

Why Does Recovery from Mortgage Credit Crises Take So Long? Institutional Causes of Delay in Liquidation of Troubled Building and Loans during the Great Depression

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Abstract

As the waves of bank failures were ending during the Great Depression, a crisis in the home mortgage markets began picking up steam and served to slow the recovery from the 1933 trough. Building and Loans (B&Ls) held nearly half of all nonfarm mortgages in 1930 and few had failed by 1934 even though many held troubled loans. By the end of the decade more than half had failed and the rest had converted to a Savings and Loan model. The mutual ownership structure, the features of the standard loan contract, and the rules for liquidation of the B&Ls slowed the process of liquidation. Using new evidence on annual balance sheets and the structure of lending for all B&Ls in New Jersey during the 1930s we show that many B&Ls had to wait until the share of borrower members with the standard loan contract fell below one-third of the membership before the B&L was able to close and liquidate its holding. This delay tied up housing market financing in ways that delayed the recovery in the housing market and thus in the overall economy.

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One of the major puzzles about the Great Depression is why it lasted so long. The trough was in 1933 but real GDP per capita did not reach its 1929 level again until 1939 while the unemployment rate remained well above 10 percent until the end of the decade. The recent housing/mortgage crisis and slow recovery from the Great Recession suggests an alternative angle on the problems of the Great Depression. Although the Depression was much deeper, both downturns were accompanied by major housing/mortgage crises. In both periods housing starts had peaked before the start of the downturn but then fell to flows below 25 percent of the peak and failed to recover anywhere near normal levels for an extended period of time.¹ On the credit side, opportunities to obtain new mortgages were cut back drastically. The real stock of home mortgage debt in 2013 still remained 11.7 percent below its 2009 peak, while during the Depression the stock remained 15 percent below the 1932 peak as late as 1940. In both periods the federal government took large steps to try to prop up housing markets. New Deal interventions included the Home Owners' Loan Corporations (HOLC) and the Federal Housing Administration (FHA), while in the modern era the government took ownership of Freddie and Fannie, developed the Homes Affordable Modification Program (HAMP) and the Federal Reserve bought large amounts of mortgage-backed securities.

Despite the large and protracted contraction of home mortgage debt during the 1930s, the literature on the Great Depression has largely ignored distress among home mortgage lenders as a contributing factor to the slow recovery of the 1930s.² There has been examination of the links between the homebuilding boom of the 1920s and housing market distress in the 1930s, as well

¹ In the 2000s housing starts peaked at 2.1 million in 2005, fell to 1.3 million in 2007 and troughed at 0.5 million in 2009 and recovered to only 0.9 million by 2013. In the earlier era they peaked at 937,000 in 1925 and then fell to 509,000 in 1929, a level that was still substantially higher than the levels prior to the 1920s. They then fell 93,000 in 1933 and only reached the 1929 level again in 1940. Data on housing starts and the stock of home mortgage debt from the earlier era was compiled from Snowden 2006, 4-481 to 4-482 and 4-526 to 4-527 and deflated by the CPI 1967=100. For the current period they are from the FRED database at the St. Louis Federal Reserve Bank.

²For the recent work, see Fishback, Rose, and Snowden (2013) and a volume edited by White, Snowden, and Fishback (forthcoming) that contains several papers about housing and the Great Depression.

as the impact that the buildup of mortgage debt during the boom had on the deterioration of household balance sheets and aggregate consumption.³ The work on the impact of distress within credit channels during the 1930s, on the other hand, has been focused primarily on commercial banks and not on the nation's most important residential mortgage lender in 1929—its Building & Loan Associations.

We show here that the contractual and organizational features of the traditional, pre-Depression Building and Loan (B&L) delayed the liquidation and resolution of these most important, but severely distressed, residential home mortgage lenders during the 1930s. Using newly collected and digitized institution-level data from New Jersey we estimate the duration of these delays and the real costs that they imposed on market participants. By doing so we clarify that an important contributing factor to the length of the Great Depression, as has also been at work within private securitization structures during the Great Recession of 2007, were contractual impediments to the resolution of distressed mortgage lenders.⁴ The results here also provide insight into how the delays in resolutions of traditional B&Ls during the 1930s provided impetus for major financial innovations—the transformation of the traditional B&Ls into the modern Savings & Loans and the latter's rapid adoption of the fully-amortized, conventional home mortgage loan.

Two key features of the pre-Depressions B&L accounted for the delays in resolution that we find here. First, B&L's were not depository institutions but were, instead, member-owned, equity-financed corporations that were not obligated to honor withdrawal requests or to cease operations when they became illiquid. In fact, absent fraud or mismanagement, a B&L could

³ Alvin Hansen (1964) and others argued that a fifteen- to eighteen-year "building cycle" had been a key determinant of the depth and severity of business cycle contractions in the U.S. before 1940 and the "super-depressions" that began in 1929) just after a building cycle peak. For overbuilding see Bolch, Fels and McMahon (1971) and Field (1992) for the impediments uncontrolled residential land development during the 1920s created for the housing recovery in the 1930s. Mishkin (1973) investigated the household balance sheet and consumption.

⁴ See Keys et al (2013) for a survey of this literature.

liquidate only if two-thirds of its members voted to do so. The housing and mortgage crisis of the 1930s revealed that the B&L's unique Share Accumulation Contract (SAC) mortgage also delayed resolution when an association experienced severe distress. Under this contract borrowing members had incentives to vote against liquidation, and postpone resolution. Borrowers with SAC mortgages bought shares in the B&L and paid interest on the loan until they accumulated enough shares and dividends to repay the loan principal. If the SAC borrower was able to finish repaying the loan prior to liquidation of the B&L, his shares were valued at book value in repayment and he kept his home as he left the B&L kept his home. If the SAC borrower still was repaying the loan at the time of liquidation, the loan came due and his shares were valued at the much lower liquidation value, which increased the likelihood that he might lose his home to foreclosure markedly. As a result of these two features, severely distressed B&Ls often remained in operation until the share of its borrowing members dwindled below the one-third mark that allowed them to block decisions to liquidate. .

We document this pattern using newly collected and digitized information on balance sheets for all 1,563 B&Ls that operated in the state of New Jersey between 1930 and 1940. New Jersey is an ideal place to study the issue because the state regulators collected information on borrowing members and non-borrowing members. It was a leading B&L state in terms of numbers of associations and members and nearly every B&L retained its state charter rather than adopting new Federal S&L charters. We estimate a hazard model and show that as the membership share of SAC borrowers fell below the one-third share required to block liquidation, the probability that the B&L voluntarily liquidated rose markedly. Of the factors influencing voluntary liquidations of B&Ls, only the rise in foreclosures on real estate has more explanatory power.

