

The impact of payday alternative loans on credit union performance and loan quality

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Abstract

Federal regulators in 2010 amended lending rules to allow federal credit unions (FCU) to originate short-term, small-dollar amount loans, with an annual percentage rate of up to 1000 basis points above the otherwise imposed interest rate ceiling of 18 percent. The purpose of the change in policy was to allow FCUs the ability to provide their members with an alternative to payday loans. We find the decision to originate these higher-interest loans is primarily influenced by the characteristics of a credit union's environment. Credit unions located in minority neighborhoods and in markets with fewer traditional financial services are more likely to participate in the payday alternative loan program. Participation in the program is shown to improve earnings performance without adversely affecting participants' loan quality. These results suggest credit unions can provide lower-priced alternatives to payday loans that are beneficial to members and their credit unions.

Keywords: Consumer credit; Credit union; Payday loan,

1. Introduction

Payday loans are unsecured, short-term, small-dollar loans made to borrowers that are typically underwritten based on a borrower's regular paycheck and access to a bank account. In exchange for a loan, the borrower provides the lender with a postdated check or a future electronic debit from their bank account, for the loan amount plus a fee. The prices of payday loans are determined by the fees that lenders charge, which when combined with small loan amounts and short-terms (e.g. 2 – 4 weeks), results in effective annual percentage rates (APR) that average nearly 400%.¹ Despite being short-term loans when originated, borrowers are often unable to repay the initial debt when due, and instead rely on rolling-over the debt at similarly high fees (Skiba and Tobacman, 2008), which can catch borrowers in a long-term debt trap. In response, consumer advocacy groups (Bourke *et al.*, 2013; Montezemolo, 2013) and government agencies

¹ The FDIC (2015) notes a typical charge of \$15 per \$100 advanced per two-week period results in an effective APR of 391%.

(Department of Defense, Consumer Finance Protection Bureau, OCC, FDIC) have called for the industry to be more heavily regulated.

Whether there is need for government intervention in the market for short-term, small-dollar credit depends on the presence of market failure and an inefficient outcome. Traditional causes of market failure (market power, information asymmetry, and externalities), however, are not clearly evident in the market structure of payday lending (Campbell *et al.*, 2011). The market for payday loans is instead characterized by many sellers, where each seller accounts for only a small share of the market.² Despite charging high prices, payday lenders do not appear to earn abnormal profits (Flannery and Samolyk, 2005), as payday lenders face high operating expenses related to borrower defaults.

The perception is that payday lenders charge high interest rates, in part, by exploiting a lack of financial literacy in their target market. Concerns with exploitation are also strengthened by the concentration of payday lenders in urban, minority, and lower-income neighborhoods (Stegman and Faris, 2003; Burkey and Simkins, 2004). Survey data of payday loan users further indicates many borrowers fail to understand the APR associated with these loans (Bertrand and Morse, 2011), despite the requirement under the Truth in Lending Act for this information to be clearly provided. Failure to understand the APR, though, does not necessarily imply that users of payday loans do not fully understand the price. Lawrence and Elliehausen (2008) observe that while only 20% of payday loan users could recall the APR, and more than one-half of these customers reported a rate below market rates, the vast majority (91%) are able to report fees in line with market prices. Payday loan use may then not be the result of asymmetric information or an inefficient outcome, as the main alternatives for credit constrained consumers to payday

² Campbell *et al.* (2011) note there are approximately 24,000 payday lenders and the six largest account for 20% of the market.

loans available from traditional financial institutions (e.g. bouncing checks, overdraft advances, credit card use with late payments) have similarly high fees (Morse, 2011).

Less clear, though, is the external impact that payday lending has on communities. While payday loans may benefit consumers who are faced with a financial shock and are otherwise credit constrained, they also increase the risk to consumers who may borrow beyond their means to repay their debt. Empirical studies, therefore, often find conflicting results with respect to the effects payday lenders have on their communities' well-being. Access to traditional financial services, for example, may be influenced by the presence of payday lenders. If access to payday loans reduces returned checks (Morgan *et al.*, 2012), then this explains why fewer bank accounts are closed involuntarily in communities with access to payday lenders (Bhutta *et al.*, 2016). Campbell *et al.* (2012), however, find the opposite is true, where payday lending is positively associated with account closure. This result is expected if payday borrowing worsens one's financial conditions. Bea (2023) finds evidence of this, as access to services provided by non-depository institutions, including those of payday lenders, results in higher family poverty rates. Payday lending is also associated with borrowers' having greater difficulty in making mortgage payments (Melzer, 2011) and increases the number of bankruptcies (Morgan *et al.*, 2012). Payday lending, though, has also been shown to reduce communities' mortgage foreclosure rates (Morse, 2011) and Chapter 7 bankruptcy filings (Barth *et al.*, 2020). Similar disparate results have been shown for the effects payday lending has on crime. Some studies (Lee *et al.*, 2014; Kubrin and Hipp, 2016) find that neighborhood crimes are positively associated with the number of payday lenders, while others (Morse, 2011; Barth *et al.*, 2020) find the opposite.

Regulation of payday lending in the United States is primarily determined at the state level.³ Barth *et al.* (2016) observe that ten states and the District of Columbia ban payday lending entirely and another 31 states restrict payday lenders' activities. In some cases, these restrictions are quite significant. Both Montana and New Hampshire, for example, allow only a maximum APR of 36% on payday loans, which is well below the market interest rate and effectively curtails the use of payday loans. Reducing the availability of payday loans, however, does not ameliorate these consumers' fundamental need for credit, or their use of other expensive forms of credit. What may instead be required is for consumers to have greater financial access so they can learn about and use credit in an appropriate manner (Huang *et al.*, 2022) that doesn't result in being trapped in debt. This is particularly true among low-income families, as Huang *et al.* (2022) show that financial access influences both their financial behaviors and financial well-being. Thus, there exists a need for the market to offer greater access to alternatives for short-term, small-dollar credit than what is offered by payday loans.

This paper takes a different approach from much of the literature by considering whether traditional lenders might provide a market solution to meet this need. To encourage this outcome the National Credit Union Agency (NCUA) in 2010 amending lending regulations to encourage federal credit unions (FCU) to offer their members an alternative to payday loans. Under the Payday Alternative Loan (PAL) program, federal credit unions are able to offer short-term, small-dollar loans with an annual percentage rate of 1000 basis points above the otherwise imposed interest rate ceiling of 18 percent.⁴ A concern the NCUA expressed (Payday-alternative

³ The Consumer Financial Protection Bureau (CFPB) was given federal regulatory oversight of payday lenders with the passage of the Dodd-Frank act. Kirsch *et al.* (2014), however, note this oversight is limited, as the CFPB is prohibited from setting maximum APRs on loans.

⁴ We refer to the Payday Alternative Loan (PAL) program as the final rules published September 24, 2010 by the NCUA in the Federal Register for Short-Term, Small Amount Loans. Loans originated under these rules were

loans, 2012) following the change in regulations was whether an APR of 28% would be high enough to cover operating costs and induce lenders to originate these loans.

The purpose of this paper is to determine the factors that influence whether FCU participated in the PAL program following the change in policy and whether implementation of the program had either a negative impact on a credit union's earnings performance or loan quality. Our results indicate program implementation is strongly associated with the characteristics of a credit union's market environment. Federal credit unions are more likely to implement the PAL program if a branch (2 percentage points) or their headquarters (7.1 percentage points) are in a minority neighborhood. These effects are large in magnitude, as only 11.4% of federal credit unions offer PAL loans in our sample. In addition, credit unions operating in markets with less competition from traditional banks are more likely to offer their members PAL loans. Empirical analysis using a difference-in-difference estimation approach shows that federal credit union participation in the PAL program improves earnings. Returns on assets (ROA) are 7 to 17 basis points higher, relative to the control group, in the years following implementation. The effect is large in magnitude as credit unions earn, on average, a ROA of 23 basis points. There is also no evidence to suggest that loan quality is adversely impacted by implementation of the program.

Our findings have several implications for consumers from this change in lending regulations. Credit unions are found to have an economic incentive to offer their members greater access to short-term, small-dollar credit at a price less than other alternatives, such as payday loans. This suggests the market can provide greater financial access to consumers, when given the opportunity by regulators. Consumers who gain access to this credit not only benefit

originally referred to in Call Reports as short-term, small amount (STS loans), until 2015, when they became referred to as payday alternative loans.

from the lower costs, but also learn from the responsible use of credit, which can improve their financial well-being.

2. Payday lending, alternatives, and the role of credit unions

There exists a strong demand among American households for short-term, small-dollar credit. According to data from the Federal Reserve's 2020 Survey of Household Economics and Decisionmaking, 36% of U.S. adults would need to borrow, sell something, or not be able to pay if faced with an emergency expense of \$400. This need for short-term, small-dollar credit is even greater for Black (55%) and Hispanic (52%) adults, where the majority are unable to cover such an expense with their cash on hand. To cover this hypothetical shortfall, 68% of adults in the survey indicate they would borrow and among those who borrow 5.6% would, in part, use a payday loan, deposit advance, or overdraft to pay for the expense.⁵ The use of payday loans, similar to the need for credit, is also higher among minorities, as 10.8% of Black and 7.1% of Hispanic adults who borrow to cover the expense would rely on payday loans, deposit advances, or overdrafts. These patterns of hypothetical use of payday loans are also consistent with individuals' self-reported use. Among all adults, 2.2% report using payday loans in the past year, with higher use reported by Black (5.2%) and Hispanic (3.8%) adults and low-income households earning less than \$25,000 per year (4.1%).

