Can the Federal Reserve Effectively Target Main Street? Evidence from the 1970s Recession

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Abstract

Modern central bankers confront a challenge of providing economic stimulus even when the policy rate is constrained by a lower bound. This challenge has led to substantial innovation by policymakers and a proliferation of new policy tools. In this paper, I offer evidence on the efficacy of a new tool known as funding for lending, which provides banks with subsidized funding to make additional loans. I focus on a historical episode from the United States in which the Federal Reserve provided banks with steeply subsidized loans to promote the expansion of credit within their local communities. I show that the cheap funding succeeded in generating more lending by countering the banks' excessive liquidity preference. The additional credit benefited the real economy. Local areas enjoyed higher rates of small business formation and more rapid employment growth. These real economic benefits were present in both slower- and faster-growing areas. Finally, I show that the cost of the subsidy provided by the government was more than offset by the additional payroll taxes paid out of higher wages and salaries. These results reveal that funding for lending programs deserve consideration for the modern central banker's toolkit. Moreover, this study demonstrates how certain unconventional tools can offer monetary policymakers the means to pursue more targeted objectives.

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1 Introduction

Providing economic stimulus when the policy rate is constrained by an effective lower bound is a principal challenge for modern central bankers. To meet this challenge and protect the relevance of monetary policy, policymakers have experimented with new tools to speed economic recoveries and limit the damage from deeper and longer downturns (Bernanke, 2020). The most widely adopted alternative policy tools include quantitative easing (QE) and forward guidance, and a large literature now exists to evaluate the efficacy of these policies. However, central banks continue to innovate beyond QE and forward guidance, possibly due to some combination of declining marginal benefits, increasing costs and risks, and the inability of unconventional policy to fully overcome the limitations introduced by the effective lower bound (Bernanke, 2020). Even before the COVID-19 crisis, central banks adopted policies including negative rates, yield curve control, funding for lending facilities, and non-sovereign QE. Although policymakers report little regret in the decision to use these novel policy tools (Blinder et al., 2017), whether or not they become part of the standard toolkit will ultimately depend on their efficacy.

In this paper, I offer evidence on the ability of a funding for lending (FFL) facility to boost credit supply and promote growth in the real economy. FFL programs offer subsidized loans to banks on the condition that banks increase their lending, particularly to bank-dependent borrowers that lack access to capital markets and likely face cash and credit constraints. Therefore, FFL can help support an economic recovery even outside of a crisis or financial panic. Such programs can be particularly attractive to policymakers if they judge that the social benefits of additional lending and a more rapid recovery exceed the private benefits banks enjoy from the additional loans (English and Liang, 2020). The social benefits of easier credit are likely to be substantial, particularly during steep downturns when small firms could fail and cut employment *en masse* (Brunnermeier and Krishnamurthy, 2020). FFL programs with sufficient subsidies can also be beneficial if banks become too risk averse to pursue many profitable lending opportunities, or if bank funding costs are abnormally high. The subsidy offered to banks is then justified because it helps banks internalize the positive externalities from looser credit, compensates banks for the additional risk, and counteracts high funding costs.[1]

Lowering the hurdle rate for new loans with a FFL program can transmit additional stimulus through the banking sector even if the main policy rate is pinned at an inefficiently high level because of the effective lower bound. Not only can subsidized lending help circumvent the lower bound on the policy rate, but the ability to adjust the subsidy offers policymakers an effective tool even if a low and flat term structure of rates limits the gains from additional QE and forward guidance. However, the potential benefits of FFL can be negated if unattractive terms restrain total borrowing from the facility, if banks channel credit to nonviable firms, or if banks simply make loans that they would have originated even without subsidized funding.

To evaluate the efficacy of FFL programs, I appeal to a historical episode in which the Federal Reserve (Fed) provided highly subsidized funding to banks so that they could expand lending within their local communities. Specifically, I examine the introduction of the Seasonal Credit Facility (SCF), which was introduced as a discount window program in 1973 and continues to this day. The SCF is meant to provide funding to small banks that lack reliable access to national capital and money markets and that witness pronounced seasonality in deposits and loans. Many of the institutions that meet these criteria are small banks in agricultural areas. These banks witness robust loan demand during the planting and growing seasons. In contrast, rapid deposit growth materializes in the fall and winter when farmers sell their crops and pay off their loans. The inevitable deposit runoffs in the spring and summer restrain banks' willingness to invest in long-term illiquid assets when

[1]Policymakers may also wish to design a program that alleviates bank balance sheet constraints. In this case, structuring a lending program that works through purchasing loan participations—as in the case of the Federal Reserve's Main Street Lending Program (MSLP) initiated in 2020—may be the most effective option. However, FFL programs can also ease banks' balance sheet constraints by providing sufficient compensation for the balance sheet growth, and by boosting expected capital through a higher flow of retained earnings. In addition, the extremely limited success of the MSLP at the time of this writing suggests that a loan participation structure may be difficult to implement in practice.

they receive deposit windfalls. Instead, banks subject to strong seasonal patterns carry an inefficiently large share of assets in the form of liquid securities throughout the year. The SCF helps banks meet funding needs during periods of peak loan demand so that they can reduce their liquidity buffers to support more loans. As the Fed explained when rolling out the SCF, the explicit goal of the facility was to enhance the ability of member banks to expand credit within their communities.

The circumstances and details surrounding the implementation of the SCF reveal that the lending facility was a *de facto* FFL program. First, SCF credit was offered at the ordinary discount rate, which was often set below prevailing short-term interest rates before 2003. The discount rate could at times become substantially unmoored from market rates at the time, partly due to a view that increasing the relatively high-profile discount rate would attract unwanted attention and criticism. This disconnect was especially pronounced when the SCF was introduced, which led to a steep subsidy. Over the first 18 months of the program, the subsidy averaged 2.75 percentage points, with a maximum of nearly 5 percentage points. Second, banks were forbidden from using the funds to increase lending to other banks, and local Reserve Banks monitored SCF borrowers to ensure compliance with this rule. Third, because the terms of SCF advances generally made larger banks ineligible, any additional lending supported by the facility was almost certainly directed to the bank-dependent firms and households that compose the bulk of small bank customers.

Another appealing feature of the historical setting is that it offers a strategy to draw causal inference. A key identification challenge faced by researchers aiming to measure the effects of central bank funding is the endogeneity of banks' borrowing decision. When the SCF was introduced, only Fed member institutions enjoyed the seasonal borrowing privilege. Consequently, central bank funding was open to only a subset of institutions operating within a given area. Eligible and ineligible banks faced similar local demand conditions, so a divergence in lending activity after the introduction of the SCF points to a causal effect of the facility. Furthermore, the variation in total SCF draws across geographic areas correlates with the prevalence of eligible institutions. This correlation opens up an instrument for seasonal credit funding, which allows for causal estimates of cheap central bank funding on local economic activity. Isolating the geographic area that reaps the benefit of SCF loans is relatively straightforward because severe branching restrictions at the time resulted in tightly defined loan market areas for most banks.

I find that subsidized funding from the central bank boosted loan growth and supported real economic activity. Banks that drew on the SCF reduced their liquid asset buffers and increased lending. The increase in loans was split between non-agricultural and agricultural businesses. The shift in asset composition also increased interest income, because the interest earned on the additional loans exceeded the interest lost from the sale of liquid assets. Communities with banks that took up more SCF loans witnessed faster employment growth, particularly among sole proprietorships. Consistent with that evidence, the additional credit from the central bank helped support an increase in small business establishments. The new establishments were concentrated in industries that were well represented in rural counties, had lower startup costs, and were more dependent on credit from small banks. By contrast, prevalent industries with high regulatory, staffing, and capital hurdles witnessed no net change. In sum, these results are consistent with the notion that credit constraints could restrain productivity growth, in which case a FFL program can boost the supply potential of the economy (Churm et al., 2012).

This paper contributes most directly to the nascent literature on the efficacy of the most nonstandard unconventional policy measures introduced since the global financial crisis. While a large and expanding literature examines the effects of QE, forward guidance, and negative policy rates, far less evidence has been brought to bear on FFL programs. The dearth of studies on FFL reflects the limited examples of such programs. The studies that exist focus on either the BoE's funding for lending scheme (Churm et al., 2018) or the ECB's targeted longer-term refinancing operations (Benetton and Fantino, 2018; Afonso and Sousa-Leite, 2019; Laine, 2019). As explained in Churm et al. (2018) and Andrade et al. (2019), all of these studies confront a difficult identification challenge stemming from the endogeneity of bank participation. Addressing this challenge by using the restricted eligibility is a key feature of the present study. In addition, I also focus on the real effects of the FFL program. Churm et al. (2018) conducts a time series analysis in which a measure of bank funding costs is used to indirectly estimate the macroeconomic benefit of the BoE's FFL program, but other studies focus mainly on financial effects. As explained in Gros et al. (2016), gauging the real effects of FFL programs may be particularly important given the ease with which banks can originate loans that make them eligible for cheaper funding but serve no real economic purpose. Lastly, I offer the only study of an FFL program within the United States, which also entails a rare analysis of Fed lending outside of a crisis context.

The present study also contributes to the literature on central bank policy objectives (Yellen, 2009; Woodford, 2014). Most monetary policy tools are characterized as blunt instruments that are best suited to ease or tighten overall financial conditions. Traditional policy tools may suffer from an inability to precisely target other potential goals such as financial stability and economic equality. This study demonstrates the scope for central banks to add finesse to their policy toolkit and make progress towards more targeted objectives. In the present setting, targeted borrowers were identified according to a stated geographic preference because banks drawing subsidized credit were expected to boost lending to their local communities. However, other FFL programs could tie eligibility to a requirement that additional lending be directed towards a particular demographic, industry, or firm type.[2]

One potential drawback to the research design presented here is that the lessons may lack generalizability. The external validity of studies examining historical episodes is always a question, but some key aspects of the facility and setting are similar to modern considerations and enhance the overall relevance. First, the Fed provided funding at an attractive subsidy, and bank participation was robust. Bank participation is central to the success of a program

[2]For example, legislation advanced in August of 2020 would add a mandate that the Fed minimize and eliminate racial disparities in employment, wages, wealth, and access to affordable credit. Other central banks have been actively involved in initiatives to support green energy.

that is intended to support a wide array of nonfinancial companies without ready access to capital markets (English and Liang, 2020). Second, the SCF is aimed at eliminating the financial friction introduced by an excessive liquidity preference among banks. Banks placing too high a premium on liquidity is a typical affliction that policymakers confront when designing monetary policies to counter significant downturns. Third, by coincidence, the Fed introduced the SCF just before the 1973–1975 recession. Policymakers are most likely to consider FFL programs when facing a flagging economy. Because the effects of additional credit can change over the course of the business cycle, it is helpful that the results in this paper apply to subsidized funding granted during a recession. Fourth, although the SCF only targeted small banks, large institutions typically enjoy access to liquid capital markets that the Fed can exert more influence over using other tools. FFL is typically aimed at bank-dependent firms that often maintain relationships with smaller financial institutions that cannot raise funding as readily as large banks. Finally, as outlined above, several features of the SCF's implementation support the internal validity of the research design. Insofar as internal validity is a *prerequisite* for external validity (Carlson and Morrison, 2009; Campbell and Stanley, 2015), these features also advance the external validity of the results.

2 Institutional Background: Discount Window Lending and The Seasonal Credit Facility

2.1 The Discount Window and Preexisting Credit Programs

The discount window is the primary lending facility maintained by the Fed. In the years following the establishment of the Fed, discount window lending was the principal tool of monetary policy. By the Great Depression, discount window lending started to wane because of the discovery of open market operations and the emergence of the federal funds market. In general, the prevailing view over subsequent years was that banks should tap the private market to satisfy funding needs in normal times. Over time, discount loans were extended for two main reasons. First, banks that faced an unexpected shortage of reserves could approach the discount window for a short-term loan that could be used to make payments or meet minimum reserve requirements. Second, the discount window acted to mitigate upward pressure on the federal funds rate that could arise when reserves supplied via open market operations fell short of anticipated demand (Clouse, 1994; Madigan and Nelson, 2002).

In the early 1970s, the Fed extended loans to its member banks through two discount window programs. The "adjustment credit" program was by far the most common of the two programs. Adjustment credit loans were ordinary discount window loans granted to requesting institutions to meet temporary liquidity needs. Banks initiated loan requests by telephoning their district Reserve Bank, which would ensure that the bank posted adequate collateral and had an appropriate reason to request a discount window loan. To grant the loan, the Reserve Bank would have to make a determination that the borrower exhausted reasonably available alternative sources of funds. While a temporary and unexpected funding shortfall was a valid reason to borrow, loans would be disallowed for planned increases in loans or securities and for replacing an anticipated runoff of private funds (Clouse, 1994). The "extended credit" program was intended to meet the needs of banks facing extended periods of illiquidity under exceptional circumstances.[3] The terms of extended credit loans were strict, and the Fed made almost no loans through the extended credit program during the years covered in this study.[4]

Adjustment credit loans were offered at the discount rate, which was usually set below overnight market interest rates. Reserve Banks set the discount rates for member banks in their district, subject to approval by the Board of Governors. This practice did not result in meaningful variation across districts in the early-to-mid 1970s. In fact, differences in

[3]In 2003, the adjustment and extended credit programs were replaced by the primary and secondary credit facilities.

[4]In the decades before 1980, the extended credit facility saw nontrivial use only once when over a billion dollars was provided to aid in the wind-down of the mafia-linked (?!) Franklin National Bank. This bank does not appear in the sample used in the main analysis.

discount rates charged by Reserve Banks were almost always no more than 25 basis points for no more than a few days.