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

In 1929, one century after being introduced in the U.S., mutually-owned Building & Loan Associations were the nation's most important source of residential mortgage credit. By then 12,342 B&Ls operated in every state and in cities of all sizes and together claimed 12 million members or one B&L member for every two of the nation's nonfarm families.⁵ These institutions specialized in residential mortgage lending and financed 4.2 million of the 7 million homes built between 1920 and 1929 and a total of 10.5 million of the owner-occupied homes standing in 1930.⁶ In the aggregate, B&Ls held 30 percent of the mortgage debt on 1 to 4 family homes in 1930 or 48 percent of home mortgage debt held by institutional lenders.⁷ From this high point, the industry was ravaged by a wave of failures that lasted for fifteen years and left the traditional B&L sector a marginal player in the post-World War II thrift industry that would be dominated by a new form of "Savings & Loans".

In this section we first examine four features of the unique contractual structure of the traditional B&L and the case law specific to the industry that controlled how these associations operated and how they were resolved once they became distressed. Together these considerations help to explain both the great success of B&Ls in their first century of growth and the wave of prolonged failures and delayed resolutions after these intermediaries were hit by the severe housing crisis of the 1930s.

⁵ Bodfish, 1931, p. 136; *Housing Statistics Handbook*, 1948, p. 87. 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."

⁶ Bodfish, 1931, p. 138; *Housing Statistics Handbook*, 1948, p. 5, 60.

⁷ *Housing Statistics Handbook*, 1948, p. 114. Individuals held nearly 40 percent of home mortgage debt as late as 1930.

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, as an example, the combined value of a member's dues and dividends reached its \$200 par value after 139 months. Time to 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 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 the investment in B&L shares, however, represented a sinking fund that grew over time in order to repay their loan. Third, because both borrowing and non-borrowing members were owners they enjoyed similar 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 that proved to be instrumental in delaying resolution within the industry during the 1930s housing crisis.

To clarify the unusual dual status of a B&L borrowing member it will be useful to describe the structure of the B&L mortgage loan in more detail. The mortgage loans made by B&Ls were interest-only, balloon loans and in this respect similar to those made by nearly all lenders at that time. As a condition of the B&L loan, however, the borrower also entered 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. 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).⁸ 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 longer if they were lower. When the maturity value was reached, and not until then, the borrowing member’s share account was used to repay and cancel her loan. 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 do not keep current on payment of dues. Non-borrowers were also

⁸ 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.

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 of B&L stock 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. To begin with, 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. But 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.⁹

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.”¹⁰ 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.¹¹ 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 withdrawal by paying a premium to the association.¹² We shall see below that the obligation to treat members equally and in their collective best interest led B&Ls to suspend withdrawals indefinitely and in unprecedented volume during the housing crisis of the 1930s.

Restrictions on the withdrawal of shares by a borrowing member of a B&L are much simpler to specify. First, borrowing members could never withdraw their shares without fully repaying the loan that was being secured. Second, borrowing members could use unmatured shares and additional funds to prepay their mortgage loan at any time.¹³ Finally, and most

⁹Sundheim, (1922, p. 153) states: “The right of withdrawal is a privilege, dependent upon compliance, with the conditions upon which it is allowed, and when the by-laws, or statute, fix the conditions under which members may be allowed to withdraw, they must be complied with; therefore when notice is required to be given, it is essential in order to perfect that right, unless waived by the association.”

¹⁰ Cited in Sundheim, 1922, 152 from the laws of Pennsylvania of 1874.

¹¹ In case of disagreements concerning the ability of the Association to honor a withdrawal, the member could sue the corporation in a court of equity (Endlich, 1895, 95-6).

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&L borrowers had the right to pay off the loan at any time, and could augment their share account with other funds to retire their debt (Sundheim, 1922, 168).

important for purposes here, borrowing members had a right to use their shares to pay off their loans at any time.¹⁴ Such “withdrawals” drained no funds from the association’s treasury and so could not be suspended. We shall see that the prospect of repaying their loans provided borrowing members of distressed B&Ls during the 1930s with incentives to delay the resolution of their association.

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—these 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 state supervisory reports in 1925 found that there had been up to that time no reports of B&L failures in 24 states and only 88 failures reported across the entire industry (Clark and Chase, 1925, 15).¹⁵ B&L advocates pointed to the small number of failures—fewer than 1% of the 10,000 plus associations in operation in 1925—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.

¹⁴ Endlich (1895, 144) states that “When... the stock advanced upon to the borrower has matured, he is entitled to stop payments thereon, and to have his securities cancelled and surrendered within a reasonable time. He may enforce this right by bill in equity or mandamus and the association can recover no judgment against him upon his obligation.”

¹⁵ Clark and Chase (1925, 365) found that 24 states reported no B&L failures up to that time. Excluded from these counts were the planned closings of what were 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.

The meaning of insolvency for B&Ls was unique, as Braver indicates, because the business of these organizations was confined to raising capital from their member-owners and making loans to a subset of the same group.¹⁶ The traditional B&Ls raised funds from members only through stock subscriptions.¹⁷ B&Ls were also generally restricted from using other forms of borrowing to conduct their business.¹⁸ 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 inapplicability of a creditor-based definition of insolvency for B&L's was eventually recognized even in federal statute when these associations were formally exempted from the U.S. bankruptcy code in 1932.¹⁹

Given the unusual financial structure of the B&L, it was left to the courts to identify the conditions under which an association could be judged “insolvent.” Over time, case law settled on a deceptively simple standard—that 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

¹⁶ The special character of B&L insolvency was commented on by many authorities. See Endlich (1895, 497) who states that “[i]nsolvency ... does not necessarily dissolve a building association ... [because] ... insolvency of a building association is a peculiar thing.” Sundheim (192, 179) begins his discussion with “The insolvency of a building and loan association is a condition not usually provided for by the statutes. In the ordinary meaning of the word ... such a condition is practically impossible.

¹⁷ Clark and Chase (1925, 396) show that 30 states 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. Deposits were prohibited in New Jersey.

¹⁸ Clark and Chase (1925, 125-6) explain that 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. Clark and Chase (1925, 403-8) show that most states limited B&L borrowing to 20-25 percent of assets with several above and below. New Jersey's limit was 30 percent. All states limited borrowings to one year.

¹⁹ See U.S. House of Representatives, 72nd Congress, Session 1, Report No. 98 to accompany H.R. 374, January 15, 1932.

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 in a series of decisions courts 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 were 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.²⁰

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

²⁰ “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).

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).²¹

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. We have seen earlier, however, that 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 what were known as “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 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

²¹ 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 then be filed with the Commissioner of Banking and Insurance, whereupon a certificate to the trustees in liquidation may be issued by him.”

request a withdrawal. A borrowing members 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 liquidation was entered all shareholders were generally treated equally regardless of differences in the maturity or types of shares and given a claim proportional to the equity they had paid into the association.

An issue of greater concern here regards the treatment of borrowing members during a voluntary liquidation. Central to the issue was the dual status of the borrowing member in the traditional B&L—he was both an owner and a debtor to the association. The view held in the great majority of states, including the New Jersey B&Ls we study here, was known as “the Pennsylvania Rule,” named after the state where the key court decision was made.²² Under the

²²A handful of states dealt with SAC borrower/members by what was known as the Maryland rule. Under this interpretation the dual role of stockholder-mortgagor was treated as a fiction imposed by the technical aspects of the B&L contractual structure. As a result, the borrowing member was fundamentally 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.

