform due diligence on new lending. However, if flightiness is negatively correlated with financial sophistication, management may feel pressure to make higher-quality investments lest a larger base of informed/sophisticated depositors leave.

6.3 Conclusion

In this paper, I study the role that flightiness plays in causing financial distress. I leverage institutional differences across B&Ls in California during the Great Depression. These institutions offer a unique laboratory to investigate flightiness because their liabilities greatly differed, with one type of plan, Dayton plans, offering relatively low withdrawal penalties and allowing irregular savings plans. At the same time, the asset structure across institutions was very similar and focused almost exclusively on mortgage lending.

I emphasize three main results. First, Dayton plans had a probability of closure during the Great Depression higher than other plans. Second, Dayton plans were less costly for members to join and participate in compared with other plans. Finally, Dayton plans had lower returns to members compared with non-Dayton plans. Taken together, these three results suggest that the access costs of non-Dayton B&L's were an important factor in reducing closure rates, likely because it attracted a less flighty member who would be significantly less likely to need liquidity during the Great Depression. These higher withdrawal penalties were justified by offering higher returns to members.

The results in this paper do not necessary imply that withdrawal penalties are socially optimal. As shown in this paper, B&Ls with withdrawal penalties also needed to pay out higher returns to members to attract investment in general. The need to pay out higher returns may affect lending rates and reduce demand for loanable funds, with potential spillover effects on local households and businesses. Future research can examine this tradeoff.

The evolution of Dayton B&Ls has important implications for financial stability. First, some liquidity characteristics of liabilities can lead to financial instability. During the Great Recession, both money market mutual funds and investment banks such as Lehman Brothers experienced distress (Gertler and Gilchrist 2018). This distress took the form of a bank run in wholesale lending markets where investors could easily withdraw funds. Capital flows are known to be fickle in international finance (e.g. Caballero and Simsek 2020). Central bank digital currencies (CBDCs), which represent a more liquid and low-cost alternative to bank deposits, may be an arguably safer asset available to the private sector. If households have access to CBDCs (so-called retail CBDC's as described by Boar and Wehrli 2021), this arguably safer asset may lead to financial instability in future downturns if the retail holders of standard bank deposits are "flighty."

Second, consider the development of financial institutions due to innovation. The evolution of Dayton plans is not unlike the growth of trust companies (an early form of investment bank) at the turn of the 20th century. Noyes (1901) discusses how the rapid growth of trust companies from 1896-1901 was driven by competition with commercial banks; however, trust companies were more lightly regulated and could finance riskier types with lower reserve requirements. Trusts therefore grew rapidly and were the main source of

financial instability during the Panic of 1907, subject to severe deposit withdrawals and contractions of lending (Moen and Tallman 1992) with subsequent effects on real economic activity (Frydman, Hilt, and Zhou 2015). Much like the development of the Dayton B&Ls liability structure, the financial innovation that resulted in rapid growth was also a source of fragility.

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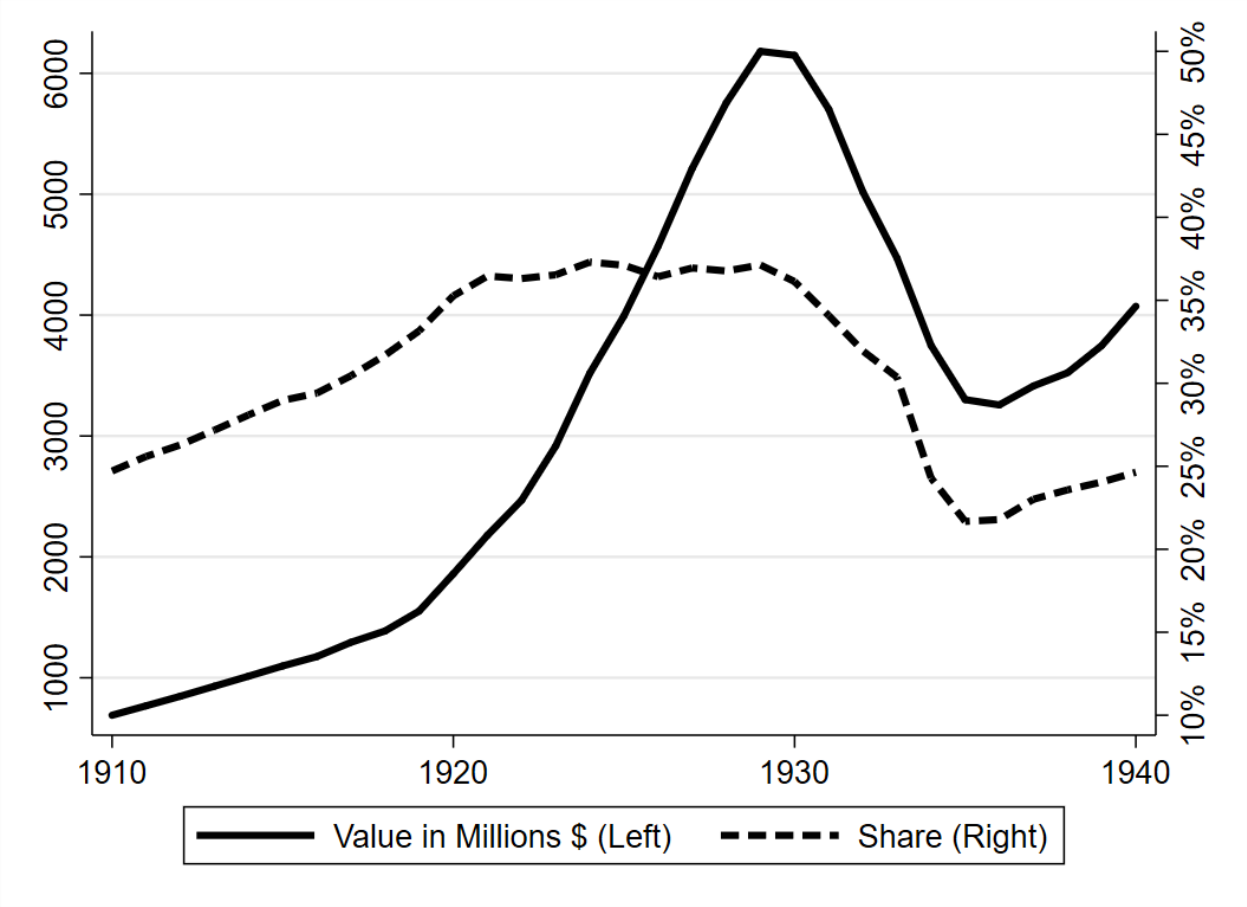
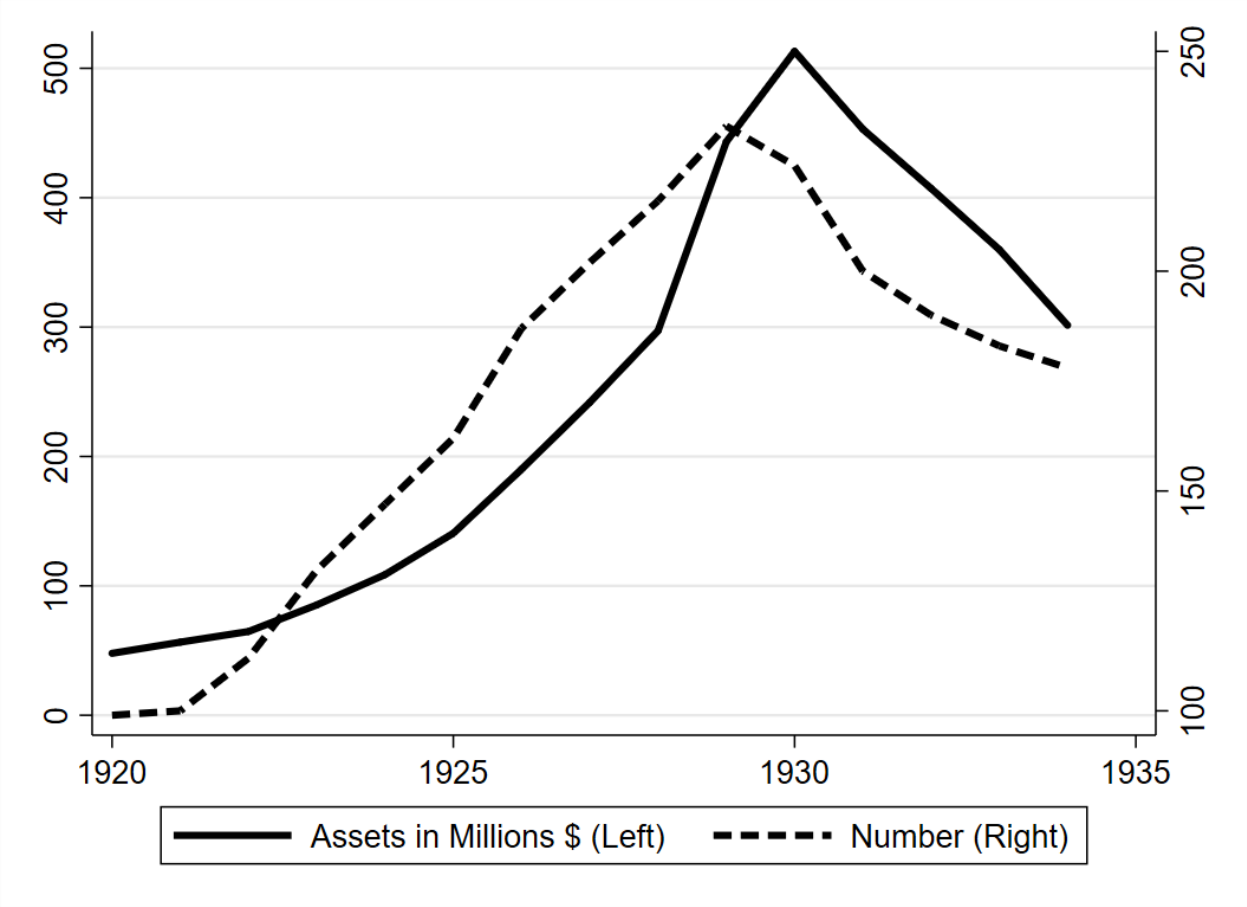
Figure 1: Rise and Fall of B&Ls during the Interwar Period



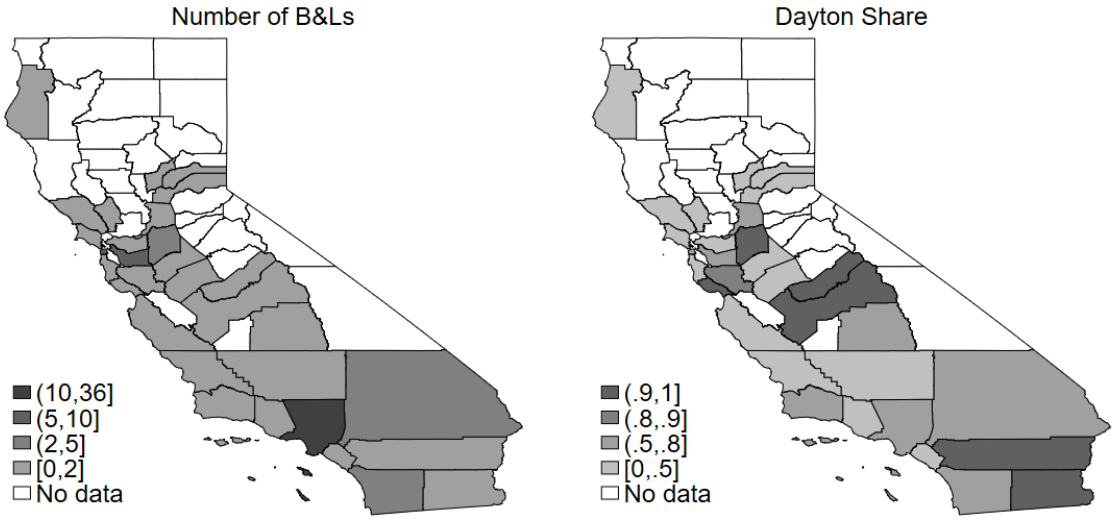
Value (in millions, on the left) and share of total institutional real estate lending (in percentage points, on the right) by building and loan associations in the United States. **Source**: Carter et al. (2006)