Below-market rates on discount window loans led to substantial administrative burdens for the Reserve Banks. To prevent an uncontrolled expansion of reserves, discount window credit was rationed via rules that prohibited banks from borrowing too frequently, forbade arbitrage of the spread between the federal funds rate and discount rate, and required banks to exhaust other sources of funding. Administrative rationing of discount window credit therefore required discount officers to review every prospective borrower's funding situation and monitor borrowing institutions' federal funds sold position. The judgments necessary to grant discount window loans could be subjective, complicating efforts to achieve consistency across the 12 Reserve Banks (Madigan and Nelson, 2002).

2.2 The Design of the Seasonal Credit Facility

The Fed announced its intention to offer a seasonal borrowing privilege through the discount window on November 22, 1972. As with the preexisting discount window lending programs, the new Seasonal Credit Facility (SCF) was available only to banks that were members of the Federal Reserve System. The SCF was intended to assist institutions that operated in areas with pronounced seasonality in deposits and loan demand. Such seasonal patterns typically resulted from the local economic importance of a single seasonally sensitive industry such as agriculture.[5] Banks with seasonal deposit flows would often carry a large share of liquid assets to guard against the correlated deposit outflows and sudden credit needs of their customers during other times of the year. For example, agricultural banks witnessed rapid deposit growth following the harvest season, but these funds were not used to support loan growth. Instead, banks held an inefficiently large share of liquid assets in anticipation of deposit runoffs and increased demand for short-term loans through the growing season.

[5]Meaningful seasonal fluctuations in deposits and loans were not unique to agricultural banks. Among other things, seasonal patterns could also be caused by construction, college, tourism, and municipal financing.

Prior to the introduction of the SCF, discount window credit was not available to help banks address predictable liquidity pressures.

By offering seasonal credit on attractive terms, the Fed hoped to counteract banks' inefficient liquidity hoarding. As stated in the circular requesting public comment on the facility, "the seasonal borrowing privilege now proposed is meant to enhance the ability of member banks to serve the credit needs of their communities and areas." In a review of the potential benefits of offering seasonal credit, the Fed explicitly identified the ability of such funds to aid in rural banks' provision of credit to boost the "developmental capital" available to their communities. Because seasonal credit was intended to help banks expand credit within their local communities, banks were disallowed from drawing funds to make loans outside of their normal market areas or to purchase loans from other institutions. Similarly, banks were not permitted to use the funds to increase their liquid asset holdings. The rationale underpinning the SCF thus mirrored that of a funding-for-lending program.

In contrast to other discount window programs, the SCF did not require banks to exhaust market sources of funding to receive a loan. Instead, banks were simply expected to submit historical data on loans and deposits to demonstrate persistent seasonal fluctuations. A seasonal credit line was available to a bank in the amount that the bank's decline in available funds (deposits minus loans) exceed a "deductible" that the bank was expected to meet out of its own resources.[6] The Fed also required that the seasonal funding strains lasted for *at least* two months, because the SCF was not designed to cover short-term needs. If a bank met these criteria, the Fed stated a willingness to extend credit for the maximum allowable time of 90 days and to issue a new loan in the event that a member bank's seasonal needs persisted for more than 90 days.

The SCF favored smaller banks for several reasons. First, more diversified metropolitan areas are less likely to generate pronounced seasonal fluctuations. Banks in rural areas are thus more likely to satisfy the eligibility requirements, and rural banks tend to be smaller

[6] The deductible changed over the years, but was initially set at 5% of a bank's average total deposits in the preceding calendar year.

than their counterparts in urban areas. Second, the deductible that banks were required to meet with their own resources could be quite substantial for larger banks, and the seasonal component of their business would have to be very large to secure SCF funding. In later years, the percentage deductible increased with bank size. Third, smaller institutions lacked the capacity to smooth seasonality in their deposit base with wholesale funding sources including large-denomination CDs and the Eurodollar or federal funds markets.

2.3 Borrowing at the Seasonal Credit Facility

As shown in Figure 1, borrowing from the SCF commenced immediately upon the facility's introduction. Because banks were required to go through a review process with their Reserve Banks before receiving funds via the SCF, the rapid take-up indicates that eligible banks began preparing for access in advance of the facility's launch in April of 1973. The participation also indicates that the credit program was offered on favorable terms and correctly identified a funding need for certain institutions.

The SCF's interest rate was an important factor influencing bank participation in the facility. As demonstrated in Figure 2, the effective subsidy as measured by the difference between the federal funds rate and the discount rate was already over 1 percentage point during the SCF comment period in early 1973. In fact, the multiple-month maturity of SCF loans implies that the true subsidy was somewhat higher than reported in Figure 2. During peak seasonal credit needs later in the year, the effective subsidy was over 3 percentage points. For the first 18 months of the program, the subsidy averaged 2.75 percentage points, with a maximum of nearly 5 percentage points near the peak borrowing period in 1974. The relatively modest take-up in 1975 and 1976 in part reflects the low or nonexistent effective subsidy in these years, when the federal funds rate fell more rapidly than Reserve Banks' discount rates.

The geographic distribution of SCF credit was disperse in its first two years, as shown in Figure 3. Although banks in popular vacation areas in New England and Southern

Florida drew on the facility rather heavily, rural counties with a large agricultural presence benefited the most from the subsidized lending. The relevance of SCF credit to rural counties is demonstrated in Figure 4. Compared with urban counties, the maximum SCF draw by banks in a county as a share of county-wide deposits was twice as high across all rural counties. A more restrictive definition of rural counties increases the gap further.

3 The Financial Effects of Seasonal Credit

The goal of the SCF was to expand the lending capacity of banks that maintained inefficiently high liquidity buffers because of steep seasonal liquidity pressures and correlated deposit flows. If the additional bank loans reached credit constrained households and businesses, highly seasonal communities could enjoy more rapid growth relative to the counterfactual.

In this section, I focus on evaluating whether observed financial outcomes are consistent with the rationale behind the SCF. Table 1 reports summary statistics for the sample of banks in rural areas, which received the overwhelming majority of SCF loans. As explained in Section 2, discount window loans were only available to Federal Reserve member banks until the 1980s. Nonmember banks that operated in the same areas as member banks may be used to form a counterfactual, so it is useful to split the sample accordingly.

Although nonmember banks were smaller than member banks on average, the two types of banks held a similar amount of total assets because nonmembers were more numerous. While member banks are about 65% larger than nonmembers on average, this difference is far smaller than the roughly 400% differential observed in urban areas.[7] Members and nonmembers held a similar share of assets in loans, and the composition of the banks' loan portfolios was very similar. The funding structure was also similar across membership status, with each group deriving about 90% of funding from deposits. Interest income was about the same, but the slightly smaller liquid asset portfolio share among member banks—

[7] The average bank size for both groups in these metropolitan areas is an order of magnitude larger than that of rural banks reported in Table 1.

possibly reflecting the liquidity insurance offered by the discount window—made a smaller contribution to return on assets. At the bottom of Table 1, I report the average of member banks' maximum SCF draw between 1973 and 1974 as a share of 1972 deposits. Conditional on using the SCF, banks averaged a peak SCF draw of about 5% relative to deposits.

In total, rural banks are highly similar regardless of membership status. Table 2 reveals that membership status is not easily determined based on observable characteristics. The pseudo R^2 from a logit regression of membership status on the 11 characteristics in Table 1 is only 7.5%. Moreover, only two of these characteristics—the capital and interest income ratios—are statistically significant.

Members and nonmembers were also similar in their exposure to seasonal swings. Figure 5 displays the regular seasonal patterns in banks' loan portfolio shares using the semi-annual Call Reports for banks operating in communities with seasonal patterns sufficient to qualify for the SCF. Specifically, I plot the β_js from the following regression:

$$\left(\frac{Loans_{bt}}{Assets_{bt}}\right) = \gamma_b + \phi_{ZIP3} \cdot t + \sum_j \beta_j \cdot \mathbb{1}_j(t) + \varepsilon_{bt} \tag{1}$$

where $j \in \{1, ..., T\}$, and the interaction of a time trend with 3-digit ZIP location dummies accounts for any drift in each area's average portfolio shares. The timing of the Call Reports do not generally line up with the seasonal lending peaks and troughs, but there is a clear pattern of increasing loan issuance through the growing season and pay-downs following the harvest. Figure 5 also suggests an effect of the SCF on credit provision, because the loan-to-asset ratio for member banks moves up relative to nonmember institutions after the introduction of the lending facility.

To more formally examine the financial effects of the SCF, I estimate the following two-way fixed effects regressions with two groups of banks:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \sum_j \beta_j \left[\mathbb{1}_j(t) \times \mathbb{1}_{SCF}(b)\right] + \varepsilon_{bt} \tag{2}$$

where Y_{bt} is either the bank-quarter liquid asset share or loan share of total assets, and $\mathbb{1}_{SCF}(b)$ is an indicator function that identifies banks that drew on the SCF by the end of 1974. Because the decision to request seasonal credit may be endogenous to lending opportunities, equation (2) may present more of a descriptive analysis rather than a causal analysis. Nevertheless, the ZIP-time fixed effects help control for local economic and credit demand conditions that might otherwise give rise to endogeneity concerns.

As shown in Figure 6, the response of SCF borrowers accords with the theory behind the facility. Following the introduction of the facility, SCF borrowers reduced their liquid asset holdings in favor of higher loan shares relative to other banks. The relative increase in loan-to-asset ratios reached more than 4 percentage points in 1974 after deviating by less than one percentage point in the three and a half years before the SCF's introduction. Because SCF credit is extended only after a consultation with and review by a member bank's Reserve Bank, the noticeable divergence of lending and liquidity positions so soon after the comment period suggests that institutions anticipated their eventual use of the facility. This interpretation aligns with the evidence presented in Section 2.3 that member banks were in communication with their Reserve Banks throughout the comment period.

To facilitate the interpretation of the financial effects, Table 3 reports the average post-implementation effects for banks that tapped the SCF from an estimation of:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \beta\big[Post_t \times \mathbb{1}_{SCF}(b)\big] + \varepsilon_{bt}. \tag{3}$$

The loan-to-asset ratio for drawing banks increased by about 3 percentage points. The nearly exactly offsetting estimate for the liquid asset share indicates that the additional lending cannot be attributed to interference with banks that did not draw on the SCF. Liquid assets including Treasuries and agency debt are allowed to mature or sold using brokers into national markets. If SCF borrowers simply cannibalized loans from nearby banks, the simultaneous reduction in credit by SCF non-borrowers would result in a much larger estimate for loan shares relative to the decline in liquid asset shares. While it could also be the case that SCF non-borrowers' liquidity ratios rose mechanically because of a passive decrease in size as SCF borrowers poached loans, this does not appear to be the case. In unreported results, I find that using the natural logarithm of total assets as the outcome variable yields a coefficient estimate of -0.01 ($p = 0.17$). This pattern of results suggests the absence of interference across banks and therefore supports the validity of the stable unit treatment value assumption.

The increase in the loan-to-asset ratio resulted in loan growth that was about 6 percentage points higher, as seen in the third column of Panel A. An increase in loan growth that is about twice the size of the increase in the loan-to-asset ratio follows from the average loan-to-asset share of about 50% (Table 1) with no meaningful difference in asset growth.

Decomposing the increase in the lending share of assets in Panels B and C of Table 3 reveals that commercial and industrial, commercial real estate, and agricultural loan shares all increased by about 10% compared with the member bank averages reported in Table 1. The final columns in Panel C show that the substitution from liquid assets to loans boosted banks' interest income margins by about 11 basis points on average.

To further address the endogenous decision to borrow from the SCF, I proceed with two additional exercises. First, I estimate intent-to-treat effects with a specification given by:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \beta\big[Post_t \times \mathbb{1}_{Mem50}(b)\big] + \varepsilon_{bt} \tag{4}$$

where $\mathbb{1}_{Mem50}(b)$ is an indicator function that identifies banks that the Fed expected to be the most likely beneficiaries of the SCF. Specifically, the initial SCF proposal included an explanation that the terms of the facility would be particularly attractive to member institutions with less than \$50 million in total assets, and a maximum seasonal funding swing that exceeded 5% of deposits. The results in Table 4 broadly confirm those reported in Table 3, although there is now some evidence of an increase in residential real estate loans in place of the commercial real estate lending increase observed earlier. The parameter estimates in Table 4 will be attenuated somewhat because the indicator function includes member banks that would not draw on the SCF.

As a second exercise to address the endogenous borrowing decision, I estimate an instrumented difference-in-differences (DiD-IV) system of equations using 2SLS. In this system, the targeted member bank dummy instruments for the seasonal credit borrowing dummy, both of which are interacted with a post-SCF time indicator:

$$Post_t \times \mathbb{1}_{SCF}(b) = \gamma_b + \phi_{ZIP3,t} + \mu\big[Post_t \times \mathbb{1}_{Mem50}(b)\big] + \eta_{bt}. \tag{5}$$

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \beta\big[\widehat{Post_t \times \mathbb{1}_{SCF}}(b)\big] + \varepsilon_{bt} \tag{6}$$

For this exercise, I collapse the time dimension for each bank to a single observation before and after the implementation of the SCF as in Bertrand et al. (2004). While the results and conclusions are nearly identical without collapsing, the two-period DID-IV with a binary instrument and treatment corresponds to a special case of DiD-IV in which the β coefficient identifies a local average treatment effect as in Imbens and Angrist (1994) so long as familiar difference-in-differences and instrumental variable assumptions are met (de Chaisemartin, 2010; Hudson et al., 2017). The results in Table 5 reveal qualitatively similar results to those obtained above. According to the 2SLS results, however, SCF loans from the Fed helped boost residential real estate loans in addition to C&I and agricultural loans. Because sole proprietorships entangle the personal and business financial positions of the owner, it is possible that residential real estate loans helped support small business activity.[8] As I show in the next section, areas exposed to more SCF funding witnessed higher proprietorship growth.