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 the resolution for voluntary liquidation was passed, the borrowing member's loan was due immediately in full, while the share account he had built to pay off the loan was held back with the shares of all other members until all of the B&L's assets had been disposed of and a liquidating dividend payment declared.

Under the Pennsylvania Rule, it turns out that borrowing members in a distressed association had incentives to delay liquidation until they could pay off their share accumulation loan contract as originally written. To see why, first consider the expected liquidation value of the shares of a *non-borrowing* member at time t (LV_{it}^{nb}):

$$(1) LV_{it}^{nb} = \alpha_{it} \cdot EPV_t \{ Mort_t + REO_t + Other Assets_t \},$$

which is simply the member's share of ownership (α_{it}) times the expected present value of the liquidated value of all the B&L's assets—its outstanding mortgage loans ($Mort_t$), the real estate it owned (REO_t), and all other assets ($Other Assets_t$). Note that book value of a non-borrowing member's shares before liquidation affected the expected liquidation value after liquidation only through its influence on the member's proportional share of the liquidated assets (α_{it}).

Under the Pennsylvania Rule, the share account of a borrowing member was treated equally to those of the non-borrowing members while the borrower's debt (which under the B&L loan plan was still fully outstanding in its original amount) became due in full. His expected liquidation value under this rule would have been:

$$(2) LV_{it}^b = [-Loan_0] + \alpha_{it} \cdot EPV_t \{ Mort_t + REO_t + Other Assets_t \},$$

If the resolution for voluntary liquidation failed, on the other hand, the borrowing member would retain the right to repay her loan under the original terms of the share accumulation loan or to pay the loan off early by augmenting the book value of her shares with additional funds. In either case, the net value (NV_t^b) of her contract, as long as the association was a going concern, was equal to the difference between her original loan balance and the current book value of her shares (BV_t):

$$(3) \quad NV_t^b = [-\text{Loan}_0] + BV_t, \text{ or}$$

$$(3') \quad NV_t^b = [-\text{Loan}_0] + \left[\sum_{j=0, N} (\text{Dues} + \text{Dividends Earned})_{t-j} \right].$$

In (3') the book value of the member's shares are expressed as the sum of the dues the borrowing member had made under the contract (which began to be paid at (t-N)) and the dividends credited to her share account over that time period.

The change in expected payoffs to a borrowing member that occurred when a resolution to liquidate passed is the difference between (2) and (3')

$$(4) \quad (LV_{it}^b - NV_t^b) = \alpha_{it} \cdot EPV_t \{ \text{Mort}_t + \text{REO}_t + \text{Other Assets}_t \} \\ - \left[\sum_{j=0, N} (\text{Dues} + \text{Dividends Earned})_{t-j} \right].$$

Which indicates that a borrowing member operating under the Pennsylvania would have been worse off as a result of a voluntary liquidation if her share of the liquidated assets of the B&L had lower expected value than the current book value of her shares. Note that if a B&L was "just insolvent" under the legal definition described in the last section, then the net expected loss from liquidation for a borrowing member would be simply the sum of dividends that had previously been credited to her share account.²³ Any deterioration in the expected value of the assets on the

²³ A B&L was "just insolvent" under the court's standard if the total value of the association's assets (denoted here as $EPV_t \{ \text{Mort}_t + \text{REO}_t + \text{Other Assets}_t \}$) was just equal to the equity contributions of all members ($\sum (\text{Dues})$ for all i).

B&L's balance sheet from this point would have increased the difference between the value of the liquidated assets and the current book value of her shares. The borrowing member, therefore, would be less likely to vote for liquidation as the B&L suffered additional losses on its assets.

Borrowing members had incentives to vote against voluntary liquidations under the Pennsylvania Rule, therefore, because it was only when the B&L operated as a going concern that they retained the right to repay their loans using the current book value of their shares. The focus of the remainder of the paper will be to explore whether and to what extent this particular channel contributed to the delayed resolution and recovery from the housing crisis of the 1930s.

E. The Rise before the Fall of the B&L Association

Before examining how the contractual structure of B&L associations prolonged failure during the Great Depression, it is worth noting that between 1830 and 1930 this same structure grew rapidly to become the nation's most important institutional source of residential mortgage loans. This record of success attests to the advantages B&L mortgages provided to borrowers, and B&L shares to savers, relative to the other loan and savings products that were available at the time. Before 1930 most 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. Given these short maturities, loans often had to be renewed one or more times before they could be paid off in full and each renewal exposed borrowers to additional costs and risks. The B&L SAC mortgage was written for up to 60 percent of the property value and fully extinguished the debt over a single 11 to 12 year horizon. The B&L share accumulation plan, in addition, provided borrowers with a form of amortization at a time no other lender offered such gradual repayment options.

In addition to the attractive terms a B&L loan offered to borrowers, B&Ls also offered non-borrowers higher returns than the savings accounts offered by commercial and savings banks. The reason, of course, was that B&L members participated fully in the earnings on their association's portfolio of home mortgage loans.²⁴ These earnings were relatively high, moreover, because B&L borrowers could pay loan premiums to their own association that raised their effective interest rate above the legal limit without violating local usury laws. With higher returns came risk, but B&L loans were better secured (with a sinking fund) and more closely monitored (required weekly or monthly payments) than loans made by other lenders.

When taken together, the B&L SAC mortgage structure proved to be attractive to both savers and borrowers in the pre-1930 home mortgage market, which was smaller in size relative to the housing stock, less institutionally mature, and more spatially fragmented than its modern counterpart (Snowden, 2010). Within this environment 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 with no more than several dozen members wherever local demands and supplies of mortgage funds were sufficient.²⁵

²⁴ B&L mortgage earnings were relatively high, moreover, because their Loans were not subject to local usury laws given the cooperative nature of the association. So B&L borrowers often paid loan premiums that raised their effective interest rate above the legal limit.

²⁵ 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.

III. Delayed Resolution of B&Ls in the 1930s in the US and New Jersey

[T]he savings and loan industry is at present in a process of consolidation ... parallel to developments ... in the banking field ... [where] the number of active banks in **1939** was only half that in **1921**. In contrast, the number of savings and loan associations increased [to] ... a peak in **1927**, and decreased slowly in subsequent years. Only recently has their number been reduced in substantial measure as a belated consequence of the depression period from 1929 to 1933... In fact, this process is not yet completed. More than 2,000 of the 7,737 associations existing at the end of 1939, although not in process of formal dissolution, are, in effect, in a state of gradual liquidation. They make no new loans and receive no new share investments, and restrict their operations to the collection of interest and principal on mortgage loans and to the disposition of real estate owned.

Eighth Annual Report of the Federal Home Loan Bank Board, 1940, 56-7.