Figure 2: California B&Ls in the Great Depression



Total assets (in millions, on the left) and total number (on the right) of California B&Ls over the period 1920-1935. **Source**: Building and Loan Commissioner (Various Years)

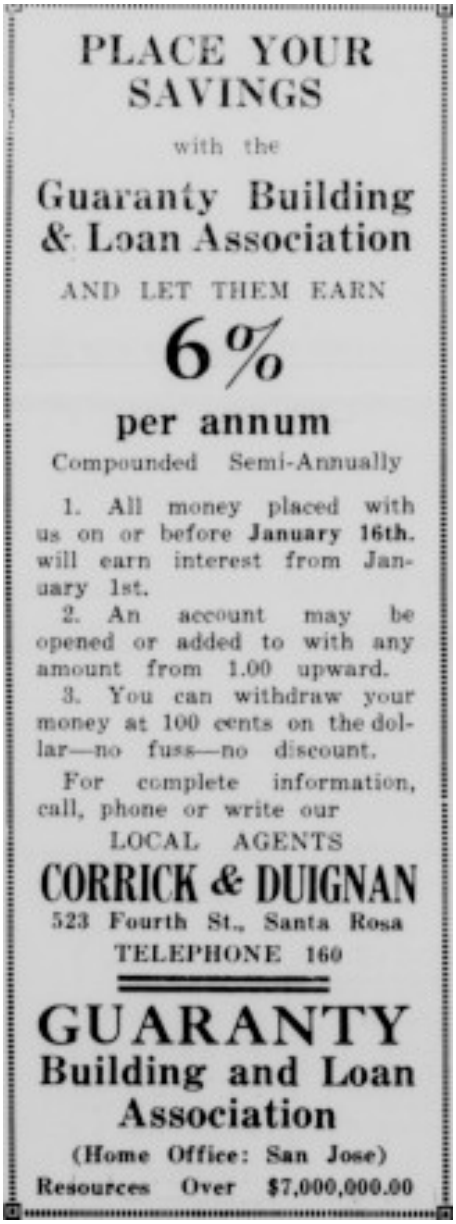
Figure 3: County Distribution of California Building and Loan Associations (1927)



The left panel maps the total number of California B&L's active in 1927. The right panel maps the share of Dayton plans. Both maps are at the county level. **Source**: Building and Loan Commissioner (1927)

Figure 4: Advertisements

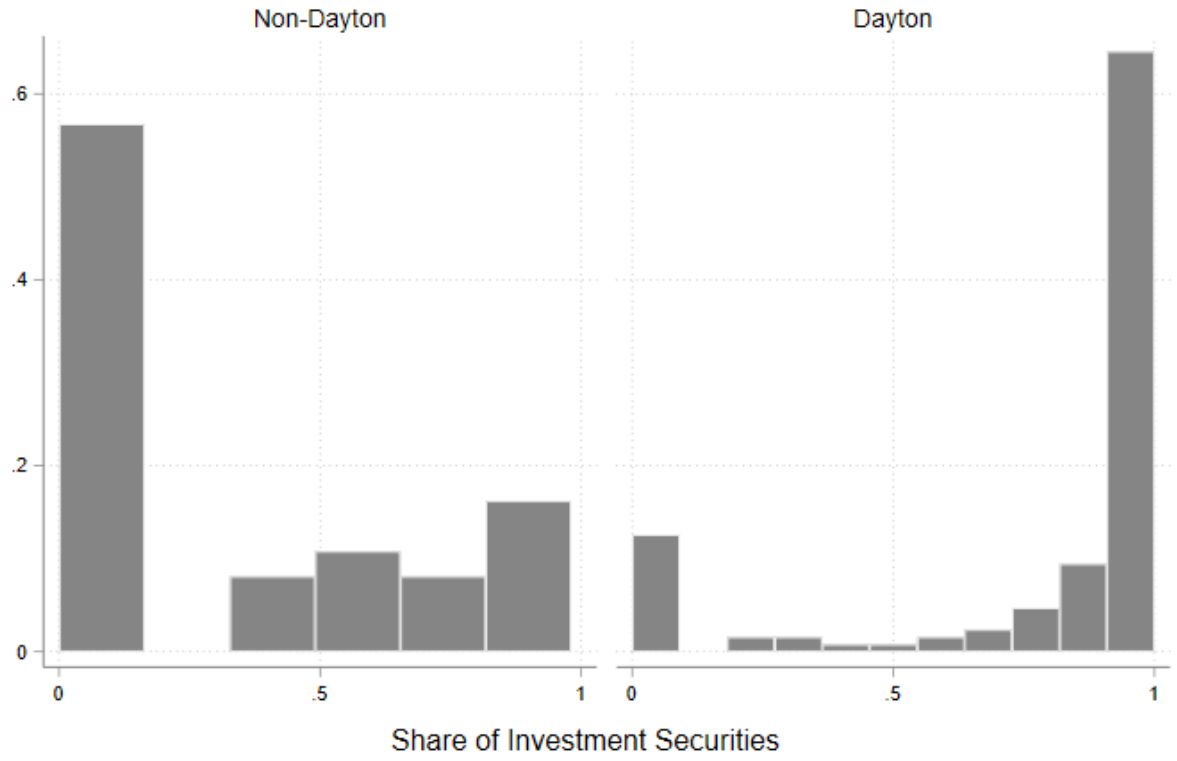
(a) Non-Dayton Plan



(b) Dayton Plans

The left panel shows an advertisement for a non-Dayton plan. The right panel shows an advertisement for a Dayton plan. **Source**: non-Dayton Plan Advertisement: *San Bernardino Sun*, Volume 57, Number 31, Page 8 (1 October 1925); Dayton Plan Advertisement: *Healdsburg Tribune*, Number 54, Page 4 (9 January 1928); Accessed via UCR California Digital Newspaper Collection.

Figure 5: Investment Certificates Share of Liabilities



This figure plots the ratio of investment certificates to the sum of investment certificates and withdrawable shares. **Source**: Building and Loan Commissioner (1929, 1927)

Figure 6: Balance Sheets

No. 136—SAN FRANCISCO.

METROPOLITAN GUARANTEE BUILDING-LOAN ASSOCIATION.

P. O. address, 915 Mission Street, San Francisco.

Incorporated December 18, 1924. Fiscal year ended December 31, 1926.

Officers—Harvey M. Toy, President; J. H. McCallum and C. M. Wooster, Vice Presidents; P. F. Fratessa, Attorney; D. C. Watson, Secretary.

Directors—Harvey M. Toy, C. M. Wooster, D. C. Watson, T. M. Gardiner, Ben W. Reed, W. E. Bouton, H. S. Thompson, S. C. Symon, B. Grant Taylor, C. I. Dennis, J. H. McCallum, W. E. McDonough, Geo. K. Rogers, W. G. Metson, J. H. Roberts.

No. of series, none. No. of members and investors, 469. No. of shares, 815.

Assets.		Liabilities.	
Loans on real estate, shares, etc.	$302,161 92	Guarantee stock, capital	$81,495 07
Arrearages on dues, interest, etc.	3,128 93	Guarantee stock, surplus reserve	2,578 72
Cash in office and bank	8,013 14	Investment certificates, principal	188,053 13
Furniture and fixtures	2,726 21	Investment certificates, interest unpaid	1,327 60
Advances, ledger accounts	559 12	Overdrafts and bills payable	25,000 00
		Reserve and undivided profits	1,809 78
		Loans due and incomplete	16,514 00
		Sundry ledger accounts	20 00
Total assets	$316,589 32	Total liabilities	$316,589 32

Receipts for Fiscal Year.		Disbursements for Fiscal Year.	
Balance from last report	$11,733 53	Overdrafts and bills payable	$30,000 00
Guarantee stock	26,991 19	Loans on real estate, shares, etc.	267,535 81
Guarantee stock premium	7,583 87	Interest paid	504 05
Investment certificates	214,095 87	Dividends on guarantee stock	6,715 22
Interest	16,755 61	Investment certificates, principal	71,446 35
Fines	50 46	Investment certificates, interest	7,331 90
Fees	4,851 21	Advances, ledger accounts	559 12
Loans repaid	86,371 43	Salaries	3,211 86
Overdrafts and bills payable	40,000 00	Taxes	391 79
		Other expenses	12,308 00
		All other disbursements	325 93
		Balance, cash in office and bank	8,013 14
Total receipts	$408,343 17	Total disbursements	$408,343 17

Installment Shares and Certificates. Age, Value, and Withdrawal Value.

Dayton plan.
Dues 50 cents per certificate per month.
Dividend, last fiscal year, 6 per cent.
Book value, dues plus dividend.
Withdrawal value, full book value.

(a) Balance Sheet: Dayton Plan

No. 146—SAN FRANCISCO.

WESTERN LOAN ASSOCIATION.

P. O. address, 1150 Divisadero Street, San Francisco.

Incorporated November 12, 1886. Fiscal year ended March 21, 1927.

Officers—F. R. Dann, President; P. N. Williams, Vice President and Manager; Leon E. Morris, Secretary and Attorney.

Directors—F. R. Dann, P. N. Williams, H. Dederky, Jr., J. A. Wallacher, E. H. Rixford, Samuel Rhine, S. E. Wallacher, M. M. Williams, Leon E. Morris.

No. of series, 20. No. of members and investors, 124. No. of shares, 680.

Assets.		Liabilities.	
Loans on real estate, shares, etc.	$132,042 98	Guarantee stock, capital	$30,000 00
Arrearages on dues, interest, etc.	2,516 35	Installment shares, dues	40,712 00
Cash in office and bank	23,450 20	Installment shares, profits	17,325 63
Other real estate owned	550 00	Paid-up and matured shares, principal	31,710 47
Advances, ledger accounts	3,803 43	Advance payments	71 25
		Reserve and undivided profits	13,787 87
		All other liabilities, real estate suspense	22,755 74
Total assets	$162,362 96	Total liabilities	$162,362 96

Receipts for Fiscal Year.		Disbursements for Fiscal Year.	
Balance from last report	$14,878 91	Overdrafts and bills payable	$2,000 00
Installment shares, dues	6,956 00	Loans on real estate, shares, etc.	5,207 44
Paid-up and prepaid shares, dues	5,000 00	Interest paid	2,225 87
Interest	14,101 01	Dues repaid, installment shares	7,923 00
Premiums	484 40	Profits repaid, installment shares	3,685 51
Fees	90	Paid-up and prepaid shares, capital	12,857 77
Loans repaid	19,859 70	Advances, ledger accounts	1,732 41
Overdrafts and bills payable	2,000 00	Salaries	3,600 00
Advances, ledger accounts	4,863 57	Taxes	59 79
		Other expenses	1,384 50
		All other disbursements	4,048 00
		Balance, cash in office and bank	23,450 20
Total receipts	$68,144 49	Total disbursements	$68,1 4 49

Installment Shares and Certificates. Age, Value, and Withdrawal Value.