The preceding analysis supports the original theory rationalizing the SCF. Geographic areas reliant on highly seasonal industries produce large swings in liquidity demands on banks that could lead to inefficiently high liquid buffers. These areas also feature highly correlated

[8]Estimating DiD-IV regressions using all time periods individually also points to a statistically significant increase in consumer loans of about 1 percentage point ($p = 0.019$).

depositor behavior that can further increase banks' precautionary liquidity holdings (Diamond and Dybvig, 1983). The SCF helped eligible banks draw down their liquidity buffers in favor of additional credit that would not have otherwise been issued. The benefits of offering lending facilities so that banks do not need to hold liquidity buffers to safeguard against all contingencies has been a motivating principle in central banking at least since Bagehot (1873). Under a similar motivation, the goal of the SCF was to support economic activity by fostering easier credit conditions. Whether such growth materialized following the expansion of credit identified above is an empirical question that I address in the following section.

4 The Real Effects of Seasonal Credit

4.1 Data and Empirical Methods

To measure the economic effects of the seasonal credit facility on local communities, I focus on county-level outcomes for a few reasons. First, regulators frequently use county boundaries to demark banking markets for rural areas. Second, branching restrictions in the mid-1970s were often tied to the county or municipality of a bank's headquarters. Stringent branching restrictions at that time increase the likelihood that a bank's lending activity was directed within its home county. In fact, many of the Midwestern states that received the bulk of SCF loans were unit banking states that prohibited branching (Amel, 1993).[9] Third, data availability constraints preclude a finer geographic unit of observation.

Table 6 reports summary statistics for rural counties as of December 1972, just prior to the introduction of the SCF. The sample includes only rural counties in contiguous states, and excludes counties in the few states that never witnessed SCF draws. Employment and population totals are reported annually by the BEA. I focus on proprietors employment in

[9]About 65 percent of states tied branching restrictions to the local county or municipality of a bank's headquarters. Over 71 percent of states had finer than state-wide branching restrictions. Midwestern states with unit banking included Colorado, Illinois, Iowa, Kansas, Nebraska, North Dakota, Montana, Minnesota, Missouri, Oklahoma, Texas, and Wyoming. Indiana and Wisconsin tied branching restrictions to a bank's home county.

addition to aggregate employment figures to gauge the real effects of Fed lending. Proprietorships are the most common form of business organization in the U.S. by a wide margin, not least because they require no formal registrations with states, are easy to start, and face few of the operational hurdles associated with other business types such as corporations or LLCs. Because proprietorships entwine individuals' personal legal and financial conditions with that of their business, proprietors are often heavily dependent on many forms of credit from small banks. This dependence was particularly pronounced during the early 1970s, because little credit was extended via credit cards and nonbank entities.[10]

Establishment counts from the County Business Patterns (CBP) data published by the Census Bureau are reported in the middle of Table 6. Along with some of the most prevalent business types in rural counties, I also report establishment counts for agricultural services businesses. While the CBP data are limited to nonfarm establishments only, agricultural services businesses may be particularly affected by the SCF loans because of their close connection to agricultural areas and the recipients of the additional agricultural loans. These businesses include those engaged in providing services related to soil preparation, crop planting, harvesting, livestock, and farm labor management and contracting. In addition to agricultural services establishments, I also consider bars and restaurants and shops specializing in building materials. Establishments in these two industries are extremely common in rural counties so that many individuals possess industry-specific knowledge, connections, and experience that can lower staffing and startup hurdles. Many of the building materials establishments—the most common establishments in rural counties by far—supply materials for housing and building and construction. By contrast, I can also conduct falsification or "placebo outcome" tests by examining certain industries that are unlikely to be affected by small bank loans because of high regulatory and capital requirements associated with starting such businesses. For this purpose, I focus on gas stations, banks, and lodging services,

[10] One notable exceptions is thrift institutions, which were far fewer in number than commercial banks, but accounted for a meaningful share of residential mortgage credit outstanding. At this time, thrifts were largely prohibited from extending all but residential real estate loans.

all of which are among the most prevalent establishment types in rural counties. The six industry subcategories reported in Table 6 compose about 85% of all county establishments on average.

The structural relationship of interest reveals the effect of SCF loan intensity on employment and establishment growth:

$$ln(Y_{ct}) = \gamma_c + \phi_t + \lambda \boldsymbol{X}_{ct} + \beta\big[Post_t \times \frac{SCF_c}{Deposits_c}\big] + \varepsilon_{ct} \tag{7}$$

where Y_{ct} is the total employment or establishment count in county c in year t, γ_c are county fixed effects, ϕ_t are year fixed effects, $\boldsymbol{X}_{ct}$ is a vector of county characteristics, and $\frac{SCF_c}{Deposits_c}$ sums each county's bank-level maximum draw on the SCF during the recession and divides this amount by total county deposits just prior to the introduction of the SCF. An OLS estimate of β will be biased if $\frac{SCF_c}{Deposits_c}$ is not orthogonal to ε_{ct}. Indeed, the SCF borrowing decision is likely to be endogenous because banks likely face higher credit demand in faster-growing counties or those counties that were less affected by the economic downturn. If banks' lending opportunities are unobservably different across counties, the orthogonality assumption is likely violated.

To identify the effect of SCF funding on local economic outcomes, I extract exogenous variation in the intensity of Fed borrowing by using the within-county Fed membership share as an instrument for SCF funding during the recession. Before the Monetary Control Act was passed in 1980, only member banks could access discount window credit. As seen in Figure 7, county membership share is positively related to the county-wide SCF borrowing intensity. Thus, I supplement equation (7) with the first-stage regression:

$$Post_t \times \frac{SCF_c}{Deposits_c} = \gamma_c + \phi_t + \kappa \boldsymbol{X}_{ct} + \delta\big[Post_t \times MemberShare_c\big] + \eta_{ct}, \tag{8}$$

where $MemberShare_c$ is measured just before the introduction of the SCF.[11]

A key identifying assumption is that county-level membership share is as good as randomly assigned, conditional on the controls. This assumption would be violated if the SCF borrowing decision is driven by county-specific factors that also affect the Fed membership share. Several factors mitigate this concern. First, many banks' membership status was established decades before the time period in question, and there were few membership transitions around the time of my sample. Second, the membership choice would be unrelated to any consideration for a lending facility akin to the SCF. Not only was the seasonal borrowing privilege announced as a surprise in late 1972, but the facility was fundamentally different from other discount window programs, as detailed in Section 2. Third, county-level fixed effects control for any unobserved heterogeneity at the county level that remained constant over time and happens to be correlated with both the membership mix and the local economic performance in the 1970s.[12] Finally, as shown in Figure 8, Fed membership rates display a wide degree of geographic variation.

Channels through which Fed membership status could affect economic outcomes outside of SCF borrowing are few. It is particularly unlikely that the outcome variables are directly affected by Fed membership. Nevertheless, institutions did face differences across membership status, even when comparing state-chartered members to state-chartered nonmembers. For example, member institutions enjoyed access to the Fed's payment services, but this access was constant through time and it is unlikely to explain differences in economic performance in any case. Member institutions were also subject to reserve requirements, but these requirements scarcely changed following the announcement of the SCF. In fact, reserve requirements on demand deposits did not change by more than 0.5 percentage points and the reserve requirement on savings deposits did not change at all.

[11]The empirical strategy outlined above is methodologically similar to Nguyen (2019), while the use of membership status to identify the effects of Fed policy has been previously used by Park and Van Horn (2015) and Carlin and Mann (2020).

[12]Using an instrument for counties' economic performance in the 1970s recession, I demonstrate in subsection 4.3 that the effect did not materially differ by growth prospects.

One potential concern with equation (8) is that the administration of the discount window through the District Federal Reserve Banks described in Section 2 means that the mapping from membership share to SCF borrowing may vary systematically across Fed districts over time. If the district Bank is more or less assiduous in its communications with member institutions, this could affect the likelihood that its member banks draw on the SCF, all else equal. To account for this potential variation across districts, I replace the simple year fixed effects (ϕ_t) in equations (7) and (8) with finer district-year fixed effects ($\phi_{FRS,t}$). These district-specific time dummies not only help explain more of the variation in county-level SCF borrowing, but they also serve as better controls for year-to-year changes in regional economic conditions.

Another potential concern regarding the equations above is the possibility of a bad control problem stemming from the county-level controls $\boldsymbol{X}_{ct}$. To avoid this issue, I measure the controls as of 1972 Q4 and interact them with a $Post_t$ dummy. This method helps ensure robustness to cross-sectional differences across counties that may be correlated with economic outcomes in the post-treatment period and membership shares.

In the following analysis, I highlight the reduced form for two reasons. First, member banks that did not draw on the SCF may still be affected by the establishment of a seasonal borrowing privilege if those banks viewed the SCF as an effective backstop against liquidity risks. Second, the coefficient estimate is easier to interpret as the effect of moving from a situation where no Fed members supply credit in a local area to a scenario in which businesses rely exclusively on Fed members for their credit needs. Alternatively, the coefficients of the reduced form estimates can be divided by 3 to achieve the approximate effect of a one standard deviation change in the membership share across counties, which corresponds to just over one member bank on average. To confirm the findings from the reduced form estimates, I additionally report the results from the DiD-IV described in equation (7).

4.2 The Economic Effects of Seasonal Credit

I first show that SCF funding had a positive effect on local employment outcomes in Table 7. While the main focus of this analysis is on the qualitative lessons for FFL programs, it is helpful to verify that the results are economically significant. In fact, relative to counties with no Fed member banks and thus no SCF loans, counties with only Fed member banks witnessed total employment growth that was about 1.5 percentage points higher in the years following the introduction of the SCF on average. For reference, I present the time pattern of the total employment effect in Figure 9. The employment effect increases gradually after the SCF credit shock, and increases for a few years before leveling off. Evidently, the additional loans were directed to productive uses and banks did not draw on the SCF merely to lend to nonviable business during the recession.

The middle columns of Table 7 reveal that proprietors' employment expanded at an even more rapid rate in counties that were more likely to receive SCF credit. To verify that the increase in economic activity spurred by the post-SCF credit expansion was not confined to the agricultural sector only, the rightmost columns show that proprietors' employment within non-farm businesses rose at a similar rate.

An increase in proprietors' employment implies an increase in business formation within counties that were more exposed to SCF loans. The first two columns of Tables 8-10 show that the SCF promoted net establishment growth among agricultural services companies, building material stores, and bars and restaurants. The middle and final columns demonstrate that the growth in total establishments within these industries was driven by the smallest establishments. Establishments with few employees are more reliant on loans from the small banks targeted by the SCF. Conversely, larger establishments are less likely to be unincorporated proprietorships and are more likely to have access to internal financing and to have relationships with larger banks. The null results for larger establishments also suggest that the effects among small businesses reflect the flow of small business credit and are not simply an artifact of an unrelated improvement in economic conditions in counties with high member bank shares. In total, the results in Tables 8-10 are consistent with expected patterns if the SCF boosts credit supply among small banks and promotes real activity by supporting these banks' small business customers.

As an additional exercise to help rule out the possibility that strong establishment growth among SCF-intensive counties reflects a shortcoming in the identification strategy, Table 11 presents several falsifications tests. In these tests, I report the results for three well represented industries within rural counties that should be less responsive to looser credit policies by smaller banks because of heavy regulations and steep initial capital requirements. In contrast to the earlier results, establishments in these industries show no clear response to the introduction of the SCF. In total, the distributional patterns of the above results help rule out the possibility that the stronger performance is driven by some unobserved factor correlated with county-level membership shares and economic activity.

4.3 The Cyclical Asymmetry of the Effects of Seasonal Credit

An important question regarding the efficacy of any monetary policy tool is whether the tool's potency depends on the state of the economy. This question is particularly salient for unconventional policy tools introduced during recent recessions because central banks maintained their reliance on these tools well into the subsequent recoveries. Recent literature highlights the state-dependence of monetary stabilization (Jordà et al., 2020) as well as the concern that certain unconventional policies may be ineffective after non-financial shocks (Karadi and Nakov, 2020).

The foregoing evidence regarding the efficacy of a FFL program may only apply to weak economic environments because the introduction of the SCF was followed by a long recession and slow recovery. Selecting on the dependent variable would econometrically invalidate a naive sub-sample analysis that simply divides counties by growth rates, which I have already shown depend upon SCF take-up.

To assess the efficacy of FFL programs across economic cycles, I divide counties using an instrument for their post-1973 growth prospects. The 1973 oil crisis triggered by the OAPEC's oil embargo in October of that year was a major cause of the 1970s recession. The supply shock engendered by the dramatic rise in the price of oil choked off a robust expansion and helped tip the economy into a recession that lasted nearly 18 months. However, counties with a petroleum extraction industry stood to benefit from higher oil prices. As shown in Table 12, these counties witnessed much stronger employment and income growth compared with counties that had no oil extraction industry.

In Table 13, I show the reduced form estimates (for brevity) of the key outcome variables when including an interaction of a petroleum production dummy ($Petro_c$) with the key regressor. All specifications additionally include a $Post_t \times Petro_c$ interaction term. In general, the coefficient estimate on the triple interaction term is a noisy zero, indicating that the economic benefits of the SCF did not systematically vary across different growth environments. The point estimates alone mostly indicate that, if anything, the SCF had somewhat stronger effects in counties experiencing growth booms.

