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ABSTRACT

Building and Loan Associations (B&Ls) financed over half of new houses constructed in the U.S. during the 1920s but they lost their predominance within the following decades as they were pushed to convert into Savings and Loans (S&Ls). This study examines whether the U.S. government-insured Postal Savings System attracted funds away from B&Ls precisely when they needed them the most in the Great Depression. Annual town- and county-level data from 1920 through 1935 for 3 states show that the sudden rise in local postal savings was associated with local downturns in B&Ls. Using a panel vector autoregression, we find that postal savings significantly reduced the amount of money in B&Ls, yet B&Ls had no significant effect on postal savings banks. Alternatively, postal savings had no significant effect on commercial banks. The results suggest that this competitive dynamic prevented B&Ls from rebounding in the mid-1930s and helped contribute to Great Depression's local real estate lending decline.

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1. Introduction

Competition among institutions for funds is often blamed for causing financial crises. Typically, this is through the attraction of funds to less regulated and more risky institutions that offer a high return. For example, studies have highlighted the instigating role of trust companies in the Panic of 1907 (Moen and Tallman 1992), saving and loans associations (S&Ls) in the S&L crisis (Shoven et al. 1992), and shadow banks in the Great Recession (Gertler and Gilchrist 2018). However, competition might also worsen financial crises when they do occur, as investors often shift funds into commodities, like gold, which extends runs on institutions and commercial banks accumulate reserves at the Fed which prevents funds from being put to use in the community. This paper examines whether this dynamic could be partially responsible for the slow rebound of the mortgage market during the Great Depression. O'Hara and Easley (1979) blame the U.S. government-insured Postal Savings System for attracting needed funds out of building and loan associations (B&Ls) during the 1930s, preventing them from propping up the mortgage market. The authors show a negative correlation between B&Ls and postal savings at the national level, but lacking disaggregated data, they are not able to rule out alternative explanations and reverse causality. In this paper, we use annual town- and county-level data from 1920 to 1935 on B&Ls share values, mortgage loans, and postal savings deposits to formally test this relationship by comparing changes in these variables in institutions in the same location during the same year.

The U.S. Postal Savings System (1911-1967) was created to offer the unbanked and marginalized households a fully-guaranteed deposit account at post offices. Its re-establishment has become an increasingly prominent modern prescription to address the gap in affordable banking options for low-income households. For example, Sen. Bernie Sanders proposed its re-

establishment in his 2016 and 2020 presidential campaigns, and Sen. Kirsten Gillibrand proposed legislation in 2018 to not only re-establish the system but also allow check-cashing and loan services. Despite the renewed interest, however, we know little about how postal savings affected other financial institutions and whether the historical record has any important lessons for modern policymakers.

The literature on postal savings banks has focused on the patterns of usage (Kemmerer 1917; Schewe 1971; Sprick Schuster et al. 2020) or on postal savings' response to commercial bank failures (Sissman 1936; Kuwayama 2000; Davidson and Ramirez 2016). Similarly, the literature on B&Ls has focused on their popularity at an aggregate-level (e.g., Clark and Chase 1925; Bodfish 1931, 1935) or the role they played in the success of the mortgage market during the 1920s and 1930s (Courtemanche and Snowden 2011; Fishback et al. 2011, 2013, and 2019; Rose 2014; Fleitas et al. 2018).

O'Hara and Easley (1979), however, provide the one study that examines the competition between postal savings banks and B&Ls. They argue that postal savings competed away funds from B&Ls. First, while commercial banks were able to receive re-deposits from postal savings, B&Ls were prohibited from receiving these funds. Second, B&Ls sought out the same small private savers as postal savings. Lacking disaggregated data that have only recently become accessible to researchers, the authors are not able to test for a causal relationship between B&L and postal savings usage. For instance, the government guarantee of postal savings deposits would have attracted funds during the Great Depression regardless of the presence of a B&L, whereas B&Ls would likely have struggled during the real estate price decline regardless of the presence of a postal savings bank.

The study also contributes to the broader literature on the effect of deposit insurance on

competition. Depositors take into account the perceived risk and return of institutions to make their investment decisions. Credible deposit insurance has often been shown to have tipped the balance of funds towards insured banks as the protections allowed them to take expanded risk (e.g., Demirgüç-Kunt, Kane, and Laeven 2008, Anginer, Demirgüç-Kunt & Zhu 2014, Calomiris and Jaremski 2016, Calomiris and Chen 2021). Historical studies such as Wheelock and Wilson (1995) and Calomiris and Jaremski (2019) have shown that the institution of deposit insurance during the early 1900s caused depositors to shift their funds into insured state banks and allowed insured banks to scale up risk. The competition between B&Ls and postal savings offers a unique environment, as postal depositors were not allowed to provide a high rate of interest to attract depositors. In this way, the B&L's unsecured returns were still able to attract funds during the good times but could have quickly lost them to postal savings banks during financial panics. The power of deposit insurance to shift funds relies on the insured institutions´ ability to offer a competitive rate and instead could create more risk during financial panics when deposits remain in uninsured institutions.

To provide a comprehensive analysis of the competition between postal savings and B&Ls, we combine annual town-level data for 3 representative states from 1920 through 1935. The data allow us to address potential reverse causality while controlling for unobserved heterogeneity across towns and across time. In this way, we can be sure that the results are not being spuriously driven by the nature of the Great Depression or differential selection across towns. Instead, we identify the relationships using changes in B&Ls shares (or mortgage loans) and postal savings deposits located in the same location during the same year. While we primarily analyze B&L shares because they are the most analogous metric to postal savings deposits, we also use mortgage loans as an outcome variable to quantify the effect the postal

savings had on lending ability. At the county-level, we also add data on commercial banking outcomes to test where postal savings had a different relationship with different types of financial institutions and that our results are robust to a variety of alternative specifications.

The results of a panel vector autoregression (Panel VAR) show that postal savings deposits have a negative and statistically significant effect on B&L shares and mortgage loans, but neither B&L shares nor loans have a statistically significant effect on postal deposits. Impulse response functions (IRFs) show that a positive one time increase to postal savings deposits leads to a persistent decline in both B&L shares and loans. Alternatively, we find no significant competition between postal savings banks and commercial banks over the same period, likely due to the requirement that postal savings deposits be redeposited back in local commercial banks. These results hold even after controlling for population growth and tax returns. We thus confirm that the existence of a federally insured deposit alternative for small investors competed away funds from B&Ls but not commercial banks during the Great Depression, likely as a direct response to the structures of the three types of institutions.

The competition between institutions had direct implications for economic growth during the period. During that period, B&L shares were almost wholly used to make loans and commercial banks receiving postal redeposits had to fully back them with bonds, the flow of funds to postal depositors would have led to a decline in local real estate lending and could have delayed the return to normal conditions after the banking panics subsided. As such, the availability of postal savings as an option for depositors might not just have shifted deposits from B&Ls to commercial banks, but likely also contributed to the credit crunch that lengthened the Depression.