One might assume that users of high-interest payday loans are necessarily credit constrained when faced with an unexpected expense or income shortfall and therefore have few alternatives in traditional credit markets. This, though, doesn't appear to be the case based on

⁵ The survey does not allow one to distinguish between the hypothetical use of these three sources of credit. Separate indicators, though, exist for whether an individual would pay for the expense by borrowing from family/friends, bank loans, or paying a credit card balance off over time. Individuals can indicate they would cover the expense by using more than a single option.

survey data. Data from the Federal Reserve's 2019 Survey of Consumer finances indicates the 2.4% of households that had used a payday loan in the past year did so primarily due to a need for quick money (38%) and convenience (22%), while only 14% reported having no other option. Bhutta *et al.* (2016) observes a similar pattern using U.S. Census data, where more than one-half of payday loan users reported using payday loans because it was easier, faster, or more convenient, in terms of the hours or locations, to borrow from payday lenders, relative to traditional banks. Only 16% of respondents indicated they used payday loans because they did not qualify for a bank loan.⁶ Further evidence suggests users of payday loans often choose to forgo less expensive credit card lines (Agarwal *et al.*, 2009) or savings (Carter *et al.*, 2010) that are otherwise available.

For some, this behavior suggests payday lenders intentionally target borrowers who are less financially literate and thus subject these borrowers to harm. The U.S. Department of Defense made this point before Congress, arguing that payday lenders targeting of military personnel reduces the military's readiness from lower morale, which they associated with service members' payday loan use (Department of Defense, 2006). The result of this led to passage of the Military Lending Act (10 U.S. Code § 987) that established, effective October 1, 2007, a federal ceiling of 36% APR on loans made to military service members and their families. This federal law, similar to laws in several states, denies some borrowers from using payday loans as a source of credit. Such laws, however, fail to address the underlying need for access to short-term, small-dollar credit. One reason payday lenders choose to locate in urban, minority, and lower-income neighborhoods (Stegman and Faris, 2003; Burkey and Simkins, 2004) is due to a

⁶ Credit constraints, though, are shown to be important in Lawrence and Elliehausen (2008). In their sample of payday loan users, 73% of users reported having had a credit request turned down or limited within the previous five years.

lack of financial services provided by more traditional lenders in these neighborhoods (Burkey and Simkins, 2004; Bhutta *et al.*, 2016). In addition, traditional lenders may be reluctant, due to high underwriting expenses and default rates, to offer competing small-dollar loans. Twenty-one percent of payday loan users indicated they chose a payday lender over a bank because banks do not give small-dollar loans (Bhutta *et al.*, 2016).

Recently, federal bank regulators have considered a different approach to reducing borrowers' use of payday loans by encouraging traditional lenders to offer small-dollar loans as an alternative. Towards this end, the FDIC in 2008 piloted a two-year loan program with approximately 30 participating banks that offered small-dollar loans with an APR below 36%. The purpose of the program was to determine the profitability of loans that are safer and sounder alternatives to payday loans. Banks, who volunteered for the pilot program, indicated (FDIC, 2010) the ability to offer small-dollar loans was important to building long-term relationships within their communities and cross-selling opportunities. An important feature reported by lenders was the streamlining of underwriting guidelines based on an applicant's income and credit report. The result of which led to lending decisions within 24 hours at almost all banks in the pilot study and in less than an hour for many.

Based on interviews with banks in the study, the FDIC (2010) identified several elements contributing to the program's feasibility. This includes strong management support from the bank's board and senior executives. In addition, location was deemed important, as banks in rural areas faced limited competition for small-dollar loans from nonbank lenders (e.g. payday lender, pawn shops), while banks in dense populations with low to moderate incomes also observed strong demand. Ties to nonprofit organizations in the community also proved important for loan referrals and marketing the program. From a loan-performance standpoint,

small-dollar loans originated in the pilot program had a delinquency rate (30 days or more past due) of 11% in the fourth quarter of 2009, which was higher than the 2.5% rate on other unsecured loans (FDIC, 2010). While small-dollar borrowers were less likely to pay on time, the default experience was similar across the two types of loans with charge-offs averaging 6.2% for small-dollar loans and 5.4% for unsecured loans. Unfortunately, the profitability of the participants' small-dollar loans was not tracked to determine whether the program was a success.

In 2010, regulators at the National Credit Union Administration (NCUA), followed a similar path forward by encouraging federally chartered credit unions to also offer an alternative to payday loans. The Federal Credit Union Act prohibits federally chartered credit unions from charging an APR above 15% yet allows the NCUA board to set a higher limit, which at the time was set at 18% for all loans. To encourage federal credit unions to offer small-dollar, short-term loans the NCUA amended lending rules (Short-term, Small Amount Loans, 2010) to allow “payday alternative loans” (PAL loans) to be offered under certain restrictions at an APR of 1000 basis points above the current ceiling imposed on all other loans and with application fees not to exceed \$20. In order to protect borrowers from falling into a debt trap, loan amounts were restricted between \$200-\$1000 and loan terms of 1-6 months. Borrowers are limited to a single PAL loan at a time, with no more than three loans per 6-month period. Rollovers were also prohibited, as were extensions beyond 6-months from origination. The NCUA (Short-term, Small Amount Loans, 2010) noted these restrictions were designed to protect borrowers and give them the best chance to repay their debt. Underwriting requirements under the loan program were simple, relying on verification of income and employment with at least two pay stubs.

Federal credit unions (FCU) were able to offer PAL loans beginning October 25, 2010, and by year-end 244 FCU (5%) had originated PAL loans. Over the next two years the number

of participants increased to 390 (2011) and 458 (2012), with a total outstanding balance of \$21.3 million on 54,256 PAL loans at year-end 2012.⁷ However, in late 2012, the NCUA Board indicated (Payday-Alternative Loans, 2012) concern that the number of credit unions offering PAL loans was less than desired, and they questioned whether credit unions were able to adequately cover their costs under the current policy rules applying to PAL loans. In particular, the Board sought public comment on whether to raise application fees and the APR allowed on PAL loans to increase the number of credit unions offering PAL loans. The comments received by the Board offered no consensus as to a change in policy and therefore the Board took no further action on amending the rules (Payday Alternative Loans, 2019). In the analysis that follows, we examine empirically the factors that influence whether federal credit unions offer PAL loans and then consider how this decision affects a federal credit union's earnings performance and loan quality.

3. Modelling the decision to offer PAL loans

3.1 Model specification

In this section, we empirically examine the binary decision made by federal credit unions to offer their members payday alternative loans (PAL) in the years immediately following the change in lending policies (2010-2015). We limit our analysis to this period, as our motivation, in part, is to address the concerns expressed by the NCUA in 2012 that too few credit unions were offering PAL loans. In addition, when we later examine the impact of the policy change, we want to isolate the effects of the change in lending policy from any subsequent major changes in policy.

⁷ One of the things we examined was whether PAL program participation in 2012 varied in relation to statewide restrictions of payday lending. Using Pew's (2012) categorization of state payday lending laws as permissive, hybrid, and restrictive, we found no evidence to suggest there was a statistically significant difference in the mean rates of program participation across the three types of restrictions. Among credit unions in permissive states, 10.9 percent participated, whereas 9.3 percent and 11.6 percent participated in hybrid and restrictive states.

One such change in policy occurred in 2016, when the NCUA board approved significant changes to credit unions' field-of-membership requirements. This change greatly affected the number of individuals eligible for credit union membership and may have impacted PAL program participation, along with credit union performance. We therefore limit our analysis from 2010, when the change in policy occurs, through year-end 2015.

The dependent variable in our model specification is equal to one ($y_{it} = 1$) if a federal credit union held PAL loans on their balance sheet at year-end (time t) and is 0 otherwise. Our model of PAL program participation controls for several factors that reflect a credit union's asset and liability management, capitalization, scale, market characteristics, and their unique structure as depository institutions. The data we use in our analysis is primarily drawn from year-end Call Report (5300) data reported to the NCUA. All financial data is adjusted to real 2015 dollars. In addition, we adjust the data to account for the effects that mergers can have on financial statement items (DeYoung and Roland 2001; Esho *et al.* 2005; Goenner 2016). In cases where credit unions merge within the period of analysis, we combine their separate financial data in the years prior to the merger. This implies two credit unions that merge in 2014 will have a single observation consisting of their combined financials in earlier years, which allows for the construction of financial ratios that are consistent for a given credit union across the analysis period. A complete description of the call report series used in the construction of our variables appears in online Appendix A, along with the sources used to construct the local market conditions. Summary statistics for our control variables appear in Table 1.

