THE UNIVERSITY OF WARWICK

Mar 2016 No.275

Economic Crisis and the Demise of a Popular Contractual Form: Building and Loan Mortgage Contracts in the 1930s

Sebastian Fleitas, Price Fishback, and Kenneth Snowden

WORKING PAPER SERIES

Centre for Competitive Advantage in the Global Economy

Department of Economics

CAGE Competitive Advantage in the Global Economy

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Economic Crisis and the Demise of a Popular Contractual Form: Building and Loan Mortgage Contracts in the 1930s

Sebastian Fleitas, Price Fishback, and Kenneth Snowden[♦]

February 14, 2016

Abstract

During the housing crisis of the 1930s long delays in the resolution of severely distressed Building and Loan associations led to the rapid diminution of these previously successful and important home mortgage lenders. These delays were caused by a unique contractual structure that created incentives for borrowing members to prolong dissolution and granted them control, along with non-borrowers, over the timing of liquidation. Using a new dataset of New Jersey B&Ls we estimate a voting model of dissolution and find that the probability of B&L liquidation rose 37 percent when the share of non-borrowing members rose above the two-thirds threshold. An average one-year delay in liquidation resulted that imposed costs on non-borrowing members roughly three times the gains borrowing members realized by delaying dissolution. These delays and costs contributed to the quick demise of the B&L and the rapid ascendancy of the modern Savings & Loan industry.

[♦] Fleitas: Economics Department, University of Arizona (sebastianfleitas@email.arizona.edu); Fishback: Economics Department, University of Arizona (fishback@email.arizona.edu) and NBER; Snowden: Economics Department, University of North Carolina Greensboro (snowden@uncg.edu) and NBER. We are very grateful for the comments and suggestions from Charles Calomiris, Joshua Hausman, Kris Mitchener, Robert Margo, Dave Ribar, Jonathan Rose, Tiemen Woutersen and participants at sessions on the paper at the World Congress of Cliometrics in 2013 and the NBER-DAE Summer Institute in 2015. Fishback and Snowden acknowledge support from the National Science Foundation (grant SES-1061927). Any opinions expressed here do not reflect the attitude of the National Science Foundation.

I. Introduction

The housing bust and Great Recession of 2007 caused severe disruptions within the residential mortgage market and has led to a broad re-evaluation of the institutions, networks and contracts that had were used to originate, finance and service loans before and during the crisis. A similar process occurred during the housing crisis of the 1930s after prolonged delays in the resolution of severely distressed Building and Loan associations led to their rapid diminution as the nation's primary source of home mortgage finance and the concomitant rise of the modern Savings and Loans (S&Ls) industry. B&Ls were local, cooperative institutions that specialized in residential mortgage lending when they first appeared in the U.S. in the 1830s and as they grew by 1929 into an industry of 12,000 institutions that operated in every state, that claimed more than 12 million members, and that held 48 percent of the nation's intermediated home mortgage debt.[1] After a century of such success, during both booms and downturns, the B&Ls foundered badly during the housing crisis of the 1930s and by 1940 this industry had become, and then remained, a minor corner of the financial landscape.[2] We argue here that this rapid decline was connected to contractual and legal elements of B&Ls that resulted in costly delays in the resolution of these institutions once they had become distressed during the Great Depression.

[1] Bodfish, 1931, p. 136; *Housing Statistics Handbook*, 1948, p. 87, 114. Richard Ely emphasized their importance in his forward to the 1920 U.S. Census Report *Mortgages on Homes* by observing that "[t]he American method of acquiring a home is to buy the site, gradually pay for it, then to mortgage it through a *building and loan* or otherwise, to construct the home with the aid of the mortgage and gradually to extinguish the mortgage." Individuals held nearly 40 percent of home mortgage debt as late as 1930. See also Bodfish, 1931, p. 138; *Housing Statistics Handbook*, 1948, p. 5, 60.

[2] Housing starts in the U.S. peaked in in 1925 at 937,000, then fell to 509,000 in 1929 and to 93,000 in 1933. They did not recover to 1929 level again until 1940. Meanwhile the nonfarm foreclosure rate quadrupled between 1926 and 1933 and remained at elevated levels until 1940. By the later date the real stock of home mortgage debt remained 15 percent below its 1932 peak. To provide relief for borrowers, to reduce foreclosures and distress sales, and to prop up housing markets the federal government created the Home Owners' Loan Corporations (HOLC) that refinanced one million distressed homeowners under generous terms. Data on housing starts and the stock of home mortgage debt was compiled from Snowden 2006, 4-481 to 4-482 and 4-526 to 4-527 and deflated by the CPI 1967=100. See Wheelock (2008) for foreclosure rates and Fishback, Rose and Snowden (2013) for the HOLC. For the transition of B&L to S&L during the 1930s see Snowden (2003, 2010).

The key contractual element of the pre-1930 B&L was its Share Accumulation Contract (SAC) that members used to purchase equity shares in the institution on the installment plan. For non-borrowing members these investments offered a disciplined savings plan that yielded attractive returns while for borrowing members the SAC account represented a sinking fund that grew in size over time until they could pay off their loans. As owners, borrowing and non-borrowing members of a B&L shared risk and control. These mutual organizations worked well for decades, but a substantial divergence of interests among members arose when B&Ls became severely distressed during the 1930s—in these situations borrowers had strong incentives under the SAC loan contract to oppose liquidation of their B&L until their own loans had been repaid, while non-borrowing B&L members generally favored rapid liquidation. We explain how these conflicts led to delays in dissolution because of by-laws that could limit withdrawals indefinitely, and case law that left insolvency to a vote of the membership—each B&L member had one vote, and liquidation required a two-thirds majority.[3] Taken in combination these elements led to the emergence of thousands of B&Ls that continued to operate long after they were no longer viable mortgage lenders. Caught in these "frozen" B&Ls were non-borrowers who could not shift their investments into better opportunities.

After describing the contractual structure of the B&L and the rules for dissolution, we perform an empirical analysis of the impact of the voting rule in the dissolution process. We collect and digitize a new panel dataset with time-varying information on the features of the

[3] It is important to recognize that it is the fact that borrowers were owners and voted on dissolution of the B&L that was the key issue. The share of votes required determined the size of the voting coalition borrowers needed to block dissolution. The two-thirds share mattered because borrowers could more easily block dissolution than if only a fifty-one percent vote share was required.

balance sheets of all of the B&Ls operating in New Jersey in the 1930s.[4] Estimates from a semi-parametric Cox (1972) survival model show that the probability of liquidation rose 37 percent when the share of non-borrowing members rose above the two-thirds needed for dissolution. This translates into a typical delay of about one year in the timing of the exit of a failing B&L. During the year delay we estimate that the non-borrowing members' losses were roughly three times the size of the gains to the borrowing members. The discovery of the delays in closure and the loss-gain ratio for B&Ls during the 1930s contributed to the demise of the B&Ls and SACs in mortgage markets. To maintain the rules that caused the delay in closure, lenders would have demanded a premium in interest rates that lenders would have been unwilling to pay. We conclude by briefly describing how the changes for B&Ls in the 1930s fit into the history of structural changes in mortgage institutions over the past 100 years.

II. The Contractual and Legal Basis of Delayed Resolution in Building & Loans

Building & Loans grew rapidly in number and importance during the home building boom of the 1920s and ended up financing 4.2 million of the 7 million homes built during the decade and holding 30 percent of the mortgage debt on the nation's 1 to 4 family homes.[5] Three features of the B&Ls accounted for its popularity at that time. First, the traditional B&L mortgage, to be described below, was the only home loan available before 1930 that offered

[4] We focus on New Jersey because it is the only state where the regulator consistently reported the number of borrowing and non-borrowing members and balance sheet information for each B&L for each year in the 1930s.

[5] *Housing Statistics Handbook*, 1948, p. 114. Individuals held nearly 40 percent of home mortgage debt as late as 1930.

borrowers long-term, amortized mortgages.[6] Second, B&Ls offered non-borrowing members higher returns than the savings accounts offered by commercial and savings banks.[7] Finally, B&Ls proved to be a nimble and elastic source of mortgage finance as they faced lower barriers to entry than depository institutions and could organize even on a small scale wherever local demands and supplies of mortgage funds were sufficient.[8]

Before 1930 B&Ls had successfully survived downturns in the housing sector, but the crisis of the 1930s was unprecedented in depth and scope. On a national basis, a sharp rise in mortgage foreclosures was caused by the combination of a 30 percent decrease in per capita income, drops of 25% or more in the nominal value of housing, and deflation that raised the real cost of repaying loans. As residential mortgage lending specialists B&Ls suffered disproportionate levels of distress, but the unique feature of the industry was the long delay in the closing of distressed B&Ls, which is well illustrated with data from New Jersey. B&Ls usually only acquired real estate when they foreclosed on properties. Between 1930 and 1935, the real estate share of assets in New Jersey B&Ls rose from 4 to 24 percent, a level of distress that would have led to a wave of closures in other types of real estate lenders. Yet, by 1935 only 41 of the 1,565 B&Ls that were operating in New Jersey in 1930 had closed. Another 90 associations closed as the real estate share of assets jumped to levels between 39 and 43 percent

[6] Before 1930 most other lenders offered homeowners interest-only, balloon loans for no more than 50 percent of the property's value and with maturities no longer than five years. Loans with these short maturities had to be renewed one or more times before they could be paid off and each renewal involved additional costs and risks.

[7] The modal rate of earnings on book values of B&L shares in New Jersey in 1928, for example, was 7 to 8 percent per annum.[7] Members who paid penalties for withdrawing shares earlier than scheduled still earned six percent or higher on B&L investments after holding the shares for five years. At the same time, deposits in mutual savings banks in New Jersey paid no more than 4 or 4.5 percent interest (Piquet, p.111). B&L earnings were higher on average because members participated fully in the earnings on their association's portfolio of home mortgages. Attractive returns generated increases in membership of 141 and percent between 1920 and 1928 (5 to 12 million) compared to growth of just 32 percent in savings bank membership (11.4 to 15 million). Total B&L assets also grew relatively rapidly; by 318% (from $2.5 to $8.0 billion) between 1920 and 1928 while the assets of mutual savings banks increased by only 60 percent ($7.1 to $11.4 billion).

[8] More than 5,000 B&Ls were established and began operation during the urban building boom of the 1880s. During the housing boom of the 1920s, more than 3,000 new B&Ls appeared. In both periods B&Ls grew in number and importance in all regions and states, and in cities of all sizes. See Snowden, 2003.

between 1935 and 1938. Even then, most of the remaining 1,434 B&Ls in operation remained badly distressed; 440 of these finally closed between 1938 and 1940, and another 485 dissolved between 1940 and 1945. By the end of World War II only 509 B&Ls continued to operate in New Jersey[9] In this section we examine four key features of the B&L contractual structure and case law that explain why and how the resolution of distress within the traditional B&L association took so long.

A. Building & Loans were member-owned, cooperative mortgage lending corporations.

The heart of the traditional B&L was the share accumulation contract. Upon joining a B&L each member agreed to purchase one or more shares in the association by making weekly or monthly installment payments, called dues. In a typical New Jersey B&L, for example, members pledged to pay monthly dues of $1 to purchase B&L shares that had par values of $200. The B&L invested these funds in local home mortgage loans and paid dividends to members from profits earned on the mortgage loans in proportion to their paid-in investments in the association. If the B&L paid annual dividends of 6 percent, for example, the combined value of a member's dues and dividends reached its $200 par value after 139 months. The time it took to reach par value was longer if dividends fell below 6 percent and shorter if they averaged more.

Three features of the share accumulation plan made the traditional B&L a unique financial intermediary. First, weekly or monthly share accumulation payments were not

[9] Information on the New Jersey B&Ls is from the sample we constructed from New Jersey state reports, and the number of New Jersey banks come from New Jersey fared better than the nation as a whole as the U.S. number of B&Ls and Savings and Loans declined 12.8 percent between 1930 and 1935 and the number of commercial banks declined 39 percent between 1930 and the trough in 1933 (U.S. Bureau of Census, 1975, series X834 and series X580). Nationwide, the number of B&Ls and Savings and Loans fell by 12.8 percent. In comparison, 27 percent of commercial banks and 15 percent of U.S. life insurance companies were eliminated nationwide between 1930 and 1933/34.The national figures are from the changes in the number of insurance companies and commercial banks come from series X834 and X580 from U.S. Bureau of the Census (1975).

deposits; they were equity contributions so that all B&L members were owners of the association and fully shared in its profits and losses. Second, members who joined to borrow from the association were required to participate in the same share accumulation plan that non-borrowing members used for their savings. For borrowing members their investment in B&L shares went into a sinking fund that was used to repay their loan. Third, because both borrowing and non-borrowing members were owners they enjoyed similar one-member-one vote voting rights and shared equally in profits and losses even though the borrowing member-owner was, at the same time, a debtor to the association. This last feature of the traditional B&L created divergent interests between borrowing and non-borrowing member-owners when an association became distressed. This divergence proved to be instrumental in delaying resolution within the industry during the 1930s housing crisis.