2. Background on Postal Savings Banks and B&Ls

The United States Postal Savings System offered the ability to start a savings account at thousands of local post offices.[1] Postal savings paid depositors 2 percent simple interest which was fully insured by the U.S. government. This amount was seen as high enough to incentivize use by the underbanked population but low enough to prevent direct competition with commercial banks, which were typically paying significantly more for deposits in 1911. To further reduce competition with the existing financial system, the post office was required to redeposit nearly all funds into commercial banks. When those funds were deposited with banks, they were collateralized by bonds deposited with the Treasury, meaning that most funds were not directly available to be loaned out. Despite the lack of widespread deposit insurance among commercial banks, the decision to insure postal deposits received no significant resistance as any attraction of funds away from commercial banks would largely be returned back to those banks. The system thus offered a guaranteed return for all depositors throughout the period and its services did not vary during the Great Depression.

B&Ls, on the other hand, were local, cooperative institutions that specialized in residential mortgage lending. What set B&Ls apart from commercial banks were their Share Accumulation Contracts (SACs). The SACs allowed borrowers to repay mortgage debt gradually over time by buying shares of the associations, rather than in a single final payment like the balloon contracts at commercial banks.[2] The shares generally achieved a high return for their investors, but that return varied on the local real estate market. In turn, nearly all B&Ls funds

[1] See Sprick Schuster et al. (2020) for a discussion of the political economy of the Postal Savings System.
[2] As Fleitas, et al. (2018) extensively discuss the SAC is a combination of an interest-only, balloon loan with an indefinite maturity for which the borrower made monthly interest payments with a pledge to purchase installment equity shares in the association until they were equal in nominal value to the principal of the loan. The shares paid interest based on the B&Ls loan portfolio and thus could lengthen or shorten the loan contract.

were invested in mortgage loans as they held relatively little cash or other investments during the period of analysis. Across the entire sample period, the level of loans was about 96% of shares.

B&Ls attracted both borrowing and non-borrowing members. As non-borrowing members also had to purchase shares of the associations (instead of having regular deposits), both types of members were owners of the association with one-member-one-vote voting rights, had equal shares in profits and losses, and very limited withdrawal privileges. A non-borrower "withdrawal" involved the repurchase of their equity by the remaining owners in the association. Withdrawals thus impacted the liquidity of the association, and B&Ls had penalties for those made before the date of full maturity (Clark and Chase 1927).[3]

B&Ls dramatically changed in the mid-1930s as a result of new policies installed to improve the mortgage market as well as to help B&Ls replace their SACs with the Direct Reduction Contracts[4] (DRC) and convert into S&Ls.[5] As a result, S&Ls became the dominant mortgage lenders by the beginning of the 1940s, and B&Ls dramatically declined in number and importance (Rose 2014; Rose and Snowden 2013; Snowden 2003 and 2010). The government also assisted B&Ls during the mid-1930s through direct lending, purchases of distressed mortgages, and the liberal refinancing of loans thus changing the behavior of the remaining B&Ls going forward.[6]

[3] Withdrawal policies had become more liberal in the 1920s with the rapid expansion of investments in B&Ls, even spending withdrawal penalties. However, the liberalization was undone in the 1930s due to the reduced inflow of new members and defaults on outstanding loans and state laws that explicitly restricted withdrawals (Snowden, 2003). While informal secondary markets appeared in some larger cities to provide liquidity, B&L shares were purchased at very discounted prices relative to their book value (Rose 2014; Kendall 1962).

[4] Under DRCs, borrowers paid monthly interest and principal payments to their bank.

[5] The Federal Housing Administration mortgage loan insurance program which amortized DRC at ran for 15 years or more was one of these programs (Snowden, 2010).

[6] For instance, the Federal Home Loan Bank (FHBL) system started in 1932 but conversions into federal charters were limited before 1935. The Reconstruction Finance Corporation provided short-term loans to B&Ls (Vossmeyer 2016), whereas the Home Owners' Loan Corporation purchased distressed mortgages and refinanced loans on more liberal terms. It is worth nothing that the state of New York organized its own "FHBL" in 1916 (Frame et al. 2012).

Postal savings and B&Ls experienced very different usage trends. Figure 1 compares postal savings banks and B&Ls usage patterns between 1920 and 1940 for our 3 sample states (New York, North Carolina, and Wisconsin). Postal savings were decreasing in popularity during the 1920s, but the Great Depression led to a sudden expansion. Between 1930 and 1934, the amount on deposit in post offices increased by more than 400 percent. Alternatively, B&Ls had a rapid expansion in the 1920s, financing 4.2 million of the 7 million homes built during that decade. However, between 1930 and 1934, the value of B&L shares fell by over 25 percent and only experienced a slight rebound going forward.

The negative correlation in Figure 1 is suggestive of competition between postal savings banks and B&Ls, but there are additional reasons to believe the two competed with each other. Sprick Schuster et al. (2020) argue that the surge of postal savings deposits in the 1930s was the result of flight-to-quality behavior. For example, Representative Emanuel Celler of New York stated that, “While banks were failing all over the country and a veritable avalanche of funds came out of other banks, it was the Postal Savings System that salvaged much of the money withdrawn by the frightened and the timid" (Congressional Record, December 9, 1931, p. 235). Both postal savings and B&Ls appealed to the same type of small-scale investor.[7] A Representative even highlighted this specific competition: "There is practically no money in the state available for home financing. The money which ordinarily would find its way into S&Ls is either hoarded in safety deposit boxes or deposited in postal savings" (cited in O'Hara and Easley 1979, p. 748). Moreover, while B&Ls were previously able to attract and retain investors due to

By 1927, about half of New York’s B&Ls had joined this institution, and by 1940, about half of those firms had also joined the Federal FHLB while staying in the state FHLB.

[7] The requirement that postal savings be redeposited in commercial banks was an explicit attempt to eliminate any competition between the two types of institutions. The approach is the result of the very effective lobby association, the American Bankers Association that the commercials bankers had, and the lack of any concessions for B&Ls is likely due to their relatively small numbers when the Postal Savings Act was passed in 1911.

their high dividend payments compared to the low but fixed interest of postal savings, this advantage disappeared during the 1930s as foreclosures and the lack of new loans led to much lower returns on mortgages.

The competition took place on at least two dimensions. Investors could have been tempted to withdraw their investments in B&Ls and deposit them in postal saving banks. However, while B&Ls often allowed withdrawals by non-borrower members in the 1920s, the directors largely suspended withdrawals during the 1930s and borrowing members opposed liquidation of insolvent associations until their loans had been paid off (Fleitas et al. 2018). Therefore, while non-borrower investors might have wanted to withdraw their money for better opportunities, many could not quickly liquidate their shares. Alternatively, postal savings may have competed away new business that would have otherwise accrued to B&Ls. New investors during the Depression may have avoided the low returns and potential lock-in nature of B&L shares and turned to the guaranteed fixed return and liquidity of postal savings. The rest of the paper uses new town-level data on B&L shares, mortgage loans and postal savings deposits to tease out the relationship between the two types of institutions.