Contemporaries were aware in 1939 that the B&L industry was in an unusually long process of resolution. The FHLB staff thought it meaningful, in fact, that B&L “consolidation” was strikingly different in timing and duration than if had been within the commercial banking sector. They did not point out, however, that recovery from the mortgage crises of the 1930s involved not only the resolution of failing mortgage lenders, but also the emergence of new mortgage lending channels. Within the thrift industry this dual process took the form of the slow resolution and marginalization of the traditional B&L sector at the same time that a new “Savings and Loan” model emerged and took hold. The goal of this paper is to understand why the resolution of the “old” B&L sector was so long delayed. To understand and examine this process, it must be differentiated from the simultaneous growth of the modern “S&L” industry that came to dominate the post-World War II residential mortgage market.

The most visible feature of the development of the modern S&L industry during the 1930s was the creation of its three regulatory components—the Federal Home Loan Bank system in 1932, a system of federal S&L charters in 1934, and the establishment of the Federal Savings and Loan Insurance Corporation in 1935. The actions and policies promulgated by these agencies “federalized” the new S&L industry, but not in a “top-down” process. Instead, all major elements of the transition were proposed, directed and implemented by individuals drawn

from the traditional B&L industry and its powerful trade group, the U.S. Building and Loan League (Snowden, 2003). The changes in contractual and organizational features from B&L to S&L, moreover, involved the implementation of innovations that had been proposed or introduced on a limited basis within the B&L sector during the 1920s.

Of most interest here are three particular features of the S&L model that represented contractual and organizational changes from the B&L model. The first was the replacement of the share accumulation contract with a new S&L “share account” that offered non-borrowers virtually the same liquidity and withdrawal privileges as a bank savings account. By abandoning the SAC contract for non-borrowers, of course, the S&L structure broke the contractual linchpin through which borrowing and non-borrowing B&L members shared in the association’s lending risk. Under the S&L model, in fact, borrowing members held only nominal amounts in their share accounts, no longer shared substantially in the association’s lending risk, and took out only “direct reduction” mortgage loans in which principal payments directly and immediately reduced the loan balance and were not deposited in the sinking-fund share account of a traditional B&L (Rose and Snowden, 2014). Finally, the establishment of the FSLIC provided an external regulator who could initiate and execute a resolution more quickly than it took to approve and complete a voluntary liquidation of a traditional B&L.

The B&L industry had discussed and experimented with all of these changes during the 1920s, and, in fact, was somewhat bifurcated when the Depression and housing crisis of the 1930s hit. By that time some associations were eager and willing to adopt the new S&L model, while the great majority of traditional B&Ls either resisted or were unable to adopt these changes. The fate of these two groups diverged dramatically over the next fifteen years as the new S&L model grew into the nation’s principal source of residential mortgage loans while most

traditional B&Ls went through extended declines and eventually exited the industry. Table 1 shows the national dimensions of the process. In the table the traditional B&L sector is identified as the group of associations that did not join the FHLB system, while the new “S&L” industry is composed of FHLB members whether they were chartered federally or by a state.²⁶

All mortgage lenders suffered losses during the first years of the Depression, but distress was most severe among B&Ls. Between 1930 and 1933 the number of operating associations in the nation decreased by 1,500 and the sector’s total assets declined by nearly one-third. As a result, the share of institutionally-held residential mortgage debt held by B&Ls and S&Ls decreased from 50 percent in 1930 to only 39 percent in 1933. By 1935 the relative demise of the traditional B&L sector was underway as the two-thirds of all operating associations that remained outside the FHLB system (some 6,811) together held 45 percent of the industry’s assets.²⁷ It took ten more years for another 4,300 of these traditional B&Ls to exit the industry and by 1945 this once-dominant form of cooperative association held only 10 percent of combined B&L/S&L assets. Over the same period the number of federally- and state-chartered S&L associations increased by only 5 percent, but their share of industry assets increased to 90 percent.

The lengthy resolution that lay ahead of the B&L sector in 1935 was clearly recognized by market observers and participants. In hearings on the National Housing Act of 1934, for example, senators raised concerns about the relationship between failing B&Ls and the FSLIC

²⁶ By 1936 640 of Federal S&L’s were new associations while the remainder had been converted from state-chartered associations. These converted associations held 2/3 of Federal S&Ls assets. All Federal S&Ls were required to be members of FSLIC, but state-chartered FHLB members were not required—and only about 900 of the 2387 had joined the insurance program by 1940 (9th FHLB Annual Report, 1941, p. 228, 244).

²⁷ Between 1933 and 1936 the Home Owners' Loan Corporation refinanced \$2.9 billion of home mortgage debt—most of it to take slow-performing loans off the books of commercial and savings banks, insurance companies and B&Ls. The market shares of all these fell as a result of HOLC refinancing activity, but the B&L share of intermediated residential debt (including the HOLC) fell from 50 percent in 1930 to only 29 percent while the combined share of the other three lenders fell only five percent (from 50 to 45 percent).

insurance program that was proposed in title I of the legislation. In addressing these concerns, the general counsel of the FHLB Board system, who supported the FSLIC proposal, testified that “those [associations] that could not qualify for this insurance, being impaired, are nearly all institutions in the process of slow liquidation now... I do not think the passage of this measure would do anything except leave them where they are, in the process of slow liquidation.”²⁸

Non-borrowing members of traditional B&Ls were already aware of the situation described to the senators. By 1934 foreclosures had become so numerous that B&L real estate holdings had reached twenty percent of assets and payments of dues and interest on loans had become severely curtailed. The restricted flow of new funds into B&L treasuries had to first be used to fund foreclosure and property management activities and many associations were forced to suspend payment of withdrawals altogether. When and where B&Ls could honor some withdrawals, there was generally an excess demand for repayments. To help manage the situation most states passed legislation that allowed B&Ls to abandon paying withdrawals on the “first come, first served” basis required by the “order of filing method” and to implement, instead, the “rotation principle” (Bodfish and Theobald, 1938, 161). Under this procedure the association 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.

The non-borrowing member in a B&L that was frozen or was using the rotation principle could accelerate withdrawals only by pressing the directors and other members to approve a resolution of voluntary liquidation—which we will see was generally long in coming. Some

²⁸ Testimony of Horace Russell, Hearings on S. 3603, 73rd Congress, 2nd Session, May 16-24, 1934, p. 79.

B&L non-borrowing members responded to this situation by selling their B&L shares in the secondary market. Rose (2014) examines in detail the operation of the 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, for an average discount of 20 to 30 percent relative to their book values.

The observations of regulators, the implementation of the rotation principle, and the emergence of secondary markets for B&L shares all provide compelling evidence that the delayed resolution of severely distressed associations was a prevalent and well-understood feature of the traditional B&L sector by the mid-1930s. The discussion of the last section showed that these equity-financed cooperatives could continue to operate even when they were severely distressed and that the most likely path to resolution was through a voluntary liquidation. To give a more detailed picture of these generalizations, Table 2 provides a detailed record of the timing and character of B&L resolutions in New Jersey between 1930 and 1945.