To clarify the dual status of a B&L borrowing member it is useful to describe the structure of the hybrid B&L mortgage loan in more detail. The loan combined two features: an interest-only, balloon loan and the requirement that the borrower enter into a share accumulation contract (SAC) equal in value to the principal of the loan. To secure a $2,000 home loan at an interest rate of 6 percent, for example, a B&L borrower agreed to purchase ten shares of the association each with a maturity value of $200 each. Under the combined loan and share accumulation contracts, the borrower had to pay $10 each month in "dues" on her shares ($1 per share for each $200 share) and another $10 each month in interest on the balloon loan (6 percent of the $2,000 loan divided by 12 months).[10] The dues payments went into a "share account", which was a sinking fund where the dues accumulated into shares. Dividend payments from the B&L also went into the share account. When the amount in the share account "matured" by

[10] If the market interest rate at the time of the loan differed from the dividend rate at the time the loan was taken out, the borrowing member might pay an additional premium payment each month or make a lump sum payment at the time of the loan.

matching the $2,000 principal on the loan, and not until then, the borrowing member's share account was used to repay and cancel her loan. The B&L shares were generally structured to mature in 11 or 12 years, but could mature more quickly if dividend rates were higher than expected or the time to maturity could lengthen if dividend rates were lower. If the borrowing member defaulted on dues or interest payments before the shares matured, the association could foreclose upon the property and seek full repayment from the borrower's share account and from the proceeds from renting or selling the property.

B. Non-borrowing B&L members had limited withdrawal privileges.

B&L share accumulation plans were marketed as programs that encouraged and rewarded regular patterns of savings over long horizons. To encourage regularity, B&Ls charged fines to non-borrowing members who did not keep current on payment of dues. Non-borrowers were also assessed fines, and forfeited some dividends, if they withdrew their B&L shares before they had fully matured. The penalties on early withdrawals were structured so that the net return to a shareholder was negative or just above zero within the first two years of the share accumulation contract, and then gradually approached the expected full maturity return after that (Clark and Chase, 1925, 176). Despite the incentives to hold the association stock until maturity, a survey in 1920 found that between 35 and 90 percent of B&L shares were withdrawn before maturity (Clark and Chase, 1925, 170). The term to maturity of most B&L shares was, therefore, longer than the desired term of most members, but appears to have offered many savers sufficiently attractive returns over their expected investment horizon.

B&Ls became concerned in the 1920s, however, with competition from savings deposits at banks that offered greater liquidity, although lower expected returns, than B&L shares. To address the issue, many associations began to waive the industry-wide requirement that B&L

members provide their association with written notification 30 days before withdrawing their shares (Clark and Chase, 1925, 185). The change in notification policy, however, could not mitigate the inherent and contractual limitations on B&L withdrawals. Without some restrictions on withdrawals the B&L could not have invested almost exclusively in illiquid residential mortgages in pursuit of their stated goals of financing homeownership and encouraging long-term saving. Even more fundamentally, a "withdrawal" of shares from a B&L actually involved the repurchase of one member's equity by the remaining owners in the association. From this perspective, it is clear why limitations had to be placed on B&L withdrawals because an association could not serve one of its members if by doing so it compromised the health and liquidity of the entire association or imposed losses on other member/owners (Sundheim, 1922, 153).

To guard against such withdrawals, B&L statutes regularly required that "at no time shall more than one-half of the funds in the Treasury [of a B&L] be applicable to the demands of withdrawing stockholders without the consent of the Board of Directors."[11] If funds in a B&L treasury were insufficient to meet withdrawal requests, then directors were required and empowered to suspend withdrawals beyond the notification window and until sufficient treasury funds were available. Once withdrawals had been suspended, moreover, the priority given to members had to be determined solely by the date they had requested their withdrawals. This meant, in particular, that no priority for withdrawals could be given to members who held matured shares relative to those requesting early withdrawals; nor could members accelerate a

[11] In citing the 1874 Pennsylvania law, Sundheim, 1922, 152 observes that "statutes in the various jurisdictions usually contain …a similar proviso". He shows in New Jersey (p. 253), for example, "not more than one-half of the receipts of any one month shall be required to be used for the payment of withdrawal claims."

withdrawal by paying a premium to the association.[12] The obligation to treat members equally and in their collective best interest led B&Ls to suspend withdrawals indefinitely in the heart of the mortgage crisis and eventually to develop the rotation principle for distributing withdrawals in the heart of the mortgage crisis.[13]

Restrictions on the withdrawal of shares by a borrowing member of a B&L were much simpler. First, borrowing members could never withdraw their shares without fully repaying the loan. Second, borrowing members could use unmatured shares and additional funds to prepay their mortgage loan at any time (Sundheim 1922, 168; Endlich (1895, 144). Such "withdrawals" drained no funds from the association's treasury and so could not be suspended. This ability to repay at any time played an important role in determining the borrower's incentives to delay the closing of the B&L.

C. B&L insolvency was rare; liquidation generally had to be triggered by a vote of members.

A B&L could not be closed because it was illiquid. B&Ls were member-owned corporations that were not obliged to repurchase the shares of their owners on demand. It turns out that B&Ls also rarely became insolvent. A survey of available state supervisory reports in 1925 found there had been no reports of B&L failures in 24 states and only 88 failures reported across the entire industry since around 1890 (Clark and Chase, 1925, 15).[14] B&L advocates

[12] Endlich, 1895, 105-7; Sundheim, 1922, 153. The B&L could also not differentiate in priority for withdrawals between the traditional installment shares and the "full-paid" share that became widely used in the 1920s.

[13] B&Ls that adopted the "rotation principle," during the 1930s set a fixed dollar limit for withdrawals each month and members queued up to receive it. Once they had received this fixed amount, they were then placed at the back of the line to wait for their next fixed payment. It took some members several years to withdraw all of their investment under this system (Bodfish and Theobold 1938, 161).

[14] Clark and Chase (1925, 365) conducted the survey by consulting the state regulatory reports that were then available at that time. The periods covered by this survey varied by state, but rarely extended to before 1890 when only a few states systematically regulated B&Ls. Nonetheless, the annual reports revealed that no B&L failures had been reported in 24 states up to that time. Excluded from these counts were the planned closings of what were

pointed to the small number of failures as evidence of safety and soundness. A more accurate characterization, however, would have been that the unique character of the traditional B&L insured that "failures" within that industry—using the common understanding of the term—would be rare:

> *The insolvency of [a building and loan] is sui generis. There can be, strictly speaking, no insolvency, for the only creditors are the stockholders by virtue of their stock.*
>
> Braver, 1936, 1345-6.

The meaning of insolvency for B&Ls was unique because their business was confined to raising capital from their member-owners and making loans to a subset of the same group (Endlich 1895, 497 and Sundheim 192, 179). The traditional B&Ls in most states were not allowed to take deposits.[15] B&Ls were also restricted in their use of other forms of borrowing to conduct their business.[16] With such limited reliance on creditors:

> *It is scarcely conceivable that the assets of a building association should shrink in so remarkable a manner as to leave such claimants in a position of inability to reimburse themselves by process of law. No case, it is believed, has occurred in which this was a ground for a successful appointment of a receiver.*
>
> Endlich, 1895, 497.

The fact that Building and Loans were generally not vulnerable to insolvency due to the actions of external creditors was recognized in 1932 in law when the industry was exempted from the U.S. bankruptcy code (U.S. House of Representatives (1932).

As a B&L suffered distress, the issue of insolvency did arise, however, because withdrawing members who had not been paid became general creditors in law and could sue for

---

known as "terminating" B&L associations and a wave of failures during the early 1890s among a group of "national" building & loans that unsuccessfully attempted to deploy the local building & loan model over multi-state markets. Snowden (2003, 172-8) examines the reasons for and impacts of the failures of the national associations.

[15] In the early 1920s 30 states, including New Jersey, prohibited B&Ls from taking deposits, and only 3 (Ohio, Missouri and Arizona) permitted them. The remaining states, some of which had not yet enacted specific B&L regulation, remained silent on the issue (Clark and Chase 1925, 396).

[16] B&Ls generally borrowed only from a bank for the purpose of smoothing the seasonal demand for mortgage loans with the steady payment of stock subscriptions. All states limited borrowing to one year and most limited it to 20-25 percent, although New Jersey's limit was 30 percent. See Clark and Chase (1925, 125-6 and 403-8).

restitution after the notification period for withdrawals had passed. In these cases the court was left to identify the conditions under which an association could be judged "insolvent." Over time, case law settled on a deceptively simple standard. A B&L was insolvent when the assets of the association became insufficient to repay on a "dollar for dollar" basis the dues that its members had paid into their share accounts (Sundheim, 1922, 179; *Yale Law Review*, 1933, 932). The rationale for this standard was the presumption that an association in this condition could no longer fulfill the function it had been created to perform for its owners (Braver, 1936, 1346).

The inability to repay the equity contributions of B&L members was a sensible standard for insolvency, but one that was difficult to implement since it required the court to assess the net worth of an operating entity. This difficulty was not mitigated, moreover, when a series of court decisions ruled that more obvious factors—such as an empty treasury, a suspension of withdrawals, or the appointment of a receiver by the state due to the negligence or malfeasance of an association's directors—did not represent determinative evidence regarding insolvency (Sundheim, 1922, 180; Braver, 1936, 1347). As a result, a member or group of members of a B&L that alleged its insolvency bore the burden of proof that the value of the association's assets was not greater than the contributions of equity made by the members. It was difficult if not impossible for them to do so, however, because the money value of an association's assets could only be determined by liquidating its loans and real estate holdings—but by liquidating these the association became dissolved. The courts, therefore, could not settle the issue of insolvency without ordering the liquidation of an association that they were required to presume was solvent.[17]

[17] "The difficulty with such a hard and fast definition is that the value of "available and collectible assets" cannot be really be determined until the association attempts to convert its securities into cash which, in turn, can only be effectively done upon liquidation." (University of Pennsylvania Law Review, 1933).

There was, therefore, no statutory basis or court remedy through which a B&L could be forced into insolvency. The state or court could appoint receivers to manage the B&L, but only if the association was "exceeding its powers, or violating the law, or that its conditions or methods of business would render the continuation of its operation hazardous to the public or those having funds in its custody" (Braver, 1936, 1380). Absent these circumstances, a member-owned, equity-financed B&L was presumed to be performing its intended function until its owners chose to liquidate the firm and surrender its charter (Endlich, 1895, 486). To do so, the members had to approve a resolution of voluntary liquidation. Although there was a presumption that liquidation required a unanimous vote of the members, this requirement could be overridden within the B&Ls charter. For the case we examine in this paper—New Jersey—the B&L Law of 1904 permitted voluntary liquidation and dissolution with the approval of two-thirds of the stockholders attending a meeting that was called specifically for the purpose of considering that motion (Sundheim, 1922, 258; Prescott, 1931, 200).[18]

D. Borrowing members had incentives to delay voluntary liquidation.

During the housing crisis of the 1930s most B&Ls became distressed, just like all other residential mortgage lenders. However, B&Ls were unlike other intermediaries in that they did not have to close when they became illiquid and could not be declared insolvent by creditors. As a result, thousands of "frozen" B&Ls continued to operate during the 1930s even though they had suspended withdrawals, had stopped making new loans, and were focused primarily on

[18] Prescott (1931, 200) cites Section 31 of the law to read "A resolution to dissolve is adopted by the board of directors when in their judgment such course is deemed best. A notice of adoption is sent to each member stating the time and place of the shareholders' meeting for action thereon. At the meeting, an affirmative vote of two-thirds in interest of the members present is required for the adoption. A copy of the resolution must them be filed with the Commissioner of Banking and Insurance, whereupon a certificate to the trustees in liquidation may be issued by him."

servicing loans that were still in good standing and foreclosing upon those that had fallen into arrears. B&Ls in this condition could operate indefinitely unless and until its members approved a voluntary liquidation.

Upon an approval of liquidation, all contracts between the B&L and its members were rescinded (Sundheim, 1922, 183-40; Braver, 1936, 1349-50). Non-borrowing members were no longer required to pay dues on their share accumulation contracts and could no longer take or request a withdrawal. A borrowing member also no longer had to pay dues on the share account that secured her loan, but the loan itself became immediately due in full. The loan was not in default, however, and the borrower was required to continue to make payments of interest on it, and still owed the principal. With all these contracts laid aside, the trustees were free to dispose of the association's assets and distribute the proceeds to members in shares proportional to their contributions of equity into the association.

A substantial body of case law developed over the years concerning the priority of different classes of non-borrowing stockholders during the distribution of the liquidated assets. Some members owned shares that had matured, others had filed notifications of withdrawal before the voluntary liquidation was approved, and still others had purchased full paid stock rather than through a share accumulation contract (*Yale Law Journal*, 1933, 935-40). The courts generally recognized priorities or preferences that had been granted before the liquidation had been approved or even anticipated, but once in liquidation shareholders were generally awarded claims proportional to the equity they had paid into the association regardless of differences in the maturity or types of shares they had held.

An issue of greater concern here regards the treatment of borrowing members during a voluntary liquidation. To confront the issue, courts had to clarify the status of the claims of

borrowing members given that they were both owners of and debtors to their associations. The view held in the great majority of states, including New Jersey, was known as "the Pennsylvania Rule," named after the state where the key court decision was made.[19] Under the Pennsylvania Rule the SAC borrower was both a bona fide member/owner of the B&L and a debtor to the B&L. The rationale for this position was that the share account attached to the SAC member's loan earned the same profits and absorbed the same losses as the share accounts of non-borrowing members. Thus, when a resolution for voluntary liquidation had been passed, the borrowing member's loan became immediately due in full, while the shares built up in the associated sinking fund was held back until all of the B&L's assets had been disposed of and a liquidating dividend payment declared.