3. Data and Empirical Analysis

Postal savings data come from Sprick Shuster et al. (2020). They digitized the annual amount of deposits in each post-office from the *Annual Reports on the Operation of the Postal Savings System.* The data on B&Ls come from Fishback et al. (2019). They digitized the name, location, and annual balance sheet of each B&L from the state banking and insurance reports of

New York, North Carolina, and Wisconsin between 1920 and 1935.[8] B&L data were aggregated up to the town/village/hamlet level to match the postal deposit data. We measure investment activity in B&Ls with the value of all outstanding shares[9] and investment activity in postal savings with total deposits. Our sample stops in 1935 in order to avoid the confounding effects of the conversion of B&Ls to S&Ls, which while available as early as 1932 did not pick up significantly until after 1935.

While postal deposits could be placed in virtually any post office, B&Ls were not present in many cities. Since we are focused on studying the competition between B&Ls outcomes and postal savings deposits rather than the total growth of postal savings (which was previously studied by Sprick Shuster et al. 2020), we constrain our analysis to any town/year combination in which a B&L is observed. Clearly, there can be no competition between B&Ls and postal savings in places where B&Ls do not exist. The maps in Figure 2 show that the 412 towns with a B&L and a listed post office are spread geographically across the states in our sample. The figure also shows the 486 towns with postal savings that have no B&Ls. Compared to post offices, B&Ls are clustered near larger cities with sufficient housing demand. Our results thus show the competition of the two institutions in areas of the state where a large portion of the mortgage loans were being issued by B&Ls.

This sample reflects a representative picture of the nation during the twenties and the first half of the thirties. These three states represent different parts of the country and have large and

[8] See Appendix Table A.1 for summary statistics on each state. The few small gaps in reporting are filled with a linear trend, but the results are not sensitive to the choice of trend or filling observations at all. Similarly, if we impute a 0 for any places where a B&L is not observed, our results are similar. While Fishback et al. (2019) have data for Iowa and Fleitas et al. (2018) have data for New Jersey, we do not include it here because information is missing for the 1920s.

[9] There is heterogeneity across the three states in the way they present the information of B&L balance sheets. Fishback et al. (2019) create categories of balance sheet variables that are standardized across states. We use the "shares" category which includes installment shares and other balance sheet categories that reflect investments, such as paid-up shares, income shares, and one payment shares.

diverse economies in terms of share of employment in industries: New York contains financial markets and manufacturing, North Carolina contains cotton and tobacco agriculture, whereas Wisconsin contains corn, wheat, and dairy agriculture. Moreover, the B&L industry in all of these states expanded during the twenties and contracted during the crisis matching the national-level B&L trends. Figure A.1 in the appendix compares the trends in our sample to nationwide S&L trends, as reported by Russell (1956). Postal savings in these states was relatively flat or declining over the 1920s and saw a spike in the early 1930s, similar to nationwide trends in postal deposits.

The goal of this paper is to disentangle the effects between B&Ls and postal savings banks. Because we do not want to impose a particular pre-existing relationship between B&Ls and postal savings, we proceed with a Panel VAR approach.[10] The VAR methodology allows the variables of interest to enter into a system of equations as endogenous, enabling us to estimate the bi-directional relationship between postal savings deposits and B&L usage. The panel data approach allows us to control for unobserved heterogeneity across locations as well as across time. The identifying variation comes from changes over time at the town or county level, controlling for time-invariant town or county effects and year fixed effects. We thus can be sure that our estimated coefficients are not being driven by differential selection into particular areas of the country or the general effect of the Great Depression itself. We also include the population of each town or county and the number of people filing federal tax returns of each county as an exogenous control for the growth in the supply of investment funds in any particular area.

[10] We make use of the code provided from Love and Zicchino (2006). As a robustness check, we also calculate impulse responses using the local projection method (Jordà, 2005). This approach provides similar results for the effect of postal deposits though provide an increased role for B&L shares. Given the relatively small number of time observations per city, we prefer the panel VAR method to the linear projection (Kilian and Kim 2011).

Indeed, a threat to identification in our setting would be unobserved local factors correlated over time with the differential behavior of deposits in postal savings and share values or loans at B&Ls that were not correlated with population growth (our main control at the city-level) and tax return data (an additional control at the county-level). For example, for our results to overestimate the negative effect of postal savings banks on B&Ls, there would have to be some time-varying unobserved factors at the town-level that are responsible for both the decline of postal savings and the rise of B&Ls during the 1920s, as well as the rise of postal savings and the decline of B&Ls during the 1930s. And while we do not have town-level data on factors that could be declining during the Great Depression such as income and employment, the results are not sensitive to aggregating data B&L and postal savings data to the county-level and controlling for annual total number of tax returns and county population. Given the high correlation between tax returns in variables such as income, wealth, and economic activity, it is unlikely that any particular unobserved variable could be driving the result.

In the presence of time and place fixed effects, there could still be room for measurement error. However, we would expect this bias to push our estimates towards zero, making our estimates conservative ones. If B&Ls and postal savings competed over a similar customer base, a town- or county-specific increase in this group's income would likely increase both postal deposits and the value of B&L shares. While we control for high-worth individuals with the tax return data, we cannot fully capture the demand for banking from low- and middle-income people, the exact group that is most likely to use B&Ls and postal savings.

We estimate the panel VAR model for two different levels of aggregation: town-level and county-level. The town-level results provide the cleanest illustration of any substitution between B&Ls and postal depositories because banking at the time was decidedly local. With most people

lacking cars or public transportation, very few traveled to other towns in order to use banking services. This meant that people were most likely to choose between banking options within the same town instead of considering travel to those in other towns.

The analysis at the county-level helps to alleviate two drawbacks of the town-level data. First, B&Ls were not always present in every city, but one was present in most counties. The county-level data thus contains data for more postal savings banks. Second, town-level controls are more limited than at the county-level. At the town-level, we can control for differential population growth, but at the county-level we can additionally control for local tax returns giving a measure of the number of wealthy individuals in the area and a direct measure of the severity of the Great Depression.[11] Maybe more importantly, the FDIC (1992) provides annual county-level data on state and national commercial banks, deposits, and suspensions from 1920 through 1936. This additional data allows us to not only control for the presence of commercial banks, but also test whether their relationship with postal savings was different than that B&Ls.

To estimate competition between B&Ls and postal savings banks from 1920 to 1935,[12] we use the following system of equations:

$$D_{it} = \boldsymbol{\alpha} + \Omega D_{i,t-l} + \beta \, \mathrm{Pop}_{it} + c_t + u_i + \varrho_{it} \quad (1)$$

where D_{it} is a vector of endogenous variables (Natural log of postal deposits, and either the Natural log of B&L shares or the Natural log of B&L Mortgage loans), $D_{i,t-l}$ is a set of lags for each of the dependent variables, Pop_{it} is the natural log of population of each town/county[13], c_t is a vector of year-fixed effects that capture common, year-specific shocks, u_i is a vector of town-

[11] The data for 1929 through 1935 come from Fishback et al. (2011), and the data for 1921-1928 were collected additionally by Paul Rhode. The results are similar if we match cities to the tax return data of their county and include it as a control.