[Inset Table 1 about here]

Managing a credit union's assets and liabilities plays an important role in meeting their liquidity needs. Liquidity reflects an institution's ability to cover current obligations (liabilities)

with their assets. Credit unions, though, draw on liquidity from both sides of their balance sheet. The most liquid of assets, cash and its equivalent, are held, in part, to meet an institution's operational needs for liquidity. Another important source of liquidity for credit unions are members' retail deposits (saving and checking accounts). Member deposits are a stable and low-cost source of funds, relative to other liabilities, as NCUA insured deposits are less sensitive to both interest rate movements and changes in credit risk than other forms of borrowing. A greater reliance on retail deposits among their liabilities, therefore, reduces a credit union's liquidity risk. The ratio of loans to deposits is another measure commonly used to assess depository institutions' liquidity, where a higher ratio indicates less liquidity. Our model specification controls for these three measures of liquidity – the ratio of cash and short-term investments to total assets, the ratio of saving deposits to total deposits and borrowing, and the ratio of loans to deposits. Each measure is constructed with the corresponding formula used in NCUA performance reports. The expectation (Tripp and Smith, 1993) is that credit unions with greater liquidity are more likely to have a higher capacity to offer additional loan products, which include payday alternative loans.

Another aspect of asset management is managing the loan portfolio's exposure to interest rate and credit risk, which is associated with different types of loans. The categories and shares of loans held by federal credit unions are car loans (42%), real estate loans (28%), unsecured consumer loans (17%), other loans (8%), and credit cards (4%). Real estate loans differ from other types of loans, as they typically feature a fixed rate and longer duration, which increases these loans' exposure to interest rate risk. Credit unions with a high concentration in real estate loans are subject to higher interest rate risk and may be more willing to offset this exposure by offering short-term (e.g. PAL loans) or variable rate loans. Goenner (2018) finds evidence of

this latter behavior as credit unions are more likely to offer private student loans with variable rates the higher is their share of net long-term assets. However, a high share of real estate loans in the loan portfolio might also reflect a strong demand among members for real estate credit, relative to consumer credit. In this case, credit unions may be less willing to offer PAL loans, when they can originate and sell real estate or other loans (e.g. car loans) that can be easily securitized in the secondary market. Differences in the loan portfolio are considered using the separate loan shares for credit cards, real estate loans, and car loans, where the share of unsecured and other loans make up the omitted category.

Included in the model's specification is a measure of a credit union's capital adequacy, which is the ratio of net worth to total assets. Credit unions are considered under 12 CFR § 702.102 to be well capitalized if they have a net worth ratio greater than 7%. The average capitalization of the federal credit unions in our sample is 13%. Higher capitalization implies a credit union is less leveraged and may be an indication of more risk adverse management (Goddard *et al.*, 2008). In this case, we might expect capitalization to be negatively related to the decision to offer higher risk PAL loans. Scale is also controlled for in the model based on total assets. Previous research has found that credit unions' size is positively related to the probability a credit union offers mortgage loans (Tripp and Smith, 1993) and private student loans (Goenner, 2018). Larger credit unions may have a greater capacity to offer their members a wider array of loan products.

The model also controls variation in the economic environments that credit unions operate within. Less competition among financial institutions in a market is likely to result in fewer traditional financial services being offered. We proxy for this using a measure based on bank deposit concentration in the credit union's home market, where we expect credit unions to

be more likely to offer PAL loans in less competitive markets. Macroeconomic conditions may further constrain a credit union's willingness to provide credit. In markets where unemployment rates are higher, loan quality is lower and there is less willingness to lend. Rising home prices in a market, on the contrary suggest strengthening economic conditions and a greater willingness to lend. Our three measures of market environment are based on the economic conditions of the MSA or county where the credit union is headquartered, with county data being used for those not located within an MSA.⁸

Credit unions are unique depository institutions, in that they are non-profit cooperatives of members (individuals) who share a common bond based on geography, employment, or fraternal association. They act as a financial intermediary by using their members' savings deposits to fund loans to other members. Since membership is limited to individuals who share a common bond, credit unions are quite constrained in their decision making by their membership's resources and needs for credit. Survey data, we noted above, indicates urban and low-income individuals are more likely to use payday loans. This implies PAL loans are likely to have strong demand among credit unions operating in these environments. An indicator variable is included to control whether a credit union is in an urban area, which is equal to one if located in a standard metropolitan statistical area (SMSA) and 0 otherwise. Another indicator is used to identify whether a credit union is designated as low-income by the NCUA.⁹

We consider that different types of bonds between credit union members may affect the decision to offer PAL loans. We theorize that credit unions with a field of membership based on

⁸ Branch location information only becomes available in 2012. The median number of locations (branches plus headquarters) operated by the credit unions in our sample (2012-2015) is 1, with 3 locations at the 75th percentile, and 6 for the 90th. The majority of our sample only operates a single location. Using market conditions based on a simple average of conditions across branches does not affect the results we report in Table 2, columns 3-4.

⁹ A credit union is classified by the NCUA as low-income if at least half a credit union's members earn less than 80% of the median household income of the community. These credit unions are eligible for grants and low interest loans from the NCUA.

a shared religious faith may be more likely to offer an alternative to high-interest payday loans, given most faiths condemnation of the charging of excessive interest (Abou-Zaid and Leonce, 2014). Research (Carrel and Zinman, 2014) shows a substantial number of military households (20-25%) in the past relied on payday lending. With payday loans no longer available to these households after passage of the Military Lending Act, it would seem credit unions with a field of membership (common bond) based on affiliation with the military may also have a strong demand for PAL loans. A separate indicator variable is included for whether a credit union has a bond based on faith and another for whether the bond is based on the military.

Survey data we noted also shows that minority individuals are more likely to use payday loans and therefore have greater need for an alternative. We think that credit unions operating in minority communities are thus more likely to participate in the PAL program. Beginning in 2012, call report data indicates the physical locations for each credit union's headquarters and branches. Separate indicator variables are included in the model to indicate whether a credit union has either a branch or headquarters in a census tract where the majority of individuals are minorities. Whether a credit union offers PAL loans is ultimately a decision made by the board of directors. We theorize credit unions governed by boards, where the majority of directors are racial minorities (i.e. majority-minority board) are more sensitive to the needs of their minority customers (Buse *et al.*, 2016; Smith *et al.*, 2001) and thus more likely to offer PAL loans. Call report data starting in 2012 indicates whether the majority of directors are minorities, along with a separate indicator for whether the majority of members are minorities. Indicator variables for both are included in our model.

3.2 Estimation method

We model our binary outcome using Chamberlains' Correlated random effects (CRE) probit

model (Wooldridge, 2010). The CRE probit model's structure offers an advantage when using a binary dependent variable with panel data by allowing for the inclusion of a credit union level fixed effect that is correlated with the regressors.¹⁰ Inclusion of a credit-union fixed-effect is important as it allow us to control for otherwise unobserved variables that are time-invariant and whose exclusion might result in biased estimates. For example, management's ability and risk aversion are likely to influence the decision to offer PAL loans and are also likely correlated with characteristics of the credit union and its membership. Another advantage the model's structure offers is it allows for the calculation of the marginal effects of our covariates, which is not possible with a fixed effects logit model. Unlike a typical fixed-effects model, one can include time-invariant measures in the model's estimation, however, their effects cannot be isolated from that of the individual effect. Similarly, it can be empirically difficult to identify in the data the effects of measures with limited variation over time from the fixed-effect. A time fixed effect is also included in the specification.

3.3. Results

The baseline model specification we estimate examines whether a credit union offers PAL loans in the period 2010-2015. This specification excludes four control variables of interest (branch or headquarters in a minority neighborhood, majority-minority board, and majority minority members) that only become available in 2012. Coefficient estimates and the corresponding marginal effects from the CRE probit model appear in Table 2. To calculate the marginal effects, we use a one-standard deviation change in our continuous variables and a one-unit change for the indicator variables. The results (Table 2, columns 1-2) indicate the decision

¹⁰ The credit union fixed effect (c_i) is assumed to have a conditional normal distribution with linear expectation and constant variance. In effect, the estimation replaces the fixed effect with $c_i = \psi + \bar{x}_i \xi + a_i$ where the covariates are averaged by credit union over time.

to offer PAL loans is not tied to liquidity management, as none of the three measures that we include are statistically significant at the 10% level. However, we find evidence that asset management influences the choice. Increasing the share of real estate loans in the loan portfolio by one-standard deviation reduces the probability of offering PAL loans by 2.3 percentage points, which is a decrease of 20.2%, given only 11.4% of credit unions offer PAL loans. We find a similarly sized effect (1.8 percentage points) from increasing the share of car loans. Credit unions, where the demand for asset-backed loans is strong it appears are less likely to offer PAL loans. The results also indicate capitalization is negatively associated with the decision to offer PAL loans. This suggests management's risk aversion may lower credit unions' willingness to offer riskier loans.