Under the Pennsylvania Rule borrowing members in a distressed association had incentives to delay liquidation until they could pay off their share accumulation loan contract as originally written. If a borrowing member could pay off the loan prior to liquidation, his shares were assessed at their book value and were not written down to account for losses embedded in the association's balance sheet. If the loan was still outstanding at liquidation, on the other hand, his shares fell to their liquidation value and he still owed the full, original principal of his loan. We estimate below that the liquidation value of B&L shares were typically two-thirds of their book value; therefore, repaying a loan after liquidation imposed a sizeable loss on the B&L

[19]A handful of states dealt with SAC borrower/members with the "Maryland rule." Under this interpretation the dual role of stockholder-mortgagor was treated as a fiction imposed by the B&L contractual structure. As a result, the borrowing member was considered to be a debtor with a liability equal to the difference between her outstanding straight mortgage loan and the balance in her share account. Under insolvency, therefore, the borrower became responsible for a loan balance equal to the difference between her share account and the original loan balance. This NET debt was calculated based on the book value of her shares and became due immediately.

borrower.[20] This loss also raised the probability that the borrower would default on the loan and lose his home, in which he typically held 40 to 50 percent equity during this period.

Given the divergent incentives of borrowing and non-borrowing members, it is likely that their relative numbers influenced the decision to voluntarily liquidate. More specifically, SAC borrowing members could effectively block dissolution if they accounted for more than one-third of the members who attended and voted at the special meeting called for the purpose of considering the resolution to liquidate. As we will further explain in the data and descriptive statistics section, we can only construct a proxy for the share of SAC members that had the opportunity to block the liquidation in the special meeting, due to two reasons. First, we have an estimate of the share of SAC borrowers among all members, and not those who actually attended and voted on these resolutions. SAC borrowers had more at stake in the vote than the non-borrowing members and thus were more likely to attend these meetings. Second, our measure of the share of SAC borrowing members is an estimate for each association that is based on an assumption about the relative average sizes of SAC and non-SAC loans. From these considerations it follows that our modeling of the voting decision should treat the one-third voting rule as a "fuzzy" threshold. To take these considerations into account, in the estimation below we use a set of variables that indicate different levels of the share of SAC members, and we also estimate the impact of the percentage of SAC members measured as a continuous variable in modeling the decision to liquidate a B&L. In the robustness checks section we show,

[20] Rose (2014) examines in detail the operation of the curb market for B&L shares in New Jersey during the 1930s and shows that it provided withdrawals at deep discounts for B&L members and offered purchasers control over the foreclosed real estate owned by the association. In his examination of the Milwaukee situation, Kendall (1962, 146) examines secondary market prices for nearly one hundred Milwaukee B&Ls in 1936 and finds that B&L members sold shares at prices that ranged from $15 to $86 for each $100 "par" share. The average discount was 20 to 30 percent relative to their book values.

through both graphs and regression analysis, that the results do not change if we limit the analysis to a small interval around the cutoff of one-third share of SAC members.

III. Data and Descriptive Statistics

To examine the impact of the two-thirds majority rule for dissolution, we have collected and digitized a panel dataset with time-varying information on the features of the balance sheets of all of the B&Ls operating in New Jersey in the 1930s. We chose New Jersey for several reasons. First, it is the only state in which the state regulator consistently reported the number of borrowing and non-borrowing members as well as balance sheet information for each B&L for each year in the 1930s. Second, New Jersey had a large number of B&Ls spread throughout the counties of the state. Third, few of the B&Ls in New Jersey converted to the Savings and Loan structure; therefore, we can look specifically at voluntarily liquidations without facing the complications in incentives created by the conversion to S&Ls and the attempts to shift borrowers into S&L contracts.

The information on individual B&Ls was collected, compiled, and digitized from the *Annual Reports of the Commissioner of Banking and Insurance* in New Jersey for the years 1930 through 1940. The sources provide the name, location, and date of establishment for each association that operated between 1930 and 1940, as well as comprehensive balance sheet information for each year. It also identifies B&Ls who have exited each year and the type of exit.

A total of 1,581 associations operated at some time during the decade in New Jersey and there was wide variation in age and size. In 1930 of the 1,561 operating B&Ls there were 283 associations operating that had been established before 1900, another 585 had been placed in operation between 1900 and 1920, and 693 had been organized during the rapid expansion of the

1920s. Another 20 B&Ls were formed after 1930. The size also varied considerably. More than 400 small associations held total assets of less than $250,000 while another 92 held more than $2 million. Membership numbers correlate closely with total association size, as 240 small associations had fewer than 250 owner-members and 297 claimed more than 1,000 members. All told, the average association in New Jersey held assets of $633,000 in 1930 and claimed 528 members of which 123 were borrowers.

The detailed balance sheet data provided in the annual reports provide a rich set of measures of each association's financial structure and strength that we use here as controls for the probability of exit. Table 1 shows the means and standard deviations for these variables for several years during the 1930s. In our regressions in the next section, we control for the size of the association's total assets, and use the shares of total assets represented by key assets and liabilities to measure their financial condition. The principal earning assets for a healthy B&L were mortgage loans and these represented an average of 90 percent for operating associations in 1930. As the housing crisis unfolded, the average share of mortgages fell to lows of only 50 percent in 1937 and then recovered to 58 percent by the end of the decade. Offsetting increases in the shares of two other assets trace the dynamics of the difficulties B&Ls faced during the crisis. Nonpayment of dues on stock subscriptions and interest on loans were classified as "arrearages," and the average share of assets in this category increased from less than 1 percent in 1930 to 5 percent in the mid-1930s before falling back to 2 percent in 1940. Increases in arrearages on loans and shares securing loans were signs of problems and often were followed by loan foreclosures. Increased numbers of foreclosures caused the average share of assets represented by real estate owned by the B&L to increase from 3 percent in 1930 to nearly 40 percent as late as 1939. The annual shares of mortgage loans, arrearages and real estate owned

for the B&Ls in our sample together give a rich and dynamic picture of their basic profitability and solvency and we supplement that here with a measure of their short-run liquidity—the share of assets held in cash.

The liabilities reported in the annual reports characterize the structure of claims on each B&L's assets that were held by its member-owners. In 1930 most of the capital invested in New Jersey B&Ls (84 percent on average) came through the traditional channel—dues paid on installment shares and the profits on these shares that had been apportioned by the B&L and accumulated in the members share account. As distress mounted, B&Ls built loss reserves and sought greater liquidity by holding back on payments of dividends and retaining profits to serve as loss reserves and to fund greater liquidity. These un-apportioned profits -which legally belonged to members- became a major liability, rising from one percent in 1930 to more than 20 percent by the end of the decade, as shown in Table 3. Also by the end of the decade the more modern form of investment that would become the standard liability in the postwar S&L—paid-up shares—increased in importance as a share of liabilities.

The annual reports provide information in each year on the number of borrowing and non-borrowing members in each B&L. The voting bloc of most interest here is borrowing members, but more specifically borrowing members with traditional B&L share accumulation, sinking-fund loans. One of the important changes in the transition from B&L to S&L was the replacement of the traditional share accumulation loan (henceforth SAC) with the modern direct reduction loan contract (DRC) in which monthly principal payments were used to immediately reduce the outstanding loan balance. The impact of a voluntary liquidation on DRC borrowers, and their likely voting positions, were different because under liquidation the dues payments the SAC borrower's had made under the original contract in order to repay the loan were held back

and subject to the member's share of association losses. So although the loans of both SAC and DRC borrowers became due immediately upon liquidation, under the traditional contract the borrower owed the original loan amount while the DRC owed only the remaining principal.

The New Jersey B&L reports are unusual because they report for each year not only the number of borrowing and non-borrowing members, but also the breakdown of mortgage loans into the volume of SAC and DRC loans. As a result, we can estimate the number of SAC and DRC borrowing members in each B&L by multiplying the total number of borrowers by the shares of the two loan types in total mortgage lending volume.[21] As can be seen in Table 3, the share of members who borrowed under a direct reduction mortgage contract was very small in New Jersey over this decade, accounting for less than 2.5 percent of members through 1938 and then rising to 5.6 percent in 1939 as the dissolution of traditional B&Ls accelerated. The share of members who had borrowed using SAC contracts was a much larger voting bloc, on the other hand, and represented an average of 23 percent of members in 1930 and 26 percent in 1934 before falling off rapidly in the last few years of the decade.

The New Jersey data, therefore, allow us to divide B&L membership each year into three groups—SAC borrowers, DRC borrowers and non-borrowers. We treat all non-borrowers as a single voting bloc here because non-borrowers were treated equally when associations became frozen or liquidated whether they held installment, matured, or paid-up stock. Our focus is on the share of SAC borrowers and the requirement in New Jersey law that a voluntary liquidation had to be approved by at least two-thirds of all members that attend the meeting. In our main specification we estimate the impact of SAC membership shares by creating a dummy variable

[21] The maintained assumption is that the size of SAC and DRC loans were on average the same. The categories of loans reported in the annual report are "Mortgage Loans-With Pledged Shares" and "Mortgage Loans-Without Pledged Shares". The latter could include both DRC and straight loans—we refer to them all as DRC which clearly become more important over the decade.

for B&Ls in which the share of SAC borrowers in that year accounted for more than or equal to one-third of the voting members and thus could block liquidation. Because attendance at dissolution meetings was voluntary, the number of members and the attendees might differ, which would add some additional fuzziness as to who might actually participate in the voting. To allow for this fuzziness and the possibility that borrowers were still able to block liquidation with a lower share, we add a second dummy for settings when the share was greater than or equal to 25 percent and less than one-third. As shown in Table 3, SAC borrower voting blocs were sufficiently large to determine voting outcomes in nearly 20 percent of B&Ls over the entire 1930s decade and just under that size in another 20 percent. We also estimate the impact on the hazard of the share of SAC borrowers to allow comparisons of the size of the effects on dissolution of changes in the SAC share and changes in features of the balance sheet.

Not all of the New Jersey B&L closures were voluntary liquidations. Of the 568 closures between 1934 and 1940, 351 were voluntary liquidations, 93 involved mergers, 31 were reorganizations, 6 were conversions to Federal S&Ls and 87 were driven by state action. Most of the reorganizations involved "bulk transfers" of assets in which the membership of an association segregates non-performing loans from good loans and places the good loans in a new B&L in which each member was given a proportional share. The members, in essence, accepted a write-down in the value of the shares in their original association so that the new "healthy" B&L can begin to operate while the "bad loan association," was liquidated (Ewalt 1962, 116-8). The state actions included 21 liquidations and conservatorships run by the state regulator, likely for fraud. The remaining 58 occurred in only two years—1937 and 1940—and are described in the state reports as "the state taking possession." Most B&Ls in this category continued to operate for a year or two before ending operations, but the annual report provides no clear

information about how they were resolved. In the next section we focus on voluntary liquidations and we discuss the robustness of the results to considering other sources of exit. [22]

Finally, the empirical analysis focuses specifically on the 1934 to 1940 period during which voluntary liquidations accelerated and before state government and federal regulators began to sponsor large numbers of resolutions. By narrowing the focus to the period 1934 to 1940 our empirical analysis examines 992 B&Ls that survived and operated until at least 1940, 351 B&Ls that were voluntarily liquidated by their members between 1934 and 1940, and 170 B&Ls who exited through mergers, federal conversions, reorganizations or state actions.

IV. Empirical Strategy

The empirical strategy of the paper identifies the effects of the share of SAC members on the timing of voluntary liquidations using a semi-parametric survival model of exit. For our baseline analysis we restrict our sample to B&Ls that either exited through voluntary liquidation or survived until the end of our five-year sample period. Later in the paper we perform robustness tests for this limitation.[23] Using these data we estimate a Cox (1972) survival model in which the hazard of closure through voluntary liquidation is:

$$h(t) = h_0(t) \exp(\beta SAC_{itc} + \delta_1 F_{itc} + \delta_2 C_{itc} + \delta_3 F_{i30c}) \quad (1)$$

where *h(t)* is the hazard of closure at time *t*. The subscript *i* refers to the firm, *t* to the year, and *c* to the county where the firm is located. Survival models divide the hazard of exiting into two components: a) the baseline hazard ($h_0(t)$) that defines the pattern of the baseline hazard of exit

[22] The strategy we employ is first to examine the timing of voluntary liquidations by using the first two groups, and then to investigate the robustness of the results by considering the impacts of the other types of exit in a multinomial logit analysis. In an appendix table we also show that the basic qualitative results are unchanged when we treat mergers and reorganizations as voluntary liquidations and when we estimate the model treating all closures as the same.

[23] See Section VIII for the multinomial logit analysis for the sample period in which all types of exits—mergers, conversion to federal charters and reorganizations as well as voluntary liquidations—are modeled.

for all observations over time, and b) the differences in the hazard related to the covariates (the exponential of a linear index of covariates). The Cox model is a semi-parametric technique that leaves the baseline hazard rate unspecified and imposes that the effect of covariates on the hazard rate for any individual is proportional to the baseline hazard. As a robustness check, in the next section we present the estimates for other survival models in which the baseline hazard ($h_0(t)$) is assumed to have a parametric distribution (for example an exponential or Weibull distribution).