[12] We find similar results when we drop the earliest years in the sample or alternatively drop the latest years. In this way, we believe we are capturing an effect that is not period specific.

[13] Town population comes directly from the Census manuscripts, while county-level population was taken from Haines (2000). Values in between each decade are filled with a linear trend.

specific or county-specific fixed-effects, which capture any unobserved, time-invariant town/county characteristics, such as the structural fundamentals of the housing market. ϱ_{it} is a robust error term.[14] We select one lag based on the modified Akaike information criterion, modified Bayesian information criterion, and the modified Hannan-Quinn information criterion. We also confirm that the system satisfies the necessary stability conditions using unit root test. Fixed effects are removed using forward orthogonal deviation (the Helmert procedure).

In ordering the variables for the Cholesky decomposition to compute the impulse-response functions, we assign B&L shares (or mortgage loans) a higher order and assume postal deposits can only affect B&L shares with a lag for at least two reasons. First, we believe that B&L shares respond more slowly than postal deposits. For instance, an increase in foreclosures could reduce the value of B&L shares without having any direct effect on postal deposits. Second, B&L shares had restrictions on withdrawals. Therefore, even if a member wanted to cash in their B&L shares and make a deposit in a postal savings account they could always do so, particularly during the 1930s. Note also that the ordering chosen introduces a bias away from finding an effect of postal savings deposits on B&L shares and towards an effect of B&L shares on postal savings deposits. Indeed, when we reverse the ordering of the two institutions, the effect of postal savings deposits on B&L shares becomes larger while the effect of B&L shares on postal savings deposits becomes even smaller.

The parameter estimates for the town-level system of equations are reported in Table 1.[15] They show that postal savings deposits have a negative, statistically significant effect on B&L outcomes, but the effect of B&Ls on postal deposits is smaller and fails to be statistically

[14] We convert all variables into log form (after adding 1). Monetary values are deflated to 1920 levels.
[15] While we include tax-return data in all of our county-level results, we only include variables for which we have town-level data in our town-level regressions. However, the results are robust to controlling for county-level tax returns.

significant. In Panel A, which shows the results using B&L shares, the coefficient on postal deposits suggests that a 1 percent increase in postal savings leads to a 0.058 percent decrease in B&L shares. While this marginal effect might seem small in most years, the massive growth in postal savings growth during the Great Depression would have led to a substantial decline in B&L shares. For example, towns in our sample saw postal savings deposits increase 485% from 1930 to 1934. We also find that the increase in postal deposits decreased the amount of mortgage loans made by B&Ls, as seen in Panel B. The marginal effect of postal savings on loans is similar to the effect on B&L shares, which is expected given the high correlation between shares and loans. If the marginal effect was constant, this suggests that the 485% increase in postal savings decreased B&L loans by more than 28%, which would translate to a decrease in mortgages of about $210 million (more than $3 billion in modern dollars) for the three sample states not to mention the entire rest of the country (Fleitas et al. 2018).

Figure 3 shows the IRFs for our system of equations that estimates the effect of a positive one standard deviation increase of each of the endogenous variables on both itself and the other endogenous variable.[16] The IRFs imply that a one standard deviation positive increase (i.e., 4.7) to the log of postal savings leads to a 0.1 decrease in the log of B&L shares and mortgage loans that persists for several years: the 95 percent confidence interval does not include zero through 5 years following the initial increase. The persistence of the estimated effect signals that the decline in B&L shares as a result of the postal savings increase is likely to have been a semi-permanent fixture rather than a temporary deviation from steady-state. The IRFs also indicate

[16] Note that the IRFs should be interpreted as disturbances to the equilibrium, and therefore, an increase in any year will disturb the system from the existing equilibrium to a new equilibrium. We assume that the parameters describing the equilibrium are the same during the whole period of estimation and during the next years that are implied by the IRFs. Therefore, the IRFs are counterfactuals that allow us to understand the average effects over the whole period of the sample. Nevertheless, the results are similar if we exclude the Great Depression, suggesting there was not large structural break between the two periods.

that a positive increase to either B&L shares or loans has a positive effect on postal deposits in the contemporaneous period, but the effects become insignificant after one period. This finding of a positive, contemporaneous effect of B&Ls on postal deposits stems entirely from the assigned Cholesky ordering: when we switch the ordering, the IRFs show B&Ls to have no effect on postal deposits in any time period.

Variance decompositions in Table 2 highlight the overall effect of postal deposits on B&L shares and mortgage loans issued by B&Ls. The variation in postal deposits explains 8.4 percent of B&L share changes for the second year and rises over time. By 5 years out, postal savings explains about 30.74 percent of the variation in B&L shares. As seen in Figure 1, the drop in the value of B&L shares was about $300 million, while the increase in postal deposits was about half that. If the increase in postal deposits explains thirty percent of the decrease in B&L shares, this suggests that a large percentage of the money going into postal savings would have otherwise gone to B&Ls. As seen in Panel B, postal savings explained 20.2 percent of the change in mortgage loans after five years. This number is roughly in line with the back of the envelope calculations taken from the regressions results. As B&Ls held 48% of the mortgage debt held by institutional lenders in 1930, a 20.2% reduction therefore translates to a 9.7% reduction in total mortgage debt held by institutional lenders.

This was a period of large changes in B&L shares: shares in the sample grew by an average of 18 percent annually from 1922 to 1930, and then decreased an average of 10 percent annually for the next 5 years. The decomposition also indicates that B&L shares explain very little of the variation of postal deposits, less than 2 percent after 5 years. Therefore, even though the absolute size of B&L shares is significantly larger than postal deposits, they seem to have little influence on changes in deposits.

While the town-level results provide the cleanest illustration of any substitution between B&Ls and postal savings, town-level data does not exist for other relevant economic measurements. Therefore, we aggregate our data up to the county level to pair it with additional variables both as controls and outcome measures in the analysis.

We start by repeating the same model as in the town-level analysis in Table 1 with both county-level tax returns and county-level population as controls. Table 3 shows the results are similar to those at the town-level. The coefficients of postal deposits on B&Ls remains negative and statistically significant, but the coefficients are slightly larger in magnitude.

Next, we include measures for state and national commercial bank activity from the FDIC (1992) to the county-level model. Focusing on B&L shares because it is so similar to loans, Table 4 shows the county-level estimates, when including the log of state and national commercial bank deposits as endogenous to equation (1). First and foremost, we see that the effect of postal savings deposits on B&L shares is negative and statically significant, matching the previous tables. Second, the table shows that postal savings deposits did not significantly compete with either state or national bank deposits.[17] This pattern is expected given the redeposit system. Postal savings deposits were required to be redeposited in local commercial banks, and therefore, while they likely competed some funds away from those institutions (i.e., the reason for the negative sign on the coefficients), any county-level competition was likely muted because those removed deposits would have been placed back in the local system. Finally, we find that B&L shares did not have a significant effect on either state or national bank deposits. However, state bank deposits do have a significant positive effect on B&L shares. It, therefore, seems clear

[17] National banks were those chartered by the Federal government and subject to much tighter restrictions, whereas state banks were chartered by the state governments and had relatively loose restrictions (e.g., Mitchener and Jaremski 2015).

that (1) postal savings banks' relationship with B&Ls was very different than that for commercial banks and (2) any bias in our town-level regressions from excluding commercial banks is likely small.