Serial No.	Age in months	Total dues per share	Book value per share	Withdrawal value
31	124	$124 00	$180 76	$167 57
32	112	112 00	157 66	146 24
33	100	100 00	135 95	125 16
34	88	88 00	116 82	106 73
35	76	76 00	96 18	88 09
36	72	72 00	89 89	81 83
37	60	60 00	72 08	66 04
38	48	48 00	55 47	51 73
39	36	36 00	39 99	37 99
40	24	24 00	25 68	24 84
41	12	12 00	12 39	12 19

(b) Balance Sheet: Non-Dayton Plan

Left panel shows a sample B&L balance sheet for a Dayton plan (as indicated at the bottom of the figure). Right panel shows a sample B&L balance sheet for a non-Dayton plan. **Source**: Building and Loan Commissioner (1927)

Table 1: Distribution of Plans in the United States in 1923

Plan	Number	Percent
Terminating	96	0.92%
Serial/Permanent	9,121	87.04%
Dayton	1,186	11.32%
Other	76	0.73%
Total	10,479	100%

Serial/Permanent plans calculated as the sum of "All Permanent" and "Regular Permanent." Percent shares may not add up to 100% due to rounding. **Source**: Page 61 of Clark and Chase (1927), author's calculations.

Table 2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	P50
Dayton (Reported)	164	.774	.419	0	1	1
Members (Thousands)	164	1.446	2.053	.014	9.263	.583
Closure Dummy	205	.371	.484	0	1	0
Age (Years since Incorporation)	205	15.122	15.849	0	55	7
Total Assets (Millions)	205	1.909	3.835	.033	30.892	.593
Cash (% Assets)	205	4.627	4.466	0	25.867	3.395
Real Estate Owned (% Assets)	205	1.177	2.204	0	13.661	0
Shares (% Assets)	205	22.448	34.013	0	97.928	1.376
Investment Certificates (% Assets)	205	56.82	31.599	0	91.579	68.916
Investment Securities Share of Member Funds	205	.74	.382	0	1	.982
Number of Banks in City	205	8.059	9.441	0	25	3
City Population (Thousands)	205	349.195	487.379	.726	1238.048	52.513

"Closure Dummy" is a dummy variable equal to one if a building and loan association was absorbed, closed, consolidated, or transferred. "Investment Securities Share of Member Funds" calculated as investment securities divided by the sum of investment securities and withdrawable shares. "Age" calculated as number of years open as of 1929. "Dayton (Reported)" and "Members (Thousands)" use data from the 1927 annual reports and so drop B&Ls formed in 1927-1929. "Investment Securities Share of Member Funds" is the ratio of investment certificates to the sum of investment certificates and withdrawable shares, as described in the text. **Source**: Building and Loan Commissioner (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009)

Table 3: Dayton and Non-Dayton (Reported)

Variable	(1) Permanent	(2) Dayton	(3) Diff
Closure Dummy	0.16	0.39	0.22**
	(0.37)	(0.49)	(0.09)
Members (Thousands)	0.76	1.64	0.88**
	(1.22)	(2.20)	(0.38)
Age (Years since Incorporation)	33.86	13.96	-19.90***
	(11.88)	(14.28)	(2.57)
Total Assets (Millions)	1.17	2.60	1.43*
	(2.01)	(4.60)	(0.78)
Cash (% Assets)	2.86	4.47	1.61**
	(2.47)	(3.83)	(0.67)
Real Estate Owned (% Assets)	0.91	1.56	0.65
	(1.49)	(2.56)	(0.44)
Shares (% Assets)	60.43	17.48	-42.95***
	(33.09)	(30.45)	(5.80)
Investment Certificates (% Liabilities)	27.63	64.98	37.35***
	(31.77)	(28.59)	(5.48)
Investment Securities Share of Member Funds	0.32	0.80	0.48***
	(0.36)	(0.34)	(0.06)
Number of Banks in City	4.65	8.76	4.11**
	(6.20)	(9.62)	(1.68)
City Population (Thousands)	177.24	382.41	205.17**
	(303.59)	(499.75)	(86.57)
Observations	37	127	205

"Closure Dummy" is a dummy variable equal to one if a building and loan Association was absorbed, closed, consolidated, or transferred. "Investment Securities Share of Member Funds" calculated as investment securities divided by the sum of investment securities and withdrawable shares. "Age" calculated as number of years open as of 1929. "Dayton (Reported)" and "Members (Thousands)" use data from the 1927 annual reports and so drop B&Ls formed in 1927-1929. "Investment Securities Share of Member Funds" is the ratio of investment certificates to the sum of investment certificates and withdrawable shares, as described in the text. **Source**: Building and Loan Commissioner, (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009)

$* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table 4: Closure Rates

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.224***	0.238***	0.253**	0.195*				
	(0.0749)	(0.0803)	(0.109)	(0.109)				
Dayton (Liabilities)					0.225***	0.218***	0.161**	0.159*
					(0.0661)	(0.0679)	(0.0811)	(0.0828)
N	164	164	164	164	205	205	205	205
R-Squared	0.04	0.04	0.07	0.13	0.05	0.05	0.07	0.16
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age FE	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

This table presents results for the coefficient β from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, consolidated, or transferred. "Dayton (Reported)" is the plan type as reported in the 1927 annual reports, while "Dayton (Liabilities)" is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard Errors in parentheses.

Table 5: Closure Rates: Alternative Specifications

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.253**	0.297*	0.299*	0.446*				
	(0.109)	(0.174)	(0.175)	(0.227)				
Dayton (Liabilities)					0.161**	0.306***	0.304***	0.482**
					(0.0811)	(0.114)	(0.115)	(0.201)
N	164	117	114	53	205	150	145	67
R-Squared	0.07	0.33	0.32	0.62	0.07	0.40	0.39	0.56
B&L Controls	Y	Y	Y	Y	Y	Y	Y	Y
Age FE	Y	Y	Y	Y	Y	Y	Y	Y
City FE	N	Y	Y	Y	N	Y	Y	Y
Sample	Full	Full	Both	No SF/LA	Full	Full	Both	No SF/LA

This table presents results for the coefficient β from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. $Closure_i$ is a dummy variable equal to one if building and loan association i was absorbed, closed, consolidated, or transferred. "Dayton (Reported)" is the plan type as reported in the 1927 annual reports, while "Dayton (Liabilities)" is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. The sample denoted "Full" is the benchmark sample of 164 B&L's for the reported measure and 205 B&Ls for the liabilities measure. The sample denoted "Both" includes only counties which contain at least one of each type of B&L (Dayton and non-Dayton). "No SF/LA" drops B&Ls located in San Francisco or Los Angeles. **Source**: Building and Loan Commissioner (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table 6: Evidence on the Role for Flightiness in Predicting Closure

(a) Withdrawal Fees and the Costs of Membership by Type

	Withdrawal Penalty	Dues	Shares per Member	Costs
Dayton (Reported)	-0.491***	-0.0970*	-0.651**	-5.939*
	(0.0841)	(0.0551)	(0.326)	(3.425)
N	164	164	164	164
R-Squared	0.26	0.42	0.24	0.25
B&L Controls	Y	Y	Y	Y
Age Controls	Y	Y	Y	Y

(b) Archival Evidence: Member Returns and Loan Characteristics

	Return	Borrower Share	Lending Rate	Log Avg Loan Size
Dayton (Reported)	-0.232**	-0.0975*	0.306	-0.0102
	(0.0975)	(0.0585)	(0.273)	(0.110)
N	97	97	97	97
R-Squared	0.13	0.19	0.08	0.07
B&L Controls	Y	Y	Y	Y
Age Controls	Y	Y	Y	Y

(c) Withdrawal Fees Difference in Difference

	Fees Ratio
Dayton (Reported) X 1930	0.792***
	(0.244)
N	298
R-Squared	0.82
B&L FE	Y
Year FE	Y

The top and middle panels show results from estimating the equation $y_i = \alpha_i + \beta DAYTON_i + \Gamma \mathbf{X}_i + \varepsilon_i$. The outcomes for the top panel include: "Withdrawal Penalty," a dummy equal to one if a B&L has penalties for withdrawing funds; "Dues" denotes the cost of dues in 1927; "Shares per Member" is the ratio of total shares to total members; "Costs" is the product of "Dues" and "Shares per Member," or total costs per member. The outcomes for the middle panel include "Return," which is the weighted average of returns for investment certificates and withdrawable shares, where the weights are given by the relative proportion of each; "Borrower Share," which denotes the share of members that are borrowing, "Lending Rate," which denotes the average rate on mortgage loans, and "Log Avg Loan Size," or the log of the ratio of the amount of loans to the number of loans. B&L controls include log assets and cash percentage, and age controls include age bin fixed effects. Age controls for this panel, which uses archival data, include a dummy equal to one if the association was incorporated after 1920 due to the limited sample size. The bottom panel estimates differences-in-differences specifications of the form $Y_{it} = \alpha_t + \beta_i + \gamma(DAYTON_i \times \mathbf{1}(t = 1930))$.
Source: Building and Loan Commissioner of the State of California (1927), *Department of Savings and Loan Records*
$* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table 7: Closure Type over Time

Closure Year	Consolidations/Transfers	Involuntary	Other	Total
1929	14	1	4	19
1930	10	3	9	22
1931	4	6	4	14
1932	0	5	1	6
1933	1	3	0	4
1934	0	0	2	2
1935	1	5	3	9
Total	30	23	23	76

Total closures by year and type. Closure type is taken from the 1935 annual report. Involuntary includes any involuntary closure that resorts in liquidation or reorganization by the commissioner. Other includes absorption or voluntary liquidation. **Source**: Building and Loan Commissioner of the State of California (1935)

A Data Sources

Table A1 displays the sources for each variable used in this paper.

Table A1: Data Sources

Source	Variables	Geography
Building and Loan Commissioner (1927)	Members, Dues, Withdrawal Values, Shares	B&L
Building and Loan Commissioner (1929)	Balance Sheet, Incorporation Year	B&L
Building and Loan Commissioner (1927, 1930)	Total Receipts, Loan Repayments, Fees Income	B&L
Building and Loan Commissioner (1935)	Closure Codes	B&L
Department of Savings and Loan Records	Lending Rates, Returns, Borrower Characteristics	B&L
Bleemer (2016)	Population	City
Carlson and Mitchener (2009)	Number of Banks, Bank Failure Rate	City
Fishback, Horrace, and Kantor (2005)	Retail Sales, Urban Pop. Share, Democratic Vote Share (1896-1928)	County
Fishback and Kantor (2018)	HOLC Loans per capita	County
Haines, Fishback, and Rhode (2018)	Average Farmland Values	County
Inter-university Consortium for Political and Social Research (1999)	1912 Progressive/Republican Voting Shares	County
Carter et al. (2006)	Real Estate Lending, Price Level	USA

B Additional Information on Historical Context and Final Sample

The first annual report in 1893 listed 146 active B&L's. The oldest B&L in the state was the Germania Building and Loan Association of Sacramento, incorporated in 1872. Prior to 1893, some B&L's were incorporated under various legislative environments in California. In 1893, all B&L's were consolidated under the same California law. This law also created the state's Building and Loan Commission, which started the series of annual reports used extensively in this paper.

There are 204 B&L's listed in the 1927 annual report. I drop the two foreign B&L's that are headquartered in Utah. Of the remaining 202, 11 institutions are new and do not have sufficient balance sheet information, and 20 other close in 1927 and 1928. Finally, 7 institutions federalize.[32] This brings the total sample down to 164 institutions. Using the new institutions between 1927 and 1929, the alternative definition of Dayton plan increases the sample size to 219, of which 14 are federalized.