In our specification, SAC_{itc} is a vector of dummy variables that capture the impact of different ranges of the share of SAC borrowing members among all members. In our main specifications we use an indicator function that takes the value of one if the share of SAC members is between 1/4 and 1/3 and another indicator function that takes the value of one if the share of SAC members is greater than1/3. In other specifications we use the share of SAC members as a continuous function. Our primary focus is on β, the coefficient(s) on the measure(s) of the proportion of SAC borrowers.[24]

The most complete specification of the model includes a rich set of correlates to control for omitted variable bias and potential selection bias. F_{itc} is a vector of time-varying firm characteristics, including size (measured as log of total assets), the share of DRC borrower/member and a series of variables describing the assets and liabilities. The asset variables include the shares of assets in arrears (non-payments), real estate owned, and cash on hand; the left out category is loans and miscellaneous assets. On the liability side we can also

[24] Because the SAC borrower shares may have some measurement error, we have tried alternative measures of the reliance on SAC loans. In one of them we use the SAC share of the value of loans, which focuses on the differences between DRC borrowers and SAC borrowers but ignores the non-borrowing members. In a second specification, we use the proportion of borrowing members in the total membership, which focuses on differences in attitudes between borrowers and non-borrowers but ignores differences between DRC and SAC borrowing members. The results in all settings suggest that greater reliance on SAC loans was associated with a lower probability that the B&L would close.

control for the shares of liabilities in installment shares, paid up shares, and un-apportioned profits with apportioned profits and miscellaneous as the left-out category.[25]

C_{itc} represents a vector of time varying measures of economic activity in the county where the B&L was located. Retail sales per capita offers a measure of average consumption and federal tax returns filed per capita controls for the top end of the income distribution. These variables were drawn from data sets compiled by Fishback, et. al. (2011). We also developed a variable for the value of Home Owners' Loan Corporation (HOLC) loans purchased per household across New Jersey counties.[26] The HOLC purchased mortgages from all types of New Jersey lenders and refinanced them for roughly 8 percent of households. Approximately 80 percent of the purchases were made in 1934 and 20 percent occurred in 1935 and the shares varied across counties. We controlled for the value of the HOLC loans purchased per household in those years because somewhere between 33 and 50 percent of the HOLC funds removed problematic mortgages from the B&Ls balance sheets.[27]

The hazard model structure does not allow controlling for time-invariant features of the B&Ls with fixed or random effects. Following the practice in survival models estimation, to control for unmeasured time-invariant heterogeneity across firms, we include time-invariant

[25] Although the shares of assets and liabilities measure different elements of the financial structure and health of B&Ls, there are strong connections between the structure of liabilities and the structure of assets. To see the robustness of results to multi-collinearity, we also estimated, but do not report, models with the variables describing the structure of assets and liabilities alone.

[26]The HOLC reported the total distribution of loans and number of households that they made across each county in New Jersey; 80.7 percent of the New Jersey loans were distributed in 1934, and 19.26 were distributed in 1935. See Federal Home Loan Bank Board (1934, 86; 1935, 63; 1936, 164, 192-193). We used these percentages to apportion the loans for each county for 1934 and 1935.

[27] The HOLC bought troubled mortgages from lenders and then refinanced them for borrowers in 1933 and 1934. This would have helped delay insolvency by removing a number of troubled mortgages from the B&Ls' books. A rough estimate is that the HOLC purchased about $50 million in mortgages from New Jersey B&Ls in 1934 and 1935, which was about 20 percent of the decline in B&L assets during that period. Through 1935 About 8 percent of New Jersey nonfarm homes were mortgaged by the HOLC compared with 9.5 percent for the nation as a whole. New Jersey ranked 36th on that percentage. 5.3 percent of HOLC loans. (Federal Home Loan Bank Board, 1935, p. 63, 1937, p. 164). The Federal Housing Administration (FHA) had relatively small impacts in New Jersey because it, insured a relatively small share of mortgages in NJ before the early 1940s.

controls for the asset structure and size of the firms in 1930 and/or the liability structure in 1930 just before the mortgage crisis started to develop.

Our baseline analysis uses the Cox proportional model because it does not specify a functional form and therefore is more flexible than other methods. To insure that the results found here are robust, we have also estimated the relationships in several other ways. We explore use of exponential and Weibull parametric analysis. We have also estimated the survival model by treating other forms of exit as voluntary exits, and also treating them as non-exits. We have also estimated a multinomial logit model in each form of exit is treated as an outcome. Finally, we have reanalyzed the data using methods designed for discontinuous changes. In all cases the results lead to similar conclusions, so we report the robustness checks in Appendix I.

V. Results

In column 1 of Table 2 we model the hazard of exiting through voluntary liquidation as a function only of the voting bloc size of the borrowing members of B&L associations. These estimates are based on maximum-likelihood estimates of equation (1). Dummies are included here to identify B&Ls in which SAC borrowers were more than one-third of members, for associations with SAC borrowers between one-quarter and one-third of members, and with the actual share of DRC members. The negative and statistically significant coefficients imply that the probability of closure declined for B&Ls with higher shares of SAC borrowers. B&Ls with SAC shares greater or equal to one-third of voters were 75.7 percent less likely to close than B&Ls with SAC shares below 25 percent. B&Ls with SAC shares between one-fourth and one-third were 63.6 percent less likely to close.

The estimated relationships above are unconditioned by the asset or liability structures of the B&Ls. This likely means that there is omitted variable bias that overstates the ability of the SAC loan holders to stop voluntary liquidations. B&Ls with higher shares of assets in real estate owned due to foreclosure were more likely to be in trouble and thus to have been closed down. At the same time, foreclosure on loans and increases in real estate owned would have directly reduced the numbers of SAC borrowers and, therefore, their share of the membership. Taken together, these two influences should create an omitted variable bias in the negative direction if the SAC member share is estimated without conditioning on the share of real estate and other balance sheet variables that would bias the unconditional estimates toward being more negative. Consistent with the anticipated negative omitted variable bias, when we control for changes in the asset and liability structure of the B&Ls in Specification 2 of Table 2, in fact, the coefficients on the SAC borrower share of borrowers become substantially less negative.

To mitigate problems associated with the potential endogeneity of the SAC loan member share, we add additional controls for the structure of the assets and liabilities for each B&L in 1930. In a survival model, the balance sheet variables measured before the crisis can be considered as similar to fixed effects that control for the condition of each B&L before the crisis. We also add measures of contemporary economic activity within the county in which each B&L was located. When these additional factors are included in the analysis, the coefficients in column 3 of Table 2 become less negative but remain statistically significant for B&Ls with a SAC share of voters greater than or equal to the one-third threshold required to block liquidation. The estimated coefficient for B&Ls with SAC shares above one-third (-.872) implies that these associations were 50.2 percent less likely to go into voluntary liquidation than ones with SAC shares below 25 percent. The less negative estimate (-.438) for SAC shares between one-third

and one-fourth, on the other hand, indicates these B&Ls were 24 percent less likely to close than those with less than a one-fourth share, but the relationship is statistically insignificant.

One way of illustrating the magnitude of the impact that borrowing members on liquidation is to calculate the change in the baseline probability of liquidation for the sample if the SAC mortgage shares of ownership had been greater than one-third in all New Jersey B&Ls. To do so, we first calculate the predicted probability of liquidation for each B&L in each year using the baseline probability estimated in the model, the coefficients from specification 3 in Table 2 and the actual values of each of the correlates. The mean of these predicted probabilities is 16.0 percent, which represents the mean baseline probability of any B&L in the sample failing in any given year between 1934 and 1940. When all firms are given a SAC share above one-third while leaving the rest of the correlate values the same for each observation, the predicted probability falls to 8.4 percentage points or to just under 50 percent of the actual sample's baseline hazard. If we redo this calculation by assuming all firms have SAC shares between one-fourth and one-third, and the probability of liquidation falls from 16.0 to 11.8 percentage points, or a decrease of 26 percent.

An alternative counterfactual method of showing the large magnitude of the impact of borrower's voting power is to show how the number of predicted liquidations each year and in total would have changed under different values of the share of members with SAC loans. The first column in Table 3 shows that the actual number of voluntary liquidations for B&Ls in the sample in each sample year. Between 1934 and 1940, 351 New Jersey B&Ls entered voluntary liquidation, with only 11 before 1936 and a peak of 149 in 1939. As a benchmark for our counterfactual exercise, the second column presents the predicted pattern of voluntary liquidations over time using the predicted probabilities of liquidation derived from the estimated

coefficients in specification 3 in Table 2 in conjunction with the actual values of the correlates and the baseline probabilities for each observation. We assigned voluntary liquidation status to each B&L when its predicted probability of liquidation rose to or above 83 percent.[28] This threshold was chosen because that at that threshold the model predicts the same number of voluntary liquidations as the number that actually occurred. The time pattern of these predictions was more back-loaded than the actual distribution as there are no predicted liquidations before 1936, a higher peak than the actual peak in 1939, and more predicted liquidations in 1940.

The remaining three columns in Table 3 show the results of this counterfactual exercise. We present the total number and time pattern of predicted voluntary liquidations using the 83 percent threshold for entering predicted voluntary liquidation under different counterfactual values of the SAC borrowers' share of membership. If all firms had had SAC Borrower Shares greater than one-third, the total number of predicted liquidations would have been cut sharply (from 351 to 98), and the peak of these liquidations would have been delayed (from 1939 to 1940). Had the SAC shares for all associations been between one-third and one-fourth, on the other hand, the predicted number of liquidations would have been 230, roughly two-thirds of the actual number liquidations. Had all firms had SAC shares been below one-fourth, the number of predicted liquidations increases to a number above the actual number of liquidations. These patterns illustrate the powerful predicted negative impact that higher shares of borrowing members with SAC loans had on the likelihood and timing of voluntary liquidation among New Jersey B&Ls.

In the middle panel of Table 2 we show the magnitude of the impacts of all the remaining variables in Specification 3. Because all of these variables are continuous, we show the effect on

[28] In results not reported in the paper (available upon request) we do the same exercise using the actual probability of liquidation predicted for each firm at the time of liquidation, instead of the 83% rule for all firms, and the results are very similar to the ones reported in the paper.

the probability of liquidation of a one-standard deviation change in each correlate holding all others at their sample values. We also show the effects on the predicted probability of the change in the mean of each variable between 1934 and 1939. The standard deviations for the sample and the mean values for 1934 and 1939 are shown in Table 1.

Because the SAC mortgage membership share variables are dummy variables, the changes above when we assign all observations to have SAC shares above one-third are not directly comparable to one-standard deviation changes for continuous variables. To allow comparisons of the magnitude of the impact of the SAC borrower share to the impact of other factors, we have re-estimated the model with the share of members with SAC mortgages, which is continuous, as the dependent variable. The coefficients of the SAC share continuous variable in Table 2 are statistically significant and negative in specifications 4, 5, and 6 in Table 2. The effect of a one-standard deviation increase of 0.129 in the SAC share leads to the reduction in the predicted liquidation probability of 5.6 percentage points from 16 to 10.4 percent. Between 1934 and 1939 the mean SAC share fell by 10.3 percentage points from 26.3 to 16 percent. Such a decline would have been associated with a rise in the predicted liquidation probability of 5.6 percentage points from 16 to 21.6 percent.

There are only three correlates in Table 2 that have larger or comparable impacts on predicted probabilities as the SAC borrower share of membership. First, the average size of B&Ls fell between 1934 and 1939 by more than 38 percent (Table 1), and the drop increased the predicted probability of liquidation shown in Table 2 by 4.2 percentage points. Second, the average share of arrears for the sample B&Ls fell from 5.1 to 2.6 percent between 1934 and 1939, and this change lowered the probability of liquidation by -2.2 percentage points (Table 2) from 16.0 to 13.8 percent. Finally, between 1934 and 1939 the share of assets in real estate

owned rose from 21.5 to 37.6 percent of assets (Table 1), implying a 14.3 percentage point increase in the probability of liquidation in Table 2. [29]

VI. Gains from Borrowing Members and Losses to NonBorrowing Members from Delay

The distributions of actual and predicted liquidations in columns 1 and 2 of Table III show that the dissolution rules delayed liquidation by an average of about one year. The one-year delay offered gains to a significant set of borrowers but at the expense of losses for the other members of the B&L. The relative size of the gains and losses give a sense of the long term viability of the dissolution rules for the B&Ls and their SAC mortgages. If the losses to non-borrowers from the delay were substantially larger than the gains for the borrowers, the likelihood that the B&L would be a successful institution going forward without changing the dissolution rules was reduced. Nonborrowers would have demanded a premium in interest rates to include the dissolution rules that the borrowers would not have been willing to pay.

We develop estimates of the gains and losses from the year delay using information from the balance sheets for each of the 351 New Jersey B&Ls that voluntarily liquidated between 1934 and 1940 and our best estimates of housing values, the foreclosure rates, and the likely losses on foreclosed housing. The balance sheets in the year of dissolution and the year before show how many borrowers were able to pay off their loan during the year before dissolution and

[29] The nonlinear nature of the exponential function underlying the Cox hazard model leads to differences in the magnitudes of changes in the probability of liquidation associated with changes in correlates at different points in the distribution. In the text, the comparisons are based on the average of the marginal differences associated with a change for each observation. An alternative method is to calculate the marginal effect when the predicted probability is evaluated at a point associated with the means for all of the correlates. This method also tells the same qualitative story as in the text. The predicted probability at of liquidation evaluated at the means is 5.1 percent. A one-standard deviation increase in the dummy for a SAC member share over one-third is associated with a -1.2 drop in the liquidation probability. The only larger effects of a one-standard deviation rise are for the real estate share of assets at 5.3, the size of the B&L at -2.1 and the arrears share of assets at 1.7. The OSD effect for installment dues was the same size at -1.2.

how many borrowers and nonborrowers were still in the B&L when it dissolved. From this information we can determine *how many members of the B&Ls involved in the dissolving B&Ls* gained from the one-year delay and how many lost. [30]

There were 66,182 non-borrowing members and 10,529 SAC borrowers.in the 351 liquidating New Jersey B&Ls above *in the year before they dissolved*, Had the B&Ls gone into dissolution that year, the 66,182 non-borrowing members would have experienced a sharp drop in the value of their shares then. The 10,529 SAC borrowers also would have experienced a sharp drop in the value of their shares, making repayment more difficult and raising the likely foreclosure rate from around 3 to 10 percent for this group of borrowers. We will also discuss relative gains and losses when the foreclosure rate for borrowers caught in dissolving B&Ls is higher.