4.4 The Costs and Benefits of the Subsidy

Potential financial losses associated with various unconventional policies can result in a reluctance to pursue programs that would otherwise benefit the economy. In fact, the possibility of losses was cited by policymakers as a potential cost of QE (Bernanke, 2012). Although economic benefits such as those identified above should be the key determining factor in the decision to adopt a policy, the potential for financial losses may weigh on policymakers who also consider risks to the central bank's independence and reputation. In terms of the SCF, the subsidy offered by the Fed relative to market rates may be viewed as a cost of the facility, even if the loans are extended through the issuance of unremunerated reserves.

For this reason, I evaluate the narrow fiscal implications of the SCF to show that a FFL program can generate tax revenues that surpass the "costs" of the subsidy. In Table 14, I report the results from equation (7) as well as its reduced form. To more easily compare tax revenues against the dollar cost of the subsidy offered by the Fed, dependent variables are expressed in levels.

Panels A and B reveal that the SCF boosted total wage and salary employment, which also translated into an increase in total wages and salaries within the counties. Focusing on the second specification, both the reduced form and the 2SLS results point to an average salary per additional job of about $16,750. Dividing the coefficient estimates for contributions to social insurance programs by that for total wages and salaries shows that about 12% was passed on in the form of payroll taxes. This figure conforms with the total payroll taxes of 11.7% at the time, plus the average state and federal unemployment insurance taxes of about 2.5%. A full accounting of for phaseouts and lower rates for certain types of workers would yield a more precise number, but it is clear that the estimates in Table 14 are consistent with prevailing tax rates and average salaries of the time.

The total cost of the subsidy (calculated using the values from Figures 1 and 2) point to a total subsidy of about $5 million between the introduction of the SCF and the end of the recession in 1975. The value of the contributions to government social insurance funds implied by the final coefficient estimate in Panel B of Table 14 suggests that the jobs created by the SCF in the average affected county resulted in about $1 million per year in payroll taxes. Even in the event of bank defaults, the additional economic activity supported by the SCF-fueled credit expansion would more than offset the subsidy provided by the Fed.

5 Policy Implications

Directing monetary support to business poses a substantial challenge for central banks, which may not be able to legally or practically offer either direct grants or loan guarantees. This challenge is multiplied when the goal is to direct credit towards small and medium sized businesses, because these firms lack access to financial markets and will not benefit from

LOLR backstop facilities that can ensure credit continues to flow through capital markets. One option, which the Fed employed during the COVID-19 crisis, is to purchase loan participations from banks if the loans meet certain criteria. Another possible option is to subsidize bank loans through a FFL program. Both options necessitate a reliance on financial institutions as a practical matter, because central banks do not have the capacity to make credit decisions on a large scale basis, particularly for more opaque small business.

FFL programs can ensure that monetary stimulus transmits through the banking sector even if the main policy rate remains at its effective lower bound. In contrast to the effects of negative policy rates on banks' assets, negative rates on loans from the central bank should *improve* the health of the banking sector and thus promote credit growth. Besides opening up additional policy space at the lower bound, FFL also allows the central bank to incur contingent losses during severe downturns. When adverse shocks generate real economic losses that must be borne regardless of financial market conditions—for example, as in the COVID-19 crisis (Hanson et al., 2020)—FFL facilities offer the central bank the ability to shoulder a share of those losses by setting the lending rate well below the rate paid on reserves.

To be successful, a FFL program should be offered on terms that are sufficient to induce meaningful participation by banks. The main factor involved in banks' decision to request subsidized credit from the central bank is the size of the subsidy. For this reason, FFL programs can be particularly successful in offsetting abnormally high bank funding costs (English and Liang, 2020). However, sufficient compensation via funding subsidies can also work to overcome banks' balance sheet constraints and excessive risk aversion. Because banks originate the loans and keep them on their balance sheets, FFL programs face fewer complications related to asymmetric information and adverse selection. Consequently, FFL programs do not necessarily require that borrowers meet a litany of eligibility criteria, which in turn increases the likelihood of broad participation and benefits to a variety of small businesses.[13]

As with other programs that encourage lending to small businesses, FFL programs should result in loans that would not have otherwise been originated. Because of the unobserved counterfactual, assessing the extent of additional lending spurred by an FFL facility can pose a challenge to policymakers, absent some randomization embedded in the design of the facility. The results above deliver an encouraging message. SCF-eligible banks boosted credit relative to ineligible banks operating in the same communities, and an increase in SCF funding corresponded to better economic outcomes. The results also offer no evidence to support the concern that highly subsidized credit might be directed towards unproductive loans that serve to temporarily prop up nonviable businesses.

Ensuring that banks direct the additional lending towards institutions or areas that the central bank wishes to support can be a key consideration for an FFL program. If sufficiently attractive FFL terms are conditioned on lending to particular types of businesses or locations, banks will almost certainly devise a method to certify compliance with the requirements. Some types of targets, including specific geographic areas or demographic characteristics of business owners may be easier to verify than other targets, such as businesses most affected by a pandemic, but a certification protocol is still feasible. In terms of the SCF, policymakers hoped to target credit-starved businesses and individuals in areas subject to large seasonality. I find that the SCF was successfully able to target these areas, and credit was directed towards non-agricultural industries including restaurants and bars.

The ability to fine-tune the targets of a FFL program presents policymakers with a policy tool that is far less blunt than both conventional tools and more common unconventional tools. As mentioned above, FFL programs may be used to target particular geographic areas, demographic groups, or industries. Although efforts to promote distributional equality

[13]Another example of FFL program's relative flexibility is the fact that they may be structured through the central bank's existing discount window authority, which are subject to established regulations that may be flexibly adjusted. In contrast, loan participation programs such as the Fed's MSLP may be subject to additional constraints imposed by its emergency (Section 13(3)) lending classification.

may be best addressed through targeted fiscal policies, central banks can introduce some measure of specificity in their objectives through careful design of a FFL program.

Some of the most vociferous criticisms of FFL programs concern the quasi-fiscal component of the stimulus. Ensuring a separation between fiscal and monetary policy can be an integral aspect of central bank independence, so these concerns should not be minimized. However, considerations surrounding credit allocation and fiscal encroachment are not completely foreign to other unconventional policies. Even simple interest rate adjustments can disproportionately affect rate-sensitive industries. Purchases of mortgage-backed debt have long been criticized by policymakers that disfavor the credit-allocation effects or appearance of such purchases. Purchasing corporate debt involves taking credit risk in addition to the interest rate risk association with all QE programs, and such purchases can generate backlash if they are seen to favor some firms or industries. In fact, many central bank policies may favor larger and safer borrowers over smaller borrowers insofar as the former can access capital markets that benefit most from LOLR backstop facilities, direct purchases, and portfolio balance effects. Borrowers that depend on bank credit can be cut off from the support and stimulus offered by monetary actions if credit spreads at banks remain high and credit provision low, even as benchmark rates are depressed by QE, forward guidance, and other measures. Even with limited ability to further adjust the level or path of the main policy rate, an FFL program can ensure that monetary stimulus continues to transmit to needy borrowers through the banking system.

Efforts to improve the flow of credit to small, bank-dependent businesses can help ensure that unconventional policies are not predominantly benefiting borrowers with access to securities markets. There is a pervasive view that QE and other central bank policies are largely directed at large corporations and large financial institutions on Wall Street. FFL programs and other facilities that target small- and medium-sized businesses can help countervail that perception because they improve credit access for bank-dependent firms with productive investment opportunities.

6 Conclusion

As modern central banks face the effective lower bound with more regularity, it is increasingly important to assess new policy tools that may help manage downturns and foster robust recoveries. Some unconventional tools—such as QE and forward guidance—saw widespread adoption during the global financial crisis, and many central banks actively employed such policies throughout the decade-long recovery that followed. A large literature sprung up to evaluate the effficacy of these tools, but far more work remains to understand the potency and transmission channels of less tested unconventional tools.

In this paper, I evaluate the success of a de facto funding-for-lending program wherein the Fed offered some banks subsidized funding with the goal of promoting credit growth within the banks' local communities. I find that banks increased their credit supply to small businesses after receiving the cheap central bank funding. The additional credit supported employment growth, entrepreneurship, and net business creation across a variety of sectors. The economic benefits of the credit materialized across a broad set of communities, and was not limited only to areas with the best growth environment.

In sum, the foregoing analysis suggests that funding-for-lending programs warrant serious consideration for inclusion in the modern central banker's toolkit. Not only can these programs flexibly target "Main Street" businesses that may benefit less directly from other unconventional policies, but they can be creatively adapted to aid in an effort to combat many forms of distributional inequality.

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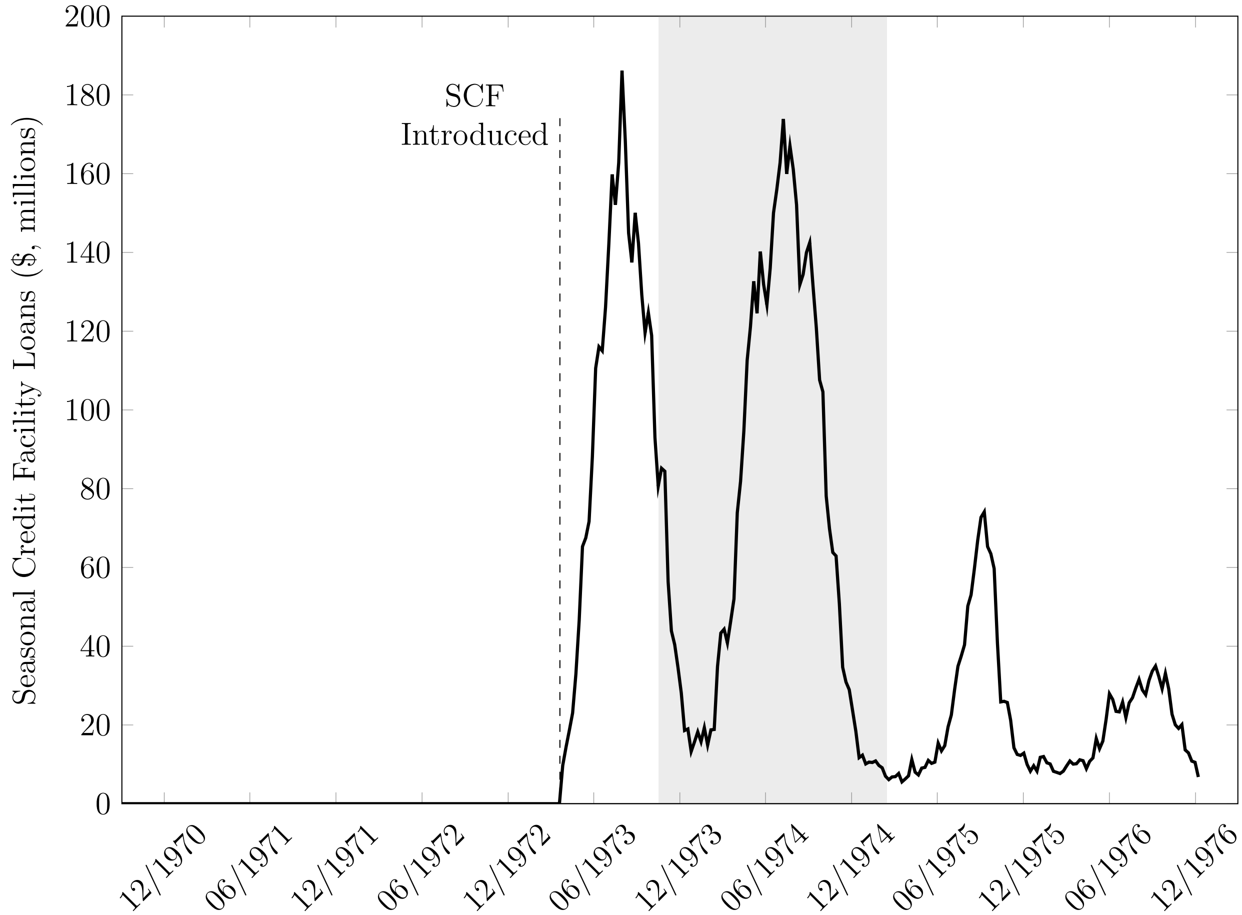


Figure 1: **Total Seasonal Credit Facility Lending.** This figure plots the weekly volume of discount window loans granted to member banks as part of the Seasonal Credit Facility. Source: Board of Governors of the Federal Reserve System (Transmission of Edited Deposits System, form FR 414a).