A credit union's scale is shown to influence the decision to offer PAL loans. We find that larger credit unions are less likely to offer PAL loans. A one standard deviation increase in a credit union's size (natural logarithm of total assets) reduces the probability of offering PAL loans by 5.1 percent. Finding a negative relation is somewhat surprising based on past results (Goenner, 2018; Tripp and Smith, 1993), but we show later this may be more so associated with smaller credit unions' branch and headquarters locations. Variation in credit unions offering PAL loans is also explained by differences in their local market. Increasing the concentration among banks in a credit union's market increases the probability they offer PAL loans by 2 percentage points, while increasing the unemployment rate in the market reduces the probability by 0.8 percentage points. While we did not find any statistical evidence that credit unions in urban areas have an effect on the decision to offer PAL loans, we did observe that credit unions designated as low-income were 1 percentage point more likely to offer these loans. Of the two types of common bonds (faith and military) examined, only one is statistically significant. Credit

unions where members share a bond based on faith are 7 percentage points more likely to offer PAL loans.

[Insert Table 2 about here]

Next, we extend the model specification to include separate indicator variables that control for whether the credit union has a branch or headquarters located in a minority neighborhood. In addition, we also add separate indicators for whether the board is governed by a majority of directors who are minorities, and the majority of members are racial minorities. Each of these four variables is only available beginning in 2012, so we limit the analysis to the period 2012-2015. The results (Table 2, columns 3-4) indicate that credit unions whose headquarters are located in a minority neighborhood are 7.1 percentage points more likely to offer PAL loans, and those with a branch located in a minority neighborhood are 2.0 percentage points more likely to offer PAL loans. However, we find no evidence that the racial composition of the board or members, more generally, affected the decision. Location, rather than member race, seems more important to the decision to offer PAL loans. However, it is possible we are unable to identify statistically significant coefficients for some of our indicator variables in our CRE probit model due to their limited variation over time and the inclusion of a fixed-effect.

In the extended model, the inferences on the other control variables are quite similar to our baseline model. We do find an added effect where liquidity is positively related to credit unions offering PAL loans. Less liquid credit unions, with a higher loan to deposit ratio, are 1 percentage point less likely to offer PAL loans. When controlling for office location and members' race, we find that size or being designated as limited income no longer has a statistically significant effect on whether PAL loans are offered.

Overall, our empirical analysis of credit unions' use of PAL loans supports many of the same conclusions drawn from the FDIC's pilot study of bank's offering alternatives to payday loans. Location is an important factor in this decision, as credit unions located in minority neighborhoods are much more likely to offer PAL loans. Credit unions operating in markets with fewer alternatives for traditional banking are also more likely to offer PAL loans. We find membership ties to their community also matter, as credit unions whose members share a faith-based bond are also more likely to offer PAL loans. Differences, though, in the loan portfolio also matter with credit unions less likely to offer higher risk PAL loans the larger the shares of asset-backed (car and real estate) loans in their portfolio.

4. Modeling the impact of PAL program participation

4.1 Model specification

In this section, we examine the effects on earnings performance and loan quality of federal credit unions to determine whether either was negatively impacted by their participation in the PAL program over the period 2009-2015. Payday lending is associated with high operating expenses (Flannery and Samolyk, 2005)), therefore a concern (Payday-alternative loans, 2012) with credit unions offering alternatives to payday loans is whether operating expenses rise more than interest income and reduce a credit union's return on assets. We model three different measures of earnings performance to discern these effects, which include the share of operating expenses to gross income, the share of interest income to total assets, and the return on assets (ROA). Even if returns are not adversely impacted by offering PAL loans, it is also possible loan quality may deteriorate as credit unions offer loans subject to greater credit risk. To examine this possibility, we model three different measures of loan quality. These measures include the

charge-off rate on consumer loans, the delinquency rate on loans, and the share of member loans subject to bankruptcy.¹¹

Our model controls for many of the same measures used in the previous analysis of PAL program participation, which reflect differences in asset and liability management, in addition to market characteristics. These measures have also been used in previous studies (Ely, 2014; Goenner, 2016; 2018) of credit union performance. However, our specification must exclude the indicator variables we used previously, as the linear fixed effects model used here, unlike the CRE probit model, does not allow for inclusion of time-invariant measures. This excludes our indicator measures for an urban environment, having a limited income designation or field of membership tied to one's faith or the military. We also exclude the measures that are largely invariant (e.g. branch location and membership characteristics), as we also lack data on these measures prior to 2012. The impact of these measures will be captured by our inclusion of a fixed effect for each credit union.

4.2 Identification and estimation strategy

To identify the policy effect, we use a difference-in-difference (DID) estimation approach and compare outcomes prior to and after implementing the program for a set of credit unions that implemented the policy, relative to the difference in outcomes for a set of credit unions that did not offer PAL loans over the same period. The model specification we estimate in equation 1 is a linear, two-way, fixed effects model that includes separate fixed effects for time (δ_t) and credit union (θ_i).

$$y_{it} = \alpha_1 T1_{it} + \dots + \alpha_6 T6_{it} + \beta X_{it} + \delta_t + \theta_i + \epsilon_{it} \quad (1)$$

¹¹ A loan is defined as delinquent if it is 30 or more days past due and may still be collectible, whereas a loan charge-off is considered by the lender not collectible and written off as a loss. Note we are unable to directly consider the policy effect on the loan quality of payday alternative loans, as we cannot identify the differences in pre-treatment loan quality between the treatment and control group.

The effects of implementing the policy are measured by separate indicators ($T1_{it}, \dots, T6_{it}$) that measure the duration of each credit union's participation in the PAL loan program, where $T1_{it}$ is an indicator equal to one if credit union i is in the first year of participating in the PAL program in year t , and the other five indicators $T2_{it} - T6_{it}$ indicates previous participation for two to six years. The estimate of α_1 then indicates the average impact on the outcome examined in the year of program implementation and α_j indicates the effect after j years of offering PAL loans.

Measuring the treatment effect in this manner allows the program's impact to potentially vary over the short and long-run. Operating expenses, for example, may initially be significantly higher if there are significant start-up costs (e.g. advertising, specialized staff, information technology) associated with offering and underwriting a new loan product. Similarly, it may take time for loan quality to be affected. If payday alternative loans create a debt trap similar to payday loans, then borrowers who rely on this type of loan for their long-term financing needs will be more adversely affected in the long-run as will loan quality. The specification used here is easily generalizable to the typical DID model if we assume the treatment effect is the same magnitude regardless of program duration, i.e. ($\alpha_1 = \alpha_2 = \dots = \alpha_6 = \alpha$). In our discussion of our results, we test whether these coefficients are jointly equal to zero, which is a test of whether the treatment effect is statistically significant in a model that does not account for program duration.

Including a firm-level fixed effect (θ_i) in the model specification allows us to control for both observed (e.g. membership bond) and unobserved (e.g. management quality) time invariant factors, which may affect program participation and performance. Failure to control for the latter, due to a lack of data, could otherwise result in biased estimates from omitted variables. The robust standard errors we report with our coefficient estimates are clustered by credit union

to allow for the presence of heteroskedasticity and the error term to be correlated for a credit union over time.

When using difference-in-difference estimates to determine a program's impact it is important to ensure covariate balance between the group using the program and not, otherwise inferences can be sensitive to model specification (Imbens and Rubin, 2015). Similarity between the two groups also makes it less likely unobserved differences that vary with time explain our observed differences in outcomes. Table 3 shows that prior to the change in policy (2009) there were no significant differences in the balance sheet and market characteristics of federal credit unions that would subsequently offer PAL loans and those that didn't. Normalized differences for our covariates are all below 0.25 and are considered small (Imbens and Rubin, 2015).

[Insert Table 3 about here]

Identification of the program's effect in a difference-in-difference estimation model relies on the ability to estimate the true counterfactual, i.e. what would have happened to federal credit unions had they not implemented the PAL program. Thus, a potential concern with the analysis is whether there were systematic differences between our two groups in the period prior to program implementation, which might suggest omitted factors explain any differences we observe following the change in policy in 2010. To test whether there is a difference in pre-treatment trends, we use observations from prior to the change in policy (2004-2009) and a slightly modified version of the model specified in equation 1. We add to the specification separate year indicators for credit unions that will become treated, which allows for comparison with those never treated. We show (Figure 1) there is no statistical difference in any year between operating expense, interest income, or ROA between the two groups' pre-treatment trends and fail to reject the null hypothesis at the 10% level that the yearly trends are jointly

equal to zero.¹² Similarly, for our measures of loan quality (charge-offs, delinquency, and bankruptcy) we find there is no difference in the two groups pre-treatment trends.

[Insert Figure 1 about here]

4.3 Results

4.3.1 Impact on earnings performance

In Table 4 (column 1), we report estimates of the effect PAL program implementation had on operating expenses as a share of gross income. The estimates indicate that participation in the PAL program lowers operating expense as a share of income by 4.7 to 6.8 percentage points in years 2-6 following implementation, with the separate yearly effects statistically different than zero at the 5% level for years 2-5. In Figure 2, we provide a visual that summarizes the policy's effects on operating expenses. The total impact of the program, which is averaged over the six years following implementation indicates operating expenses were lower, on average, by 4.7 percentage points per year and is statistically different than zero at the 1% level based on a F-test. In a supplemental analysis (not reported), we examine the separate components of operating expenses as a share of total assets and find PAL program participation did not result in higher expenses on either employee compensation, office leasing, office operations, marketing, loan servicing, professional services, or other miscellaneous operating expenses. This suggests that credit unions' operating expenses were not adversely affected by their participation in the PAL program.

