SERVING THE UNDERSERVED: IMPACT OF THE LOW-INCOME DESIGNATION ON US CREDIT UNION FINANCIAL PERFORMANCE

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ABSTRACT

The low-income designation, which provides regulatory waivers and operational assistance to credit unions who serve low-income members, is one type of US governmental program promoting financial inclusion. Despite the increasing occurrence of low-income designation, the impact on credit union financial performance is unclear. The present study employs regression analysis using panel data to assess the impact of low-income designation. The study finds the low-income designation and usage of attendant regulatory benefits are positively associated with credit union financial performance. These findings provide insights for credit union practitioners and regulatory agencies regarding the sustainability of credit unions who serve the underserved.

Keywords*:* credit union; low-income designation; financial institutions; financial inclusion

INTRODUCTION

Numerous studies have evaluated the effect of various determinants of credit union performance (Athanasoglou et al., 2008; Dietrich & Wanzenried, 2014; Goddard et al., 2004, 2008a, 2008b; Gomez-Biscarri, et al., 2021; Hillier et al., 2008; Tan, 2017). Despite the ample literature that examines several aspects of the relationship between credit union characteristics, macroeconomic condition, and various facets of financial performance, to the best of my knowledge, no study has evaluated the impact of the low-income designation on US credit union financial performance. In this study, I analyze the association of the low-income designation, and usage of attendant regulatory benefits, with credit union profitability, risk, and growth.

The following excerpt from a Congressional Research Service report explains the motivation for US governmental programs that promote financial inclusion programs while alluding to the challenges those financial institutions face when providing such services:

> Access to basic financial products and services is generally considered foundational for households to manage their financial affairs, improve their financial well-being, and graduate to wealth building activities in the future…Financial institutions may find serving these consumers expensive or difficult, given their business model and safety and soundness regulation requirements. (Cooper, 2019, p. 2)

The terms “unbanked” or “underserved” refer to households who lack access to basic financial products and services. Low family income is the characteristic most strongly correlated with being unbanked; in 2019, 38% of households with annual income below $50,000 did not have a bank

account (Federal Deposit Insurance Corporation, 2020). While there are indications that these customers are less profitable to serve (Benjamin et al., 2003; Cooper, 2019; Cotten, 2008; Glass & McKillop, 2006; Goddard et al., 2008a; McKillop et al., 2007), there is scant research regarding the impact to the financial performance of financial institutions who participate in specific financial inclusion initiatives. In this paper I explore one such program, the low-income designation (LID) for US credit unions. Unlike similar governmental programs, the LID is only available to credit unions so there is less noise in the study than if we included banks who have heterogenous ownership, governance, and tax characteristics. The LID provides credit unions with regulatory waivers as well as financial and technical assistance to help overcome the challenges in serving the underserved. The LID allows credit unions to exceed regulatory restrictions on member business lending, to obtain secondary capital, and to accept non-member deposits. These benefits provide unique strategic options for credit unions, as further described in section 2.2.

Credit unions are eligible for the LID when a simple majority of their members earns 80% or less of regional median income. In 2012, the National Credit Union Administration began to notify eligible credit unions based on membership data submitted by credit unions through quarterly mandatory reporting and this is the most common method of obtaining the LID (CUInsight, 2012). Alternatively, and prior to 2012, credit unions can submit information if they believe they qualify, or if they intend to initiate service in underserved areas (National Credit Union Administration, 2020a; National Credit Union Administration, 2021). In 2020 the number of LIDCUs increased by 37 (National Credit Union Administration, n.d.a), and nineteen of those credit unions had submitted requests for approval to expand to underserved areas (National Credit Union Administration, n.d.d). At year-end 2020, 51% of the 5,200 credit unions in the US have the LID, and LIDCUs held 45% of total US credit union assets while serving 49% of total US credit union members (National Credit Union Administration, n.d.a).

Despite the prevalence of LIDCUs and the substantial efforts to support their financial inclusion efforts, there is little research on the topic. There is a gap in the literature regarding the between LID and credit union financial performance. As such, there is no clear indication regarding the effect of incentives for LID credit unions in overcoming the financial challenges inherent in serving low-income customers. Are the benefits offered to LIDCUs associated with achieving strong financial performance while serving the underserved? This research addresses the gap by answering the following research questions:
Q1: What is the association between low-income designation and credit union financial performance?
Q2: What is the association between LID benefit usage and credit union financial performance?

In brief, my research findings suggest that LIDCUs who use the benefits afforded by the designation achieve improved financial performance. The findings are important for practitioners as pertains to individual credit unions and for regulatory bodies as pertains to the stability of the credit union industry.

This research further contributes to the literature, to practitioners, and to regulators by finding evidence that suggests favorable regulatory relief has the potential to mitigate financial institutions' higher costs involved in serving the underserved. Programs, such as the LID, which support financial institutions who serve the underserved increase the strategic options available for

these financial institutions to achieve financial sustainability. This becomes increasingly important as credit unions and other regulated financial institutions now face competition not only from other financial institutions, but also from fintech companies (Buchak et al., 2018; Egan et al., 2017; Petach et al., 2021; Tan, 2017; Thakor, 2020).