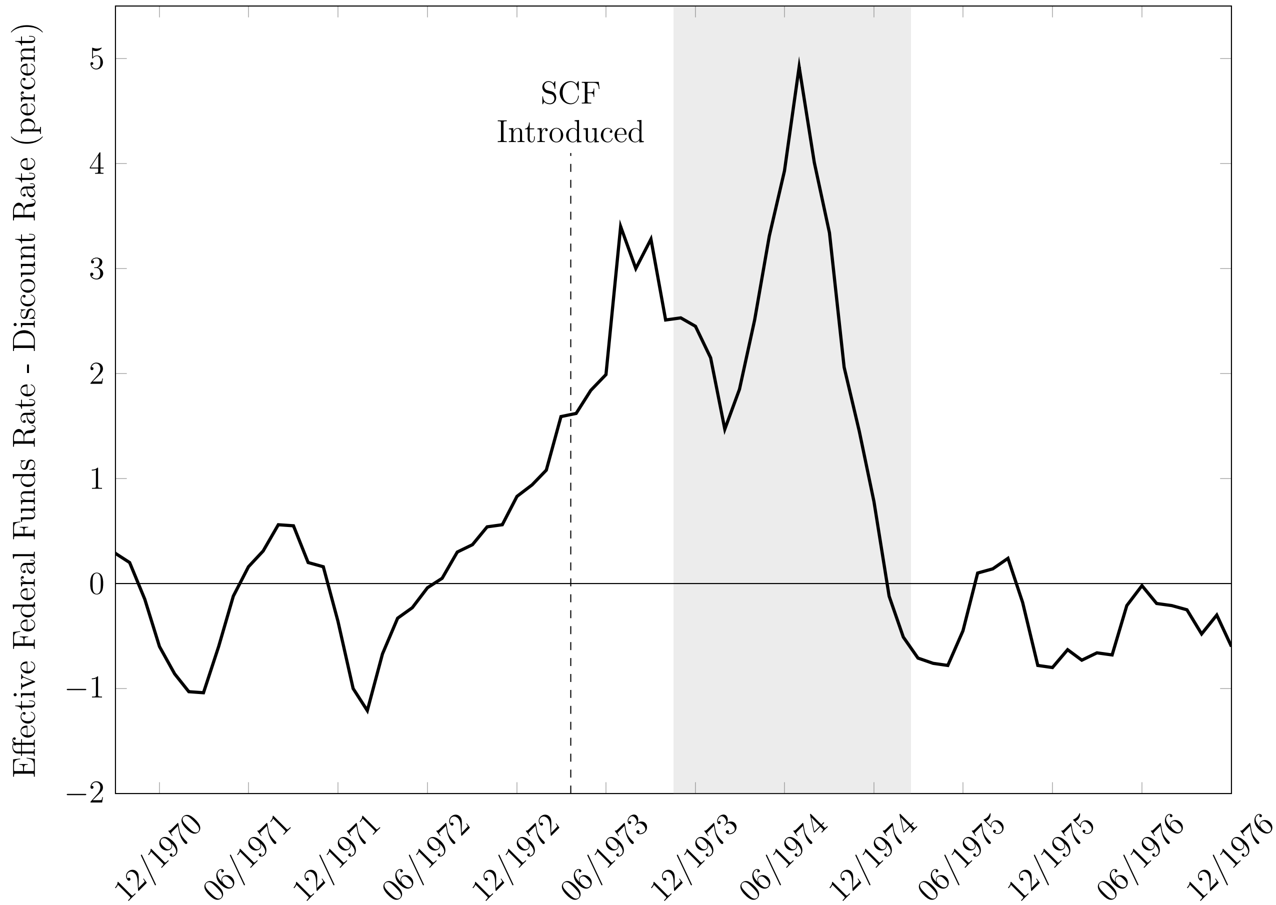


Figure 2: **Subsidy offered through the Seasonal Credit Facility.** This figure plots the effective subsidy offered to banks that borrowed from the Seasonal Credit Facility for each month. The subsidy is defined as the effective federal funds rate (averaged over days within each month) minus the adjustment credit (discount) rate established by the Federal Reserve Bank of New York.
Source: Annual Statistical Digest; Board of Governors of the Federal Reserve System (H.15).

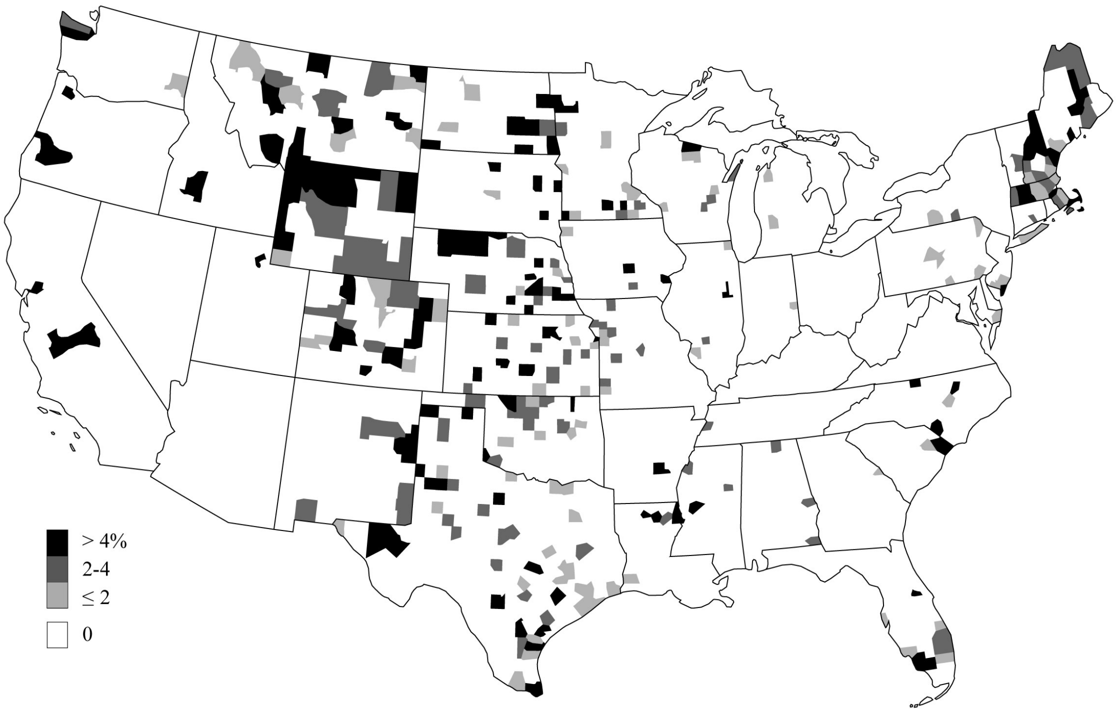


Figure 3: **Seasonal Credit Facility loans by county as a percentage of total county-wide deposits**. This figure depicts the maximum SCF borrowing by banks within a county as a percentage of total county-wide deposits. Counties are binned according to the values shown in the legend.
Source: Board of Governors of the Federal Reserve System (Transmission of Edited Deposits System, form FR 414a), (form FR-105); National Information Center

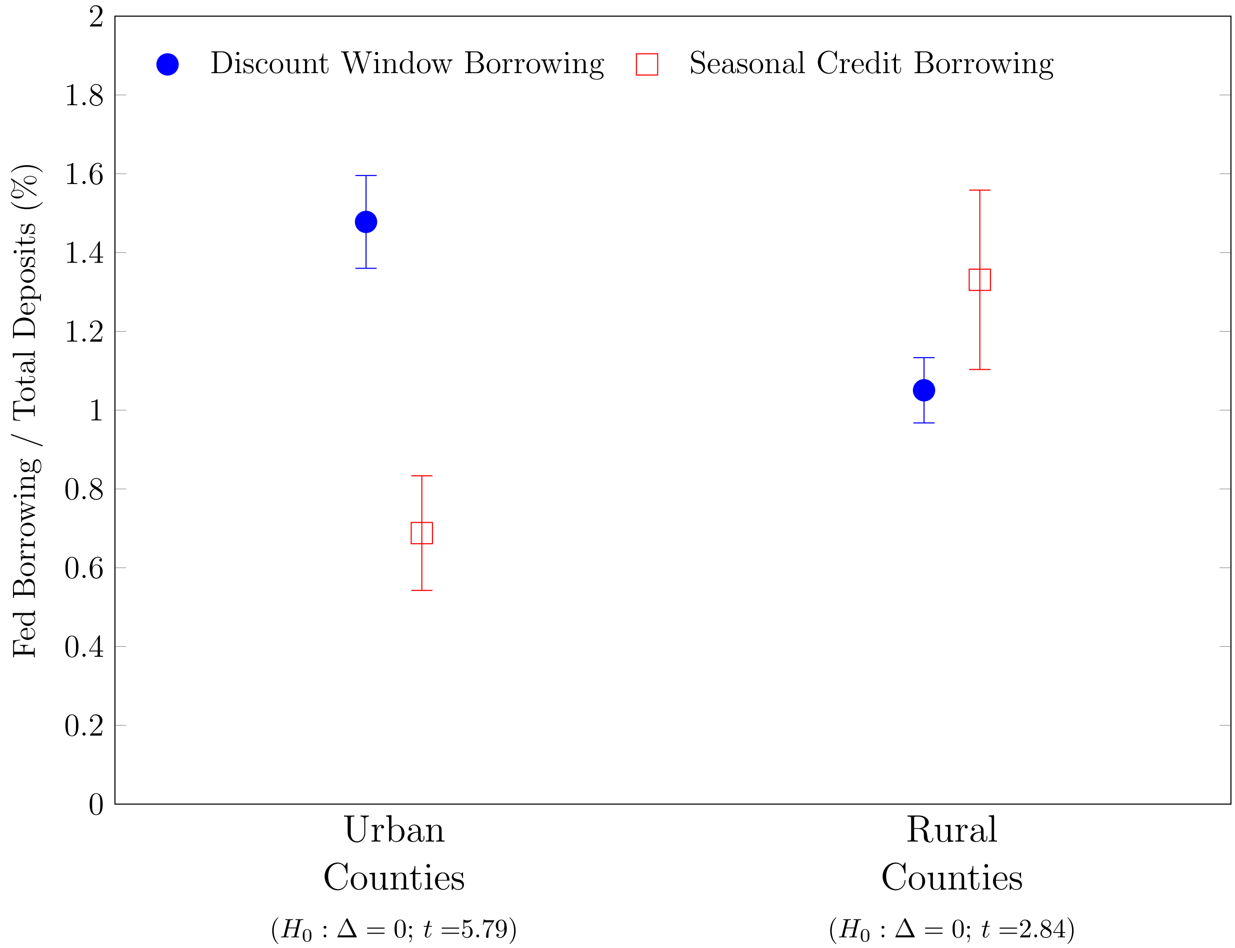


Figure 4: **Discount Window Borrowing Relative to Total Deposits.** This figure plots county-level discount window borrowing as a percentage of total county-level deposits. Solid blue circles represent Adjustment Credit borrowing, and open squares represent borrowing from the Seasonal Credit Facility. County-level borrowing is computed by summing the maximum borrowing across banks within each county and year, and averaging the 1973 and 1974 values. County-wide deposits are measured as of year-end 1972. A t test of the equality of means between Adjustment Credit and Seasonal Credit borrowing intensity is reported in parentheses beneath each county grouping.
Source: Board of Governors of the Federal Reserve System (Transmission of Edited Deposits System, form FR 414a); United States Department of Agriculture.

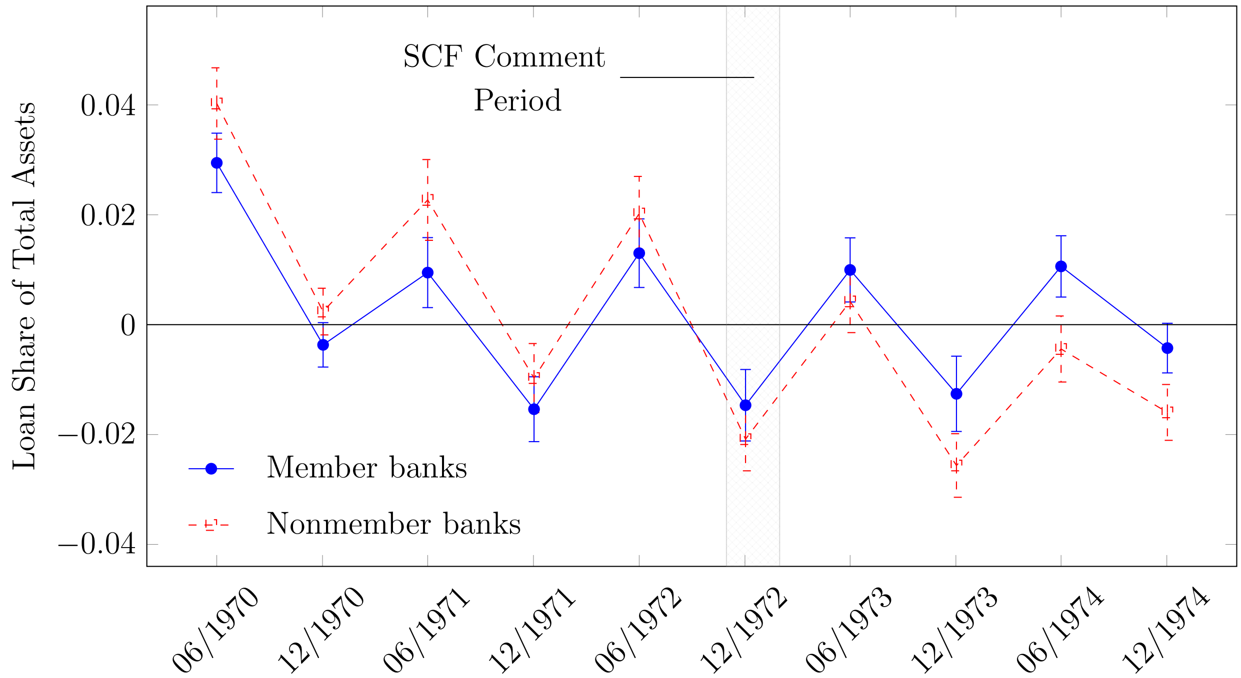


Figure 5: **Seasonality of Banks' Loan Portfolios**. This figure plots the β_j coefficients from an estimation of the following specification for zip codes with sufficient seasonality to justify SCF loans:

$$\left(\frac{Loans_{bt}}{Assets_{bt}}\right) = \gamma_b + \phi_{ZIP3} \cdot t + \sum_j \beta_j \cdot \mathbb{1}_t(j) + \varepsilon_{bt}.$$

Source: Board of Governors of the Federal Reserve System (Transmission of Edited Deposits System, form FR 414a); National Information Center.