[Insert Figure 2 about here]

The decrease in operating expenses relative to gross income we observe is instead explained by an increase in interest income. Interest income as a share of total assets is higher

¹² A complete set of estimates appear in online Appendix Tables B1 and B2.

by 5.2 to 11 basis points in years 2-6 following program implementation (Table 4, column 2 and Figure 2). The program's impact increased interest income, on average, over the six years following implementation by 6.7 basis points per year and is different than zero at the 1% level. This seemingly small increase in interest income, however, has a large impact given financial institutions are highly leveraged. The effects of which are clearly evident based on credit unions' return on assets (ROA). Returns on assets (ROA) are found (Table 4, column 3 and Figure 2) to be 7 to 17 basis points higher in the years following implementation, where the yearly differences are statistically significant at the 10% level in years 2, 3, 5, and 6. PAL program participants, on average, had a return on their assets 11 basis points higher over the six years following implementation, which is statistically different than zero at the 5% level. This seemingly small difference in returns is quite large in percentage terms (48%), as the average ROA for credit unions in our sample was 23 basis points for the period 2009-2015.

[Insert Table 4 about here]

4.3 Comparison of program implementation on loan quality

Interest income and returns are shown to be higher following implementation of the PAL program. A concern is whether these higher returns are also associated with an increase in higher risk loans that result in greater financial difficulty for members. To assess the impact on the loan portfolio, we examine the impact offering PAL loans had on the charge-off rate on consumer loans. The results (Table 5, column 1 and Figure 2) indicate that charge-offs are lower in five of the six years following implementation. The effect is statistically different than zero at the 5% level for years 1 and 2 and at the 10% level for year 3. However, we fail to reject (p-value 0.23) the null that the average effect over the six years following implementation is different than zero and conclude charge-offs were not adversely affected by the PAL program.

We draw a similar conclusion examining loan delinquencies. In the years following implementation of the PAL program do we not observe (Table 5, column 2 and Figure 2) any evidence that loan delinquency rises in participants' loan portfolios. Credit risk appears not to have been affected by offering PAL loans.

Previous studies (Morgan *et al.*, 2012; Skiba and Tobacman, 2019; Stegman, 2007) have shown that access to payday loans can create financial difficulty for borrowers by increasing bankruptcies. To determine whether members were adversely affected by the PAL program, we examine the program's effect on the share of member loan balances subject to bankruptcy. The results (Table 5, column 3 and Figure 2) show the share of loans in bankruptcy were lower and statistically significant (10% level) in years 4 and 5 following implementation. The effect averaged over the six years, though, was not statistically significant at the 10% level (p-value 0.13). Based on our findings, we find no evidence that suggests loan quality was adversely impacted by the decision to offer PAL loans.

[Insert Table 5 about here]

4.4 Robustness checks

4.4.1. An alternative control group and falsification test

The PAL loan program is only available to credit unions with a federal charter. State-chartered credit unions are therefore not affected by the change in lending policy and are an alternative control group that can be used to test the robustness of our findings. We use nearest-neighbor matching to ensure that the covariates are well balanced between the group of federal credit unions that offer PAL loans and our matched group of state-chartered credit unions.¹³ Matching is based on propensity scores constructed using a cross-section of the two groups balance sheet

¹³ Without matching there is a large difference in the low-income status of members between the treated and control groups.

and market characteristics prior to implementation of the policy (2009).¹⁴ The matched sample with common support consists of 709 federally chartered credit unions (treatment group) and an equal number of credit unions with state-charters. Comparisons of the matched groups' covariates prior to policy implementation appear in online Appendix Table C1. The characteristics of the matched groups are quite similar with normalized differences less than 0.05 in absolute value. A comparison of pre-treatment trends between federal credit unions that choose to participate in the PAL program and our matched sample of state credit unions appears in online Appendix Figure C1, which visually highlights the similarity of trends in earnings and loan quality. The estimates reported in online Appendix Tables C2 and C3 indicate we fail to reject the null at the 10% level that each separate trend is jointly equal to zero.

Table 6 presents the estimates of our difference-in-difference model of earnings performance when state-chartered credit unions are the control group. We find no evidence (Table 6, column 1) to suggest that operating expense as a share of gross income has a statistically significant effect in any of the individual years following program implementation or in the aggregate. This result suggests program participants' operating expenses did not grow by more than their interest income. Online Appendix Figure C2 provides a visual of the impact on operating expenses. With respect to the program's effect on interest income the result is similar to our previous finding. Interest income as a share of total assets increases by 4.3 to 9.5 basis points in years 2-6 following implementation and on average increases 6 basis points yearly.

¹⁴ We only match observations with common support between the two groups. Specifically, we do not use observations in the treated group with a propensity score less than the first percentile for their group or use observations in the treated group with a propensity score greater than the 99th percentile of scores for the control group. Matching based on common support reduces the sensitivity of the results to the matching algorithm. (Dehejia and Wahba, 2002).

The impact on the return on assets is also quite similar, as returns are higher by 10 to 19 basis points in the years following implementation with an average increase of 15 basis points.

Examining the effects on loan quality, we report estimates in Table 7 that are similar to our previous findings. Charge-off rates (Table 7, column 1) are once again lower and statistically significant in the first three years following program implementation. Similar to before, the average effect over the six years following implementation is not statistically significant (p-value 0.26). The coefficient estimates (Table 7, columns 2 and 3) further confirm that loan delinquency and bankruptcies were not at all impacted following the change in policy.

[Insert Tables 6 and 7 about here]

The robustness of our original findings to using an alternative control group adds further evidence to support our conclusion that the PAL program increased returns without adversely affecting loan quality. This added control group, however, also provides an opportunity to implement a falsification test. In this test, we pretend federal credit unions that in fact did not offer PAL loans, begin offering these loans in 2010 and continue to offer them in subsequent years, i.e. they are given a placebo. The control group consists of our matched sample of state-chartered credit unions that are also known to be not affected by the program. We then estimate a modified version of equation 1, where we replace the duration of program implementation, with an indicator equal to 1 for our placebo group's treatment in years 2010-2015. Given neither group is theoretically impacted by the program, we expect the placebo's treatment effect to be zero. The results (online Appendix Table D1) indicate that we fail to reject the null at the 10% level that the placebo test is zero for our three earnings measures (operating expense, interest income, and ROA). Similarly, the results (online Appendix Table D2) also indicate that the placebo's effects on our three loan quality measures are also zero. The results of our falsification

test confirm that there is no difference in terms of earnings performance or loan quality as expected. This finding reduces the likelihood that our original difference-in-differences estimates of the PAL program's impact are biased.

4.4.2 Intensity of PAL program participation

A final robustness check of our main results considers whether the policy effects observed among federal credit unions are influenced by the intensity of program implementation. It is a challenge in our dataset to identify variation in program intensity as we observe PAL balances at points in time and are unable to observe the number or total volume of loans originated in a year. What we can observe is a credit union's loan concentration in PAL loans, which we believe is a reasonable proxy of the intensity of program implementation. To test the impact of program intensity, we interact the six indicators of program duration with our proxy measure of participation intensity. The coefficients for the interaction terms with program duration j , then measure the impact j years after policy implementation from an initial 1 percentage point increase in PAL concentration, relative to the pre-treatment period and control group. What we would expect to find is that the benefits on earnings increase with participation intensity, whereas loan quality remains unimpacted.

In online Appendix Figure E1 we present the effects PAL program duration and intensity has on earnings and loan quality, which we observe from our models' coefficients of the interaction terms. Online Appendix Tables E1 and E2 include a full set of estimates. Operating expenses as a share of income are lower each year following program implementation and are lower the greater the intensity of program participation. We find that six years after implementing the PAL program, operating expenses are 2.24 percentage points lower for each percentage point increase in PAL concentration. The yearly impacts observed are statistically

significant at the 5% level for the second, fourth, fifth, and sixth years of program duration. Over six years of participation, we find that operating expenses as a share of income are on average lower by 1.90 percentage points per year, which is statistically different than zero at the 5% level. Falling expenses relative to income is explained by the increase in interest income associated with program participation intensity. Interest income increases by 3 basis points, on average, per year for each percentage point increase in PAL concentration following program implementation and is statistically significant at the 5% level. The policy impact on a credit union's overall return on assets is also affected by the participation intensity, however the increase in returns we observe for years 2-6 is only statistically significant at the 5% level for years 5 and 6 following PAL program implementation. This suggests it may take time for credit unions to fully absorb the fixed costs associated with initiating a new loan program, along with perfecting the underwriting requirements and interest rates charged on a new loan product when there is a greater emphasis put into the product. Our results, though, in online Appendix Figure E1 indicate there is no negative effect on loan quality from program duration and intensity, based on the impact on loan charge-offs, delinquencies, and bankruptcies.