The resolution of distressed B&Ls appears to have been even more delayed in New Jersey than in the nation as a whole. Two-thirds of the B&Ls that were operating in 1930 had left the industry by 1945, but fewer than 4 percent of them—only 51 out of 1,565—did so during the first five years of the Depression.²⁹ The marked acceleration in exits within the state, in fact, did not begin until 1937 and then plateaued for six years as more than 100 associations left the

²⁹ The change in numbers of B&Ls in New Jersey between 1930 and 1945 was due almost only to exits. Only two new associations entered the industry between 1930 and 1935 and both had exited by 1940. 14 new B&Ls appeared in 1939 through reorganizations of existing associations. No other new associations were organized during this period.

industry every year between 1938 and 1943. Before and throughout the period of heavy exits, New Jersey B&Ls were severely distressed as indicated by industry-wide holdings of real estate that rose above 20 percent of assets in 1934 and remained at that level until 1941.

The majority of these exits, and a very large majority before 1940 resulted from voluntary liquidations. The timing of these liquidations followed the same pattern as total exits as they accelerated from low levels in 1937 and remained above 70 per year until 1942. Members could also vote to end the operation of their association by merging with another B&L. Mergers accounted for 11 percent of all exits between 1930 and 1945, and occurred in a steadier pattern over time than either total exits or voluntary liquidations. It is likely that mergers occurred between less severely distressed associations since they had to be approved by members of both the acquiring and acquired associations.

Although the discussion in the last section emphasized the importance of member control over B&L resolution, one-third of exits in New Jersey, mostly after 1940, were for reasons other than voluntary liquidation or merger. These fall into three categories and each one reveals an important feature of the New Jersey case that provides insight into how the empirical evidence regarding the determinants of the timing of exits in New Jersey needs to be structured and interpreted.

A striking difference between New Jersey and the U.S. as a whole in the 1930s was the small number of B&Ls in that state that converted to a federal S&L charter. Table 1 shows that there were more than 1,400 Federal Savings & Loans operating in the U.S. by 1940 and more than half of these were converted state-chartered B&Ls. By 1940, however, only 6 New Jersey B&Ls had converted to federal charters and the state was one of very few in which not one brand

new federal S&L had been chartered.³⁰ Even by 1945 only 18 of the more than 500 associations in New Jersey operated under a federal charters while at the same time that federal S&Ls represented nearly 25 percent of all associations operating in the nation as a whole. State-chartered B&Ls in New Jersey were also relatively slow to join the FHLB system and the FSLIC insurance program.³¹ It is not surprising that New Jersey B&Ls were slow to respond to the new federal S&L programs since they represented one of the largest and most homogeneous groups of traditional B&Ls in the nation. The important point for purposes here is that New Jersey is ideal for examining resolutions of traditional B&L sector because relatively few of its associations transitioned through the difficulties of the 1930s by relying on new federal regulatory structures and programs.

A second noteworthy feature of the New Jersey experience is the relatively large number of exits due to reorganizations. A total of some 240, most after 1940, accounted for more than 20 percent of all exits. These reorganizations were of two types. Before 1940, 24 of the 31 reorganizations were accomplished through what was called a bulk transfers of assets in which the membership of an association segregates non-performing loans from good loans and places the latter group in a new association in which each member was given a proportional share (Ewalt 1962, 116-8). 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,” is liquidated. The number of reorganizations in New Jersey increased dramatically after 1940 when the state and federal governments stepped in to assist in the

³⁰ Massachusetts and Maryland were two other prominent B&L states in which no new Federal associations had been established by 1941, but in both states conversions from state to federal charters were greater in number than in New Jersey. See FHLB, *Ninth Annual Report*, p.224.

³¹ The FHLB membership rate for B&Ls in New Jersey was 19 percent in 1935, 30 percent in 1940 and 42 percent in 1945 versus national averages of 27, 42 and 47 percent for each of these years. The share of these FHLB members that joined the FSLIC program was also low, at 25 percent in 1940 relative to the national average of 57%. See FHLB *Annual Reports* (various years).

reorganization of 220 associations in 20 different localities within the state.³² The fact that B&Ls in New Jersey warranted this attention as late as the early 1940s attests to the difficulty and delay that impeded resolution within this sector and state. For purposes of this paper, however, the important point is that the change in the character and increase in the number of reorganizations after 1940 could have influenced the determinants and timing of voluntary liquidations within the state. With this in mind we focus the analysis below on the 1936 to 1940 period.

During the 1936 to 1940 period voluntary liquidations accounted for two-thirds of all exits. The next largest category of exits during this period occurred as a result of “State Actions”. Twenty-one of these 90 cases involved either conservatorship or liquidation by the state regulator. Nearly all of the remaining 58 occurred in only two years—1937 and 1940—and are described in the regulators report simply as the state “taking possession” associations. 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.

The empirical sections of the paper identify the determinants of voluntary liquidations as the key to understanding the timing of B&L resolutions. By narrowing the focus to the 1936 to 1940 our empirical analysis examines 992 B&Ls that survived and operated until at least 1940, 352 B&Ls that were voluntarily liquidated by their members between 1936 and 1940, and 170 B&Ls who exited through mergers, federal conversions, reorganizations or state actions. The strategy we employ is to first examine the timing of voluntary liquidations by using the first two groups and then investigate the robustness of the results by considering the impacts of the other types of exits in a multinomial probit analysis.

³² These “community programs” were directed by state governments but actively supported by the FHLB and the FSLIC. Besides New Jersey these were used extensively in Altoona, Chicago, Milwaukee and New Orleans. For details see the 8th (1940, 107-10) and 9th (1941, 120-4) *Annual Reports* of the Federal Home Loan Bank Board.

IV. Testing the Hypothesis with New Jersey B&L Data

The goal of this paper is to better understand why the resolutions of traditional B&Ls took more than a decade to complete after the housing crisis of the 1930s. The explanation offered here, based on the analysis of B&L contracts and case law in Section II, is that the borrowing members of a traditional B&Ls had incentives to keep their associations operating until they repaid their loans so that they could avoid losses that they would have been forced to realize in liquidation. The empirical prediction, therefore, is that a distressed B&L continued to operate in the 1930s so long as its borrowing members could vote to defeat a resolution to liquidate. In particular, we need to assess whether the hazard of exiting from the industry through a voluntary liquidation was negatively related to the share of members who had borrowed under a traditional B&L share accumulation loan. To do so we need panel data that combines time-varying information on economic conditions in the local market with time-varying information on the financial condition of individual B&Ls and the distribution of voting power within them. The New Jersey B&L data is unusual and in that it provides both detailed balance sheet information for each year and member level data that can be used to measure the voting power of traditional B&L borrowers. In this section we describe these features of the New Jersey data that we use.