Some B&L's listed as their origin cities that did not have population data. For these, the cities were either merged into a larger cities (and were thus "neighborhoods") or the city was unincorporated. Those cities that were merged into a larger city include San Pedro, Van Nuys, Wilmington, Sherman, and North Hollywood, which became part of Los Angeles, and La Jolla, which became part of San Diego. I therefore assign those larger city populations. Newcastle and Cucamonga were unincorporated, so I assume these are Rocklin and Ontario, respectively.

Table B1 shows the full summary statistics table, including those used in the robustness checks in Section C.

Table B2 shows the balance table for the liabilities measure of Dayton plan. The differences between the two types are similar to the results in the main text.

Table B3 shows the balance table for the variables at the local level, including real retail sales changes, changes in real average farmland values, and bank failure rates.

The distribution of closure codes by plan type can be seen in Table B4. The timing of closures can be seen in Table B5.

Figure B1 plots the raw histogram of fees paid.

Figure B2 shows the histogram of institution ages by plan type.

Table B6 shows which observable variables most predict Dayton choice as of 1930. The results show that Age is an important predictor, which motivates my inclusion of age controls in the benchmark specification. Log population also matters for the reported plan type.

Figure B3 shows an example Balance Sheet from the Archives.

Table B7 shows a balance table to compare the available associations in the archival sample to the full sample.

32. 14 institutions actually federalize, but 7 of them incorporate between 1927 and 1929.

Figure B1: Fees Share

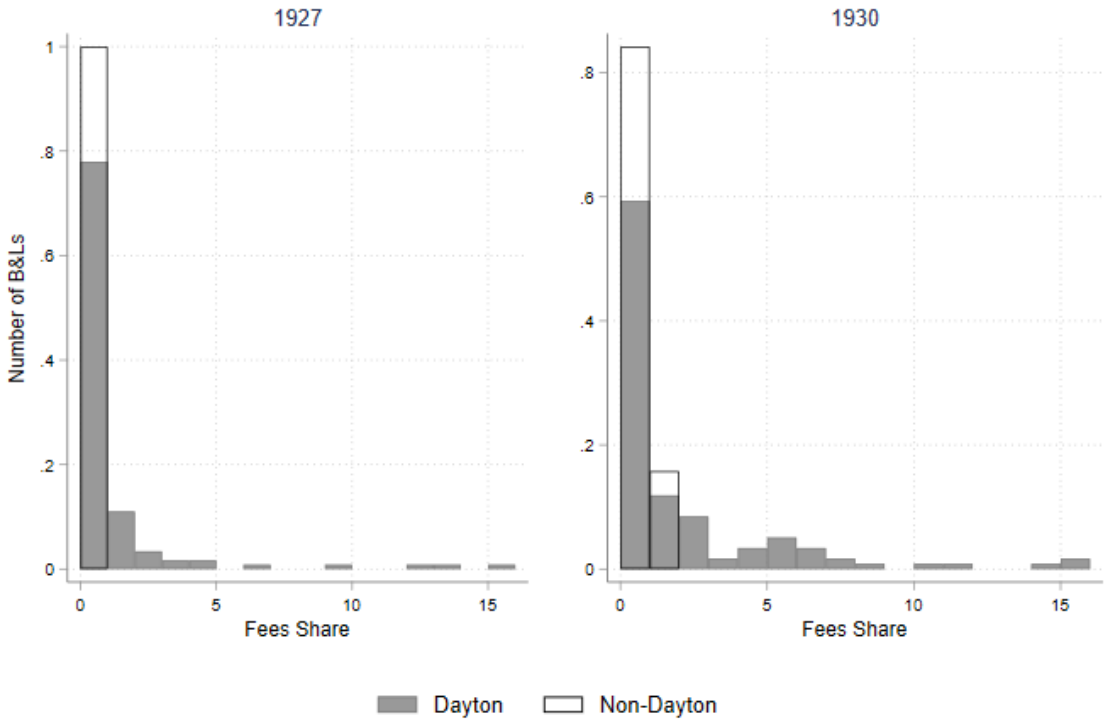
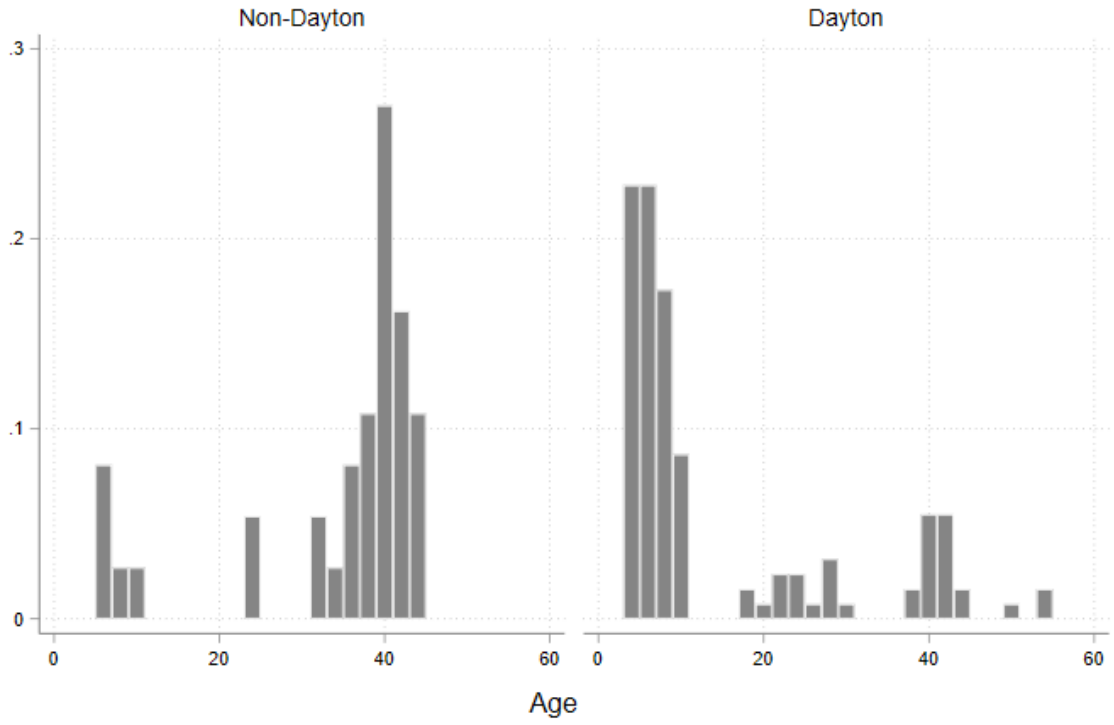


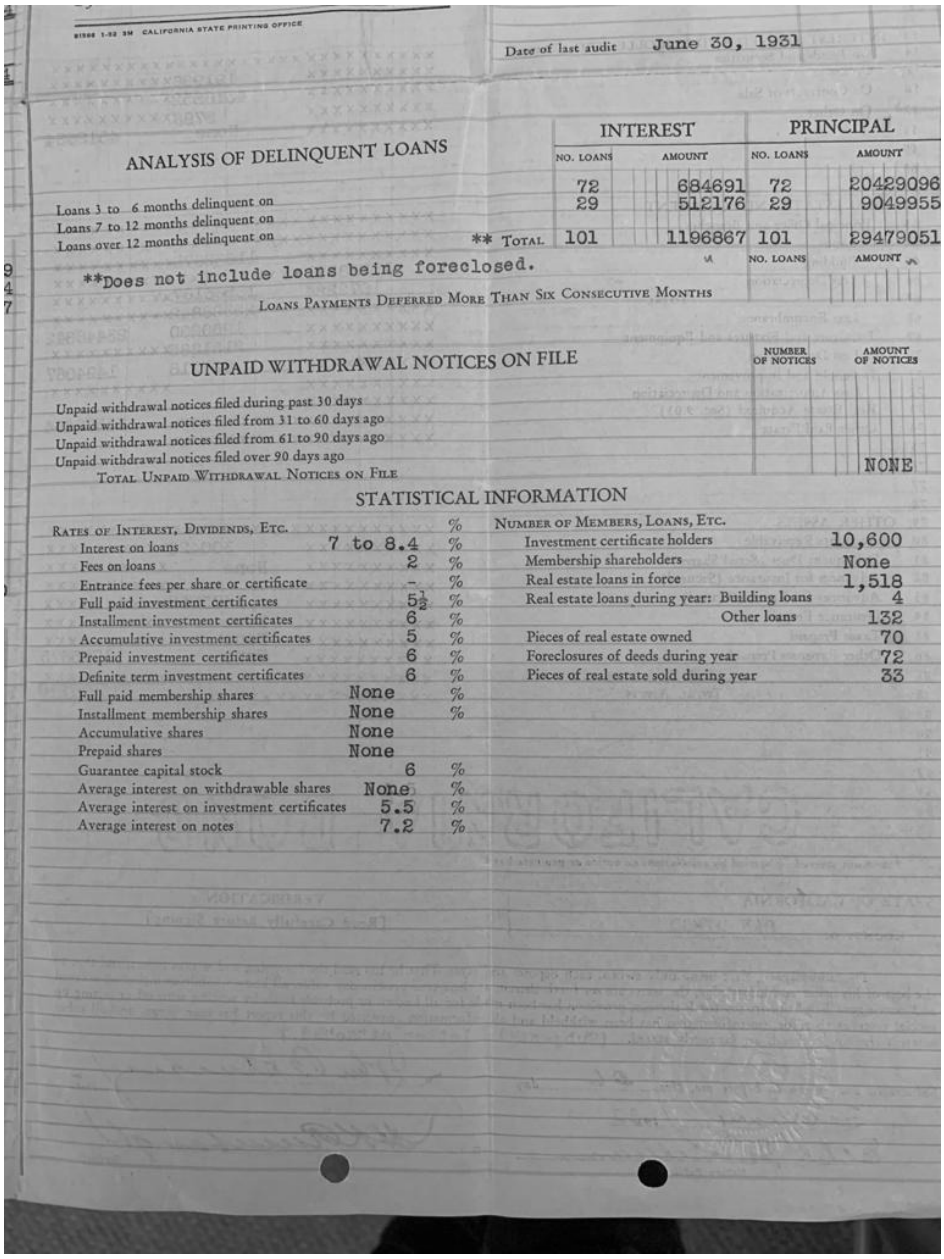
Figure shows distribution of fees in 1927 and 1930 as share of assets in 1927 for Dayton and Non-Dayton plans. **Source**: Building and Loan Commissioner, (Various Years)

Figure B2: Age Distribution by Type



This figure shows the histogram of Building and Loan associations by plan type. **Source**: Building and Loan Commissioner (1935, 1927)

Figure B3: Balance Sheet: Raw Archives



Date of last audit June 30, 1931

ANALYSIS OF DELINQUENT LOANS

	INTEREST NO. LOANS	INTEREST AMOUNT	PRINCIPAL NO. LOANS	PRINCIPAL AMOUNT
Loans 3 to 6 months delinquent on	72	684691	72	20429096
Loans 7 to 12 months delinquent on	29	512176	29	9049955
Loans over 12 months delinquent on				
** Total	101	1196867	101	29479051