5. Discussion and conclusion

The NCUA's decision to modify lending rules to allow federal credit unions the ability to offer their members short-term, small-dollar loans is shown here to improve the earnings performance of credit unions that took advantage of the new loan program. Participants in the payday alternative loan program exhibited returns on assets that were annually higher than their counterparts, on average, by between 30% and 74% in the years following program implementation. This increase in returns is primarily explained by an increase in interest income earned on assets, which ranged between 5 and 11 basis points higher among participants in the

program. Conversely, we find no evidence to suggest that operating expenses rose significantly from the decision to offer PAL loans. It is clear from these results that the NCUA's concern that increases in operating expenses might not be covered by an increase in interest due to an APR limit of 28% is unfounded. Furthermore, credit unions are shown to offer their members PAL loans without negatively affecting the overall quality of their loan portfolio. Credit unions' safety and soundness does not appear to be compromised by their decision to offer higher interest rate loans, perhaps due, in part, to the numerous restrictions the program imposed on loan amounts, terms, and rollovers.

From a policy perspective, increasing the provision of short-term, small-dollar credit via the payday alternative loan program seems a means in reducing consumers' reliance on payday lenders and other high-cost alternatives. However, greater access to credit also provides opportunities for consumers to learn about the appropriate uses of credit. The borrowing restrictions imposed by the NCUA on the PAL lending program's loan amounts, loan-terms, the number of loans, and roll-overs were included to give borrowers the best opportunity to repay their debt and limit repetitive borrowing that results in a debt trap. The availability of PAL loans helps inform consumers of the characteristics of responsible borrowing and imparts valuable financial skills. Financial access and skills are both key to consumers' financial well-being, which is particularly important among those with low-incomes.

Therefore, increasing credit union participation in the PAL program should remain a priority of the NCUA. This is particularly true among credit unions designated as low-income by the NCUA, as individuals with limited income more often use high-cost forms of credit. Low-income credit unions are currently eligible for low interest loans through the NCUA's Community Development Revolving Loan Fund to fund payday alternative loans, though,

funding is quite limited and should be expanded to subsidize program participation. However, increasing participation, more generally, is likely to take a shift in managements' perspective towards risk, as offering higher risk, higher interest rate loans, requires a greater ability to assess and price risk. Further study using individual loan data, not publicly available, is needed to identify simple, yet effective, underwriting requirements to overcome many credit unions' lack of experience in this area.

Our findings may suggest that other depository institutions are also well suited to offer similar loan programs, as was inferred from the FDIC's pilot study of banks. However, additional study is needed to determine whether bank performance is affected by program participation, given the unique characteristics of credit unions. Unlike banks, credit unions are non-profit cooperatives and are thus more willing to offer a loan product at a price that may not maximize profit if it benefits their members (Frame *et al.*, 2003; Fried *et al.*, 1993; Kane and Hendershott, 1996; Wheelock and Wilson, 2011). Credit unions are also typically active in their communities by providing financial education and credit counseling, which may provide them with an advantage in differentiating their lower-cost PAL loan offerings from those of payday lenders. Convenience also plays an important role, as users of payday loans often cite their use is due to traditional lenders not offering comparable products in their communities. Credit unions, more so than banks, are already located in under-served communities where PAL loans are needed most. More than one-third of the federal credit unions in our sample are designated low-income and just less than one-third are headquartered in neighborhoods where racial minorities are in the majority. These unique attributes may make credit unions the best suited to reducing borrowers of moderate means use of payday loans and provide additional evidence in

support of federal credit unions' continued exemption from state and federal taxes under federal law.

ACKNOWLEDGEMENTS

This research was supported by a summer research grant from the Nistler College of Business and Public Administration at the University of North Dakota. I would like to thank Margie Tieslau and conference participants of the Missouri Valley Economic Association annual 2022 meeting for their comments. In addition, I thank the three anonymous referees and the journal's editors for their insightful suggestions, which helped to improve the paper.

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Table 1. Summary statistics (2010 - 2015)

	Mean	Std. Dev.
Cash and S.T. Investments/ Total Assets (%)	26.967	16.043
Sav. Dep./ Total dep. & Borrowing (%)	57.347	26.498
Loans / Deposits (%)	58.810	22.200
Credit Card Loan Share (%)	4.011	5.419
Real Estate Loan Share (%)	27.882	25.306
Auto Loan Share (%)	41.850	22.559
Net worth / Total Assets (%)	13.148	6.178
Size	16.879	1.939
Bank Deposit Concentration	0.196	0.109
Unemployment (%)	7.354	2.344
Home price appreciation (%)	0.001	0.014
Urban market	0.764	0.425
Limited Income Membership Designation	0.366	0.482
Faith based Field of Membership	0.063	0.242
Military Field of Membership	0.020	0.139
Branch in a minority neighborhood†	0.209	0.406
Headquartered in a minority neighborhood†	0.311	0.463
Majority-minority Board of Directors†	0.154	0.361
Majority of members are Minorities†	0.147	0.354

This table provides summary statistics of federal credit unions' assets, liabilities, and characteristics of their market environments and membership for the period 2010-2015. Variables indicated by (†) are only available for all credit unions beginning in 2012.

Table 2. CRE probit model estimates of payday alternative loan program participation

	(2010-2015)		(2012-2015)	
	Coefficients	Marginal Effects	Coefficients	Marginal Effects
Cash and S.T. Investments/ Total Assets (%)	-0.004 (0.004)	-0.003	-0.003 (0.006)	-0.002
Sav. Dep./ Total dep. & Borrowing (%)	0.008 (0.007)	0.010	-0.006 (0.012)	-0.006
Loans / Deposits (%)	-0.006 (0.004)	-0.006	-0.013** (0.007)	-0.010
Credit Card Loan Share (%)	0.003 (0.013)	0.001	0.001 (0.015)	0.000
Real Estate Loan Share (%)	-0.020*** (0.007)	-0.023	-0.035*** (0.013)	-0.030
Car Loan Share (%)	-0.017*** (0.006)	-0.018	-0.017* (0.010)	-0.013
Net worth / Total Assets (%)	-0.059*** (0.021)	-0.017	0.031 (0.037)	0.007
Size	-0.573* (0.308)	-0.051	-0.536 (0.574)	-0.036
Bank Deposit Concentration	3.996*** (0.961)	0.020	5.279*** (1.655)	0.020
Unemployment (%)	-0.078** (0.037)	-0.008	-0.107* (0.063)	-0.009
Home price appreciation (%)	2.432 (2.132)	0.002	2.248 (3.151)	0.001
Urban market‡	0.108 (0.778)	0.005	-1.026 (1.687)	-0.035
Limited Income Membership Designation‡	0.223** (0.095)	0.010	0.052 (0.186)	0.002
Faith based Field of Membership‡	1.565*** (0.387)	0.072	1.478** (0.739)	0.051
Military Field of Membership‡	0.593 (0.743)	0.027	1.818 (2.165)	0.063
Branch in a minority neighborhood‡			0.577* (0.342)	0.020
Headquartered in a minority neighborhood‡			2.074*** (0.445)	0.071
Majority-minority Board of Directors‡			0.079 (0.318)	0.003
Majority of members are Minorities‡			-0.239	-0.008

Constant	-8.426*** (1.050)	(0.241) -9.093*** (1.490)
Number of observations	22,380	14,872

This table reports estimates of the Conditional Random Effects (CRE) probit model, where the dependent variable indicates whether a credit union offered PAL loans in a given year. The specification includes fixed effects for time and credit union (not reported), where the latter uses the means of the covariates according to the Mundlak–Chamberlain–Wooldridge design. Estimates of the first model cover the period 2010-2015, while estimates of the second model cover the period 2012-2015 and add variables only available beginning in 2012. The marginal effects reported are calculated using a 1-standard deviation change for the continuous variables and a 1-unit change for the indicator variables (‡). Standard errors appear in parentheses where *, **, *** indicates the coefficient is statistically different from zero at the 10%, 5%, and 1% level.

Table 3. Pre-policy (2009) comparison of PAL loan originators and non-originators

	FCU PAL Originator	FCU PAL Non- originator	Normalized difference
Cash and S.T. Investments/ Total Assets (%)	28.065 (15.974)	29.019 (16.963)	-0.04
Sav. Dep./ Total dep. & Borrowing (%)	49.365 (25.685)	52.230 (28.479)	-0.07
Loans / Deposits (%)	66.670 (29.234)	64.076 (21.535)	0.07
Credit Card Loan Share (%)	4.253 (5.285)	3.636 (4.956)	0.08
Real Estate Loan Share (%)	25.503 (21.492)	27.435 (24.132)	-0.06
Car Loan Share (%)	45.514 (20.807)	43.345 (22.641)	0.07
Net worth / Total Assets (%)	13.394 (6.645)	13.659 (6.623)	-0.03
Size	17.065 (1.939)	16.923 (2.009)	0.05
Bank Deposit Concentration	0.186 (0.105)	0.196 (0.109)	-0.06
Unemployment (%)	8.719 (2.386)	8.769 (2.462)	-0.01
Home price appreciation (%)	-0.010 (0.013)	-0.009 (0.013)	-0.04
Observations	779	3306	

This table reports summary statistics of the mean and standard deviation in parentheses, stratified by PAL program participation, for federal credit unions' assets, liabilities, and characteristics of their market environments for the year prior to the change in policy (2009). The difference in mean covariates by treatment status (PAL program participation), normalized by the standard deviations is also reported.