Finally, we consider the effects of national and state commercial bank closures and suspensions. Bank suspensions would likely have caused depositors to run on their banks and begin to withdraw funds. As such, we might expect postal savings banks to benefit from a flight to quality in such events (e.g., Davison and Ramirez, 2016). Table 5 uses the logarithm of total deposits in both suspended national banks and suspended state banks as endogenous variables. While we find that state bank suspensions have a strong positive effect on postal deposits, the inclusion of suspension data increases the significance of the coefficient of postal savings on B&L shares. Alternatively, we find that national bank suspensions have a strong positive effect on B&L shares. This suggests that suspensions (predictably) affect depositor behavior in other financial institutions, but there is no evidence of omitted variable bias that is related to bank suspensions.[18]

Taken together, the data indicate that there was a fierce competition between B&Ls and postal savings banks for funds during Great Depression. This runs counter to the seemingly lack of competition between postal savings banks and commercial banks and is robust to a variety of different specifications and controls.

4. Conclusion

Postal saving depositories and B&Ls were two important and understudied institutions in the financial system at the beginning of the 1930s. The characteristics of these two players put

[18] In regressions not presented, we find no relationship between the real-estate holdings of B&L as a ratio of total assets and either postal deposits or the value of B&L shares.

them in an intensified competition when real estate markets plunged. Using new data on both B&Ls and postal savings banks, we test this relationship by comparing institutions in the same location during the same year. We find that postal savings banks were able to attract funds away from B&Ls during the 1930s. Indeed, our analysis shows that an increase to postal savings leads to a long-run decline in B&L shares. As such, we confirm that the existence of a federally insured deposit alternative for small investors was capable of competing away funds from B&Ls during the Great Depression. In the absence of postal savings banks, the analysis indicates that B&Ls would have maintained a significantly larger number of investors and may have been able to expand lending during the period. We find no significant competition between postal savings banks and commercial banks of the period, likely due to the redeposit requirement of postal savings.

The competition between postal savings and B&Ls may have prevented a quick return to normal conditions after the banking panics had subsided. B&Ls were the nation's leading residential mortgage lenders in the U.S. and their trouble during the Great Depression is often linked with further problems in local mortgage markets (Fishback et al. 2019). While the postal savings system intended a redeposit system to prevent funds from flowing out of local areas, the funds moving out of B&LS and into postal savings were not typically offset by additional lending by commercial banks receiving redeposits. Instead, commercial banks were forced to fully back the additional postal funds with federal bonds thus mitigating their ability to expand lending. When commercial banks during the mid-1930s began turning away postal funds due to their relatively high fixed interest payments, postal savings funds were used to directly purchase federal government debt. Therefore, postal savings depositories were not only attracting money

away from B&Ls specifically but were also drawing money out of communities that desperately needed it during the Depression.

By funneling money towards government bonds, postal savings exacerbated a problem articulated by Shughart (2011) in his articulation of the "credit view" of the Great Depression that the "reallocation of loanable funds towards treasuries and other government-guaranteed debt made it more difficult for private borrowers to obtain the credit they needed to finance spending that otherwise would have boosted aggregate demand" (Shughart, 2011, pg. 521).

Within this view, it is not the existence of postal savings that exacerbated the economic downturn, but two components of the system: limitations on what institutions could receive postal re-deposits, and the relatively high interest changed on these loans compared to other investments. Postal re-deposits with banks earned 2.5% interest. While this was a low interest rate in 1911 when the system was created (Sprick Schuster et al. 2020), by the 1930s, this rate caused most financial institutions who were eligible for re-deposits to refuse them.

The response to competition with insured postal savings deposits might even have changed the evolution of B&Ls coming out of the Great Depression. Before the mid-1930s, the B&L movement did not seemingly want any government intervention in the industry, whether it be the implementation of deposit insurance or government loan guarantees. Bodfish and Theobold (1938, p. 490), for example, document that legislatures in some states passed their own insurance programs for S&Ls in the early 1930s, but these state-level programs were not made active. However, the National Housing Act of 1934 created the Federal Savings and Loan Insurance Corporation (FSLIC), which provided insurance to the B&L association, making them safer and able to compete with other government insured deposits. Contemporary B&L "insiders" such as Ewalt (1962) as well as Bodfish and Theobold typically highlighted the need

for government intervention to combat the creation of the Federal Deposit Insurance Corporation in 1933. Our findings show that the same argument would clearly apply to postal savings. Given that the FSLIC was instrumental for the transformation of B&Ls to S&Ls as well as for the industry's crash during S&L Crisis of the mid-1980s, more research needs to be done on the political economy of the legislation in the context of postal savings.

Though the historical context differs in some respects to the modern period, the competition between B&Ls and postal savings banks provides lessons for the policymakers seeking to re-introduce postal savings. In both instances, postal savings has been presented as a way to combat what were seen as predatory financial institutions: immigrant savings banks in the 1910s, pay-day loans today. In both periods, small-scale depositors were often locked out of the traditional banking system. In the 1910s, immigrants and minorities were often prevented from banking in many places due to discrimination (Sprick Schuster et al., 2020); today, households that are unable to maintain the required minimum balances find commercial banking more costly, and therefore are less likely to be protected by deposit insurance.

Our findings provide a warning about potential unintended consequences of having a government-backed savings alternative during financial crises. During normal periods, the system reached underbanked and marginalized individuals, but during the Depression, it stripped funds from B&Ls thus worsening the downturn. While any government-guaranteed institution tends to receive funds during a large-scale panic, the fixed rate of interest paid by the postal savings system was likely responsible for the size of the shift of funds. By having an interest rate that varies with a market rate (e.g., the Federal Funds Rate or the interest rate paid on reserves at the Fed), a new postal system could avoid some of the direct competition with private institutions

during crises. Moreover, the approach would prevent postal savings redeposits from becoming too costly and being rejected by institutions during crises when the funds are needed the most.