**Does not include loans being foreclosed.

Loans Payments Deferred More Than Six Consecutive Months — NO. LOANS — AMOUNT

UNPAID WITHDRAWAL NOTICES ON FILE

	NUMBER OF NOTICES	AMOUNT OF NOTICES
Unpaid withdrawal notices filed during past 30 days		
Unpaid withdrawal notices filed from 31 to 60 days ago		
Unpaid withdrawal notices filed from 61 to 90 days ago		
Unpaid withdrawal notices filed over 90 days ago		
Total Unpaid Withdrawal Notices on File		NONE

STATISTICAL INFORMATION

Rates of Interest, Dividends, Etc.		
Interest on loans	7 to 8.4	%
Fees on loans	2	%
Entrance fees per share or certificate	–	%
Full paid investment certificates	5½	%
Installment investment certificates	6	%
Accumulative investment certificates	5	%
Prepaid investment certificates	6	%
Definite term investment certificates	6	%
Full paid membership shares	None	%
Installment membership shares	None	%
Accumulative shares	None	
Prepaid shares	None	
Guarantee capital stock	6	%
Average interest on withdrawable shares	None	%
Average interest on investment certificates	5.5	%
Average interest on notes	7.2	%

Number of Members, Loans, Etc.	
Investment certificate holders	10,600
Membership shareholders	None
Real estate loans in force	1,518
Real estate loans during year: Building loans	4
Other loans	132
Pieces of real estate owned	70
Foreclosures of deeds during year	72
Pieces of real estate sold during year	33

Sample page from archival balance sheet information. **Source**: Inventory of the Dept. of Savings and Loan Records. Records of the Los Angeles Office. F3739:425-450. California State Archives

Table B1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	P50
Dayton (Reported)	164	.774	.419	0	1	1
Closure Dummy	205	.371	.484	0	1	0
Members (Thousands)	164	1.446	2.053	.014	9.263	.583
Age (Years since Incorporation)	205	15.122	15.849	0	55	7
Total Assets (Millions)	205	1.909	3.835	.033	30.892	.593
Cash (% Assets)	205	4.627	4.466	0	25.867	3.395
Real Estate Owned (% Assets)	205	1.177	2.204	0	13.661	0
Shares (% Assets)	205	22.448	34.013	0	97.928	1.376
Investment Certificates (% Assets)	205	56.82	31.599	0	91.579	68.916
Investment Securities Share of Member Funds	205	.74	.382	0	1	.982
Concentration Index (1929)	205	35.35	31.708	0	99.894	22.412
1930 Loan Repayments	180	1.139	7.897	0	72.811	0
Number of Banks in City	205	8.059	9.441	0	25	3
City Population (Thousands)	205	349.195	487.379	.726	1238.048	52.513

"Closure Dummy" is a dummy variable equal to one if a building and loan association was absorbed, closed, consolidated, or transferred. "Investment Securities Share of Member Funds" calculated as investment securities divided by the sum of investment securities and withdrawable shares. "Age" calculated as number of years open as of 1929. "Dayton (Reported)" and "Members (Thousands)" use data from the 1927 annual reports and so drop B&Ls formed in 1927-1929. **Source**: Building and Loan Commissioner (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009) Inter-university Consortium for Political and Social Research (1999)

Table B2: Balance Table - Liabilities Measure

Variable	(1) Permanent	(2) Dayton	(3) Diff
Closure	0.22	0.45	0.22***
	(0.42)	(0.50)	(0.07)
Age	28.12	8.67	-19.45***
	(16.06)	(11.10)	(1.92)
Members (Thousands)	1.17	1.63	0.46
	(1.77)	(2.21)	(0.33)
Total Assets (Millions)	1.53	2.10	0.56
	(2.29)	(4.40)	(0.57)
Secur. Share of Liabs	0.26	0.98	0.71***
	(0.31)	(0.04)	(0.03)
Shares (% Liabilities)	63.89	1.88	-62.02***
	(29.77)	(3.69)	(2.58)
Cash (% Assets)	3.52	5.18	1.66**
	(3.95)	(4.62)	(0.65)
Real Estate Owned (% Assets)	1.36	1.09	-0.27
	(2.52)	(2.03)	(0.33)
1930 Loan Repayments	1.22	1.10	-0.12
	(9.11)	(7.18)	(1.23)
Banks	25.18	39.69	14.51***
	(31.32)	(36.08)	(5.13)
City Population (Thousands)	294.22	376.48	82.26
	(446.88)	(505.63)	(72.25)
Observations	68	137	205

Age calculated as number of years open as of 1927. Closure is a dummy variable equal to 1 if a Building and Loan Association were absorbed, closed, consolidated, or transferred. **Source**: Building and Loan Commissioner, (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009).
$* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table B3: Local Balance Tables

(a) Reported Measure

Variable	(1) Non-Dayton	(2) Dayton	(3) Diff
Real Retail Sales (1929-1933)	-0.45	-0.45	0.00
	(0.11)	(0.08)	(0.02)
Avg. Farmland Value (1920-1925)	-0.09	-0.03	0.06
	(0.23)	(0.20)	(0.04)
Avg. Farmland Value (1925-1935)	0.32	0.15	-0.16**
	(0.42)	(0.33)	(0.07)
Bank Failure Rate	0.12	0.17	0.05*
	(0.14)	(0.14)	(0.03)
Observations	37	127	205

(b) Liabilities Measure

Variable	(1) Non-Dayton	(2) Dayton	(3) Diff
Real Retail Sales (1929-1933)	-0.45	-0.45	0.00
	(0.10)	(0.09)	(0.01)
Avg. Farmland Value (1920-1925)	-0.08	0.00	0.08***
	(0.21)	(0.19)	(0.03)
Avg. Farmland Value (1925-1935)	0.23	0.15	-0.08
	(0.37)	(0.31)	(0.05)
Bank Failure Rate	0.15	0.18	0.03
	(0.14)	(0.14)	(0.02)
Observations	68	137	205

Age calculated as number of years open as of 1927. Closure is a dummy variable equal to one if a Building and Loan Association were absorbed, closed, consolidated, or transferred. **Source**: Building and Loan Commissioner, (Various Years), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009) $* \ p < 0.1$, $** \ p < 0.05$, $* * * \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table B4: Distribution of Closures by Closure Code

	Reported		Liabilities	
Closure Code	Dayton	Non-Dayton	Dayton	Non-Dayton
Absorbed	10	2	15	3
Removed	3	0	3	0
Consolidated	6	2	9	1
Transferred	24	3	26	5
Relocated	1	0	1	0
Federalized	4	1	11	3
Converted	1	0	1	0
In Liquidation (Commissioner)	16	0	20	2
In Liquidation (Receiver)	1	0	2	0
Liquidated (Commissioner)	0	1	0	1
Liquidated (Voluntarily)	3	1	5	1
Liquidated (Receiver)	0	0	1	0

Source: Building and Loan Commissioner of the State of California (1927,1935)

Table B5: Distribution of Closures by Year

	Reported		Liabilities	
Year	Dayton	Non-Dayton	Dayton	Non-Dayton
1929	14	3	14	5
1930	9	2	20	2
1931	12	0	12	2
1932	3	0	5	1
1933	2	1	3	1
1934	2	0	2	0
1935	7	0	8	1

Closure timing for B&L's in the sample. The differential number of closures in the two measures is due to 17 closures by B&L's formed in 1927 and 1928. **Source**: Building and Loan Commissioner of the State of California (1927,1935)

Table B6: Determinants of Dayton Plan

	Dayton	Dayton	Dayton	Dayton	Dayton	Dayton
Age	-0.0131***	-0.0524***	-0.0947***	-0.0170***	-0.0515***	-0.0855***
	(0.00188)	(0.00939)	(0.0184)	(0.00184)	(0.00715)	(0.0126)
Log Population (1930)	0.0707**	0.356**	0.750**	0.0513	0.193	0.349
	(0.0345)	(0.157)	(0.300)	(0.0350)	(0.132)	(0.227)
Log Banks (1930)	-0.0639	-0.155	-0.428	-0.0552	-0.213	-0.349
	(0.0538)	(0.229)	(0.422)	(0.0533)	(0.204)	(0.349)
Percent Urban	0.000407	-0.00578	-0.0143	0.000334	0.000358	-0.000312
	(0.00221)	(0.0102)	(0.0183)	(0.00214)	(0.00807)	(0.0140)
Mean Repub Share 1896-1928	0.00603	0.0137	0.0118	0.00312	0.0110	0.0139
	(0.0109)	(0.0480)	(0.0821)	(0.0111)	(0.0432)	(0.0716)
Avg. Farmland Value 1920-1925	0.100	0.379	0.811	0.160	0.542	1.002
	(0.227)	(1.050)	(1.795)	(0.227)	(0.856)	(1.480)
Bank Failure Rate	0.0776	0.493	1.080	-0.136	-0.632	-0.924
	(0.221)	(0.993)	(1.744)	(0.214)	(0.843)	(1.447)
Constant	0.126	-1.650	-3.168	0.370	-0.667	-1.212
	(0.474)	(2.016)	(3.382)	(0.497)	(1.894)	(3.116)
N	164	164	164	205	205	205
R-Squared	0.31			0.35		
Dayton Measure	Reported	Reported	Reported	Liabilities	Liabilities	Liabilities
Estimator	OLS	Probit	Logit	OLS	Probit	Logit

The first column estimates via OLS equations of the form $Dayton_i = \alpha + \beta Age_i + \Gamma \mathbf{X}_{a(i)} + \varepsilon_i$. The second and third columns use probit and logit respectively. **Source**: Building and Loan Commissioner of the State of California (1927,1935), Bleemer (2016), Superintendent of Banks (1935), Haines, Fishback, and Rhode (2018), Fishback, Horrace, and Kantor (2005)

Table B7: Balance Table for Micro Sample

Variable	(1) Missing	(2) Micro Data	(3) Diff
Dayton (Reported)	0.79	0.74	-0.05
	(0.41)	(0.44)	(0.07)
Age	14.92	14.72	-0.21
	(15.96)	(15.67)	(2.14)
Members (Thousands)	1.63	1.23	-0.39
	(2.14)	(1.93)	(0.31)
Total Assets (Millions)	2.17	1.50	-0.67
	(4.78)	(2.42)	(0.50)
Secur. Share of Liabs	0.76	0.73	-0.03
	(0.39)	(0.38)	(0.05)
Shares (% Liabilities)	21.43	23.25	1.82
	(35.18)	(33.36)	(4.63)
Cash (% Assets)	4.60	4.52	-0.08
	(4.44)	(4.37)	(0.60)
Real Estate Owned (% Assets)	1.19	1.12	-0.06
	(2.02)	(2.32)	(0.30)
1930 Loan Repayments	2.51	0.08	-2.43**
	(11.87)	(0.70)	(1.11)
Banks	37.01	33.85	-3.16
	(35.52)	(34.79)	(4.76)
City Population (Thousands)	362.28	346.85	-15.44
	(490.64)	(486.92)	(66.16)
Observations	103	116	219

Age calculated as number of years open as of 1927. Closure is a dummy variable equal to one if a Building and Loan Association were absorbed, closed, consolidated, or transferred. The difference in samples comes from the inclusion of Federalized B&Ls for the exercises using the micro sample. **Source**: Building and Loan Commissioner, (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009)

$* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

C Robustness Specifications

Coefficient Stability I first show the sensitivity of the main coefficient estimate of β in Equation 1 to the inclusion of additional controls. To frame the discussion, Figure C1 plots the estimate of the coefficient β, corresponding to the marginal effect on closure rates of the self-reported Dayton measure, changes when adding different controls. The first row of the figure labeled "Benchmark" presents the coefficient estimate and 90% standard error bars from the results in Table 4.