LITERATURE REVIEW

2.1 Credit Union Industry Background and Financial Performance

In 2020, 124 million Americans were credit union members (National Credit Union Administration, n.d.c). Credit unions are non-profit financial cooperatives that are owned by their members (McKillop et al., 2020). Each credit union defines its field of membership by a common bond, such as employer or geographic region. Individuals or entities who are part of the field of membership can apply to become a member of the credit union and open their membership account for a nominal ownership share. Each credit union member has equal voting rights to elect the volunteer board of directors (McKillop & Wilson, 2011).

I follow Goddard et al. (2004, 2008a, 2008b), McKillop et al. (2005), and Wheelock & Wilson (2013) in including bank financial performance literature in this review. Even though there are crucial differences between banks and credit unions, both perform similar intermediation functions and offer many of the same products and services.

Credit unions and retail banks rely on deposits to fund loans, and loan activity is their largest revenue source (Diamond & Rajan, 2001; Drechsler et al., 2017; Rubin et al., 2013; Stulz, 2019). Interest rates are the price of the primary credit union revenue-generating intermediation activities. The cost of funds that are lent out is lower when credit unions use member deposits as the funding source than when alternative sources of funds such as borrowing are used (Diamond & Rajan, 2001; National Credit Union Administration, 2020). Profitability is higher when deposits are the source of loan funding and net interest income is the predominant revenue stream (McKillop & Wilson, 2011; Tran et al., 2016). Thus, interest rates and source of funds are linked with credit union financial performance.

Interest rates are largely determined by the macroeconomic environment. Goddard et al. (2004) find evidence of a positive relationship between interest rates and credit union profitability. Athanasoglou (2008) finds that bank factors including capital levels, asset quality, and efficiency combined with macroeconomic factors to determine profitability. Alternatively, Dietrich and Wanzenried (2014) analyze banks in 188 countries and the results suggest that macroeconomic factors do not relate to profitability in developed countries; rather, profitability is positively related to market share, efficiency, and asset quality. These apparently contradictory findings may not actually be contradictory, because financial institutions with high market share are expected to set competitive interest rates.

There is little research regarding the impact of serving underserved communities on financial institution financial performance. UK credit unions with low-income membership bases are less cost-efficient and less profitable than credit unions with higher income membership bases (McKillop et al., 2005). Studies suggest prolonged poor financial performance threatens credit

union sustainability (Brown & Davis, 2009; Goddard et al., 2016; McKillop et al., 2007; Weerawardena et al., 2010), but these studies did not evaluate the income levels of credit union members.

In sum, there is extensive research on the determinants of financial institution performance, but little that is specific to financial institutions who serve underserved markets.

2.2 Low-Income Designation Background

The LID is a governmental initiative designed to give more flexibility in operations to credit unions who serve the underserved (Cooper, 2019; Gomez-Biscarri et al., 2021; National Credit Union Administration, 2021). From a societal perspective, access to financial institutions for deposit and loan services enhances financial well-being (Birkenmaier & Fu, 2018; Cooper, 2019). Further, lack of access to financial institutions may restrict participation in economic activities and force consumers to use expensive alternative financial services such as check cashing or payday loans (Mylonidis et al., 2019).

Specific to credit unions, the Federal Credit Union Act of 1934 authorized the NCUA to develop guidelines for identifying credit unions that serve a majority low-income members so that these credit unions would be eligible for limited statutory relief and additional financial and technical assistance (National Credit Union Administration, 2021). A credit union is eligible for the low-income designation when at least 50.01% of its members earn 80% or less of the median wage in the region (National Credit Union Administration, 2021). The National Credit Union Administration periodically notifies credit unions of their eligibility and credit unions can also apply for the designation (CUInsight, 2012). In 1979, Congress approved the establishment of a revolving loan fund to increase economic activity in low-income areas (The Low-Income Definition, 2010). The administration of this fund, called the Community Development Revolving Loan Fund (CDRLF), was transferred to the NCUA in 1986 for use by credit unions designated as serving low-income members. However, prior to the 2008 financial crisis, only 12% of federally insured credit unions were designated as serving low-income members (CUInsight, 2012). Following the 2008 financial crisis, the NCUA revised the eligibility process and heavily promoted the low-income designation (LID) and its benefits to credit unions (The Low-Income Definition, 2010). By 2020, 51% of federally insured credit unions are LID (National Credit Union Administration, n.d.a; National Credit Union Administration, 2021).

The following chart from the National Credit Union Administration (2021) describes the advantages of obtaining the credit union low-income designation:

What Are the Benefits of the Designation?
• An exception from the statutory cap on member business lending, which expands access to capital for small businesses and helps credit unions to diversity portfolios;
• Eligibility for grants and low-interest loans from the Community Development Revolving Loan Fund;
• Ability to accept non-member deposits from any source; and
• Authority to obtain supplemental capital.