Table 4: Impact of PAL loan program duration on credit union performance

	Operating Expense	Interest Income	ROA
TE - First year of PAL implementation	0.350 (2.963)	0.002 (0.016)	0.067 (0.065)
TE - Second year of PAL implementation	-6.836*** (1.947)	0.052** (0.022)	0.103* (0.053)
TE - Third year of PAL implementation	-6.655** (3.177)	0.064** (0.027)	0.137** (0.053)
TE - Fourth year of PAL implementation	-5.230*** (1.761)	0.100*** (0.036)	0.079 (0.078)
TE - Fifth year of PAL implementation	-5.131*** (1.949)	0.075** (0.037)	0.108* (0.065)
TE - Sixth year of PAL implementation	-4.682 (3.090)	0.110** (0.049)	0.169** (0.085)
Cash and S.T. Investments/ Total Assets (%)	0.509*** (0.137)	-0.004** (0.002)	-0.007* (0.004)
Sav. Dep./ Total dep. & Borrowing (%)	0.054 (0.210)	-0.008*** (0.002)	0.010** (0.005)
Loans / Deposits (%)	0.621 (0.650)	0.030*** (0.004)	-0.001 (0.010)
Credit Card Loan Share (%)	0.348 (0.633)	0.001 (0.005)	0.007 (0.010)
Real Estate Loan Share (%)	-0.088 (0.117)	-0.006*** (0.001)	-0.001 (0.003)
Car Loan Share (%)	-0.118 (0.203)	-0.004** (0.002)	-0.001 (0.004)
Net worth / Total Assets (%)	-3.927* (2.347)	-0.028** (0.011)	0.145*** (0.039)
Size	-63.648*** (15.603)	-0.561*** (0.095)	1.719*** (0.311)
Bank Deposit Concentration	1.340 (8.723)	-0.104 (0.113)	0.140 (0.327)
Unemployment (%)	0.640** (0.276)	0.001 (0.005)	-0.027*** (0.009)
Home price appreciation (%)	-27.526 (19.283)	-0.281 (0.228)	2.296*** (0.540)
Constant	1150.246*** (263.942)	12.727*** (1.507)	-31.036*** (5.065)
Observations	27588	27590	27590
Average treatment effect	-4.698	0.067	0.111
F-test on average treatment effect (p-value)	0.01	0.01	0.03

This table reports OLS estimates of the difference-in-difference model that measures the impact in the first and subsequent years (2-6) following a federal credit union's implementation of the PAL loan program on three measures of earnings performance - the ratio of operating expense to income, the ratio interest income to total assets, and the return on assets (ROA). All specifications include fixed effects for time and credit union, which are not reported for brevity. Standard errors reported in parentheses are clustered by credit union. *, **, *** indicates the coefficient is statistically different from zero at the 10%, 5%, and 1% level.

Table 5: Impact of PAL loan program duration on loan quality

	Consumer loan Charge- offs	Loan Delinquency	Member loan Bankruptcy
TE - First year of PAL implementation	-0.202*** (0.054)	0.005 (0.161)	-0.033 (0.024)
TE - Second year of PAL implementation	-0.161*** (0.058)	-0.113 (0.092)	0.002 (0.032)
TE - Third year of PAL implementation	-0.112* (0.067)	0.075 (0.148)	-0.044 (0.039)
TE - Fourth year of PAL implementation	0.080 (0.163)	0.020 (0.133)	-0.066* (0.036)
TE - Fifth year of PAL implementation	-0.015 (0.093)	0.073 (0.147)	-0.075* (0.043)
TE - Sixth year of PAL implementation	-0.134 (0.148)	-0.110 (0.171)	-0.040 (0.057)
Cash and S.T. Investments/ Total Assets (%)	0.016** (0.008)	0.015*** (0.006)	-0.000 (0.001)
Sav. Dep./ Total dep. & Borrowing (%)	-0.015* (0.008)	-0.012 (0.011)	-0.003** (0.002)
Loans / Deposits (%)	0.003 (0.005)	0.025* (0.013)	-0.001 (0.001)
Credit Card Loan Share (%)	-0.001 (0.018)	0.053** (0.021)	0.009** (0.004)
Real Estate Loan Share (%)	0.002 (0.012)	-0.007 (0.009)	0.001 (0.002)
Car Loan Share (%)	-0.014 (0.015)	-0.012 (0.011)	-0.000 (0.001)
Net worth / Total Assets (%)	-0.137*** (0.046)	0.020 (0.064)	-0.011** (0.005)
Size	-1.434** (0.642)	-0.433 (0.616)	-0.060 (0.087)
Bank Deposit Concentration	0.290 (0.312)	0.657 (0.732)	-0.029 (0.139)
Unemployment (%)	0.047 (0.030)	0.052** (0.025)	0.033*** (0.007)
Home price appreciation (%)	-2.425** (1.038)	-3.648*** (1.246)	-0.994* (0.542)
Constant	27.471** (11.941)	8.026 (10.771)	1.521 (1.467)
Observations	27589	27590	27590
Average treatment effect	-0.091	-0.008	-0.043
F-test on average treatment effect (p-value)	0.23	0.94	0.14

This table reports OLS estimates of the difference-in-difference model that measures the impact in the first and subsequent years (2-6) following a federal credit union's implementation of the PAL loan program on three measures of loan quality – the charge-off percentage of consumer loans, the percentage of delinquent loans, and the percentage of member loans in bankruptcy. All specifications include fixed effects for time and credit union, which are not reported for brevity. Standard errors reported in parentheses are clustered by credit union. *, **, *** indicates the coefficient is statistically different from zero at the 10%, 5%, and 1% level.

Table 6: Performance comparison using state-chartered credit unions

	Operating Expense	Interest Income	ROA
TE - First year of PAL implementation	-0.804 (1.078)	0.011 (0.019)	0.104** (0.044)
TE - Second year of PAL implementation	-1.724 (1.383)	0.043* (0.023)	0.169*** (0.049)
TE - Third year of PAL implementation	-1.058 (1.754)	0.053* (0.030)	0.139** (0.059)
TE - Fourth year of PAL implementation	-2.509 (2.159)	0.095** (0.040)	0.162* (0.083)
TE - Fifth year of PAL implementation	-3.304 (2.462)	0.069 (0.042)	0.128 (0.081)
TE - Sixth year of PAL implementation	-4.138 (3.359)	0.093* (0.055)	0.185* (0.106)
Cash and S.T. Investments/ Total Assets (%)	0.570*** (0.146)	-0.002 (0.001)	0.002 (0.005)
Sav. Dep./ Total dep. & Borrowing (%)	0.448* (0.246)	-0.006** (0.003)	-0.007 (0.006)
Loans / Deposits (%)	1.614* (0.943)	0.033*** (0.005)	0.016 (0.010)
Credit Card Loan Share (%)	0.382 (0.621)	0.002 (0.005)	0.019** (0.008)
Real Estate Loan Share (%)	-0.132 (0.116)	-0.009*** (0.002)	-0.004 (0.004)
Car Loan Share (%)	-0.496* (0.269)	-0.007*** (0.002)	-0.004 (0.005)
Net worth / Total Assets (%)	-4.681* (2.420)	-0.031* (0.018)	0.236*** (0.079)
Size	-57.567*** (18.428)	-0.576*** (0.173)	1.047** (0.493)
Bank Deposit Concentration	16.159* (9.090)	0.374** (0.164)	-0.709* (0.410)
Unemployment (%)	0.620 (0.436)	0.005 (0.008)	-0.035*** (0.013)
Home price appreciation (%)	-48.887 (36.864)	-0.270 (0.511)	5.139*** (1.361)
Constant	999.772*** (294.354)	12.927*** (3.000)	-21.248** (9.080)
Observations	9823	9823	9823
Average treatment effect	-2.256	0.061	0.148
F-test on average treatment effect (p-value)	0.18	0.03	0.01

This table reports OLS estimates of the difference-in-difference model that measures the impact in the first and subsequent years (2-6) following a federal credit union's implementation of the PAL loan program on three measures of earnings performance - the ratio of operating expense to income, the ratio interest income to total assets, and the return on assets (ROA). The control group consists of a matched sample of state-chartered credit unions not subject to the policy change. All specifications include fixed effects for time and credit union, which are not reported for brevity. Standard errors reported in parentheses are clustered by credit union. *, **, *** indicates the coefficient is statistically different from zero at the 10%, 5%, and 1% level.