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Table 1: Panel VAR of Postal Savings and B&Ls: 1920-1935

	PANEL A: B&L Shares	
	Response To:	
	Log(B&L Shares)	Log(Postal Deposits)
Response of:		
Log(B&L Shares)	0.529***	-0.058***
	[0.036]	[0.009]
Log(Postal Deposits)	0.083	0.734***
	[0.156]	[0.044]
Observations	4612	

	PANEL B: B&L Mortgage Loans	
	Response To:	
	Log(B&L Loans)	Log(Postal Deposits)
Response of:		
Log(B&L Loans)	0.330***	-0.060***
	[0.0368]	[0.011]
Log(Postal Deposits)	0.0373	0.733***
	[0.078]	[0.0425]
Observations	4612	

Notes: The table provides the results of a 2 panel VAR regressions. Panel A uses the log of the value of B&L shares and the log of the value of postal deposits as the endogenous variables; panel B used the log of B&L mortgage loans and the log of postal deposits as the endogenous variables. Each observation is a town-year. The sample contains all towns with at least one active B&L in the particular year. All values are deflated to 1920 dollars. The regression includes both town and year fixed effects, as well as the log of town population. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 2: Variance Decomposition of Postal Savings and B&Ls: 1920-1935

PANEL A: Value of B&L Shares

Response/Impulse	Log(B&L Shares)	Log(Postal Deposits)
Log(B&L Shares)		
1 year	100.00%	00.00%
2 years	91.59%	8.41%
3 years	81.42%	18.58%
4 years	73.92%	26.08%
5 years	69.26%	30.74%
Log(Postal Deposits)		
1 year	0.90%	99.1%
2 years	1.03%	98.97%
3 years	1.13%	98.87%
4 years	1.19%	98.81%
5 years	1.22%	98.78%

PANEL B: Value of B&L Mortgage Loans

Response/Impulse	Log(B&L Loans)	Log(Postal Deposits)
Log(B&L Loans)		
1 year	100.00%	00.00%
2 years	93.01%	6.99%
3 years	86.27%	13.73%
4 years	82.12%	17.88%
5 years	79.84%	20.16%
Log(Postal Deposits)		
1 year	0.52%	99.48%
2 years	0.58%	99.48%
3 years	0.61%	99.39%
4 years	0.63%	99.37%
5 years	0.64%	99.36%

Notes: The table provides the variance decomposition of the panel VAR regression in Table 1. Panel A uses the log of B&L shares and the log of postal deposits as the endogenous variables; panel B used the log of B&L mortgage loans and the log of postal deposits as the endogenous variables. The sample contains all towns with at least one active B&L in the particular year. Each observation is a town-year. The two main variables are the natural log of the value of B&L shares and the natural log of the value of postal savings deposits. The regression includes both town and year fixed effects as well as the log of town population.

Table 3: Panel VAR of Postal Savings and B&Ls - County-Level Results: 1920-1935

	PANEL A: Value of B&L Shares	
	Response To:	
	Log(B&L Shares)	Log(Postal Deposits)
Response of:		
Log(B&L Shares)	0.785***	-0.0669***
	[0.0673]	[0.0203]
Log(Postal Deposits)	-0.425	0.902***
	[0.302]	[0.094]
Observations	1994	
	PANEL B: Value of B&L Mortgage Loans	
	Response To:	
	Log(Mortgage Loans)	Log(Postal Deposits)
Response of:		
Log(Mortgage Loans)	0.637***	-0.0934**
	[0.110]	[0.0432]
Log(Postal Deposits)	-0.392	0.960***
	[0.324]	[0.140]
Observations	1994	

Notes: The table provides the results of a panel VAR regression. Each observation is a county-year. The sample contains all counties with at least one active B&L in the particular year. The main variables are the logarithms of: the value of B&L shares (or mortgage loans) and the value of postal savings deposits. All values are deflated to 1920 dollars. The regression includes both county and year fixed effects as well as the log of county population and the log of the number of federal income tax filers in a county as exogenous variables. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 4: Panel VAR of Postal Savings and B&Ls - Controlling for Commercial Banks: 1920-1935

	Response To:			
	Log(B&L Shares)	Log(Postal Deposits)	Log(State Bank Deposits)	Log(National Bank Deposits)
Response of:				
Log(B&L Shares)	0.642***	-.0361**	0.130***	-0.0102
	[0.0607]	[.0155]	[0.0467]	[0.0147]
Log(Postal Deposits)	-0.0301	0.827***	-0.173	-0.0802
	[0.264]	[0.0698]	[0.200]	[0.0577]
Log(State Bank Deposits)	0.194	-0.0433	0.571***	-0.0324
	[0.202]	[0.0626]	[0.019]	[0.0583]
Log(National Bank Deposits)	-0.168	-0.0687	-0.124	0.656***
	[0.217]	[0.0585]	[0.260]	[0.0612]
Observations	1994			

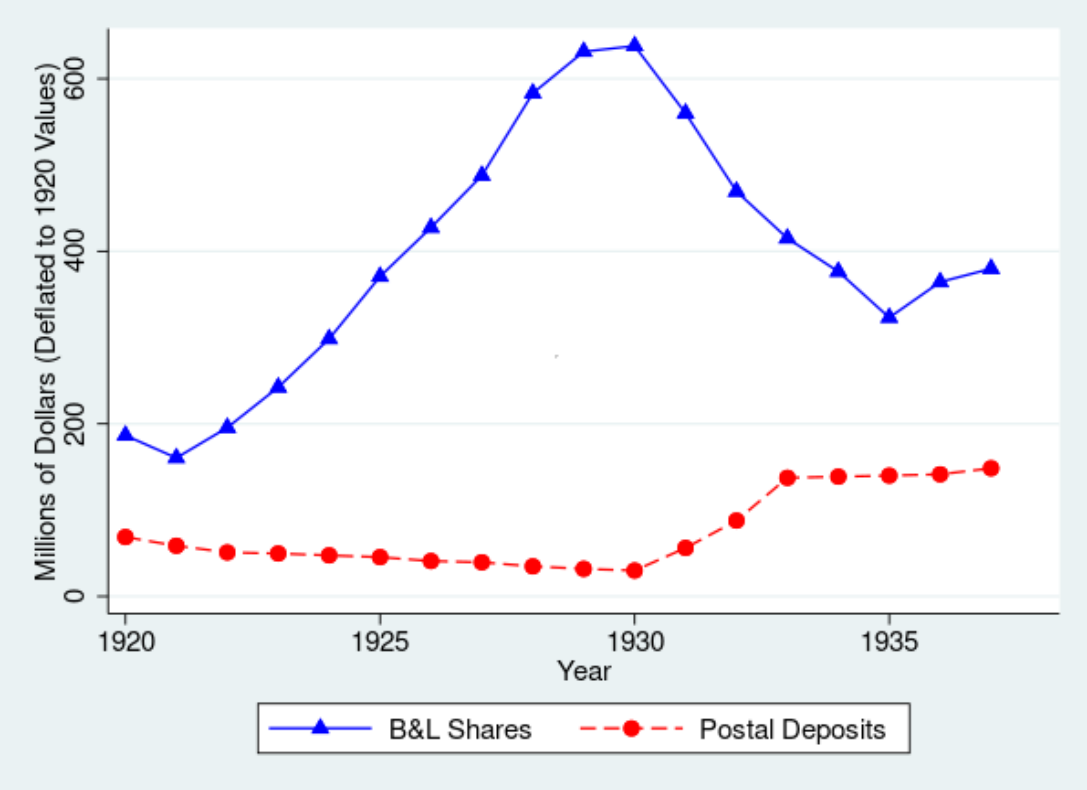
Notes: The table provides the results of a panel VAR regression. Each observation is a county-year. The sample contains all counties with at least one active B&L in the particular year. The main variables are the logarithms of: the value of B&L shares (or mortgage loans), the value of postal savings deposits, and the value of commercial state and national bank deposits. All values are deflated to 1920 dollars. The regression includes both county and year fixed effects as well as the log of county population and the log of the number of people filing federal income taxes. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 5: Panel VAR of Postal Savings and B&Ls - Controlling for Commercial Bank Suspensions: 1920-1935