The information on individual B&Ls was collected, compiled, and digitized from the *Annual Reports of the Commissioner of Banking and Insurance* for the years 1930 to 1940. The sources provides 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 (see Table 2 above).

A total of 1,581 associations operated at some time during the decade in New Jersey, but with wide variation in age and size. In 1930 there were 283 associations operating that had been established before 1900, another 585 that had been placed in operation between 1900 and 1920, and 693 that had been organized during the rapid expansion of the 1920s. Together these account for the 1,561 B&Ls that were operating in the state in 1930. The size of these B&L's varied considerably, however, with more than 400 small associations holding total assets of less than \$250,000 while another 92 held more than \$2 million. Membership numbers correlate closely with total association size and vary from 240 small associations with fewer than 250 owner-members to the 297 that 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 3 shows the means and standard deviations for these variables for several years during the 1930s. In our regressions 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 was mortgage loans and these represented on average of 90 percent for operating associations in 1930. As the housing crisis unfolded the average share of mortgages fell to low of only 50 percent in 1937 and then recovered to 58 percent by the end of the decade. Offsetting increase 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 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 unapportioned 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 are borrowing members, but more specifically borrowing members with traditional B&L share accumulation, sinking-fund loans. As mentioned briefly in the last section, 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. As explained earlier, the impact of a voluntary liquidation, and their likely voting positions, were fundamentally 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 could 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.³³ As can be seen in Table 3, the share of members who borrowed under a direct reduction mortgage contracts, and the share of direct reduction mortgage contracts, 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 23 percent of members in 1930 and 26 percent in 1934 before falling off rapidly in the last few years of the decade.

³³ 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.

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, as explained earlier, non-borrowers were treated equally when associations became frozen or liquidated whether they held installment, matured or paid-up stock. The focus here is on the share of SAC borrowers, however, and the requirement in New Jersey law that a voluntary liquidation had to be approved by at least two-thirds of all members. In our main specification we estimate the impact of SAC membership shares by creating a dummy variable for B&Ls in which the share of SAC borrowers in any year accounted for more than or equal to one-third of the voting members and thus could block liquidation. A second dummy is included 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.

V. Empirical Approach

The goal of our analysis is to estimate the impact that SAC borrowers had in delaying the resolution of traditional B&Ls during the 1930s. To do we developed a panel data set that combines the annual data on B&L size, balance sheet composition and voting blocs with information on time-varying economic activity in the county mortgage market where each B&L was located. As explained above, the empirical analysis focusses specifically on the 1935 to 1940 period during which voluntary liquidations accelerated and before state government and federal regulators began to sponsor large numbers of resolutions. For our principal analysis we also restrict our sample to B&Ls that either exited through voluntary liquidation or survived until

the end of our five-year sample period.³⁴ Using these data we estimate a Cox survival model in which the hazard of closure through voluntary liquidation is:

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

in which $h(t)$ is the hazard of closure in time t , SAC_{itc} is a vector of dummy variables to capture the impact of different ranges of the share of SAC borrowing members among all members. The subscript i refers to the firm, t to the year, and c to the county where the firm is located. Our primary focus is on β , the coefficient(s) on the measure(s) of the proportion of SAC borrowers.³⁵

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 control for the shares of liabilities in installment shares, paid up shares, and unapportioned profits with apportioned profits and miscellaneous as the left-out category.³⁶

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

³⁴ See Section VIII for the multinomial probit 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.

³⁵ Because the SAC borrower shares may have some measurement error, we have tried alternative measures of the reliance on SAC loans. In one we used 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, we used the proportion of borrowing members of 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.

³⁶ 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.

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.³⁷ 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.³⁸

Finally, the hazard model structure will not allow us to control for time-invariant features of the B&Ls with fixed or random effects. To control for a significant degree of the unmeasured time-invariant heterogeneity across firms, we therefore include time-invariant 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.

VI. Estimation Results

In column 1 of Table 4 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. Dummies are included here to identify B&Ls in which SAC borrowers were more than one-third of

³⁷The 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.

³⁸ 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.

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 asset structures with higher shares of assets in real estate owned due to foreclosure were more likely to be in trouble and thus be closed down. The increases in real estate owned almost mechanically led to a reduction in the SAC loan holders as a share of voters. This combination of a positive and a negative relationship would lead to an omitted variable bias that would bias the unconditional estimates toward being more negative.

Once we control for changes in the asset and liability structure of the B&Ls in Specification 2 of Table 4, the coefficients on the SAC borrower share of borrowers become substantially less negative. This is consistent with the anticipated negative omitted variable bias in the unconditional estimates.

To reduce potential problems with endogeneity, we add additional controls for the structure of the assets and liabilities of B&Ls in 1930 before the crisis. These controls act somewhat like fixed effects because they control for the asset and liability structures of each B&L in good times just before the crisis hit. We also add measures of contemporary economic activity in the county. When the additional factors are included in the analysis, the coefficients

in column 3 of Table 4 become less negative but remain statistically significant for B&Ls with a SAC share of voters greater than or equal to the one-third needed to block liquidation. The coefficients imply that B&Ls with SAC shares above one-third were 50.2 percent less likely to go into voluntary liquidation than ones with SAC shares below 25 percent. B&Ls with SAC shares of less than one-third and greater than or equal to one-fourth were 24 percent less likely to close than those with less than a one-fourth share, but the relationship is statistically insignificant.

Before examining the magnitude of the SAC voting bloc effect on the hazard of exit, it will be useful to examine the estimates for the remaining correlates in the model.

Shares of Members with DRC Loans

We expect that DRC borrowers were either largely indifferent to voluntary liquidation or slightly against it if they had to deal with the transactions costs of shifting lenders or having a loan purchased. In the unconditional estimates for the DRC voter share in column 1 of Table 4, the coefficient is negative and not statistically significant. Here again, there is likely to be negative omitted variable bias because DRC loans, which tended to be newer and more carefully vetted, would have been less likely to be associated with shares of arrearages, foreclosed real estate and, therefore, B&L liquidations. The combination of the positive and the negative correlations would lead to a negative omitted variable bias. In fact, when all of the correlates are included in specification 3 in Table 4, the coefficient switches sign and becomes positive but still is not statistically significant. Between 1934 and the peak year of liquidations the DRC share of membership rose from 0.9 percent to 5.6 percent in Table 3. Such a rise for all observations would have increased the baseline probability by 1.2 percentage points from 16.0 to 17.2 percent.

B&L Size and Structure of Assets and Liability

Given a specific set of asset, liability and ownership conditions, larger B&Ls were less likely to close. The one standard deviation effect was the second largest in Table 4 at -6.6 percentage points. Unfortunately, between 1934 and 1939 the average size of B&Ls fell sharply by more than 38 percent (see Table 3). The drop increased the probability of liquidation by 4.2 percentage points in Table 4.