The results are not sensitive to balance sheet measures of borrower quality. If Dayton plans borrowers were more ex-ante likely to default in general, then the differential closure rates I identify may simply be due to the impairment of assets. Real estate owned shares is a useful proxy for default risk. As emphasized by Fleitas, Fishback, and Snowden (2018), this asset includes foreclosed property taken on by the B&L. The point estimate does not change much when including this estimate, and the estimate is now significant at the 90% level. As I use 1929 measures, this control does not capture whether or not borrowers were more likely to default during the Great Depression. Rather, this measure captures a loan quality measure of whether, in tranquil times, borrowers were more likely to default. I can instead use 1930 loan receipts to capture repayments during the Great Depression as a proxy for borrower quality and the maturity of the loan portfolio. I construct this measure using principal repayments, rather than interest repayments, to better capture this potential latter effect. Note that using this variable as a control drops B&L's that closed prior to submitting a 1930 annual report, so the estimate of β is downward biased. Still, the point estimate is little changed. Finally, I show the result is robust to including the average loan to value ratio.[33]

I next focus on measures that account for the ownership structure of the B&L. I include the ratio of guarantee stock to the sum of investment certificates and shares. The benefits of the guarantee-stock plan is that B&L's could attract funds quicker and begin lending operations earlier Clark and Chase 1927. One concern would be that of guarantee stock acted as a form of insurance. Similar to deposit insurance, higher levels of guarantee stock could signal to members that the institution is safe, and thus are less likely to close. The fourth row of Figure C1 shows this is not the case by including the share of guarantee stock as a control.

Another concern relates to how B&L's could function in a zombie status as withdrawals were not paid out immediately. These "zombie" B&L's were common across the country (Snowden 2003). Fleitas, Fishback, and Snowden (2018) discuss how B&Ls in New Jersey could close with a 2/3 majority vote by shareholders and stockholders. The regulations on closure was similar in California. I construct a "concentration index", which is the sum of withdrawable shares and guarantee stock as a share of assets. This measure captures how much the B&L relied on voting members. Including this measure does not affect the point estimate.

An additional concern may be that the mass of people at Dayton plans was higher, all else equal. The benchmark specification includes log total assets as a measure of size due to the number of members being unavailable in the 1929 annual reports. This measure of size accounts for a measure of scale that takes into account how crowded the association is. Haveman and Rao (1997) discuss how institutions had to become more efficient to handle growing numbers of members because relationship lending would be more difficult. That the coefficient is little changed suggests that the efficiency across plans is relatively similar.

Finally, I explore include additional local controls. While I have already shown the results are robust to

33. I calculate the average loan to value ratio by first calculating the average loan size for each B&L. The average loan size is given by total lending in 1927 relative to total members in 1927 (since the 1929 statements do not include total members). I then divide this by the average house value for the city, taken from the 1930 Census (Ruggles et al. 2021).

city fixed effects, these controls are also illustrative to rule out specific sources of bias. First, it could be that Dayton plans preferred urban areas, with more potential members, which may have been vulnerable to the Great Depression. Controlling for the urban share of the population does not affect the point estimate. Second, political factors across California may have led some areas to enact different zoning regulations or even to respond to the Great Depression differently. I show that political party, as measured by the average Republican vote share from 1896-1928, does not affect the results. Similarly, the Progressive vote share in the Election of 1912 also does not affect the point estimate.

I then include measures of the potential severity of the recession. I caution that these controls could be considered a bad control if the presence of Dayton institutions led to worse real outcomes during the Great Depression. Still, given how "small" B&L's were in some areas, it is useful to show that the magnitude of the coefficient is little changed when including this variable. As discussed by Courtemanche and Snowden (2011), declining values of B&L shares may also have led members to delay loan payments to obtain HOLC financing. I show that including HOLC loans per capita does little to the point estimate. Results are also robust to using the bank failure rate from Carlson and Mitchener (2009) in the city. At the county level, results are robust to log change in retail sales by county from Fishback and Kantor (2018) or the growth in log change in real farmland values from Haines, Fishback, and Rhode (2018). Similarly, I include the growth in farmland values during the boom period using data from Haines, Fishback, and Rhode (2018). This coefficient captures whether areas with high growth in land value simply had more Dayton plans due to entry in response to good conditions. The coefficient is again little changed.

Figure C2 repeats this exercise using the liabilities measure of Dayton plan. Given that I do not observe the number of members in 1929, I do not include this control as it would lower the sample size. Second, the concentration index greatly raises the point estimate. There is a high correlation between this variable and the liabilities measure because both are constructed using the securities share. For all other controls, the coefficient estimate is again robust to their inclusion.

Probit/Logit Specification I show results using probit/logit models. Suppose closure is modeled in the following latent variable framework, where y_i^* denotes some latent variables.

$$Closure_i = \begin{cases} 1 & y_i^* > 0 \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

$$y_i^* = \alpha + \beta Dayton_i + \Gamma X_i + \eta_i \tag{3}$$

I show results using a probit specification (assuming η_i is normally distributed) and using a logit distribution (assuming that the error term η_i is distributed by the standard logistic distribution), and estimate this equation via maximum likelihood.

The results of this estimation, presented in Table C1 are shown as odds ratios. The coefficient estimate in Column (1) implies that Dayton institutions are two and a half times more likely to close compared with Non-Dayton institutions. As before, the point estimate is stable when including the same sets of controls as in the table in the main text, as shown in Columns (2)-(6).

Cox Specification Table C2 presents results using a Cox specification. The results for the liabilities measure are strong, and all point estimates suggest that non-Dayton plans are more likely to close earlier.

Closure Characteristics Tables C3 and C4 drop types of closures to investigate where the variation in closure rates is coming from. Assuming that the type of closure is uncorrelated with the plan type, then all coefficients are mechanically downward biased in these tables.

Table C3 drops involuntary closures. As expected, the coefficient falls somewhat, although remains broadly stable across the specifications. For the liabilities meeasure, the point estimate stays large and significant. Table C4 drops consolidations and transfers. Again, as expected, the coefficient falls. However, the coefficient estimate remains broadly stable across the reported specification. For the liabilities specification, the estimate fall somewhat when including the full set of controls on the liabilities measure. This is solely because of the age controls (the estimate is unchanged when including only B&L and city controls, unreported). Therefore, for non-consolidations and transfers, there is a somewhat stronger negative correlation between age and involuntary closure. This result is not worrisome, as closures due to consolidations are also indicative of flightiness.

Federalization In the baseline sample, I chose to drop B&L's that are federalized rather than close or stay open as state institutions. The reason for this is because it is not clear why B&L's choose to federalize. It could be that weak B&L's that might have closed chose to federalize because of additional access to liquidity. On the other hand, strong B&L's may have federalized because, as explained by Snowden (2003), much of the legislation was written by the B&L operators of the time period.

Because of the unknown relative ordering in terms of the outcomes, specifically with respect to the decision to federalize vs. close, I estimate a multinomial logit model.

$$Pr(Result_i \in \{Closure, Federalize\}) = \alpha + \beta DAYTON_i + \Gamma X_i + \varepsilon_i \tag{4}$$

The results are presented in in Table C5. The base level is staying open, so all coefficients should be interpreted as the relative risk ratio of the listed result happening relative to staying open for a given change in the independent variable. The independent variable of interest is $DAYTON_i$. For closed institutions, as above, we see that the effect of being a Dayton institution increases the probability of closure. However, there is no significant effect of being a Dayton institution on the probability of being federalized. If anything, being a Dayton plan reduces the probability of federalizing. I interpret these results not as saying that federalization was completely random, but rather the decision to federalize was unrelated to the institution's liability structure.

Alternatively, one might think that federalized BŁ's should not be dropped from the sample. One argument may be that these institutions are not in danger of closing, just changing their regulator for idiosyncratic reasons. Table C6 shows that the results are unchanged when including these institutions as open throughout the sample.

Dropping 1929 Closures I present results dropping all B&L's that closed in 1929. Table C7 presents the results of this estimation.

Ordered Logit Specification I have so far assumed that the timing of closure is irrelevant. However, it may be the case that non-Dayton plans closed earlier than Dayton plans due to the Great Depression, but Dayton plans closed over time as deflation raised interest rates. To estimate whether or not Dayton

plans closed earlier than non-Dayton plans, I follow Postel-Vinay (2016) in estimating an ordered logistic model.

$$ClosureOrder_i^* = \{j; \kappa_{j-1} \leq y^* \leq \kappa_j\} \tag{5}$$

$$y^* = \beta Dayton_i + \Gamma X_i + \varepsilon_i \tag{6}$$

where κ_j are estimated cutoff value. $ClosureOrder_i$ is an ordered variable of closure for institution i as described below. y^* is a latent variable estimated as the linear combination of controls. The main variable of interest, $Dayton_i$ is the type of the institution (Dayton vs. non-Dayton), and $\mathbf{X}_i$ is a vector of additional controls.

Here, the dependent variable $ClosureOrder_i$ is no longer simply a dummy variable indicating closure. Instead, this variable is equal to the number of years an institution survives from 1927 through 1935.[34] For example, if a B&L is alive in 1929 but closes in 1932, this value is 3. If it survives into 1936, then it takes on the highest value of 7. Table C8 shows the distribution of banks in this way, broken down by type. We can see that both Dayton and Non-Dayton plans had high rates of closure early on in the Depression before settling down a bit. At first glance, it also looks like Dayton plans not only had higher closure rates throughout the time period, but also had a peak slightly earlier, in 1929.

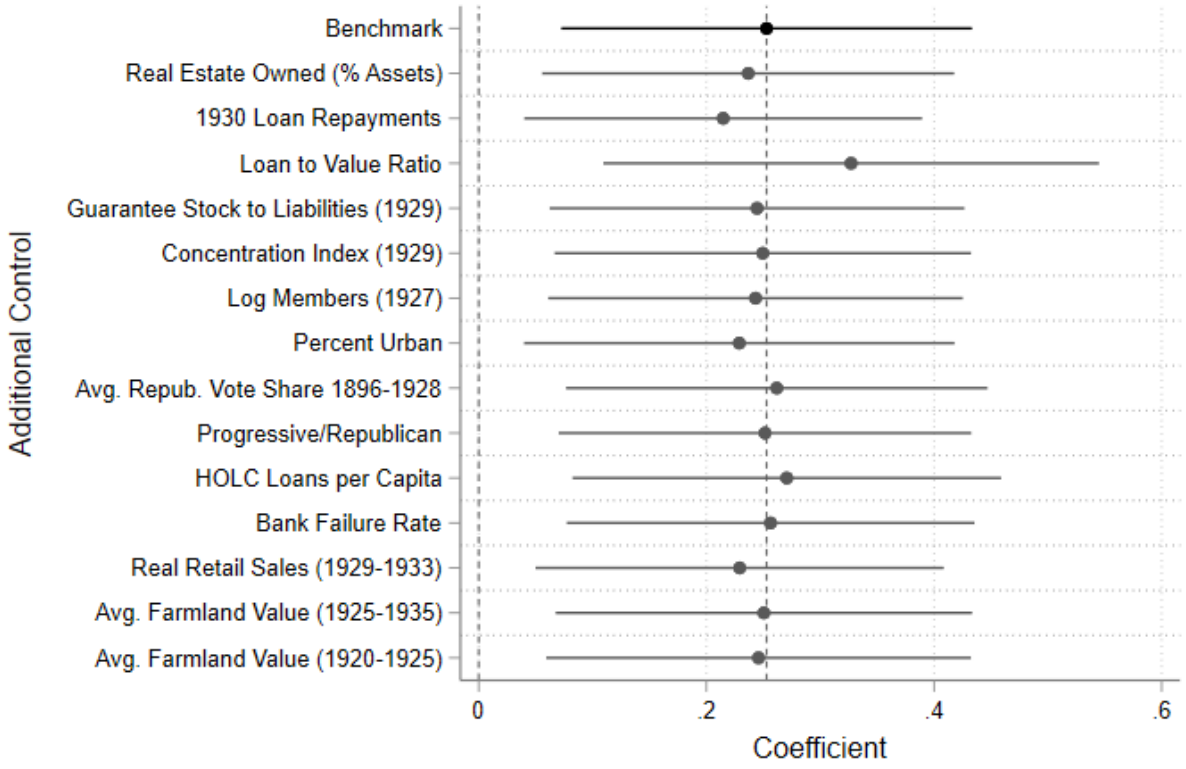
The results of estimating Equation 5 are shown in Table C9. Coefficients are again expressed as odds ratios. Column (1) shows, consistent with earlier results, that Dayton B&L's had a significantly lower chance of surviving longer into the Recession than Dayton B&L's. The point estimate implies that the odds of a Dayton plan surviving another year is 0.34 times than that for permanent plans. This result is stable when including other controls, shown in the remaining columns, or using the alternative measure of Dayton plan.