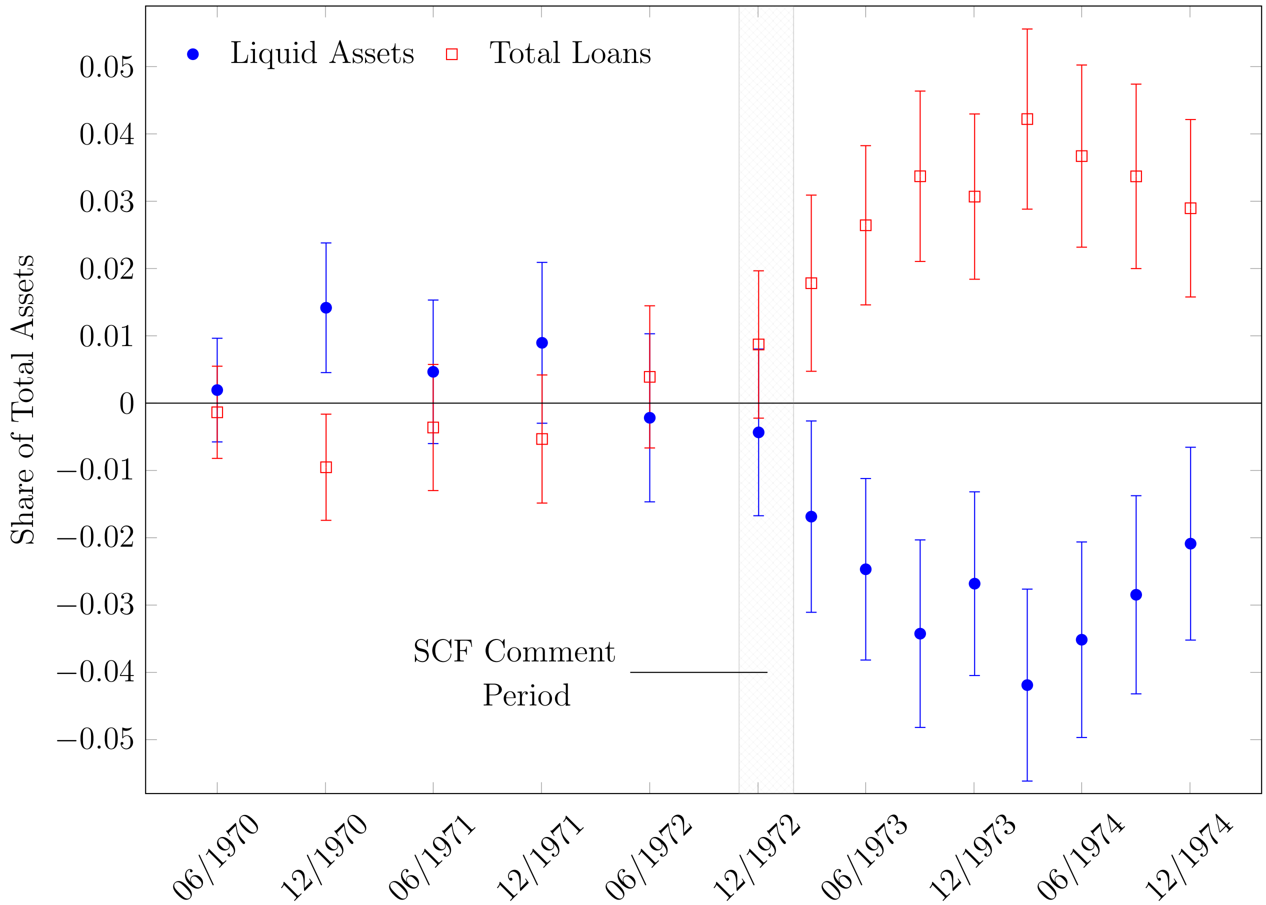
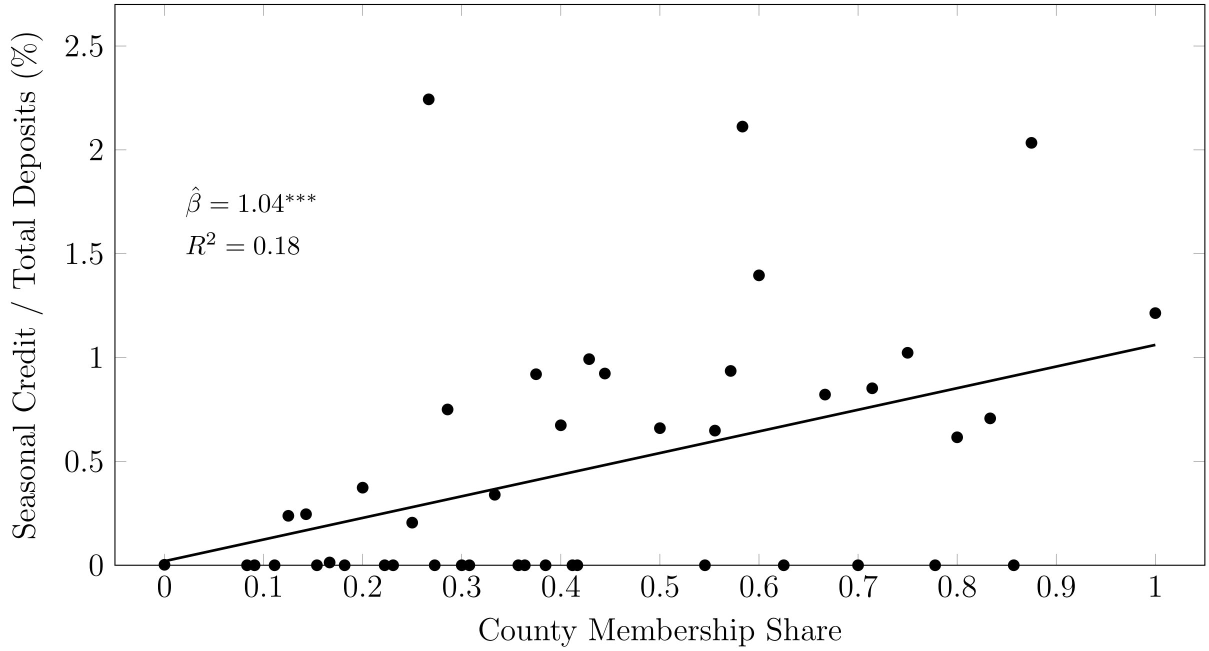


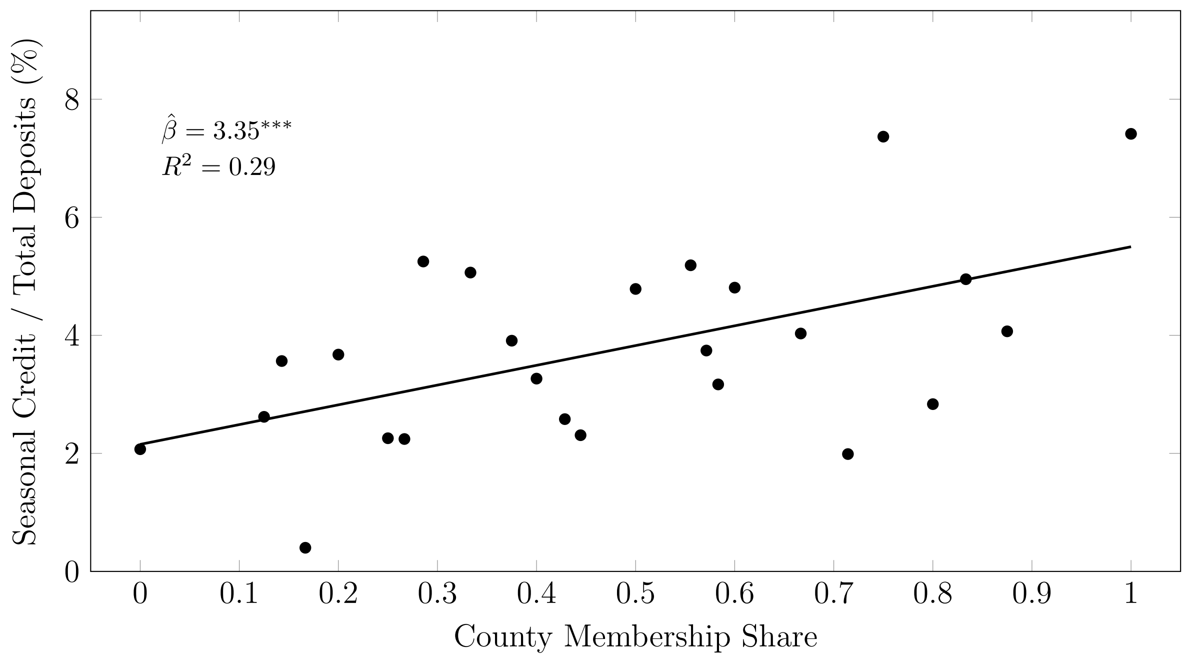
Figure 6: **Bank Balance Sheet Allocation Over Time**. This figure plots the β_j parameters from an estimation of the following specification for zip codes with sufficient seasonality to justify SCF loans:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \sum_j \beta_j \left[\mathbb{1}_j(t) \times \mathbb{1}_{SCF}(b) \right] + \varepsilon_{bt}.$$

Y_{bt} is either the bank-quarter liquid asset share of assets (solid blue dots) or loan share of assets (open red squares).
Source: Board of Governors of the Federal Reserve System (form FR-105); National Information Center.



(a) All rural counties



(b) Rural counties with Seasonal Credit > 0

Figure 7: **The Relationship Between Seasonal Credit Use and Fed Membership Share.** This figure shows the relationship between total county-level SCF borrowing and the share of Federal Reserve member banks in each county. Each point represents an average across counties for each membership share. Panel (a) includes all rural counties, and Panel (b) includes only the subset of counties that received at least one SCF loan. County-level borrowing is computed by summing the maximum borrowing across banks within each county between 1973 and 1974. County-wide deposits are measured as of 1973 Q1.
Source: Board of Governors of the Federal Reserve System (Transmission of Edited Deposits System, form FR 414a); National Information Center.

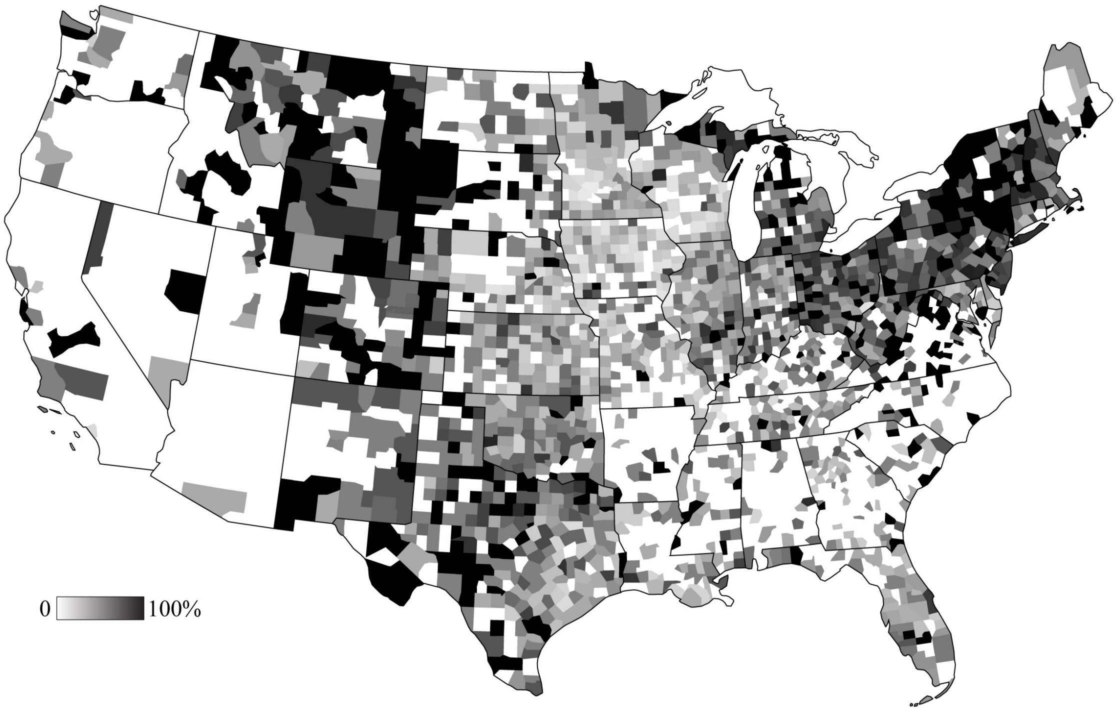


Figure 8: **Federal Reserve membership shares by county**. This figure depicts the percentage of commercial banks that are members of the Federal Reserve System within each county as of 1973 Q1. Counties with no commercial banks are coded as zero.
Source: National Information Center.