	Response To:			
	Log(B&L Shares)	Log(Postal Deposits)	Log(State Bank Sus. Deposits)	Log(National Bank Sus. Deposits)
Response of:				
Log(B&L Shares)	0.782*** [0.0674]	-.0662** [.0203]	-0.0008 [0.0022]	0.0038* [0.0023]
Log(Postal Deposits)	-0.473 [0.311]	0.913*** [0.0964]	0.0230** [0.0117]	-0.0123 [0.0109]
Log(State Bank Suspended Deposits)	1.166 [0.973]	-0.384 [0.257]	0.119*** [0.0354]	-0.014 [0.0354]
Log(National Bank Suspended Deposits)	0.565 [0.538]	-0.183 [0.138]	0.0286 [0.261]	0.0105 [0.0340]
Observations	1994			

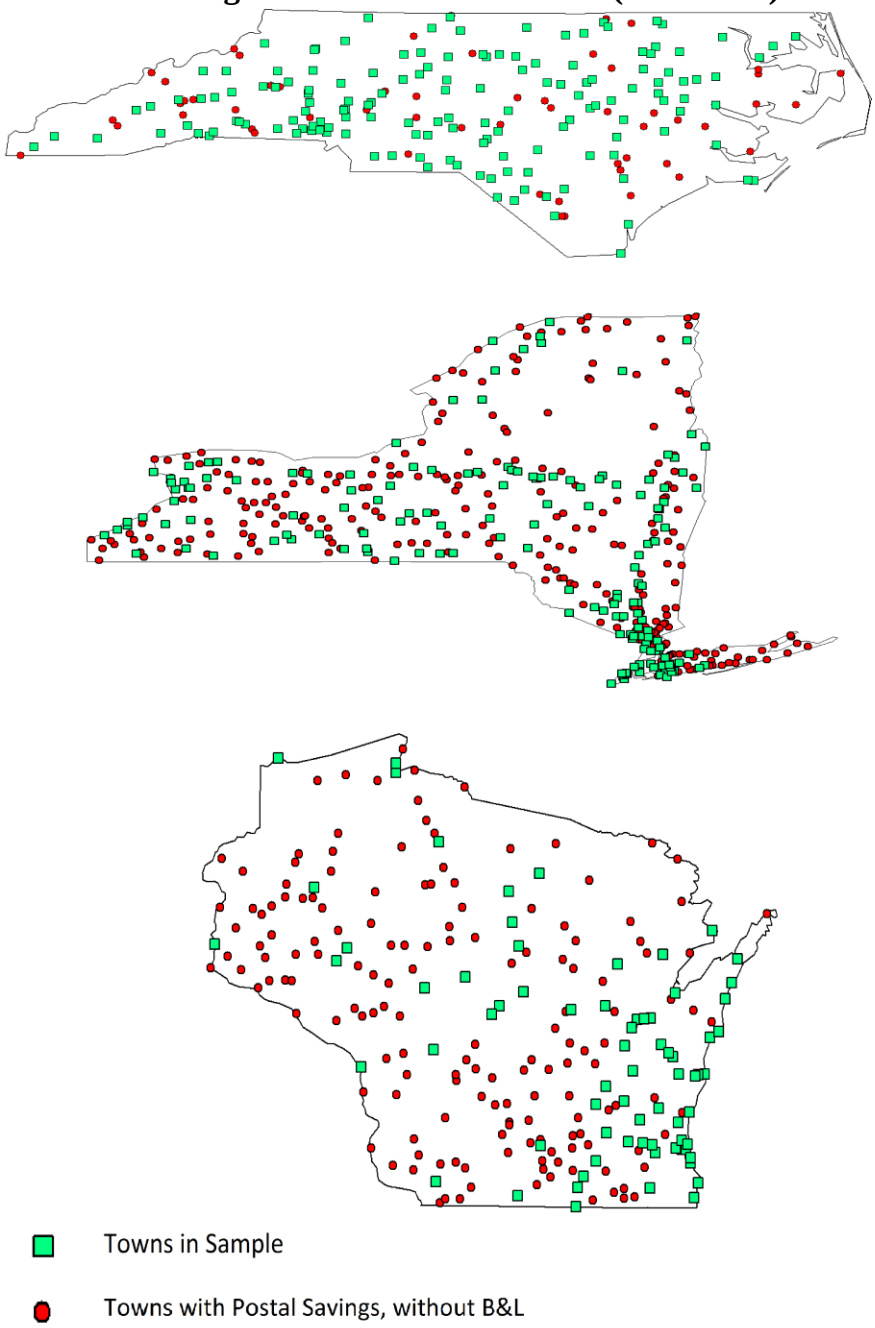
Notes: The table provides the results of a panel VAR regression. Each observation is a county-year. The sample contains all counties with at least one active B&L in the particular year. The main variables are the logarithms of: the value of B&L shares (or mortgage loans), the value of postal savings deposits, and the value of commercial state and national deposit in suspended banks. All values are deflated to 1920 dollars. The regression includes both county and year fixed effects as well as the log of county population and the log of the number of people filing federal income taxes. Robust standard errors are presented in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Figure 1: Postal Savings Deposits and Value of B&L Shares: 1920-1940



Notes: Figure provides the aggregate value of B&L shares and postal savings deposits in the three sample states. Values are deflated to 1920 values.

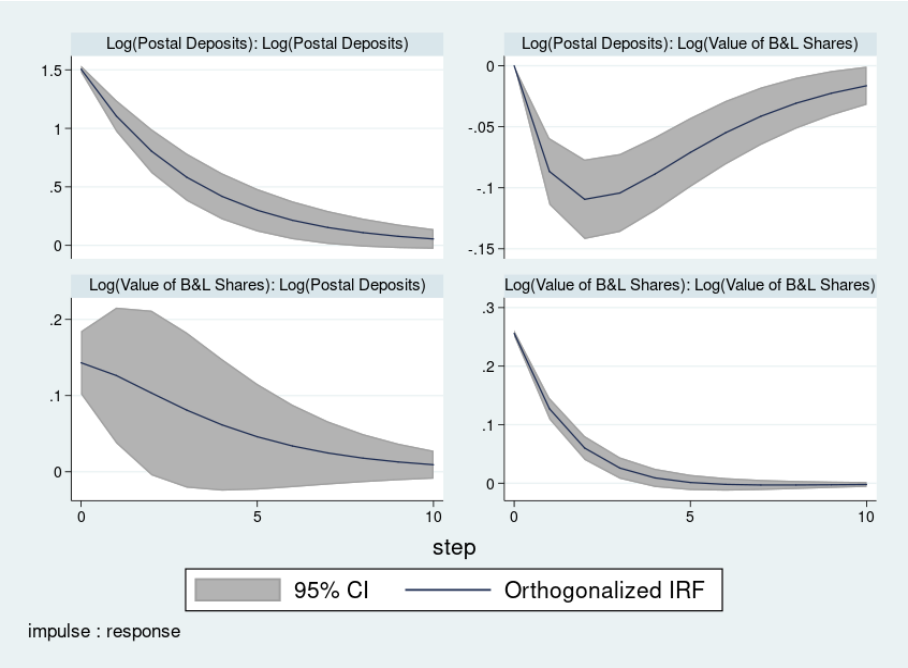
Figure 2: Locations of B&Ls (1920-1935)