Survivor Bias Table C10 shows results taking into account survivor bias. In the first four columns, I show results dropping other subsamples that would be affected by survivor bias for non-Dayton plans that may be stronger because they have survived previous recessions. The first column repeats the results from the benchmark analysis. The next column drops all permanent B&Ls that entered prior to the 1890s. The next columns drops permanent B&Ls that enter between 1890 and 1906. Both results are statistically significant and similar in magnitude. The next column drops all non-Dayton plans that enter prior to 1906 (which leaves only 10). While the point estimate does not move much, it is insignificant. The liabilities measure of the Dayton plan is useful here since it is a bit more balanced. Dropping institutions Dayton plans that were born prior to 1906, the result is a statistically significant (and larger) coefficient estimate.

Split by Closure Wave Table C11 shows results splitting into pre-1930 and post-1931.

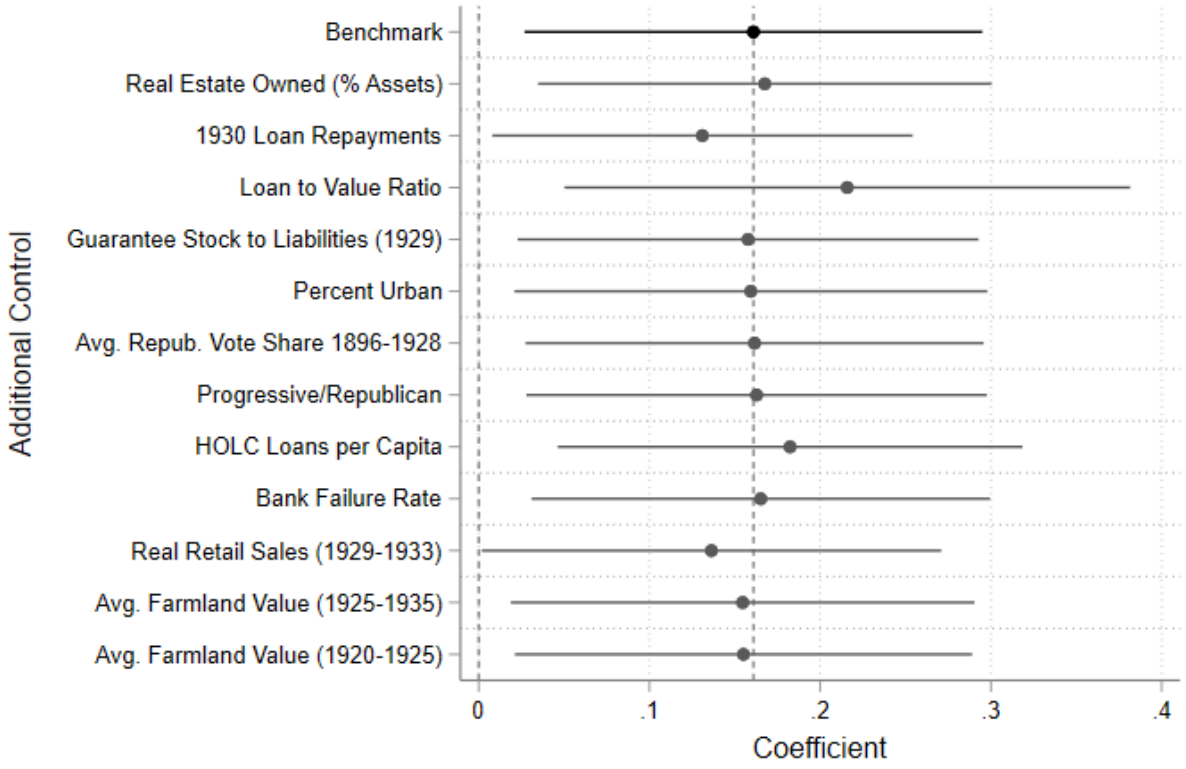
34. With these values, κ_{-1} and κ_9 are equal to minus infinity and infinity, respectively.

Figure C1: Stability of Dayton Coefficient: Reported Measure



This figure plots the value and 90% standard error bands for the coefficient β from estimating Equation (1) using the reported measure of plan type as the Dayton dummy. Each row includes the indicated control as well as the benchmark controls: cash ratio, log assets, and age bin fixed effects. The row labeled benchmark is the result from Table (4). Real Estate Owned is real estate owned as a share of total assets in 1929. 1930 Loan Repayments are the total receipts on loan principal relative to total receipts in 1930. The Loan to Value Ratio is the average loan for an institution divided by the average home value in a city. Guarantee Stock Share is total guarantee stock as a share of total liabilities in 1929. The Concentration Index is the sum of guarantee stock share and the withdrawable share of total assets, meant to capture how concentrated voting rights are. Log Members (1927) is the log number of members reported in 1927, as the 1929 annual reports do not list total members. Percent Urban is the share of the population in the county that live in urban areas. Avg. Repub. Vote Share 1896-1928 is the average of the republican vote share between 1896-1928. Progressive/Republican is the voting share for the Progressive party in the 1912 election. HOLC Loans per Capita is the per capita amount of HOLC lending in the county. The bank failure rate is the failure rate of banks in the city as in Carlson and Mitchener (2009). Real retail sales is the decline in retail sales per capita from 1929-1933. Average farmland value comes from the agricultural census, and controls are either 1920-1925 or 1925-1935. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018)
Heteroskedasticity robust standard errors in parentheses denoted by the error bars.

Figure C2: Stability of Dayton Coefficient: Liabilities Measure



This figure plots the value and 90% standard error bands for the coefficient β from estimating Equation (1) using the liabilities measure of plan type as the Dayton dummy. Each row includes the indicated control as well as the benchmark controls: cash ratio, log assets, and age bin fixed effects. The row labeled benchmark is the result from Table (4). Real Estate Owned is real estate owned as a share of total assets in 1929. 1930 Loan Repayments are the total receipts on loan principal relative to total receipts in 1930. The Loan to Value Ratio is the average loan for an institution divided by the average home value in a city. Guarantee Stock Share is total guarantee stock as a share of total liabilities in 1929. The Concentration Index is the sum of guarantee stock share and the withdrawable share of total assets, meant to capture how concentrated voting rights are. Log Members (1927) is the log number of members reported in 1927, as the 1929 annual reports do not list total members. Percent Urban is the share of the population in the county that live in urban areas. Avg. Repub. Vote Share 1896-1928 is the average of the republican vote share between 1896-1928. Progressive/Republican is the voting share for the Progressive party in the 1912 election. HOLC Loans per Capita is the per capita amount of HOLC lending in the county. The bank failure rate is the failure rate of banks in the city as in Carlson and Mitchener (2009). Real retail sales is the decline in retail sales per capita from 1929-1933. Average farmland value comes from the agricultural census, and controls are either 1920-1925 or 1925-1935. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018)
Heteroskedasticity robust standard errors in parentheses denoted by the error bars.

Table C1: Closure Rates: Logit and Probit Models

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.695**	0.772*			1.177**	1.330*		
	(0.272)	(0.413)			(0.483)	(0.780)		
Dayton (Liabilities)			0.633***	0.492*			1.042***	0.906**
			(0.201)	(0.260)			(0.340)	(0.455)
N	164	164	205	205	164	164	205	205
B&L Controls	N	Y	N	Y	N	Y	N	Y
Age Controls	N	Y	N	Y	N	Y	N	Y
Local Controls	N	Y	N	Y	N	Y	N	Y
Model	Probit	Probit	Probit	Probit	Logit	Logit	Logit	Logit

This table presents results from estimating Equation (3) using probit and logit specifications. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, consolidated, or transferred. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)

$* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table C2: Results using Cox Model

	Closure	Closure	Closure	Closure
Dayton (Reported)	0.945**	1.157**		
	(0.438)	(0.576)		
Dayton (Liabilities)			0.800***	0.621**
			(0.285)	(0.296)
N	926	926	1127	1127
B&L Controls	N	Y	N	Y
Age Controls	N	Y	N	Y

This table presents results from estimating a Cox model. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, consolidated, or transferred. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table C3: Dropping Involuntary Closures

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.158**	0.178**	0.194*	0.163				
	(0.0726)	(0.0787)	(0.111)	(0.109)				
Dayton (Liabilities)					0.203***	0.200***	0.171**	0.174**
					(0.0641)	(0.0653)	(0.0712)	(0.0734)
N	147	147	147	147	182	182	182	182
R-Squared	0.02	0.03	0.06	0.09	0.05	0.05	0.06	0.11
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age Controls	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

. This table presents results from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, voluntary closure consolidated, or transferred, with involuntary closures dropped. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)

. $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table C4: Dropping Consolidations and Transfers

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.204***	0.210***	0.212**	0.148*				
	(0.0601)	(0.0648)	(0.0887)	(0.0870)				
Dayton (Liabilities)					0.182***	0.177***	0.0872	0.0952
					(0.0632)	(0.0652)	(0.0743)	(0.0788)
Constant	0.0606	0.0247	0.0124	-0.390	0.145***	0.0793	-0.0506	-0.307
	(0.0418)	(0.326)	(0.321)	(0.359)	(0.0450)	(0.317)	(0.313)	(0.374)
N	139	139	139	139	175	175	175	175
R-Squared	0.04	0.05	0.07	0.15	0.04	0.04	0.07	0.21
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age Controls	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

This table presents results from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, with consolidations and transfers dropped. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table C5: Including Federalization as an Outcome (Multinomial Logit Results)

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Close of Business								
Dayton (Reported)	3.246**	3.454**	4.192**	3.771*				
	(1.568)	(1.724)	(2.934)	(2.964)				
Dayton (Liabilities)					2.836***	2.759***	2.186*	2.469*
					(0.964)	(0.950)	(0.881)	(1.141)
Federalize								
Dayton (Reported)	0.530	0.863	0.159*	0.0669**				
	(0.421)	(0.807)	(0.162)	(0.0714)				
Dayton (Liabilities)					1.743	2.001	0.980	1.118
					(1.080)	(1.279)	(0.564)	(0.722)
N	171	171	171	171	219	219	219	219
Chi Squared	7.13	16.12	241.94	399.24	9.59	24.96	718.05	634.64
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age Controls	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

Results for estimating Equation 4, where Closure is when an association absorbed, closed, consolidated, or transferred and Federalize is when an association is federalized. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Exponentiated coefficients