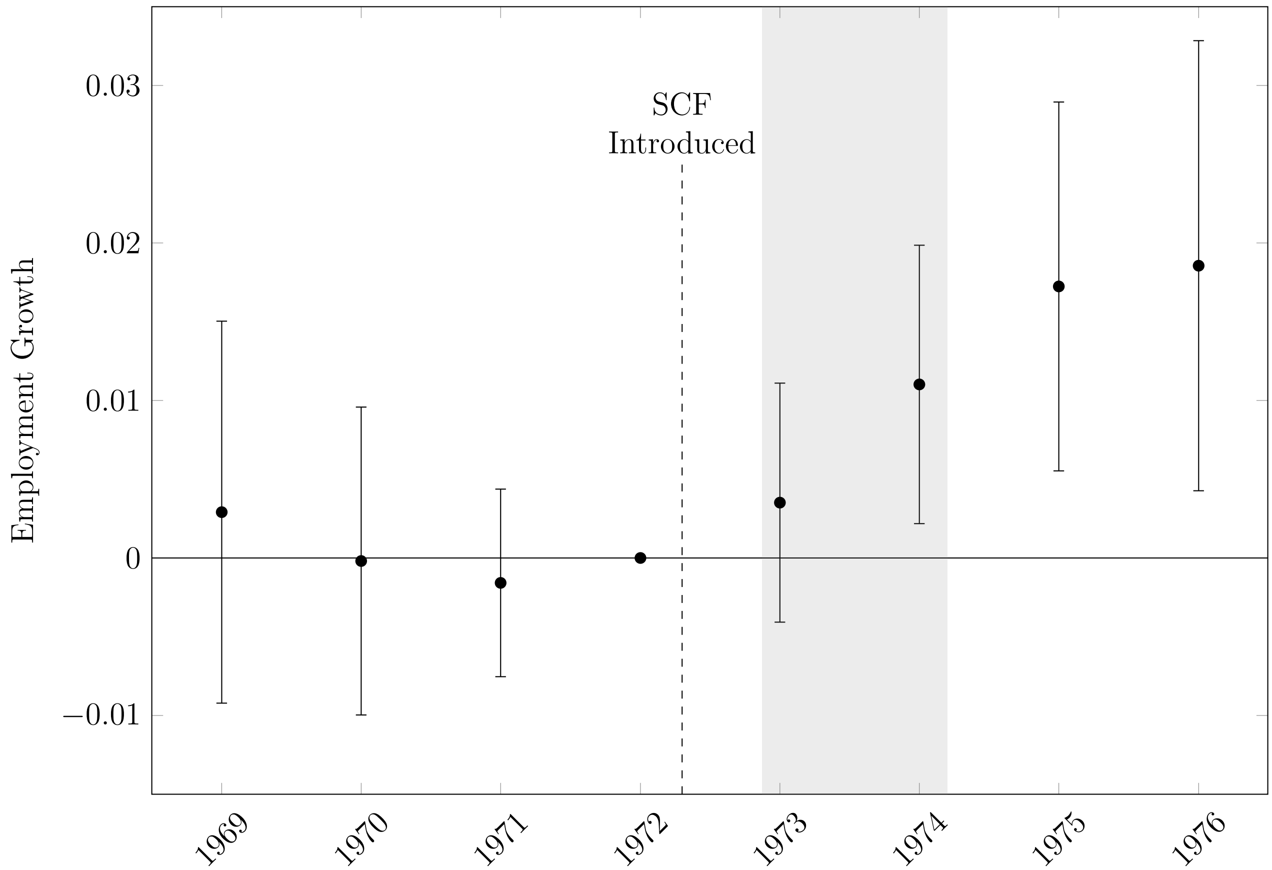


Figure 9: **Employment Growth Effects Over Time**. This figure plots the β_j parameters from an estimation of the following county-level regression:

$$ln(employment_{ct}) = \gamma_c + \phi_{FRS,t} + \sum_j \beta_j \left[\mathbb{1}_j(t) \times MemberShare_c\right] + \varepsilon_{ct}.$$

Source: Bureau of Economic Analysis; National Information Center.

Table 1: Rural Commercial Bank Summary Statistics (Dec. 1972)

	Nonmembers	Members
Assets ($mil)	8.7	14.7
	(27.3)	(15.0)
$\frac{\text{Liq. Assets}}{\text{Assets}}$	0.43	0.40
	(0.15)	(0.14)
$\frac{\text{Loans}}{\text{Assets}}$	0.46	0.47
	(0.13)	(0.12)
$\frac{\text{C\&I Loans}}{\text{Assets}}$	0.08	0.09
	(0.06)	(0.06)
$\frac{\text{CRE Loans}}{\text{Assets}}$	0.02	0.02
	(0.03)	(0.03)
$\frac{\text{Cons. Loans}}{\text{Assets}}$	0.09	0.11
	(0.06)	(0.07)
$\frac{\text{RRE Loans}}{\text{Assets}}$	0.05	0.05
	(0.05)	(0.06)
$\frac{\text{Ag Loans}}{\text{Assets}}$	0.22	0.18
	(0.13)	(0.13)
$\frac{\text{Deposits}}{\text{Assets}}$	0.90	0.90
	(0.04)	(0.03)
$\frac{\text{Equity}}{\text{Assets}}$	0.08	0.08
	(0.03)	(0.03)
$\frac{\text{Int. Income}}{\text{Assets}}(\%)$	5.20	5.07
	(0.73)	(0.69)
$\frac{max\{SCF\}}{Deposits}$	–	0.01
		(0.03)
$\frac{max\{SCF\}}{Deposits}\Big\vert \mathbb{1}_{SCF}(b)$	–	0.05
		(0.03)
N	1,583	1,061

Notes: This table reports descriptive statistics for rural commercial banks operating in areas with sufficient seasonal variation in loans and deposits to qualify for the SCF. Values are reported as of 1972 Q4. The indicator function $\mathbb{1}_{SCF}(b)$ takes a value of one for all banks that drew on the SCF at any point in its first two years. The maximum number of observations for each group is reported in the final line of the table.

Table 2: Membership Prediction Based on Observable Characteristics

	Coeff. Estimate
Assets ($mil)	39.3
$\frac{\text{Liq. Assets}}{\text{Assets}}$	2.33*
$\frac{\text{Loans}}{\text{Assets}}$	-3.01
$\frac{\text{C\&I Loans}}{\text{Assets}}$	0.50
$\frac{\text{CRE Loans}}{\text{Assets}}$	-4.00
$\frac{\text{Cons. Loans}}{\text{Assets}}$	3.19
$\frac{\text{RRE Loans}}{\text{Assets}}$	2.28
$\frac{\text{Ag Loans}}{\text{Assets}}$	1.00
$\frac{\text{Deposits}}{\text{Assets}}$	-4.29
$\frac{\text{Equity}}{\text{Assets}}$	-12.35**
$\frac{\text{Int. Income}}{\text{Assets}}(\%)$	-0.47***
Pseudo R^2	0.075
N	2,635

Notes: This table reports results from a logit regression of rural banks' membership status on balance sheet and income characteristics as of 1972 Q4. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 3: Balance sheet and income changes for banks that borrowed from the Seasonal Credit Facility (OLS estimates)

Panel A			
	$\frac{\text{Liq. Assets}}{\text{Assets}}$	$\frac{\text{Loans}}{\text{Assets}}$	ln(Loans)
$Post_t \times \mathbb{1}_{SCF}(b)$	-0.031***	0.032***	0.060***
	(0.004)	(0.004)	(0.014)
Adj. R^2	0.83	0.81	0.97
N	39,600	39,600	39,597
Panel B			
	$\frac{\text{C\&I Loans}}{\text{Assets}}$	$\frac{\text{CRE Loans}}{\text{Assets}}$	$\frac{\text{Cons. Loans}}{\text{Assets}}$
$Post_t \times \mathbb{1}_{SCF}(b)$	0.009***	0.003**	0.002
	(0.002)	(0.001)	(0.002)
Adj. R^2	0.79	0.85	0.88
N	29,020	29,020	29,020
Panel C			
	$\frac{\text{RRE Loans}}{\text{Assets}}$	$\frac{\text{Ag Loans}}{\text{Assets}}$	$\frac{\text{Int. Income}}{\text{Assets}}$(%)
$Post_t \times \mathbb{1}_{SCF}(b)$	0.000	0.017***	0.111***
	(0.002)	(0.003)	(0.031)
Adj. R^2	0.92	0.91	0.66
N	29,020	29,020	15,762
Bank FEs	✓	✓	✓
ZIP3×Time FEs	✓	✓	✓

Notes: This table reports difference-in-differences estimates from regressions of the indicated dependent variables on the interaction term, $Post_t \times \mathbb{1}_{SCF}(b)$, which equals one for post-treatment (1973 Q2 and later) observations of banks that ever drew on the SCF, bank fixed effects, and ZIP3-time fixed effects:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \beta\big[Post_t \times \mathbb{1}_{SCF}(b)\big] + \varepsilon_{bt}.$$

Standard errors (in parentheses) are clustered at the ZIP3 level. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 4: Balance sheet and income changes for member banks that the Federal Reserve identified as likely beneficiaries (Intent-to-treat/Reduced form estimates)

Panel A			
	$\frac{\text{Liq. Assets}}{\text{Assets}}$	$\frac{\text{Loans}}{\text{Assets}}$	ln(Loans)
$Post_t \times \mathbb{1}_{SCF}(b)$	-0.017***	0.018***	0.025**
	(0.004)	(0.004)	(0.012)
Adj. R^2	0.83	0.81	0.97
N	39,600	39,600	39,597
Panel B			
	$\frac{\text{C\&I Loans}}{\text{Assets}}$	$\frac{\text{CRE Loans}}{\text{Assets}}$	$\frac{\text{Cons. Loans}}{\text{Assets}}$
$Post_t \times \mathbb{1}_{SCF}(b)$	0.005***	0.000	0.002
	(0.002)	(0.001)	(0.002)
Adj. R^2	0.79	0.85	0.88
N	29,020	29,020	29,020
Panel C			
	$\frac{\text{RRE Loans}}{\text{Assets}}$	$\frac{\text{Ag Loans}}{\text{Assets}}$	$\frac{\text{Int. Income}}{\text{Assets}}$ (%)
$Post_t \times \mathbb{1}_{SCF}(b)$	0.002*	0.011***	0.159***
	(0.002)	(0.002)	(0.027)
Adj. R^2	0.92	0.91	0.66
N	29,020	29,020	15,762
Bank FEs	✓	✓	✓
ZIP3×Time FEs	✓	✓	✓

Notes: This table reports difference-in-differences estimates from regressions of the indicated dependent variables on the interaction term, $Post_t \times \mathbb{1}_{Mem50}(b)$, which equals one for post-treatment (1973 Q2 and later) observations of banks that the Federal Reserve identified as the most likely to benefit from the SCF given the terms at the time, bank fixed effects, and ZIP3-time fixed effects:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \beta\big[Post_t \times \mathbb{1}_{Mem50}(b)\big] + \varepsilon_{bt}.$$

Standard errors (in parentheses) are clustered at the ZIP3 level. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 5: Balance sheet and income changes for member banks that the borrowed from the Seasonal Credit Facility (2SLS DID-IV estimates)

Panel A			
	$\frac{\text{Liq. Assets}}{\text{Assets}}$	$\frac{\text{Loans}}{\text{Assets}}$	ln(Loans)
$\widehat{Post_t \times \mathbb{1}_{SCF}}(b)$	-0.082***	0.086***	0.118**
	(0.019)	(0.019)	(0.057)
1st Stage F	82.4	82.4	82.4
AR Wald (p)	0.000	0.000	0.040
N	5,284	5,284	5,284
Panel B			
	$\frac{\text{C\&I Loans}}{\text{Assets}}$	$\frac{\text{CRE Loans}}{\text{Assets}}$	$\frac{\text{Cons. Loans}}{\text{Assets}}$
$\widehat{Post_t \times \mathbb{1}_{SCF}}(b)$	0.023***	0.001	0.011
	(0.009)	(0.004)	(0.008)
1st Stage F	82.0	82.0	82.0
AR Wald (p)	0.007	0.827	0.179
N	5,272	5,272	5,272
Panel C			
	$\frac{\text{RRE Loans}}{\text{Assets}}$	$\frac{\text{Ag Loans}}{\text{Assets}}$	$\frac{\text{Int. Income}}{\text{Assets}}(\%)$
$\widehat{Post_t \times \mathbb{1}_{SCF}}(b)$	0.012**	0.054***	0.787***
	(0.006)	(0.013)	(0.164)
1st Stage F	82.0	82.0	81.9
AR Wald (p)	0.039	0.000	0.000
N	5,272	5,272	5,248
Bank FEs	✓	✓	✓
ZIP3×Time FEs	✓	✓	✓

Notes: This table reports difference-in-differences estimates from DID-IV regressions of the indicated dependent variables on the instrumented interaction term, $\widehat{Post_t \times \mathbb{1}_{SCF}}(b)$, which equals one for post-treatment (1973 Q2 and later) observations of banks that ever drew on the SCF, bank fixed effects, and ZIP3-time fixed effects:

$$Y_{bt} = \gamma_b + \phi_{ZIP3,t} + \beta\big[\widehat{Post_t \times \mathbb{1}_{SCF}}(b)\big] + \varepsilon_{bt}.$$

The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each specification. Standard errors (in parentheses) are clustered at the ZIP3 level. Statistical significance: $^{***}\ p \leq 0.01,^{**}\ p \leq 0.05,^{*}\ p \leq 0.10$.

Table 6: Rural County Summary Statistics (Dec. 1972)

	Mean	Std. Dev.
N	1,631	–
Total Employment	7,863	(7,395)
Proprietors' Employment	2,002	(1,287)
Nonfarm Proprietors' Employment	1,139	(888)
Population	18,792	(16,044)
Establishment Counts		
Agricultural Services	3.7	(4.6)
Building Materials	121.3	(97.0)
Bars and Restaurants	20.7	(21.6)
Gas Stations	27.4	(24.1)
Banks	23.5	(28.7)
Hotels & Lodging	78.3	(81.9)
Commercial Bank Presence (Mar. 1973)		
Banks	3.7	(2.6)
Fed membership share	0.37	(0.34)

Notes: This table reports descriptive statistics for rural counties as of 1972 Q4, except for bank counts, which are reported as of 1973 Q1, just before the implementation of the Seasonal Credit Facility.
Sources: Bureau of Economic Analysis; Census Bureau; National Information Center.