In the actual year when dissolution was declared, we assume that the number of non-borrowers stayed the same at 66,182, while the number of SAC borrowers was 7,642, 2,887 fewer than in the year prior.[31] The 2,887 difference was composed of SAC borrowers who had either paid off their loan or were foreclosed upon during the one-year delay associated with the voting rule. Assuming the national foreclosure rate of 3 percent in 1936 for the 10,529 SAC borrowers, we estimate there would have been 316 foreclosures in the intervening year and thus

[30] We focus on the direct participants because they were directly involved in real estate lending and thus were the people who likely determined which types of institutions would survive. For society as a whole, the delay may have provided external benefits by reducing foreclosures and preventing any consequent drop in general housing values. On the other hand, the delay also had external costs by tying up investment dollars that could have led to new building or housing purchases.

[31]The actual number rose by around 2,000. In the year before liquidation, 39 out of 351 liquidating associations saw membership increases of more than 50 percent without substantial increases in investments. From what we can tell these B&Ls were adding nonborrowers with nominal investments in an attempt to shift the vote in favor of dissolution. We left the extra 2000 out of the calculations because their losses would have been minimal during the dissolution.

there were 2,571 (2,887-316) SAC borrowers who paid off their loans and left the B&L without any losses.

Had the dissolution occurred the year before the actual dissolution, the drop in the value of shares likely raised the foreclosure rate for the 10,529 SAC borrowers from 3 percent to 10 percent, or from 316 to 1053 borrowers. This implies that a year delay in dissolution would have allowed 737 (1053-316) borrowers to avoid foreclosure in that year. When the dissolution actually occurred, there were 7,642 SAC borrowers, and the number of extra foreclosures under dissolution would have been 535 ((0.10-0.03)*7642). Thus, the year delay in dissolution probably saved about 202 (737-535) borrowers from having to go through foreclosure because the number of borrowers at risk at the time of dissolution was so much lower.

Given the estimates of the number of borrowers and lenders involved in the process, we now assign average values for their losses and gains from a one-year delay in the dissolution. The 66,182 non-borrowing members lost in two ways from the one-year delay. First, the liquidation value of each share typically fell in value when liquidation was delayed because the asset position deteriorated, and second, they lost the return they would have received from investing the liquidation value from the prior year in an alternative investment. We calculated the liquidation value of assets from the balance sheets by determining the likely percentage of each type of asset that would have been paid out under a liquidation. The real estate that the B&L owned due to foreclosures was typically sold at 50 percent of book value. Assuming that 10 percent of the remaining SAC mortgages were foreclosed and the real estate sold at 50 percent of the book value, the SAC mortgages were worth 95 percent of their book value (90%+0.5*10%). Similarly, direct reduction mortgages likely defaulted at a 2 percent rate and the real estate was sold at 50 percent of the book value to obtain an expected value of 99 percent

(98%+0.5*2%). Cash and other assets were treated as having full value. To get the liquidation value per member, we added up the expected value of all assets at the time of dissolution and divided that value by the sum of the number of non-borrowing members and the number of SAC borrowers. The average liquidation value per member on average was around 65.5 percent of the book value. In dollar values it fell by $304 from $2,585 to $2,281 between the year before dissolution and the year of dissolution. The members also lost the opportunity to earn a real return of 1 percent on the $2585 liquidation value from the earlier year, which comes to $26 in Table V. After multiplying the average loss of $330 (304+26) by the 66,182 non-borrowing members, the total loss to non-borrowers was $21.9 million.

Finally, consider the situation for the 7,642 SAC borrowers at the B&Ls at the time of dissolution. Of that group 10 percent, 764 borrowers, were unaffected by the year delay because they went through foreclosure under either scenario. Assume the remaining 6,878 fully repaid their loans even after experiencing the 34.5 percent drop from book value to the liquidation value of their shares.[32] Like the nonborrowing members, they lost money from the year delay because of the drop in the liquidation value of the shares from $2,585 to $2,281 and the lost interest of $26. The total loss to this group was therefore $2.27 million ($330*6,878).

There were two groups of borrowers who actually gained from the one-year delay caused by the dissolution rules: the 2,571 borrowers who were able to pay off their loan during the delay and the 202 borrowers who were able to avoid foreclosure because of the delay. The 2,571 borrowers who were able to pay off their loan during the one year delay managed to avoid a sharp drop in the book value of their shares. Many of these borrowers had taken out their loans

[32] During the liquidation under the Pennsylvania rule, the courts typically valued their shares at book value in the repayment of the loan. However, in the final liquidation settlement they were among the owners of the repaid shares, which had dropped to the liquidation value; therefore, they ended up losing the 34.5 percent difference between the book value and the liquidation value.

in the mid-1920s and were nearing the end of their repayment process. By avoiding the liquidation, they avoided the loss of the difference between the book value and the liquidation value of their shares had they been stuck in liquidation. We estimate that the typical loan principal was $6,485 for this group by assuming that that the typical borrower had borrowed 60 percent of the average New Jersey nonfarm house value of $10,808 in 1930. All dollar figures in this section are denominated in 1967 dollars. By repaying the loan before the dissolution, the shares were treated as having the book value of $6,485 in the repayment. Had these borrowers been forced to go through the liquidation, their shares would have fallen in value by 34.5 percent (see above), so they each avoided an average loss of $2,238 on their shares, as shown in Table V. The total gain to the borrowers who paid off their mortgages during the year delay was therefore $5.7 million (2,598*$2,223) in Table V.

The second group who gained from the delay was the 202 extra borrowing members who likely would have been foreclosed upon had the liquidation occurred a year earlier. Early liquidation would have caused the loan to come due. Even though the courts typically tried to set repayment structures to minimize foreclosures, this second group would have been unable to repay the loan once they knew that the values of their shares would drop to liquidation value. They typically lost the full value of the home because the foreclosure process typically did not return enough to fully pay off the original debt because home values in New Jersey had dropped by 40 to 50 percent in nominal terms. As the estimate of the home value lost, we interpolated between census years and obtained an average value of a New Jersey home of $7,854 for the late 1930s. The total gain from avoiding extra foreclosures in Table V was therefore $1.6 million ($7,864*202).

The total gain from a year's delay for borrowing members sums to roughly $7.3 million in Table 4, compared with a loss of $24.1 million for the remaining members. Thus, the gain for the borrowers was less than one-third of the loss to the rest of the members. We performed a number of robustness calculations and found that the one assumption that had significant effects on the relative gains and losses is assumption about the foreclosure rate on the homes of borrowers caught by the dissolution. The losses from a one-year delay to nonborrowers remain higher than the gains for borrowers as long as that foreclosure rate is lower than 47 percent, which is a rate that was extremely unlikely. Therefore, we are certain that inside the dissolving B&Ls the losses from the delay to nonborrower exceeded the gains to borrowers.

Until the 1930s the B&Ls had long been popular, in part, because they had survived shorter downturns with little trouble. The problems with the B&Ls in the Depression provided a direct demonstration to mortgage market participants of costs and benefits related to the B&Ls that no one had seen before. The "pricing" of the value of the delay would like have come through changes in the interest rate. The three-to-one ratio in the costs and benefits give an indication that lenders would have demanded a substantially larger premium in the interest rate than borrowers would have been willing to pay to include B&L rules that led to the delay in the mortgage contract.[33]

[33]The three-to-one ratio of costs to benefits will hold for any interest rate adjustments because both costs and benefits would be normalized by the same number to come up with the interest rate. Here is one reasonable estimate of how much interest rates might have adjusted for the dissolution rules. The adjustment to the interest rates would have been determined by the size of the losses or gains relative to the value of the B&L's assets before the crisis began as well as the probability that the voting rule would come into play. The total of the book values of the 451 liquidating B&Ls four years before liquidation, just before the signs of trouble began, was $360 million. Thus, the SAC borrowers who benefitted from the year delay received a gain of about 2.03 percent of the book value, while the losing members experienced a loss of about 6.7 percent. The likelihood that the housing market would be bad enough that the voting rule would come into play for so many B&Ls was probably about one in twenty. Multiplying the probability by the actual loss shares leads to estimates that suggest that borrowers would have been willing to add up to an extra 0.10 percent or 10 basis points to the interest rate, while lenders would have demanded an additional 33 basis points. These figures seem small but real interest rates in the late 1930s were typically in the 1 to 3 percent range, so 33 basis points is roughly a rise of 11 to 33 percent in the interest rate.

VII. Conclusion

The Building and Loan and the SAC mortgage are an example of a type of firm and contract that had been successful for a long time but were then marginalized when a financial crisis revealed their flaws in handling a major economic crisis. The rapid demise of the B&L industry during the Great Depression came about when market participants realized for the first time that once these cooperative lending structures became distressed during a crisis, they entered resolution processes that took years to complete. These delays arose because borrowing members had a strong incentive to postpone liquidation, while B&L contracts and case law insured these associations would remain operating, even when severely distressed, until liquidation was favored by a two-thirds of the members. Although borrowers gained from the delay, nonborrowers faced losses that were triple the size of the gains for the borrowers.

The relative costs of the dissolution process was not the only feature of the B&L that led borrowers and lenders to want to shift to the new S&L model. The non-borrowers also found the S&L more attractive because the restrictions on withdrawals were much weaker. Meanwhile, borrowers found the Direct Reduction Contract mortgage offered by S&Ls and some B&Ls more to their liking because they could retire part of the principal each time they made a payment, as opposed to owing the entire principal throughout the life of the loan. As a result, the borrower knew precisely the length of the loan and did not face the uncertainty that the loan length would increase if share values fell.[34]

The S&L quickly became the dominant form in the late 1930s. The process was aided by the creation of the Federal Savings and Loan Insurance Company to insure investments of the S&L's nonborrowing members and thus speed the resolution process for a troubled S&L, the

[34] For additional discussion of the shifts toward S&Ls and the dissolution process of B&Ls, see Rose (2012), Rose and Snowden (2012), and Snowden (2003, 2010).

Federal Housing Administration to guarantee conventional S&L loans, the Federal Home Loan Bank Board to rediscount S&L mortgages, Fannie Mae to provide a buyer of standardized loans, and a set of regulations favorable to Savings and Loans as the prime mortgage lenders.

S&Ls begin to struggle during the high inflation of the late 1970s and were largely replaced by the 1990s. Regulations limited the interest that they could pay on deposits, although they were given an advantage over commercial banks which could not pay interest on checking accounts. As the inflation rate grew in the 1970s, the rates of return on other mutual funds and bonds were rising, but S&Ls could not raise the interest rates paid on their deposits. Consequently, they were losing deposits and were struggling to survive. Financial deregulation in the late 1970s and early 1980s allowed the S&Ls to attract new deposits by offering higher interest rates and to expand the range of their loans and investments. In the early 1980s the regulatory structure and the charges for deposit insurance through state funds and the Federal Savings and Loan Insurance Corporation (FSLIC) did not keep pace with the increased riskiness of the S&Ls loans and investment, although it was retightened later in the decade. Over the course of the 1980s, a significant share of S&Ls became insolvent and were seized by the FSLIC and liquidated. When the FSLIC funds were exhausted, the Financial Institutions Reform, Recovery, and Enforcement Act (FIREEA) of 1989 stipulated that the Federal Deposit Insurance Corporation and general taxpayers take over the job of paying off non-borrowing S&L members and created the Resolution Trust Corporation to sponsor privately-funded equity partnerships that purchased and liquidated roughly $300 billion in assets for over 600 failing S&Ls. By 1990 the S&L share of single family mortgages had fallen to 30 percent from 53 percent in 1990.[35]

[35] See Kane (1989) and White (1991). The Federal Deposit Insurance Corporation (FDIC) website offers a detailed chronology of the events with a large list of references at http://www.fdic.gov/bank/historical/s&l/.

Similarly, the housing boom in the 2000s was spurred in part by a number of new mortgage arrangements. Some are related to the resolution process that became problematic in the Great Recession. During the boom, two relatively new lending arrangements grew in volume and relative importance—private-label mortgage-backed securitization and the use of junior liens as augments to first mortgage loans.[36] Both lending channels relied heavily on third-party loan servicing and the capabilities of these arrangements as resolution mechanisms were almost immediately tested as rates of defaults and foreclosures spiked in 2007.[37] Recent evidence shows that renegotiations or modifications of distressed mortgages within these market segments occurred at lower rates or with longer delays than in the market in general (Agarwal et al (2011), Been et al (2012), Agarwal et al (2014), Bond et al (2015)). These results indicate that the resolution activities of third party servicers missed opportunities to implement modifications that would have benefitted both borrower and lender and reduced the costs of resolving the crisis.