Table 7: Loan quality comparison using state-chartered credit unions

	Consumer loan Charge- offs	Loan Delinquency	Member loan Bankruptcy
TE - First year of PAL implementation	-0.206*** (0.061)	-0.054 (0.119)	-0.030 (0.026)
TE - Second year of PAL implementation	-0.166** (0.068)	-0.040 (0.113)	0.022 (0.035)
TE - Third year of PAL implementation	-0.148* (0.084)	0.113 (0.145)	-0.021 (0.045)
TE - Fourth year of PAL implementation	-0.116 (0.110)	0.062 (0.163)	-0.038 (0.043)
TE - Fifth year of PAL implementation	-0.002 (0.117)	0.182 (0.184)	-0.012 (0.049)
TE - Sixth year of PAL implementation	0.113 (0.126)	-0.053 (0.222)	0.034 (0.066)
Cash and S.T. Investments/ Total Assets (%)	0.032 (0.022)	0.011* (0.006)	0.001 (0.002)
Sav. Dep./ Total dep. & Borrowing (%)	0.002 (0.009)	0.012 (0.008)	-0.007*** (0.003)
Loans / Deposits (%)	0.011 (0.009)	0.041** (0.020)	-0.001 (0.001)
Credit Card Loan Share (%)	-0.005 (0.010)	0.084* (0.043)	0.004 (0.003)
Real Estate Loan Share (%)	-0.009 (0.006)	-0.007 (0.010)	-0.000 (0.004)
Car Loan Share (%)	-0.010 (0.007)	-0.023* (0.012)	-0.005 (0.004)
Net worth / Total Assets (%)	-0.316*** (0.105)	-0.078 (0.065)	-0.013* (0.007)
Size	-1.303* (0.737)	0.598 (0.727)	-0.155 (0.121)
Bank Deposit Concentration	0.713 (0.619)	1.238* (0.747)	-0.016 (0.225)
Unemployment (%)	0.097*** (0.022)	0.075** (0.035)	0.034*** (0.010)
Home price appreciation (%)	-4.258** (1.733)	-1.593 (2.378)	-2.639*** (0.754)
Constant	25.797* (13.294)	-10.414 (12.567)	3.727* (2.215)
Observations	9823	9823	9823
Average treatment effect	-0.088	0.035	-0.007
F-test on average treatment effect (p-value)	0.26	0.79	0.83

This table reports OLS estimates of the difference-in-difference model that measures the impact in the first and subsequent years (2-6) following a federal credit union's implementation of the PAL loan program on three measures of loan quality – the charge-off percentage of consumer loans, the percentage of delinquent loans, and the percentage of member loans in bankruptcy. The control group consists of a matched sample of state-chartered credit unions not subject to the policy change. All specifications include fixed effects for time and credit union, which are not reported for brevity. Standard errors reported in parentheses are clustered by credit union. *, **, *** indicates the coefficient is statistically different from zero at the 10%, 5%, and 1% level.

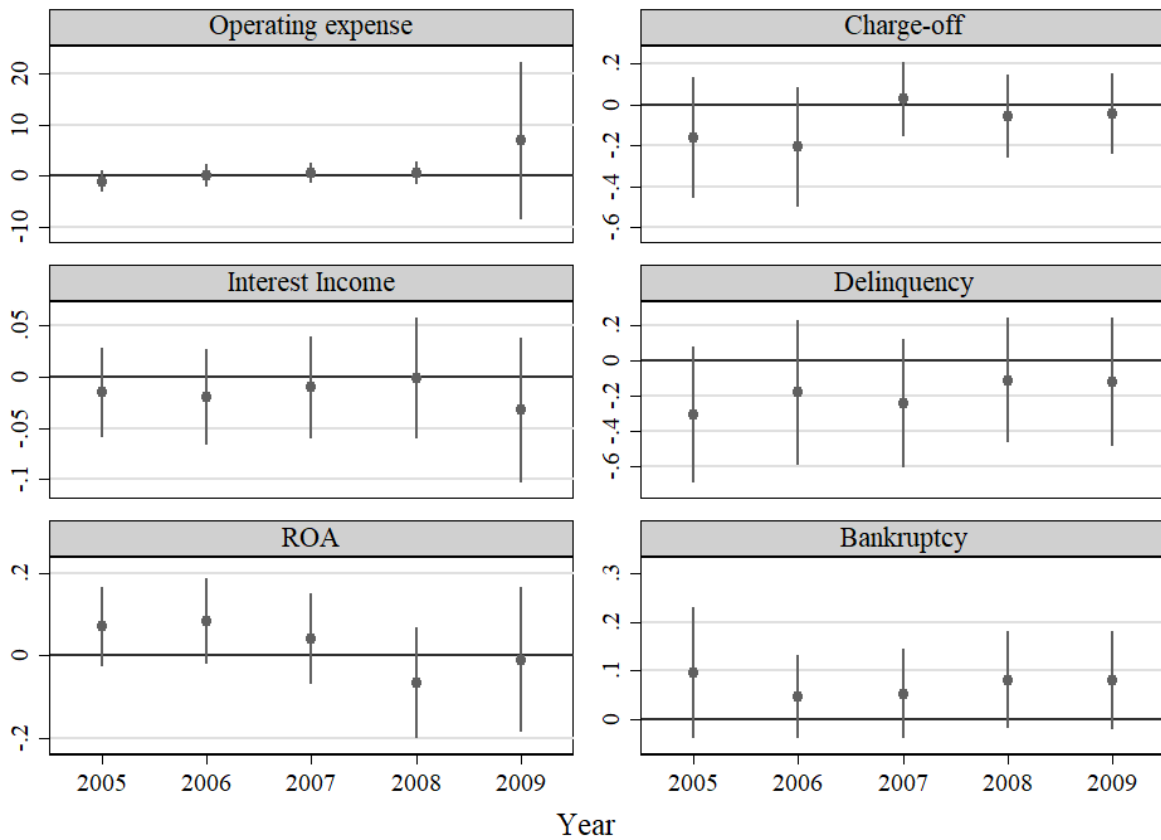


Figure 1. Comparison of pre-treatment trends. Point estimates and 95% confidence intervals of the difference in pre-treatment trends of earnings and loan quality prior to the change in policy of federal credit unions that offer PAL loans after the change in policy, relative to those that do not. Differences are measured in percentage points.

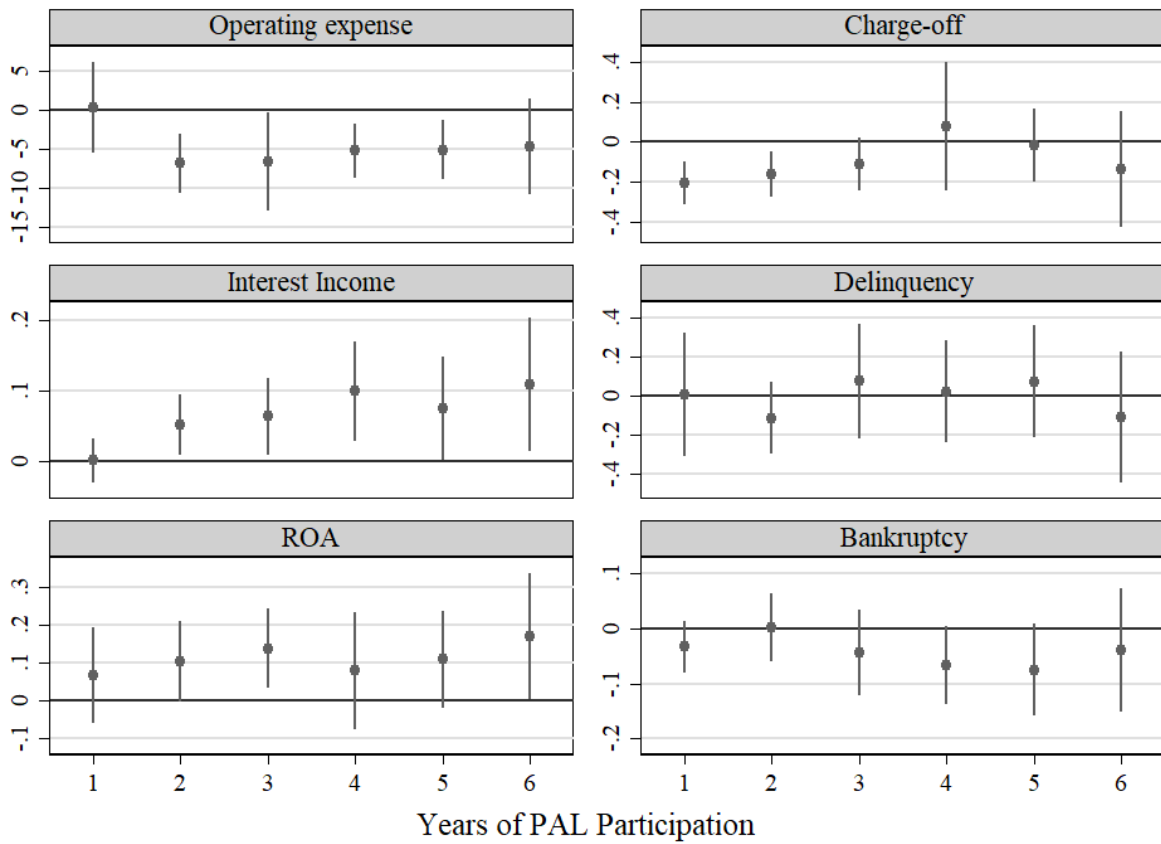


Figure 2. Comparison of policy impact of program duration. Point estimates and 95% confidence intervals of the policy impact on the differences in federal credit unions' earnings and loan quality based on the duration of PAL program participation. Differences are measured in percentage points.