Table 7: Employment outcomes for counties exposed to the Seasonal Credit Facility

Panel A: Reduced Form Estimates

	ln(Employment)		ln(Proprietors' Employment)		ln(Non-farm Prop. Employment)	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.015**	0.015**	0.021***	0.017***	0.021**	0.017***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.008)
Adj. R^2	0.99	0.99	0.99	0.99	0.99	0.99
N	11,417	11,417	11,417	11,417	11,417	11,417
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Panel B: 2SLS Estimates

	ln(Employment)		ln(Proprietors' Employment)		ln(Non-farm Prop. Employment)	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times \frac{SCF_c}{Deposits_c}$	0.999**	1.066**	1.432***	1.179**	1.424**	1.135**
	(0.453)	(0.501)	(0.508)	(0.487)	(0.583)	(0.578)
1st Stage F	46.9	40.3	46.9	40.3	46.9	40.3
AR Wald (p)	0.021	0.016	0.003	0.001	0.012	0.041
N	11,382	11,382	11,382	11,382	11,382	11,382
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameter from an estimation of the following regression:

$$ln(Y_{ct}) = \gamma_c + \phi_{FRS,t} + \beta\big[Post_t \times MemberShare_c\big] + \kappa\big[Post_t \times \boldsymbol{X}_c\big] + \varepsilon_{ct}$$

in panel A, where Y_{ct} corresponds to employment totals within each county as indicated. In panel B, $Post_t \times MemberShare_c$ is used to instrument for county-wide seasonal credit borrowing as a share of total deposits, $Post_t \times \frac{SCF_c}{Deposits_c}$. Standard errors (in parentheses) are clustered at the county level. The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each 2SLS specification. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 8: Ag services establishment outcomes for counties exposed to the Seasonal Credit Facility

Panel A: Reduced Form Estimates

	ln(Ag Services Establishments)					
	All		≤4 employees		>20 employees	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.118***	0.099**	0.120***	0.090**	0.052	0.045
	(0.039)	(0.039)	(0.041)	(0.041)	(0.061)	(0.064)
Adj. R^2	0.79	0.79	0.70	0.70	0.51	0.51
N	9,625	9,625	8,896	8,896	1,480	1,480
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Panel B: 2SLS Estimates

	ln(Ag Services Establishments)					
	All		≤4 employees		>20 employees	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times \frac{SCF_c}{Deposits_c}$	8.284***	7.495**	8.037***	6.465**	3.846	3.255
	(2.852)	(3.079)	(2.947)	(3.073)	(4.628)	(4.680)
1st Stage F	45.4	43.8	43.3	42.3	7.08	7.43
AR Wald (p)	0.002	0.011	0.004	0.027	0.394	0.481
N	9,597	9,597	8,873	8,873	1,475	1,475
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameter from an estimation of the following regression:

$$ln(Y_{ct}) = \gamma_c + \phi_{FRS,t} + \beta\big[Post_t \times MemberShare_c\big] + \kappa\big[Post_t \times \boldsymbol{X}_c\big] + \varepsilon_{ct}$$

in panel A, where Y_{ct} corresponds to establishment counts within each county as indicated. In panel B, $Post_t \times MemberShare_c$ is used to instrument for county-wide seasonal credit borrowing as a share of total deposits, $Post_t \times \frac{SCF_c}{Deposits_c}$. Standard errors (in parentheses) are clustered at the county level. The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each 2SLS specification. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 9: Building materials and hardware establishment growth for counties exposed to the Seasonal Credit Facility

Panel A: Reduced Form Estimates						
	ln(Building Material, Hardware, Mobile Home Dlr Establishments)					
	All		≤4 employees		>20 employees	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.049***	0.041**	0.067***	0.056***	0.038	0.029
	(0.017)	(0.017)	(0.017)	(0.017)	(0.034)	(0.035)
Adj. R^2	0.97	0.98	0.96	0.96	0.91	0.91
N	11,222	11,222	11,222	11,222	9,201	9,201
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓
Panel B: 2SLS Estimates						
	ln(Building Material, Hardware, Mobile Home Dlr Establishments)					
	All		≤4 employees		>20 employees	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times \frac{SCF_c}{Deposits_c}$	3.232***	2.842**	4.406***	3.880***	2.575	1.997
	(1.190)	(1.224)	(1.251)	(1.275)	(2.366)	(2.583)
1st Stage F	47.5	41.2	47.5	41.2	41.0	40.0
AR Wald (p)	0.004	0.013	0.000	0.001	0.272	0.437
N	11,187	11,187	11,187	11,187	9,173	9,173
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameter from an estimation of the following regression:

$$ln(Y_{ct}) = \gamma_c + \phi_{FRS,t} + \beta\big[Post_t \times MemberShare_c\big] + \kappa\big[Post_t \times \boldsymbol{X}_c\big] + \varepsilon_{ct}$$

in panel A, where Y_{ct} corresponds to establishment counts within each county as indicated. In panel B, $Post_t \times MemberShare_c$ is used to instrument for county-wide seasonal credit borrowing as a share of total deposits, $Post_t \times \frac{SCF_c}{Deposits_c}$. Standard errors (in parentheses) are clustered at the county level. The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each 2SLS specification. Statistical significance: $^{***}\ p \leq 0.01,^{**}\ p \leq 0.05,^{*}\ p \leq 0.10$.

Table 10: Bar and restaurant establishment growth for counties exposed to the Seasonal Credit Facility

Panel A: Reduced Form Estimates

	ln(Bar and Restaurant Establishments)					
	All		≤4 employees		>20 employees	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.055**	0.031	0.119***	0.097***	0.049	0.037
	(0.025)	(0.025)	(0.032)	(0.032)	(0.048)	(0.048)
Adj. R^2	0.95	0.95	0.86	0.86	0.80	0.80
N	9,604	9,604	9,556	9,556	6,161	6,161
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Panel B: 2SLS Estimates

	ln(Bar and Restaurant Establishments)					
	All		≤4 employees		>20 employees	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times \frac{SCF_c}{Deposits_c}$	3.485**	2.220	7.500***	6.407***	3.041	2.464
	(1.625)	(1.668)	(2.240)	(2.254)	(2.810)	(2.961)
1st Stage F	40.0	39.4	40.0	39.3	30.5	32.0
AR Wald (p)	0.028	0.184	0.000	0.003	0.267	0.399
N	9,574	9,574	9,526	9,526	6,147	6,147
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameter from an estimation of the following regression:

$$ln(Y_{ct}) = \gamma_c + \phi_{FRS,t} + \beta\big[Post_t \times MemberShare_c\big] + \kappa\big[Post_t \times \boldsymbol{X}_c\big] + \varepsilon_{ct}$$

in panel A, where Y_{ct} corresponds to establishment counts within each county as indicated. In panel B, $Post_t \times MemberShare_c$ is used to instrument for county-wide seasonal credit borrowing as a share of total deposits, $Post_t \times \frac{SCF_c}{Deposits_c}$. Standard errors (in parentheses) are clustered at the county level. The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each 2SLS specification. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 11: High-barrier-industry establishment growth for counties exposed to the Seasonal Credit Facility

Panel A: Reduced Form Estimates						
	Lodging		Banking		Gas Stations	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.023	0.021	0.002	-0.005	0.015	0.006
	(0.022)	(0.023)	(0.023)	(0.028)	(0.020)	(0.020)
Adj. R^2	0.97	0.97	0.96	0.96	0.96	0.96
N	11,198	11,198	11,221	11,221	10,268	10,268
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓
Panel B: 2SLS Estimates						
	Lodging		Banking		Gas Stations	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times \frac{SCF_c}{Deposits_c}$	1.461	1.353	0.099	-0.344	1.017	0.412
	(1.463)	(1.554)	(1.501)	(1.569)	(1.441)	(1.471)
1st Stage F	47.7	41.3	47.4	41.2	41.8	41.1
AR Wald (p)	0.311	0.376	0.947	0.827	0.480	0.780
N	11,163	11,163	11,186	11,186	10,237	10,237
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameter from an estimation of the following regression:

$$ln(Y_{ct}) = \gamma_c + \phi_{FRS,t} + \beta\big[Post_t \times MemberShare_c\big] + \kappa\big[Post_t \times \boldsymbol{X}_c\big] + \varepsilon_{ct}$$

in panel A, where Y_{ct} corresponds to the establishment counts within each county for the indicated industries. In panel B, $Post_t \times MemberShare_c$ is used to instrument for county-wide seasonal credit borrowing as a share of total deposits, $Post_t \times \frac{SCF_c}{Deposits_c}$. Standard errors (in parentheses) are clustered at the county level. The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each 2SLS specification. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 12: Rural County Summary Statistics (Dec. 1972)

	No Petro Industry	Petro Industry	Difference
Employment Growth (%, 1973–1974)	1.74	2.64	0.90***
Income Growth (%, 1973–1974)	4.82	8.87	4.05***
Employment Growth (%, 1973–1975)	1.33	3.49	2.16***
Income Growth (%, 1973–1975)	15.7	21.8	6.08***

Notes: This table reports average employment and income growth rates for rural counties separated based on the presence of a petroleum industry. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 13: Employment and establishment growth for counties exposed to the Seasonal Credit Facility and the petroleum industry

Reduced Form Estimates

	ln(Employment)		ln(Proprietors' Employment)		ln(Non-farm Prop. Employment)	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.015**	0.016**	0.021***	0.018**	0.021**	0.017**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)	(0.008)
$Post_t \times MemberShare_c \times Petro_c$	0.005	0.014	0.008	-0.002	0.024	0.017
	(0.017)	(0.016)	(0.020)	(0.018)	(0.022)	(0.020)
Adj. R^2	0.99	0.99	0.99	0.99	0.99	0.99
N	11,417	11,417	11,417	11,417	11,417	11,417
			ln(Small Establishments)			
	Ag. Services		Building Materials		Bars & Restaurants	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	0.138***	0.112**	0.070***	0.062***	0.125***	0.104***
	(0.044)	(0.044)	(0.018)	(0.018)	(0.035)	(0.034)
$Post_t \times MemberShare_c \times Petro_c$	-0.061	-0.103	0.024	-0.002	0.076	0.056
	(0.107)	(0.108)	(0.037)	(0.035)	(0.089)	(0.097)
Adj. R^2	0.70	0.70	0.96	0.96	0.86	0.86
N	8,896	8,896	11,222	11,222	9,556	9,556
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameters from an estimation of the following regression:

$$ln(Y_{ct}) = \gamma_c + \phi_{FRS,t} + \beta_0 \left[Post_t \times MemberShare_c\right] + \beta_1 \left[Post_t \times MemberShare_c \times Petro_c\right] + \kappa \left[Post_t \times \boldsymbol{X}_c\right] + \varepsilon_{ct}$$

where Y_{ct} corresponds to the dependent variables as indicated. $Petro_c$ denotes a dummy variable that takes a value of one for counties with a petroleum industry. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.

Table 14: Employment, wages, and contributions to government social insurance programs for counties exposed to the Seasonal Credit Facility

Panel A: Reduced Form Estimates

	Wage & Salary Employment		Total Wages & Salaries ($000s)		Contrib. to Gov. Social Insurance ($000s)	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times MemberShare_c$	270***	147***	6,585***	2,536***	994***	312***
	(59.8)	(51.8)	(1,154)	(735)	(183)	(111)
Adj. R^2	0.99	0.99	0.96	0.97	0.92	0.96
N	11,417	11,417	11,417	11,417	11,417	11,417
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Panel B: 2SLS Estimates ($\times 10^{-3}$)

	Wage & Salary Employment		Total Wages & Salaries ($000s)		Contrib. to Gov. Social Insurance ($000s)	
	(1)	(2)	(1)	(2)	(1)	(2)
$Post_t \times \frac{SCF_c}{Deposits_c}$	18.4***	10.2***	447.4***	176.0***	67.5***	21.3**
	(4.8)	(4.4)	(101.5)	(59.1)	(15.8)	(8.59)
1st Stage F	46.9	40.3	46.9	40.3	46.9	40.3
AR Wald (p)	0.000	0.005	0.000	0.001	0.000	0.007
N	11,382	11,382	11,382	11,382	11,382	11,382
County FEs	✓	✓	✓	✓	✓	✓
District×Time FEs	✓	✓	✓	✓	✓	✓
County Controls	–	✓	–	✓	–	✓

Notes: This table reports the β parameter from an estimation of the following regression:

$$Y_{ct} = \gamma_c + \phi_{FRS,t} + \beta\big[Post_t \times MemberShare_c\big] + \kappa\big[Post_t \times \boldsymbol{X}_c\big] + \varepsilon_{ct}$$

in panel A, where Y_{ct} corresponds to the dependent variables indicated in column headers. In panel B, $Post_t \times MemberShare_c$ is used to instrument for county-wide seasonal credit borrowing as a share of total deposits, $Post_t \times \frac{SCF_c}{Deposits_c}$. Standard errors (in parentheses) are clustered at the county level. The Kleibergen-Paap (2006) first stage F-stat, the p-value of the Anderson-Rubin (1949) weak-instrument robust inference test of the statistical significance of the endogenous regressor in the structural equation, and the number of observations are reported for each 2SLS specification. Statistical significance: *** $p \leq 0.01$,** $p \leq 0.05$,* $p \leq 0.10$.