A variety of explanations have been offered for the poor performance: inadequate capitalization and compensation to finance resolution activities; moral hazards or conflicts of interest that reduced a servicer's incentives to modify first loans they do not own; and inadequate procedural and legal direction regarding resolution activities (Cordell et al (2008), Goodman (2011). Just like B&Ls, each of these impediments resulted from contractual elements that were built into lending arrangements before the crisis, but were not clearly recognized until during the

[36] The Housing Finance Policy Center (2015, 8) reports that private label MBS loans grew in importance from 10 percent of first lien originations in 2000 to 40 percent in both in 2005 and 2006. Lee et al (2012) find that up to 45 percent of home purchases in coastal and "bubble" markets used junior mortgages and that total second lien originations tripled in volume between 2001 and 2006. Been, et. al. (2012) estimate that roughly 25 percent of all mortgaged homes carried second liens between 2004 and 2009. Goodman et al (2010) connect these two trends by finding that junior liens were present for more than one-half of first liens that were placed behind private label MBS

[37] Third party servicing had been used extensively before the 1990s, but primarily as adjuncts to the FHA and VA loan programs and the mortgage-backed securities businesses of Fannie Mae and Freddie Mac. Third party servicing is important when junior liens are present because banks, and especially large banks, originate and retain ownership of most second liens. The bank becomes a third party servicer when the first liens are then sold.

crisis. The appraisal of third party servicers as resolution mechanisms is an ongoing process that will continue to shape market and regulatory responses to the crisis of 2007.[38]

Although we have focused on mortgage contracts and firm types, the pattern for the B&Ls and the SAC mortgages is similar to patterns seen for other firms and contracts. Once developed, firms and contracts are constantly being tested and adjusted as market conditions change. Many survive for long periods because they easily handle mild fluctuations in markets but flaws are exposed during periods of extreme economic distress. These flaws often lead to new innovations in contracts and firms that help resolve the issues that arose during the crisis.

[38] Since 2007, there has been retrenchment in the use of private label MBS and "piggy back" first and second loans (see Housing Policy Finance Center (2015) and Prevost (2014)), substantial compositional change in the third party loan servicing industry (Mortgage Bankers Association et al (2015)) and proposals for reform of the industry from Congress, industry professionals and academics (see Mayer et al (2009), Morgensen (2010) and Goodman (2011)).

References

Agarwal Sumit and Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet and Douglas Evanoff. (2011). "The Role of Securitization in Mortgage Renegotiation," *Journal of Financial Economics*, 102 (2011) 559-78.

Agarwal, Sumit and Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet and Yan Zhang. (2014). "Second Liens and the Holdup Problem in Mortgage Renegotiation," National Bureau of Economic Research, Working Paper 20015, March 2014.

Been, Vicki, Howell Jackson, and Mark Willis, 2012, "Sticky Seconds – the Problems Second Liens Pose to the Resolution of Distressed Mortgages", NYU Journal of Law and Business 9:71, 71–123.

Bodfish, Morton and Theobald, A.D. (1938). *Savings and Loan Principles*. New York: Prentice-Hall.

Bolch, Ben, Rendigs Fels and Marshall McMahon. (1971) Housing surplus in the 1920's?" *Explorations in Economic History*, 1971, vol. 8:3, 259-83.

Bond, Philip and Elul Ronel, Sharon Garyn-Tal and David K. Musto, "Does Junior Inherit? Refinancing and the Blocking Power of Second Mortgages, Working Paper, December 10, 2015.

Braver, Hirsch (1936). *Liquidation of Financial Institutions: A Treatise on The Law of Voluntary and Involuntary Liquidation of Banks, Trust Companies, and Building and Loan Associations*. Bobbs-Merrill, Indianapolis.

Chamberlain, G (1980). Analysis of Covariance with Qualitative Data, *Review of Economic Studies*, Wiley Blackwell, vol. 47(1), pages 225-38

Clark, H F and Chase, F A (1927). *Elements of the Modern Building and Loan Associations*. New York: Macmillan.

Cordell, Larry and Karen Dynan, Andreas Lehnert, Nellie Liang, and Eileen Mauskopf (2008), "The Incentives of Mortgage Servicers: Myths and Realities," Finance and Economics Discussion Series 2008-46, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C.

Cox, D. R. (1972). Regression models and life-tables. Journal of the Royal Statistical Society. Series B (Methodological), 187-220.

"Effect of Insolvency upon Rights of Shareholders of Building and loan Associations," *University of Pennsylvania Law Review and American Law Register*, Vol. 81 No. 4 (Feb. 1933), 449-56.

Endlich, G.A. (1895). The Law of Building Associations. Jersey City: Frederick Linn & Co.

Federal Deposit Insurance Corporation. (undated). Federal Deposit Insurance Corporation Data on Banks in the United States, 1920-1936. Inter-University Consortium for Political and Social Research Dataset Number 7.

Federal Home Loan Bank Board. (various years). *Annual Report of the Federal Home Loan Bank Board*. Washington, D.C.: Government Printing Office.

Field, Alexander. (1992). "Uncontrolled Land Development and the Duration of the Depression in the United States." *Journal of Economic History* 52(4): 785-805.

Fishback, P, Kantor, S, Kollman, T, Haines, M, Rhode, P and Thomasson, M, and Troesken, W. (2011) "Information and the Impact of Climate and Weather on Mortality Rates During the Great Depression." *The Economics of Climate Change: Adaptations Past and Present*. Edited by Gary Libecap and Richard Steckel. Chicago, IL: University of Chicago Press, 2011, pp. 131-168. Dataset is "Weather, Demography, Economy, and the New Deal at the County Level, 1930-1940" on the internet at https://econ.arizona.edu/faculty/webpage2_fishback_climate.asp.

Fishback, P., J. Rose, and K. Snowden. (2013) *Well Worth Saving: How the New Deal Safeguarded Home Ownership*. Chicago: University of Chicago Press.

Haines, M: *Historical, Demographic, Economic, and Social Data: The United States, 1790-2002* (ICPSR 2896)

Hansen, Alvin H. 1964. Business Cycles and National Income. New York: W.W. Norton.

Housing Finance Policy Center (2015). *Housing Finance at a Glance: A Monthly Update*, Urban Institute, Washington, D.C., December 2015.

Imbens, G. W., & Lemieux, T. (2008). Regression discontinuity designs: A guide to practice. Journal of econometrics, 142(2), 615-635.

Goodman, Laurie, 2011a, "National Mortgage Servicing Standards and Conflicts of Interest," Testimony to the Subcommittee on Housing, Transportation and Community Development of the Senate Committee on Banking, Housing and Urban Affairs, May11, 2011.

Goodman, Laurie, 2011b, Examining Lien-Position Conflicts, MortgageOrb.com, June 3, 2011.

Goodman, Laurie and Roger Ashworth, Brian Landy, and Ke Yin (2010). "Second Liens: How Important?" *Journal of Fixed Income*, 20(2), Fall 2010, 19-30.

Grebler, L, Blank, D and Winnick, L (1956). *Capital Formation in Residential Real Estate*. Princeton: Princeton University Press.

Kane, Edward J., *The S&L Insurance Mess: How did it Happen?* Washington, DC: Urban Institute Press, 1989.

Keys Benjamin J., Tomasz Piskorski, Amit Seru, and Vikrant Vig (2013). "Mortgage Financing in the Housing Boom and Bust," in Edward Glaeser and Todd Sinai (eds.) Housing and the Financial Crisis, NBER and University of Chicago Press, 143-204.

Lee, Donghoon and Christopher Mayer and Joseph Tracy. (2012). *A New Look at Second Liens*. Federal Reserve Bank of New York Staff Report No. 59. August 2012.

Mayer, Christopher, Edward Morrison, and Tomasz Piskorski, 2009a, "Essay: A New Proposal for Loan Modifications", Yale Journal on Regulation 26(2).

Mian, Atif and Amir Sufi. *House of Debt: How They (and You) Caused the Great Recession and How We Can Prevent It from Happening Again.* Chicago, IL: University of Chicago Press, 2014.

Mishkin, Frederic S. "The Household Balance Sheet and the Great Depression," *The Journal of Economic History*, Vol. 38, No. 4 (Dec., 1978), pp. 918-937.

Morgensen, Gretchen. (2010). "In this play, one role is enough," *New York Times*, August 14, 2010.

Mortgage Bankers Association and PwC (2015). *The Changing Dynamics of the Mortgage Servicing Landscape*, Washington, D.C.

New Jersey Commissioner of Banking and Insurance. (Various years.) *Annual Report of the Commissioner of Banking and Insurance*, Trenton, New Jersey.

Piquet, H (1931). *Building and Loan Associations in New Jersey.* Princeton University Press, Princeton, NJ.

Prescott, P. Albion (1931). *Building and Loan Procedure in New Jersey*. Soney & Sage Co., Newark.

Prevost, Lisa. (2014). "'Piggyback' Loans Revisited," *New York Times*,

Reinhart, Carmen and Kenneth Rogoff. (2009). *This Time is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.

Riegel, Robert and J. Russell Doubman (1927). The Building and Loan Association. New York: John Wiley and Sons.

"Rights of Depositors and Borrowers upon Insolvency of Building and Loan Associations" (1933). The Yale Law Journal, 42;6 (Apr.), 931-941.

Rose, J and Snowden, K (2012). The New Deal and the Origins of the Modern American Real Estate Loan Contract in the Building and Loan Industry, NBER Working Papers 18388, National Bureau of Economic Research

Rose, J (2012). The prolonged resolution of troubled real estate lenders during the 1930s, Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C.

Snowden, Kenneth. (2006). "Housing." In *Historical Statistics of the United States, Millennial Edition*, edited by Susan Carter, et. al. New York: Cambridge University Press.

Snowden, Kenneth (2003). "The Transition from Building and Loan to Savings and Loan," in *Finance, Intermediaries and Economic Development*, edited by S. Engerman, P. Hoffman, J. Rosenthal, and K. Sokoloff. Cambridge: Cambridge University Press, pp. 157-206.

Snowden, Kenneth (2010). "The anatomy of a residential mortgage crisis: A look back to the 1930s." In The Panic of 2008: Causes, consequences and proposals for reform, edited by Lawrence E. Mitchell and Arthur E. Wilmarth. Northampton, MA: Edward Elgar.

"Statutory Control over the Dissolution of Building and Loan Associations" (1935). Columbia Law Review, 35:2 (Feb.), 265-278.

Sundheim, Joseph H (1933). The Law of Building and Loan Associations. Callaghan & Company, Chicago.

U.S. Bureau of the Census (1975). *Historical Statistics of the United States: Colonial Times to 1970*. Washington, DC: Government Printing Office.

U.S. Census Bureau. *Selected Historical Decennial Census Population and Housing Counts*, http://www.census.gov/population/www/censusdata/hiscendata.html

U. S. Federal Home Loan Bank Board, 1947, *Federal Home Loan Bank Review*. *Statistical Review*. Washington, DC: Government Printing Office. Tables 4 and 7.

U.S. House of Representatives, (1932). *Report No. 98 to accompany House Resolution 374*, January 15, 1932. 72nd Congress, Session 1. Washington, DC: Government Printing Office.

"Voting Rights of Borrowing Shareholders in Building and Loan" (1929). The Yale Law Journal, 39:2 (Dec.), 271-275.

White, Eugene, Kenneth Snowden, and Price Fishback. *Housing and Mortgage Markets in Historical Perspective*. National Bureau of Economic Research Conference Volume. Chicago: University of Chicago Press.

White, Lawrence J., *The S&L Debacle: Public Policy Lessons for Bank and Thrift Regulation*, New York: Oxford University Press, 1991.

Table 1
Means and Standard Deviations from New Jersey Sample of Building & Loans that Survived or Voluntarily Liquidated Between 1934 and 1940

		1930	1934	1939	1934-1940
SAC borrowers as Share of Members	Mean	0.235	0.263	0.16	0.214
	Std. Dev.	0.117	0.123	0.121	0.129
Dummies: SAC Borrowers Share of Owners Is					
More than One-Third	Mean	0.187	0.266	0.106	0.199
	Std. Dev.	0.390	0.442	0.308	0.399
Between One-Third and One-Fourth	Mean	0.188	0.218	0.132	0.192
	Std. Dev.	0.391	0.413	0.339	0.394
DRC borrowers as Share of Members	Mean	0.003	0.01	0.056	0.029
	Std. Dev.	0.009	0.022	0.06	0.049
SHARES OF ASSETS					
Cash on Hand	Mean	0.016	0.021	0.028	0.024
	Std. Dev.	0.023	0.03	0.043	0.034
Arrearages	Mean	0.015	0.052	0.027	0.039
	Std. Dev.	0.015	0.046	0.044	0.049
Value of Real Estate Owned	Mean	0.033	0.225	0.385	0.339
	Std. Dev.	0.048	0.136	0.196	0.183
Natural Log of Total Assets	Mean	13.678	13.847	13.451	13.626
	Std. Dev.	1.084	0.955	0.886	0.922
SHARES OF LIABILITIES					
Installment Dues	Mean	0.676	0.59	0.442	0.516
	Std. Dev.	0.097	0.111	0.164	0.15
Paid-up Shares	Mean	0.078	0.101	0.129	0.116
	Std. Dev.	0.089	0.104	0.116	0.113
Unapportioned Profits	Mean	0.007	0.118	0.212	0.167
	Std. Dev.	0.009	0.054	0.097	0.082
County Variables					
Retail Sales Per Capita	Mean	447.57	290.202	396.125	357.94
	Std. Dev.	102.63	60.426	71.804	80.942
Value of HOLC Loans Refinanced per Household	Mean	0.000	893.298	0.000	121.439
	Std. Dev.	0.000	401.511	0.000	337.872
Federal Tax Returns filed per Capita	Mean	0.051	0.053	0.094	0.081
	Std. Dev.	0.018	0.017	0.022	0.041

Table 2
Results from Cox Model Estimation of Hazard of Voluntary Liquidation of New Jersey B&Ls, 1934-1940
With Percentage of Members with SAC Loans treated as Discrete Ranges and as Continuous Variable