The liquidations of B&Ls often followed a dynamic pattern. The first sign of trouble came as the share of arrears increased, showing the impact of delinquencies in the payment on the loans. The one-standard deviation effect in Table 4 shows that raising the arrears share by one standard deviation of 0.049 (from Table 3), while holding constant all other correlates, increased the probability of liquidation by 5.3 percentage points from 16.0 to 21.3 percent. Between 1934 and 1939 the arrears share of assets actually fell from 5.1 to 2.6 percent in Table 3, which would have lowered the probability of liquidation by -2.2 percentage points (Table 4) from 16.0 to 13.8 percent.

When the arrearage share of assets declined that could be good or bad news. It was good news if it declined because borrowers caught up on their payments. Unfortunately, the decline in arrearages became very bad news when they were replaced by increases in real estate ownership as the B&L foreclosed on the mortgages that were in arrears. A one-standard deviation rise in the real estate share of assets of 0.183 (from Table 3) was associated with an increase in the probability of liquidation by 16.6 percentage points, which is the largest effect for all of the correlates in the analysis in Table 4. Between 1934 and 1939 the share of assets in real estate

owned rose from 21.5 to 37.6 percent of assets in Table 3, implying a 14.3 percentage point increase in the probability of liquidation in Table 4.

B&Ls also sometimes accumulated cash when they anticipated future problems. Table 4 shows that accumulating one standard deviation of 0.034 more in cash assets, lowered the probability of liquidation by -1.1 percentage points. The share of assets in cash increased by only 0.7 percent between 1934 and 1939 and the rise only reduced the probability of liquidation by -0.2 percent.

On the liability side, high percentages of installment shares and paid-up shares were signs of strength in the typical B&L. A rise of one-standard deviation for each reduced the probability of liquidation by -3.9 and -2.8 percentage points, respectively in Table 4. As the share of installment shares fell from 59.7 in 1934 to 45.1 in 1939, the B&L's liability position worsened and the change was associated with a 5.1 percentage point increase in the hazard of liquidation. Meanwhile, the paid-up share of liabilities rose by 3 percent, which reduced the hazard of liquidation by -0.8 percentage points. When problems hit the B&L, one sign of trouble on the liability side was a rise in unapportioned profits. A one standard deviation increase was associated with a rise in the probability of liquidation of 2.2 percentage points. The unapportioned profits share rose from 11.6 to 20.9 percent between 1934 and 1939, which would have contributed to a rise in the probability of liquidation by 2.5 percentage points.

County Economic Activity

None of the county economic activity variables in Table 4 had statistically significant elasticities. Even though the coefficients are not statistically significant, the inclusion of the county correlates sharply reduces the estimated elasticity of the SAC membership share.

1930 Firm Characteristics

We included the 1930 asset and liability structure and size variables to control for the heterogeneity in structures of the B&Ls at a successful time before the mortgage crisis hit. The coefficient estimates show the impact of prior conditions in the good times around 1930 after controlling for the variation in the asset structure that followed during the period when B&Ls began to close. Even after controlling for the changes that followed from 1934 through 1939, observers could make some predictions about which B&Ls were likely to fail from their asset structures in 1930. Each of the asset coefficients is statistically significant in Table 4. B&Ls in 1930 with an arrears share of assets that was one standard deviation higher were 1.9 percentage points more likely to liquidate. The one-standard deviation relationships were 1.5 percentage points for the cash share of assets in 1930 and 0.8 for the real estate share in 1930. The liability features had smaller one-standard deviation effects and none of the coefficients are statistically significant.

VII. Magnitude and Robustness of the Borrower Vote Effect

One way to show the impact of the SAC share is to see how the baseline probability of liquidation for the sample changes when all B&Ls had SAC mortgage shares of ownership greater than one-third. To obtain the mean predicted baseline probabilities, we started by predicting for each observation the probability of liquidation in a year using the baseline probability estimated in the model, the coefficients from specification 4 in Table 4 and the actual values of each of the correlates. We then calculate the mean for those probabilities. The mean baseline probability of failing in a particular year is 16.0 percent for the entire sample covering

1934 through 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 by -7.6 percentage points from 16.0 to 8.4 percent. Our measure of membership shares has measurement error and voting blocks of SAC mortgage holders might have been able capture swing voters, so we also have tried giving all firms SAC shares between one-fourth and one-third, and the probability of liquidation would have been 4.2 percentage points lower.

Another way to measure the impact of the SAC Borrower's Share of Assets is to compare the change in the number of voluntary liquidations associated with different assumptions about the shares. Table 5 shows that the actual number of voluntary liquidations in the 1930s was 357, with only 5 liquidations before 1936. The number of liquidations rose to a peak of 149 in 1939. After calculating the predicted probability of liquidations using the coefficients in specification 4 in Table 2 in conjunction with the values of the correlates and baseline probabilities for each observation, we found that there would have been the same number of 351 liquidations if we assumed that each firm liquidated when its predicted probability reached 83 percent or more. The frequency distribution of the predicted probabilities using the 83 percent figure was more backloaded with no predicted liquidations before 1936, a higher peak at 184 in 1939 and most of the rest of the liquidations in 1940.

If all firms had had SAC Borrower Shares greater than one-third, the number of predicted liquidations would have been cut sharply and the peak delayed. Table 3 shows that the predicted number of liquidations would have been 98 rather than 351 and the peak was moved to 1940 rather than 1939. Had the SAC shares all been between one-third and one-fourth, the predicted number of liquidations would have been 230, roughly two-thirds of the actual number liquidations and also been more delayed. Had all firms had SAC shares been below one-fourth,

there would have been 23 more liquidations than actually occurred with a frequency distribution that looked more like the predicted probabilities based on the actual shares. Thus, holding every other factor at its actual value, the SAC borrower share of owners would have had powerful impact on the likelihood of closure.

For the rest of the variables, which are all continuous, we show the average effect of a one-standard deviation change in that correlate while not changing any of the other correlates for each observation in Table 4. We also show the effects of a change equivalent to the change in the mean of the 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 really comparable to one-standard deviation changes for continuous variables.

Therefore, 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 4 is statistically significant and negative in specifications 4, 5, and 6 in Table 4. 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. The only effects in Table 4 that are larger or comparable in size to the explanatory power of the SAC share effect are the owned real estate share of assets, the total assets of the building and loan, and the arrears share of assets.

Thus, the SAC share has similar or greater explanatory power than all but three of the major features of the balance sheet and of changes in the county economy.³⁹

In the estimates in Table 4 the sample is confined to firms that either voluntarily liquidated or stayed open to focus on the decision where the SAC Mortgage share of members would have impact. To evaluate the SAC borrower effect in a model that allowed for all types of exits, we also estimate a multinomial logit model with results shown in Table 6 that includes all B&Ls and examines the probability of all categories of liquidations: 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 shares were also negatively related to lower probabilities of the other types of closures, but the only coefficient that is statistically significant for the other types of closures is for the SAC share greater than one-third for acquisitions and mergers. As for other variables, the presence of more high-income federal taxpayers 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.

³⁹The 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 were 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.