Table C6: Including Federalized B&Ls as Closure

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.224***	0.232***	0.249**	0.199*				
	(0.0709)	(0.0760)	(0.103)	(0.102)				
Dayton (Liabilities)					0.207***	0.196***	0.147*	0.148*
					(0.0631)	(0.0644)	(0.0785)	(0.0793)
Constant	0.150***	0.204	0.189	-0.294	0.208***	0.0526	-0.0415	-0.364
	(0.0568)	(0.374)	(0.367)	(0.443)	(0.0481)	(0.334)	(0.336)	(0.405)
N	171	171	171	171	219	219	219	219
R-Squared	0.04	0.04	0.07	0.12	0.04	0.04	0.06	0.14
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age Controls	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

This table presents results from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, consolidated, closed, transferred, or federalized. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)

$* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table C7: Closure Rates: Linear Probability Model Dropping 1929 Closures

	Closure	Closure	Closure	Closure	Closure	Closure	Closure	linprob8
Dayton (Reported)	0.221***	0.222***	0.232**	0.164				
	(0.0657)	(0.0714)	(0.105)	(0.107)				
Dayton (Liabilities)					0.242***	0.227***	0.160**	0.160**
					(0.0629)	(0.0648)	(0.0765)	(0.0781)
N	147	147	147	147	186	186	186	186
R-Squared	0.05	0.05	0.10	0.17	0.06	0.07	0.10	0.22
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age Controls	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

This table presents results for the coefficient β from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, consolidated, or transferred after 1929. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table C8: Classification of Closure Timing for Ordered Logit

		Self-Reported			Liabilities		
Year	Value	Non-Dayton	Dayton	Total	Non-Dayton	Dayton	Total
1929	0	3	14	17	5	14	19
1930	1	2	9	11	2	20	22
1931	2	0	12	12	2	12	14
1932	3	0	3	3	1	5	6
1933	4	1	2	3	1	3	4
1934	5	0	2	2	0	2	2
1935	6	0	7	7	1	8	9
Survive	7	31	78	109	36	93	129
Total		37	127	164	48	157	205

Timing of closure by plan type. For self-reported, I denote Dayton as any institution with at least 50% reliance on investment securities. **Source**: Building and Loan Commissioner of the State of California (1927)

Table C9: Ordered Logit Specification

	Closure	Closure	Closure	Closure	Closure	Closure	ologit7	ologit8
Dayton (Reported)	0.342**	0.316**	0.256*	0.304				
	(0.177)	(0.169)	(0.182)	(0.234)				
Dayton (Liabilities)					0.384***	0.380***	0.463**	0.461**
					(0.134)	(0.136)	(0.167)	(0.179)
N	164	164	164	164	205	205	205	205
Chi-Squared	4.32	4.74	8.31	17.52	7.48	7.46	9.36	21.23
B&L Controls	N	Y	Y	Y	N	Y	Y	Y
Age Controls	N	N	Y	Y	N	N	Y	Y
Local Controls	N	N	N	Y	N	N	N	Y

This table presents results for the coefficient β from estimating Equation (5). The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009) $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Exponentiated Coefficients

Table C10: Survivor Bias

	Closure	Closure	Closure	Closure	Closure	Closure
Dayton (Reported)	0.253**	0.268**	0.252**	0.213		
	(0.109)	(0.134)	(0.119)	(0.170)		
Dayton (Liabilities)					0.161**	0.275***
					(0.0811)	(0.0936)
N	164	147	149	133	205	160
R-Squared	0.07	0.06	0.07	0.05	0.07	0.09
B&L Controls	Y	Y	Y	Y	Y	Y
Age FE	Y	Y	Y	Y	Y	Y
Drop non-Day Start After			1890			
Drop non-Day End Before		1890	1906	1906		1906

This table presents results for the coefficient β from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. Results drop non-Dayton plans that enter between the years listed. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, consolidated, or transferred. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity Robust Standard Errors in Parentheses.

Table C11: Split by Wave

	Closure	Closure	Closure	Closure
Dayton (Reported)	0.133	0.215***		
	(0.108)	(0.0819)		
Dayton (Liabilities)			0.173***	0.160**
			(0.0618)	(0.0765)
N	137	136	170	186
R-Squared	0.03	0.09	0.06	0.10
B&L Controls	Y	Y	Y	Y
Age Controls	Y	Y	Y	Y
Wave	Pre-1930	Post-1930	Pre-1930	Post-1930

This table presents results for the coefficient β from estimating Equation (1): $Closure_i = \alpha + \beta Dayton_i + \Gamma X_i + \varepsilon_i$. Results are split by closure wave. $Closure_i$ is a dummy variable equal to one if Building and Loan Association i was absorbed, closed, consolidated, or transferred. The reported measure is the plan type as described by the 1927 annual reports, while the liabilities measure is a dummy equal to one if the association has above-median investment certificates as a share of liabilities, as described in the text. B&L controls include log assets and cash percentage. Age controls include age bin fixed effects as described in the text. Local controls include log city population and log number of commercial banks in the city. **Source**: Building and Loan Commissioner, (Various Years), Bleemer (2016), Carlson and Mitchener (2009)
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

D Additional Balance Checks

Table D1 shows a balance table for the Dayton plans across institutions in and out of the sample of banks from the archives. Table D2 shows a balance table for the non-Dayton plans across institutions in and out of sample of B&Ls from the archives.

Table D1: Balance Table: Dayton Only

Variable	(1) Missing	(2) Micro Data	(3) Diff
Members (Thousands)	1.86	1.48	-0.38
	(2.26)	(2.16)	(0.40)
Closure	0.69	0.16	-0.52***
	(0.47)	(0.37)	(0.07)
Total Assets (Millions)	3.43	1.99	-1.45*
	(6.15)	(2.89)	(0.82)
Cash (% Assets)	4.45	4.48	0.03
	(3.69)	(3.96)	(0.69)
Real Estate Owned (% Assets)	1.63	1.50	-0.13
	(2.28)	(2.76)	(0.46)
Concentration Index (1929)	29.11	26.85	-2.27
	(31.91)	(26.92)	(5.23)
Secur. Share of Liabs	0.78	0.82	0.04
	(0.37)	(0.32)	(0.06)
Shares (% Liabilities)	20.18	15.47	-4.71
	(33.81)	(27.78)	(5.47)
1930 Loan Repayments	2.03	0.10	-1.93
	(11.25)	(0.85)	(1.33)
Banks	38.76	36.77	-1.99
	(36.19)	(35.82)	(6.46)
City Population (Thousands)	351.01	405.63	54.61
	(481.63)	(514.81)	(89.93)
Observations	54	73	127

"Closure Dummy" is a dummy variable equal to one if a building and loan Association was absorbed, closed, consolidated, or transferred. "Investment Securities Share of Member Funds" calculated as investment securities divided by the sum of investment securities and withdrawable shares. "Age" calculated as number of years open as of 1929. "Dayton (Reported)" and "Members (Thousands)" use data from the 1927 annual reports and so drop B&Ls formed in 1927-1929. **Source**: Building and Loan Commissioner, (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009)
$* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table D2: Balance Table: Non-Dayton Only

Variable	(1) Missing	(2) Micro Data	(3) Diff
Members (Thousands)	1.31	0.50	-0.81*
	(1.98)	(0.45)	(0.41)
Closure	0.33	0.08	-0.25*
	(0.49)	(0.28)	(0.13)
Total Assets (Millions)	1.83	0.86	-0.97
	(3.32)	(0.83)	(0.70)
Cash (% Assets)	2.71	2.93	0.22
	(3.01)	(2.23)	(0.88)
Real Estate Owned (% Assets)	1.57	0.59	-0.98*
	(2.21)	(0.88)	(0.50)
Concentration Index (1929)	69.80	63.95	-5.85
	(33.43)	(30.55)	(11.06)
Secur. Share of Liabs	0.28	0.34	0.06
	(0.37)	(0.36)	(0.13)
Shares (% Liabilities)	66.27	57.62	-8.64
	(34.50)	(32.74)	(11.70)
1930 Loan Repayments	0.03	0.00	-0.03
	(0.11)	(0.00)	(0.02)
Banks	12.25	18.96	6.71
	(22.22)	(24.27)	(8.30)
City Population (Thousands)	86.43	220.82	134.39
	(189.84)	(340.04)	(105.72)
Observations	12	25	37

"Closure Dummy" is a dummy variable equal to one if a building and loan Association was absorbed, closed, consolidated, or transferred. "Investment Securities Share of Member Funds" calculated as investment securities divided by the sum of investment securities and withdrawable shares. "Age" calculated as number of years open as of 1929. "Dayton (Reported)" and "Members (Thousands)" use data from the 1927 annual reports and so drop B&Ls formed in 1927-1929. **Source**: Building and Loan Commissioner, (Various Years), Superintendent of Banks (1935), Bleemer (2016), Fishback, Horrace, and Kantor (2005), Haines, Fishback, and Rhode (2018), Fishback and Kantor (2018), Carlson and Mitchener (2009)
$* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

E Additional Mechanisms Table - Liabilities Measure

Table E1 shows results for the flightiness mechanism using the liabilities measure. The results are qualitatively, and in most cases quantitatively, similar to the main text.

Table E1: Evidence on the Role for Flightiness in Predicting Closure

(a) Withdrawal Fees and the Costs of Membership by Type

	Withdrawal Penalty	Dues	Shares per Member	Costs
Dayton (Liabilities)	-0.131	-0.0165	-1.678***	-8.884***
	(0.0885)	(0.0416)	(0.213)	(2.088)
N	164	164	164	164
R-Squared	0.17	0.41	0.43	0.39
B&L Controls	Y	Y	Y	Y
Age Controls	Y	Y	Y	Y

(b) Archival Evidence: Member Returns and Loan Characteristics

	Return	Borrower Share	Lending Rate	Log Avg Loan Size
Dayton (Liabilities)	-0.138**	0.0529	0.188	-0.114
	(0.0673)	(0.0345)	(0.144)	(0.0795)
N	120	120	120	120
R-Squared	0.06	0.21	0.08	0.13
B&L Controls	Y	Y	Y	Y
Age Controls	Y	Y	Y	Y

(c) Withdrawal Fees Difference in Difference

	Fees Ratio
Dayton (Liabilities) X 1930	0.864***
	(0.318)
N	298
R-Squared	0.82
B&L FE	Y
Year FE	Y

The top and middle panels show results from estimating the equation $y_i = \alpha_i + \beta DAYTON_i + \Gamma \mathbf{X}_i + \varepsilon_i$. The outcomes for the top panel include: "Withdrawal Penalty," a dummy equal to one if a B&L has penalties for withdrawing funds; "Dues" denotes the cost of dues in 1927; "Shares per Member" is the ratio of total shares to total members; "Costs" is the product of "Dues" and "Shares per Member," or total costs per member. The outcomes for the middle panel include "Return," which is the weighted average of returns for investment certificates and withdrawable shares, where the weights are given by the relative proportion of each; "Borrower Share," which denotes the share of members that are borrowing, "Lending Rate," which denotes the average rate on mortgage loans, and "Log Avg Loan Size," or the log of the ratio of the amount of loans to the number of loans. B&L controls include log assets and cash percentage, and age controls include age bin fixed effects. Age controls for this panel, which uses archival data, include a dummy equal to one if the association was incorporated after 1920 due to the limited sample size. The bottom panel estimates differences-in-differences specifications of the form $Y_{it} = \alpha_t + \beta_i + \gamma(DAYTON_i \times \mathbf{1}(t = 1930))$.
Source: Building and Loan Commissioner of the State of California (1927), *Department of Savings and Loan Records*
$*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.