	Dummies for Ranges of SAC Borrower Share					SAC Borrowers as Share of Members		
	Coefficients and (Standard Errors) in Specification			Changes in Predicted Probabilities for		Coefficients and (Standard Errors) in Specification		
	1	2	3	Increase By One Std. Deviation	Change From 1934 to 1939	4	5	6
SAC Borrowers More Than 1/3 of Members	-1.415*	-0.872*	-0.699*	NA	NA			
	(0.195)	(0.295)	(0.281)					
SAC Borrowers Between 1/4 and 1/3 of Members	-1.011*	-0.438*	-0.281	NA	NA			
	(0.210)	(0.186)	(0.199)					
SAC Borrowers' Share of Members						-5.855*	-2.499*	-1.648*
						(0.9443)	(0.6457)	(0.7126)
DRC Borrowers' Share of Members	-3.525	1.591*	1.613*	0.013	0.012	-5.337*	1.2449	1.4762
	(2.265)	(0.768)	(0.948)			(2.5203)	(0.9587)	(1.1749)
Natural Log of (Total Assets)		-0.635*	-0.600*	-0.066	0.042		-0.653*	-0.601*
		(0.083)	(0.155)				(0.0754)	(0.1548)
Share of Assets in								
Real Estate Owned		4.086*	3.968*	0.166	0.143		3.8127*	3.8415*
		(0.730)	(0.646)				(0.6638)	(0.6572)
Arrears		7.256*	5.937*	0.053	-0.022		6.8456*	5.8316*
		(1.099)	(1.133)				(1.1524)	(1.1571)
Cash on Hand		-2.294*	-2.062*	-0.011	-0.002		-2.857*	-2.300*
		(1.271)	(0.819)				(1.1108)	(0.8208)
Share of Liabilities in								
Installment Shares		-1.523*	-1.892*	-0.039	0.051		-1.586*	-1.860*
		(0.446)	(0.502)				(0.3801)	(0.4635)
Paid-Up Shares		-1.029	-1.731*	-0.028	-0.008		-1.201	-1.615*
		(0.876)	(0.599)				(0.8275)	(0.5846)

Unapportioned Profits	2.086*	1.562*	0.022	0.025	1.9192*	1.5798*
	(0.891)	(0.886)			(0.9458)	(0.9431)
County Data						
Retail Sales per Capita		0.0003	0.004	0.005		0.0001
		(0.003)				(0.0032)
Federal Tax Returns Filed Per Capita		5.691	0.043	0.042		5.6843
		(5.261)				(5.3857)
Value of HOLC Loans per Household		0.0003	0.019	-0.039		0.0005
		(0.001)				(0.0009)
Information from 1930						
Natural Log of (Total Assets)		-0.0002	0.000	NA		-0.0033
		(0.186)				(0.1866)
Share of Assets in						
Real Estate Owned		1.245*	0.008	NA		1.1268*
		(0.478)				(0.4560)
Arrears		9.317*	0.019	NA		8.9250*
		(4.687)				(4.3474)
Cash on Hand		4.482*	0.015	NA		4.5036*
		(1.919)				(1.8953)
Share of Liabilities in						
Installment Shares		0.642	0.010	NA		0.5691
		(0.420)				(0.3752)
Paid-Up Shares		2.570	0.014	NA		0.7245
		(7.011)				(0.7806)
Unapportioned Profits		0.970	0.003	NA		1.5392
		(0.806)				(7.3976)

Notes. The sample is confined to B&Ls that stayed open or voluntarily liquidated. There are 8,449 observations across time and B&L. The predicted probability of voluntary liquidation was calculated by adding either the one-standard deviation to the factor in the row (7), or the change in the factor between 1934 and 1939 (8), to every observation while hold all other factors at the actual value for the observation and then averaging the predicted probabilities across all observations. The information on standard deviations and the change from 1934 to 1939 is in Table 1. *p < 0.05

Table 3
Predicted Number of Voluntary Liquidations Under Different Assumptions About the SAC Borrowers' Share of Owners

		Predicted Probability Exceeded 83 percent When SAC Borrower Asset Shares were			
Year	Actual	Equal to Actual Value	All greater than 1/3	All between 1/4 and 1/3	All less than 1/4
1934	2	0	0	0	0
1935	9	0	0	0	0
1936	36	4	1	4	4
1937	82	12	3	4	14
1938	69	21	6	16	32
1939	149	184	39	113	185
1940	4	130	49	93	139
Total	351	351	98	230	374

Notes. Probabilities of Voluntary Liquidations are based on coefficients from specification 3 in Table 2 and the baseline hazards and values for each observation. When the predicted probability reached 83 percent or higher in the predictions, we assumed the firm liquidated.

Table 4
Gains and Losses to B&L Members from One-Year Delay in Dissolution

Winners and Losers from One Year Delay	Average Gain (+) or Loss (-) per person in 1967$	Number in Category	Total Gain (+) or Loss (-)	Percentage of Book Value of Assets of the 451 liquidated B&Ls 4 Years Before Liquidation
Borrowing Members				
1) Gain for borrower group that avoids the drop in share value from book to liquidation value by repaying during the year delay	2,232	2,571	5,738,647	1.59
2) Gain for homeowners who do not lose their home through foreclosure.	7,854	202	1,586,508	0.44
3) Loss to borrowing members who would have fully paid in liquidation.				
a) Drop in liquidation value	-304	6,878	-2,090,912	-0.58
b) lost return from investing prior year liquidation value	-26	6,878	-178,828	-0.05
NonBorrowing Members				
a) Drop in Liquidation Value of shares	-304	66,182	-20,119,328	-5.58
b) Lost return from investing prior year liquidation value	-26	66,182	-1,720,732	-0.48
Total Gain for borrowing members			7,325,155	2.03
Total Loss for borrowing members			-2,269,740	-0.63
Total loss for nonborrowing members			-21,840,060	-6.06
Net loss			-16,784,645	-4.65

Appendix I.

Robustness Checks

The Cox survival model has the advantage of not having to specify a functional form for the baseline survival function, but this flexibility comes at the cost of assuming that the effect of the covariates on the hazard is proportional. A way to relax the assumption is to impose a parametric distribution on the survival function, and to estimate a fully parametric survival model via maximum likelihood. In Table 4 we present the results of estimating the model using both the Exponential (Columns 1 and 2) and the Weibull (Columns 3 and 4) distributions for the baseline survival function. The results show that the effect of the share of SAC members remains negative, statistically significant and similar in magnitude to our earlier estimates. We have also estimated, but do not report here, linear probability models with B&L-specific and time-by-county-specific fixed effects and a random effects Probit model of voluntary liquidation. The estimated effects of the SAC borrower share of members in all of these models are qualitatively similar to those from our preferred Cox model specification.

The estimates reported in the last section also rely on our decision to exclude from the sample the B&Ls that exited the industry during the same period through a mechanism other than voluntary liquidation. The rationale for trimming the sample was to focus on the decision whether to voluntarily liquidate or continue operations because we have clear understanding of the incentives driving the agents who made this decision (the members of the B&L). We do not have clear predictions about the decisions to exit by other means because each of them required the approval of agents outside the B&L.[39]

Here we follow two strategies to evaluate the SAC borrower effect in a model that allows for all types of exits. First, in Table 5 we present the results when the sample includes all B&Ls,

[39] For example, mergers required agreement by the members of both associations, reorganizations were mediated by trustees, and state closures were directed by regulators.

and we treat as liquidations only the voluntary ones (Columns 1, 2 and 3) or we focus on all closures (Column 4, 5 and 6). The results are very similar in terms of the estimated value of the coefficient and its level of statistical significance. Second, in table 6 we present the results from the estimation of a multinomial Logit model that includes all B&Ls and examines the probability of all categories of liquidations together: voluntary liquidations, acquisitions and mergers, state interventions, and other. The qualitative results are the same for the voluntary liquidations for the SAC share variables. The SAC share is also negatively related to the probability of the other types of closures, but the only coefficient that is statistically significant when the other types of closures are considered is the SAC share greater than one-third for acquisitions and mergers. As for other variables, the presence of more high-income federal taxpayers likely reduced the probability of voluntary liquidation in this estimation. The HOLC purchase and refinance program had a strong negative relationship with other types of liquidations.

A final concern about the robustness of the survival model specification that we reported earlier is that we have imposed discrete measures of the share of SAC members in order to capture the thresholds that were critical in the vote to liquidate. This modeling decision could influence the estimates improperly if the SAC member share, which declined throughout the 1930s, was correlated over time with some other determinant of liquidation and this was not captured correctly by the survival model structure. We address this concern here by investigating whether there is evidence of a discontinuity around the cutoff of one third in the impact of the SAC borrowing member share within a linear probability model in which the share of SAC members enters as a continuous variable.

Our approach here has the flavor of a regression discontinuity design (RDD), but it is not strictly an RDD because there are two sources of noise in the cutoff for the share of SAC

members. First, there is measurement error in the share of SAC members because, as explained above, it is computed using the share of SAC loans and the number of total members. Second, even though the requirement for voluntary liquidation is the vote of 2/3 of the members present in a meeting called for that purpose, the attendance at the meeting was voluntary. In this sense, a share close to 1/3 of SAC members could still block the voluntary liquidation if some of the members did not attend the meeting. This is particularly relevant because, as discussed before, SAC members had the most interest in attending the meeting.

To evaluate the discontinuity in the probability of liquidation around the cutoff of the share of SAC members, we provide graphical and regression analysis similar to the approach suggested by Imbens and Lamoureax (2008) for the case of the RDD. The idea is to limit the sample to those observations close to the cutoff, and to look at the discrete change in the outcome variable at the cutoff. The use of a sample within a smaller interval provides a way to compare observations above and below the cutoff that are more likely to be similar.

In the graphical analysis, we limit the sample to the observations with a share of SAC members within 20 percentage points below or above the cutoff. In Graph 1.1 we present the average probability of voluntary liquidation (residualized of the other control variables) for each of the 40 one-percentage-point intervals of the share of SAC members. In the graph we also report the predicted values of a regressions of the residual of the probability of voluntary liquidation on the share of SAC members for the samples before and after the cutoff.

The graph shows a discontinuity in the probability of voluntary liquidation around the cutoff. However, it is also possible to notice in the graph the effect of the measurement error in the probability of liquidation of firms that are very close to the 1/3 cutoff. In particular, the probability of liquidation for the observations that are just to the left of the cutoff (the average

for the observations in the interval one percentage point below the cutoff) is not very different to the probability of liquidation for the observations just above the cutoff.

One potential concern with this graphical analysis is that the discontinuity in the probability of liquidation around the cutoff could be related to a discontinuity in the values of other control variables. To overcome this concern, we examine whether the voluntary liquidation probability predicted from a regression of the liquidation on the control variables (excluding any function of the SAC member share) has a discontinuity around the SAC member share cutoff. Graph 1.2 shows that the voluntary liquidation probability predicted for the covariates does not exhibit a discontinuity around the cutoff.

We also use regression analysis to confirm the results suggested by the graphical analysis. We estimate linear probability models of the voluntary liquidation on an indicator variable for the cutoff of 1/3 of the share of SAC members, as well as controlling for the continuous share of SAC members, allowing the latter to have different slopes before and after the cutoff. We estimate three different specifications of this model; first, without any controls; secondly, we include B&L-specific and time-by-county-specific fixed effects; and in a third specification, we also include the time-variant balance sheet information for the firms as controls. Formally, the third specification, which includes all the controls, is:

$$y_{ict} = \alpha_i + \beta 1(SAC_{ict} > 1/3) + \gamma_1 SAC_{ict} + \gamma_2 SAC_{ict} * 1(SAC_{ict} > 1/3) + \mathrm{F}_{ict}\phi + \delta_{ct} + \varepsilon_{ict} \qquad (2)$$

where y_{ict} is an indicator function for voluntary liquidation of firm *i* in county *c* at time *t*. SAC_{ict} is a the share of SAC members, $1(SAC_{ict} > 1/3)$ is an indicator function that takes the value of one if the share of SAC members is higher than the cutoff. The coefficient of interest is β, which represents the discontinuity in the probability of voluntary liquidation at the cutoff.

γ_1 is the coefficient for the slope of the effect of SAC share before the cutoff, and γ_2 is a coefficient for the difference in the slope of SAC member share after the cutoff. As before, F is a vector of time-variant balance sheet firm characteristics. Finally, α_i is a fixed effect for firm *i*, δ_{ct} are is a fixed effect for county *c* in year *t*, and ε_{ict} is the error term.

Table 7 presents the results for the estimation of these regression models, limiting the sample to those observations with SAC member shares within different intervals around the cutoff. The results confirm the discontinuity in the probability of voluntary liquidation around the cutoff. The first three columns of Table 7 present the results when we use an interval of 20 percentage points on each side of the cutoff, the same interval used in the graphical analysis. All these estimates show that there is a statistically significant decrease in the probability of voluntary liquidation at the cutoff of the share of SAC members. In Column 1 we present the results when we do not control for any fixed effects or balance sheet information of the firms, and the magnitude of the effect implies that the probability of failure is about 8.5 percentage points lower when the share of SAC members is above the cutoff. When we control for time-by-county and firm-specific fixed effects in Column 2, the point estimate for the magnitude increases to about 15 percentage points, and it remains virtually unchanged when we include all the control variables (fixed effects and balance sheet information) in Column 3. Columns 4 to 6 show the results when we include observations within an interval of 30 percentage points above or below the cutoff. Again, there is a statistically significant decrease in the probability of voluntary liquidation at the cutoff of the share of SAC members. The estimated coefficient implies a 15 percentage-point decrease in the probability of liquidation when we use the specification without controls or fixed effects (Column 4), and around 13.5 percentage points when we use only fixed effects (Column 5) or the full set of controls (Column 6). Overall, the

graphical analysis shows that there is a discontinuity around the cutoff of 1/3, and the regression models indicate that the decrease in the probability of liquidation associated with a SAC member share above 1/3 is estimated to be about 14 percentage points.