VII. Conclusions

The 1930s were disastrous for the nation's housing and mortgage markets as home foreclosures reached historic levels, the rate of homeownership fell from 45 to 40 percent, nominal home prices decreased by nearly 40 percent, and home construction activity remained well below 1920s levels. The federal government's principal emergency response, the Home Owners' Loan Corporation, bought, refinanced and removed from private lenders' balance sheets \$3 billion of toxic mortgages, or about 10 percent of outstanding home mortgage debt. This helped stem, but did not reverse, the downward slide in home ownership and home prices (Fishback, Rose, and Snowden 2013). HOLC also did not resolve all of the damage left behind in the nation's residential mortgage markets and nowhere was the remaining distress greater than in the traditional B&L industry. We have shown that B&Ls could not be closed because of illiquidity or forced into insolvency. So by 1934 it was clear to participants and observers that the resolution of distressed B&Ls would be a slow process and it ended up lasting for another ten years.

We have argued in this paper that a conflict between the borrowing and non-borrowing members of these mutual organizations was an important contributing factor to the slow pace of resolution within the traditional B&L sector. The conflict arose because a distressed B&L could only be closed, in general, with the approval of its membership. However, liquidation played out very differently for non-borrowing and borrowing members of B&Ls. Courts in nearly all states, including New Jersey, had ruled that the straight mortgage loan and share accumulation contract, which were combined in the traditional B&L loan, became distinct and separate contracts in liquidation. As a result, upon the approval of a voluntary liquidation of a B&L, the loans of its borrowing members became due immediately and in full, while the share accounts they had built

up to pay off their loans were held back to share in the final losses of their associations. If the resolution to liquidate was not approved, on the other hand, the borrowing members retained the opportunity to repay their loans as originally written and to avoid the write-down of their share accounts. Our estimates suggest that borrowing members with SAC loans in New Jersey voted against voluntary liquidations for this reason and by doing so slowed the process of resolving the B&L mortgage crisis in that state significantly. It took several years, in particular, for the SAC borrower voting shares to fall below 1/3 so that that the membership could close down B&Ls with weak balance sheets.

By delaying liquidation until they could repay their loans, borrowing B&L members shifted losses onto the non-borrowers in their associations. Beyond these transfers, delayed resolution could have had generated significant social costs and benefits. By forcing non-borrowing members to hold B&L equity longer, investments in other projects with higher private and social returns may have gone unfunded. Moreover, if delayed liquidation led B&Ls to hold foreclosed real estate longer than was optimal, additional deadweight losses on the property could have been generated. On the other hand, deadweight losses and negative feedback effects on general property values could have been avoided if borrowing members took advantage of the delays and paid off their loans rather than being foreclosed upon. All of these possibilities deserve further consideration.

Events since 2007 have made clear that delayed resolution after a housing crisis is not unique to the B&Ls of the 1930s and so we close with two more general points. First, mortgage lending channels that go through delayed resolution after a mortgage crisis tend to diminish in importance and become targets for innovation. In our historical setting the B&L was replaced by the modern S&L industry which, ironically, diminished in importance itself as a result of its own

troubled resolution some fifty years later. Second, subtle details in contracts and case law can generate significant and unexpected impediments to resolution when mortgage lending channels come under unprecedented distress. B&Ls had grown rapidly and successfully for a century, after all, under the same basic contractual structure and case law that they carried into the 1930s. But the housing crisis then revealed an incongruity in the B&L model—borrowing B&L members would not agree to injure themselves with a voluntary liquidation even though the alternative was the delayed resolution of their distressed and failing association.

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Table 1
Transition from Traditional B&L to Modern S&L in the US, 1930-45

	All B&L/S&L		Non-FHLB Members		FHLB Members			
	Number	Assets (\$ bil.)	Number	Assets (\$ bil.)	Number	Assets (\$ bil.)	Number	Assets (\$ bil.)
1930	11,777	\$7.471						
1935	10,266	\$5.220	6,811	\$2.330	987	\$0.495	2,468	\$2.395
1940	7,184	\$5.382	3,360	\$0.966	1437	\$1.871	2,387	\$2.545
1945	6,149	\$8.602	2,491	\$0.896	1467	\$3.924	2,191	\$3.782

Source: U. S. Federal Home Loan Bank Board, 1947, *Federal Home Loan Bank Review. Statistical Review*, Tables 4 and 7.

Table 2
B&L Exits in New Jersey, 1930-1945

Year	# of B&Ls	Exits in Years	Exits Due To:					
			All	Voluntary Liquid.	Merger	Convert to Fed S&L	Reorgan-ization	State Action
1930	1,565							
		1930-35	51	5	39			8
1935	1,514							
		1936-40 ^a	522	352	54	6	31	79
1940	993							
		1940-45	485	240	22	12	209	2
1945	509							

^a In 1936 293 of New Jersey B&Ls were members of the FHLB system. None were insured by the FSLIC. Seventy-two of these institutions exited by 1940 (28 by voluntary liquidation, 20 through merger, 5 by conversion to federal charters, 15 through reorganizations and 4 by state actions).

Source: New Jersey Commissioner of Banking and Insurance. Annual Report. (Various years).

Table 3
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 4
 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* (0.195)	-0.872* (0.295)	-0.699* (0.281)	NA	NA			
SAC Borrowers Between 1/4 and 1/3 of Members	-1.011* (0.210)	-0.438* (0.186)	-0.281 (0.199)	NA	NA			
SAC Borrowers' Share of Members						-5.855* (0.9443)	-2.499* (0.6457)	-1.648* (0.7126)
DRC Borrowers' Share of Members	-3.525 (2.265)	1.591* (0.768)	1.613* (0.948)	0.013	0.012	-5.337* (2.5203)	1.2449 (0.9587)	1.4762 (1.1749)
Natural Log of (Total Assets)		-0.635* (0.083)	-0.600* (0.155)	-0.066	0.042		-0.653* (0.0754)	-0.601* (0.1548)
Share of Assets in Real Estate Owned		4.086* (0.730)	3.968* (0.646)	0.166	0.143		3.8127* (0.6638)	3.8415* (0.6572)
Arrears		7.256* (1.099)	5.937* (1.133)	0.053	-0.022		6.8456* (1.1524)	5.8316* (1.1571)
Cash on Hand		-2.294* (1.271)	-2.062* (0.819)	-0.011	-0.002		-2.857* (1.1108)	-2.300* (0.8208)
Share of Liabilities in Installment Shares		-1.523* (0.446)	-1.892* (0.502)	-0.039	0.051		-1.586* (0.3801)	-1.860* (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 8,884 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.

Table 5
 Predicted Number of Voluntary Liquidations Under Different Assumptions About the
 SAC Borrowers' Share of Owners

Year	Actual	Predicted Probability Exceeded 83 percent When SAC Borrower Asset Shares were			
		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 4 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. The number of liquidations differ from the number in Table 2 in part due to missing values.

Table 6
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 9,426 observations across B&Ls,

Appendix Table 1

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 9,426 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.