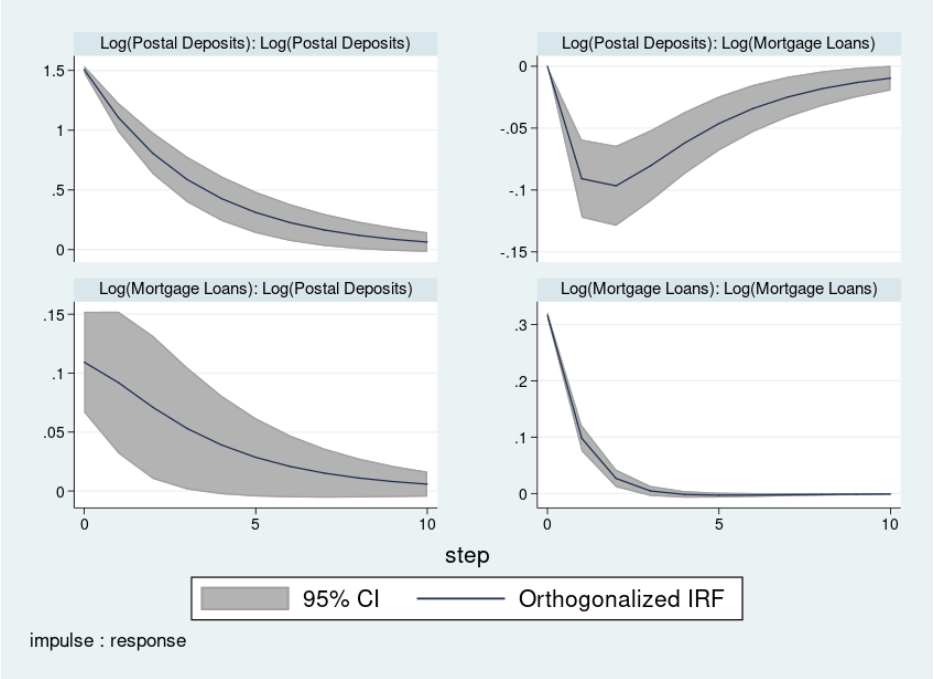
Notes: Figures map out the locations based on the presence of a B&L. Locations denoted with squares have both a B&L and post office listed in the postal savings data (and are included in our sample), whereas locations with circles only have a listed post office (and are excluded in our sample).

Figure 3: T o w n - l e v e l Impulse Response Functions

PANEL A: Value of B&L Shares



PANEL B: Value of B&L Mortgage Loans



Notes: This figure provides the IRFs of the panel VAR regression in Table 1. The sample contains all towns with at least one active B&L in the particular year. Each observation is a town-year. The two dependent variables are the natural log of the number of B&L shares and the natural log of the value of postal savings deposits. The regression includes both town and year fixed effects as well as the log of town population.

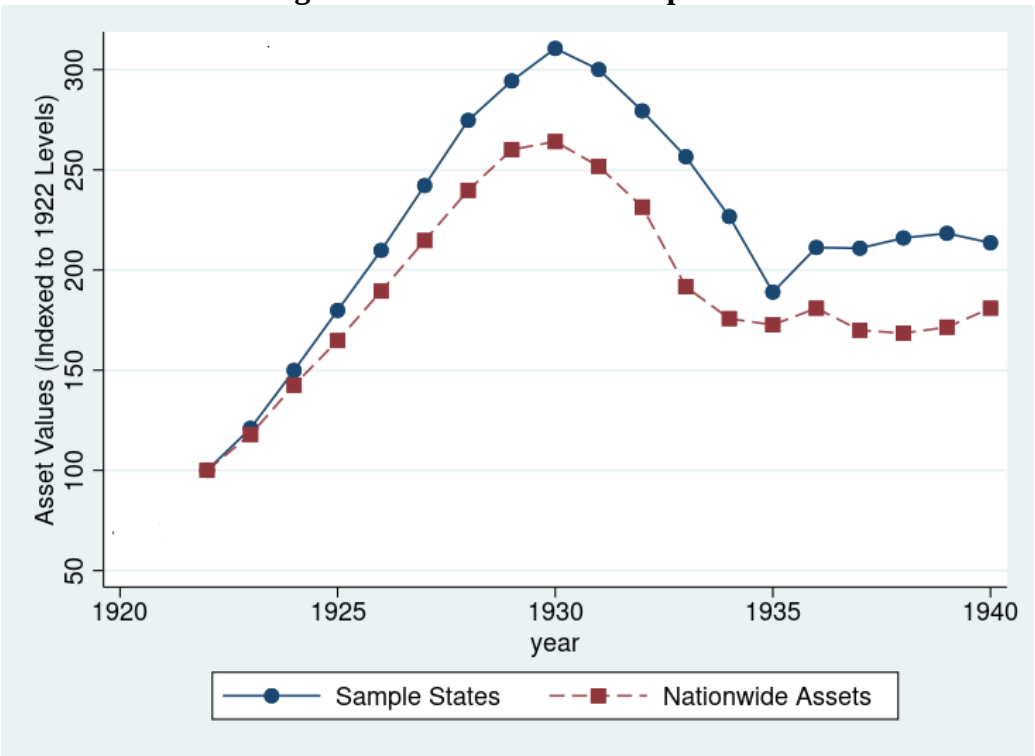
APPENDIX:

Table A.1: Summary Statistics

	B&L Shares	**Postal Deposits**	**Population**
New York	$1,512,658	$307,949	464,046
(Obs=2,003)	(6,256,071)	(2,853,810)	(1,578,371)
North Carolina	$402,884	$16,564	5,442
(Obs=1,620)	(990,863)	(68,568)	(9,783)
Wisconsin	$2,111,527	$47,539	20,198
(Obs=890)	(13,046,790)	(291,257)	(64,945)

Notes: This table provides the town-level mean and standard deviations for our sample. B&L shares and Postal deposits are deflated to the 1920 values.

Figure A.1: B&L Trend Comparison



Notes: Figure shows the trends in shares and assets for the B&Ls in our sample along with the nationwide assets of Savings and Loan associations (provided by Russell, 1956, p. 462). During this period, Savings & Loans and Values are indexed to 1922 levels.