Appendix Table 1
Results from Parametric Survival Models of Hazard of Voluntary Liquidation of New Jersey B&Ls, 1934-1940

	Exponential Model		Weibull Model	
	(I)	(II)	(III)	(IV)
SAC Borrowers are Between One-Fourth and One-Third of Members	-0.5824**		-0.7805***	
	(0.2297)		(0.2347)	
SAC Borrowers are More Than One-Third of Members	-1.0992***		-1.2604***	
	(0.3163)		(0.2628)	
SAC Borrowers' Share of Members		-3.3495***		-3.8629***
		(0.8812)		(1.1001)
Balance Sheet Controls	Yes	Yes	Yes	Yes
1930 Characteristics Controls	Yes	Yes	Yes	Yes
County Controls	Yes	Yes	Yes	Yes

Notes. The sample is confined to B&Ls that stayed open or voluntarily liquidated. There are 8,449 observations across time and B&L. *p < 0.05

Appendix Table 2: Results in Sample Including All B&Ls and Treating only Voluntary Liquidations as Liquidations

	Specification					
	Treating only Voluntary Liquidations as Liquidations			Treating All Closures as Voluntary Liquidations		
	1	2	3	4	5	6
SAC Borrowers are More Than One-Third of Members	-1.3333*	-0.8824*	-0.7108*	-1.0845*	-0.6432*	-0.4858*
	(0.1895)	(0.2752)	(0.2595)	(0.1868)	(0.2349)	(0.2578)
SAC Borrowers are Between One-Fourth and One-Third of Members	-0.9453*	-0.4143*	-0.2708	-0.8286*	-0.3415*	-0.2100
	(0.2134)	(0.1711)	(0.1880)	(0.1366)	(0.1294)	(0.1463)
DRC Borrowers' Share of Members	-3.6216*	1.4801*	1.5506*	-1.2139	2.6017*	2.4632*
	(2.0600)	(0.6926)	(0.8326)	(1.7608)	(0.7257)	(0.9263)
Natural Log of (Total Assets)		-0.6937*	-0.6830*		-0.3618*	-0.2600*
		(0.0608)	(0.1369)		(0.0834)	(0.1305)
Share of Assets in Real Estate Owned		3.5502*	3.5205*		3.3023*	3.1455*
		(0.7053)	(0.6448)		(0.5116)	(0.4735)
Arrears		6.6687*	5.7404*		6.1341*	5.0757*
		(1.1717)	(1.2514)		(1.0803)	(0.9157)
Cash on Hand		-3.0211*	-2.9473*		0.7821	1.2577
		(1.1278)	(0.6194)		(1.1853)	(1.1898)
Share of Liabilities in Installment Shares		-1.0602*	-1.2906*		-1.6718*	-1.8504*
		(0.4747)	(0.5500)		(0.4309)	(0.4561)
Paid-Up Shares		-0.8826	-1.1584*		-1.1593*	-1.2042*
		(0.7832)	(0.6119)		(0.5502)	(0.5982)

Unapportioned Profits	2.6491*	2.2835*	-0.5063	-0.7061
	(0.9743)	(1.0841)	(0.6634)	(0.7483)
County Data				
Retail Sales per Capita		0.0006		-0.0007
		(0.0024)		(0.0019)
Federal Tax Returns Filed Per Capita		5.8871		7.3913*
		(4.7402)		(3.1556)
Value of HOLC Loans per Household		0.0003		-0.0002
		(0.0010)		(0.0005)
Information from 1930				
Natural Log of (Total Assets)		0.0168		-0.0597
		(0.1743)		(0.1341)
Share of Assets in				
Real Estate Owned		0.8612*		0.5040
		(0.2645)		(0.5499)
Arrears		7.5735		10.4437*
		(4.8602)		(2.0724)
Cash on Hand		3.8157*		3.2651*
		(1.9137)		(1.5587)
Share of Liabilities in				
Installment Shares		0.4623		0.5504*
		(0.7679)		(0.2702)
Paid-Up Shares		0.9400*		0.2510
		(0.3162)		(0.8018)
Unapportioned Profits		-0.2730		10.3204*
		(5.6836)		(3.8986)

Notes. The sample includes all B&Ls in New Jersey and has 8,449 observations across B&Ls and years. In this sample all voluntary liquidations are treated as liquidations, while all survivors and the firms that were merged, acquired, closed by the state or closed for other reasons are treated as nonliquidations..*$p < 0.05$

Appendix Table 3
Multinomial Estimation for Voluntary Liquidations, Mergers/Acquisitions, State Liquidations, and Other Liquidations

	Voluntary Liquidations		Acquisitions and Mergers		State Interventions		Others	
	Coeff.	Z-Score	Coeff.	Z-Score	Coeff.	Z-Score	Coeff.	Z-Score
SAC Borrowers are More Than One-Third of Members	-1.405	-4.71	-0.639	-2.06	-1.051	-1.35	-0.615	-1.00
SAC Borrowers are Between One-Fourth and One-Third of Members	-0.748	-3.37	-0.249	-0.90	-0.568	-0.87	-1.024	-2.06
DRC Borrowers' Share of Members	0.122	0.10	3.502	2.09	-9.566	-1.82	2.999	1.48
Natural Log of (Total Assets)	-1.391	-7.14	-0.824	-3.67	0.401	0.65	0.595	1.88
Share of Assets in								
Real Estate Owned	4.093	5.99	0.703	0.56	7.798	6.63	0.741	0.76
Arrears	9.018	4.49	2.983	2.59	13.548	6.48	-3.597	-0.74
Cash on Hand	4.954	4.02	-1.797	-0.82	11.736	1.17	12.126	3.90
Share of Liabilities in								
Installment Shares	-1.872	-2.50	-2.593	-1.56	-1.552	-0.85	-1.388	-0.69
Paid-Up Shares	-1.423	-2.00	-0.592	-1.02	-5.113	-4.29	-3.864	-3.03
Unapportioned Profits	3.261	3.21	-7.493	-2.75	-1.594	-0.70	-3.753	-1.19
County Data								
Retail Sales per Capita	0.002	0.70	0.001	0.47	-0.007	-1.13	-0.003	-1.01
Federal Tax Returns Filed Per Capita	-22.084	-5.30	-6.234	-1.25	-13.128	-1.63	-18.835	-2.84
Value of HOLC Loans per Household	-0.00001	-0.01	0.0003	0.73	-0.124	-0.26	-10.082	-5.71
Information from 1930								
Natural Log of (Total Assets)	0.587	2.68	0.420	2.44	-0.167	-0.27	-0.031	-0.10
Share of Assets in								
Real Estate Owned	1.936	2.79	-1.771	-0.65	0.673	0.31	7.314	5.19
Arrears	6.573	1.08	-3.343	-0.32	21.514	1.48	16.389	1.07
Cash on Hand	3.935	1.73	1.821	0.38	1.927	0.22	-9.621	-0.90
Share of Liabilities in								
Installment Shares	1.510	2.83	1.785	3.63	-4.643	-2.53	0.825	1.24
Paid-Up Shares	2.639	2.63	3.399	1.72	-2.370	-1.24	1.131	0.42
Unapportioned Profits	4.945	0.97	29.931	3.03	22.083	2.05	19.141	2.65
Log(Duration)	2.143	4.83	0.757	2.18	3.793	2.10	5.435	6.43
Constant	2.080	0.92	-0.569	-0.28	-8.925	-1.62	-17.346	-4.88

Notes. The sample includes all B&Ls in New Jersey and has 8,449 observations across B&Ls,

Appendix Table 4
Regression analysis of the effect of share of SAC member in an interval around the cutoff

	20 p.p. interval [.133, .533]			30 p.p. interval[.033, .633]		
	(1)	(2)	(3)	(4)	(5)	(6)
SACmem_Block	-0.0845*	-0.1525*	-0.1527*	-0.1480*	-0.1352*	-0.1354*
	(0.0311)	(0.0368)	(0.0353)	(0.0358)	(0.0391)	(0.0346)
B&L Fixed Effects	No	Yes	Yes	No	Yes	Yes
Time-by-County FE	No	Yes	Yes	No	Yes	Yes
Other Controls	No	No	Yes	No	No	Yes
Observations	5956	5956	5956	7983	7983	7983

Notes. Estimates from Equation (2) with different structure of controls reported. The sample is confined to B&Ls that stayed open or voluntarily liquidated. The sample only uses the observations in the interval from the original sample of 8,449 observations across time and B&L. The first three columns use a 20 percentage point interval around the cutoff, while the next three columns use a 30 percentage point interval around the cutoff. *$p < 0.05$

Appendix Figure 1: Regression analysis of the effect of share of SAC member in an interval around the cutoff

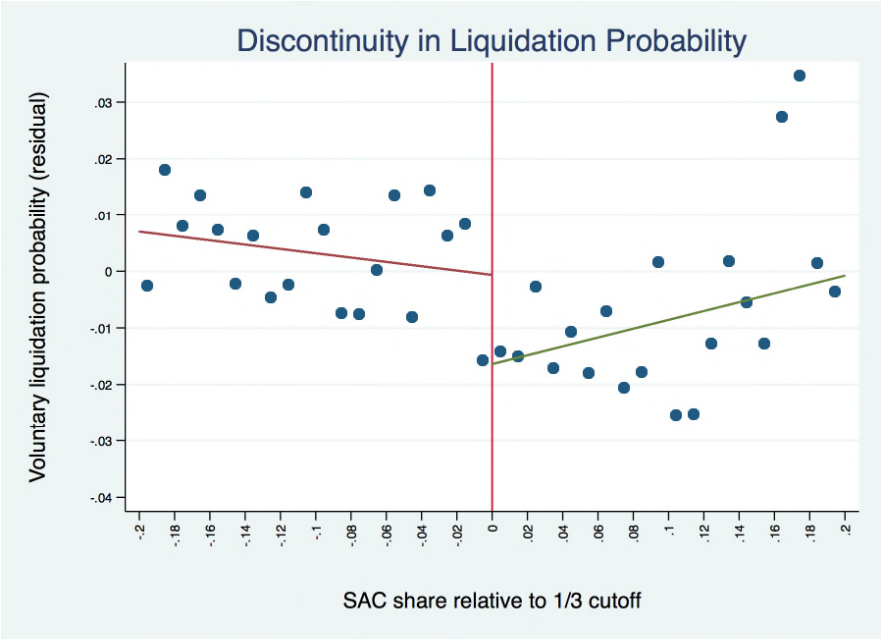

Figure 1.1: Discontinuity in the residual of the probability of liquidation (residual from a regression of the probability of liquidation on control variables and B&L and time-by-county fixed effects), around the cutoff of 1/3 SAC member share (normalized to zero).

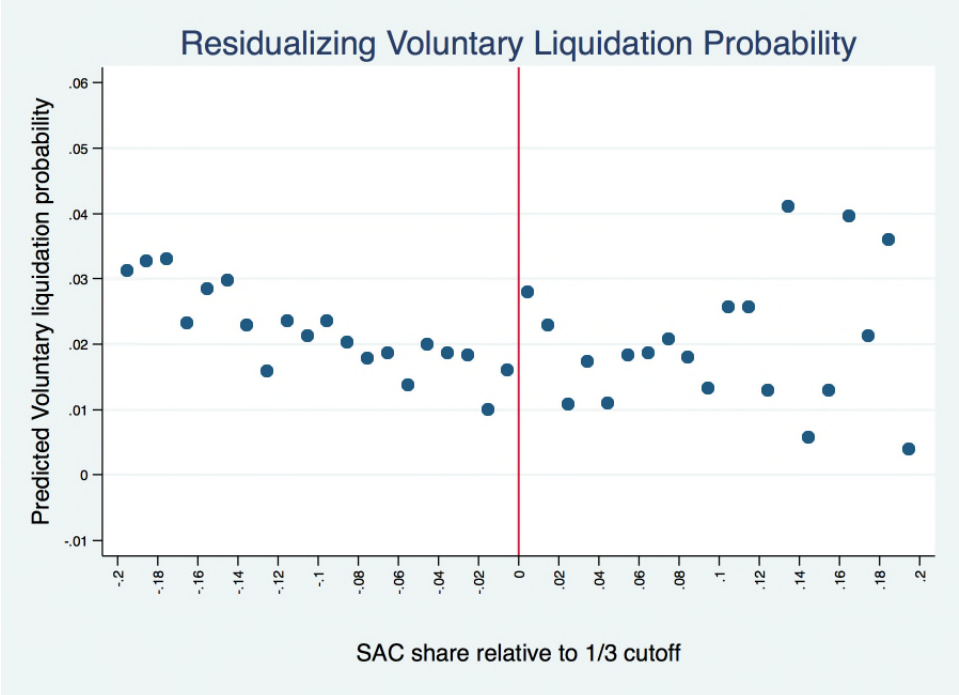

Figure 1.2: Discontinuity in the predicted liquidation probability from a regression of the probability of liquidation on control variables and B&L and time-by-county fixed effects, around the cutoff of 1/3 SAC member share (normalized to zero).