The LID benefits are designed to enable credit unions to withstand the financial disadvantages inherent in serving the underserved. LIDCUs are eligible for financial assistance from the CDRLF. LIDCUs are exempt from statutory restrictions that limit credit union member business lending to 12.25% of total assets. Unlike other credit unions, LIDCUs can also accept non-member deposits, which may provide an important funding source since low-income members have lower deposit balances (Board of Governors of the Federal Reserve System, 2020). In addition, LIDCUs can access supplemental capital, in the form of issuing unsubordinated debt that the LIDCU classifies as capital rather than as a liability for the purpose of evaluating capital adequacy. This may be the most important benefit from a strategic and solvency perspective. Davis (2005) suggests that regulatory mechanisms are important to prevent credit unions from demutualizing when they are constrained by capital requirements and unable to grow. The inability to access supplemental capital for growth or to withstand financial crisis limits most credit union's strategic options (Brown & Davis, 2009; Davis, 2005; Fonteyne, 2007; Goddard et al., 2016; Llewellyn & Holmes, 1991; McKillop et al., 2011; McKillop et al., 2020; Reddy & Locke, 2014). Consequently, the LID provides credit unions with powerful strategic options.

2.3 Low-Income Designation and Credit Union Financial Performance

Credit unions, like other financial institutions, generate profit by acting as intermediaries among financial actors, primarily depositors and borrowers (Allen & Santomero, 2001; Bauer, 2008; Brown & Davis, 2009; Goddard et al., 2008b; Gomez-Biscarri et al., 2021; McKillop et al., 2020). In 2020, interest income accounted for 72% of US credit unions' gross income (National Credit Union Administration, n.d.a). Low-income households participate less fully in the revenue-generating activities related to lending; they have lower deposit balances and lower loan balances compared to all other household income levels (Board of Governors of the Federal Reserve System, 2020). LIDCUs thus have less opportunity to intermediate funds between depositors and borrowers, which reduces what is typically the largest revenue stream.

Research has further shown that low-income customers are more costly to serve (Cooper, 2019; Goddard et al., 2008a). Reduced profitability is a primary obstacle for financial institutions who serve underserved markets (Rhine & Robbins, 2012). The regulatory authority acknowledges that LIDCUs have higher operating costs and higher credit risk than credit unions that do not have the LID (National Credit Union Administration, 2010), and that LIDCUs "face the challenges of increased competition, stagnant membership, and lagging earnings" (National Credit Union Administration, n.d.a, page 25) in the pursuit of fulfilling their mission to serve the underserved. Regulators and trade organizations recognize that credit unions who serve low-income members face financial difficulty and require support to meet regulatory capital requirements and remain a going concern (Cotten, 2018; National Credit Union Administration, 2021).

HYPOTHESIS DEVELOPMENT

In this section I develop hypotheses on how the LID, and usage of attendant regulatory benefits, namely (1) exceed statutory limits on member business lending, (2) obtain secondary capital, and (3) accept non-member deposits, connect to credit union profitability, risk, and growth.

Impact of low- income designation on financial performance

The LID is the NCUA's recognition that a credit union has a majority low-income membership base. The LID waiver benefits are provided due to the expected disadvantages, but this has not been empirically tested prior to this study. My first test is to find out if the LID does, in fact, relate to changes in credit union performance.

Therefore, I hypothesize that LID does have a significant association with financial performance (H1A-E). I will compare financial performance for credit unions pre- and post-LID. The low-income designation (LID) independent variable is a binary measure of the credit union either having or not having the low-income designation. I follow prior researchers in using the following measures of the dependent variable financial performance (Athanasoglou et al., 2008; Dietrich & Wanzenried, 2014; Goddard et al., 2004, 2008a, 2008b; Gomez-Biscarri, et al., 2021; Hillier et al., 2008; Tan, 2017). These measures are categorized as profitability, risk, and growth indicators.

Profitability measures

Return on assets (ROA): Ratio of net income to total assets. Because credit unions have historically generated most of their income through interest earned on loan assets, this ratio reflects how well the credit union generates profits from their asset base. Low-income households tend to carry lower loan balances and are also more costly to serve. I predict a negative coefficient (H1A).

Net interest margin (NIM): Ratio of net interest income to total assets. This is a measure of profitability of the credit union's intermediary role. Most credit unions use risk-based pricing for loans and charge higher interest rates to borrowers with lower credit scores. Credit scores are correlated with income levels, so I expect a positive coefficient (H1B).

Risk measure

Credit risk (CR): Ratio of delinquent loans plus net charge-offed loans to total loans. While financial performance studies often use the provision for loan loss to total loans ratio to measure credit risk (Athanasoglou et al., 2008; Dietrich & Wanzenried, 2014; Tan, 2017), I follow Hughes, et al. (2019) and Gomez-Biscarri, et al. (2021) in using delinquent loans and charged-off loans to operationalize credit risk. I predict a positive coefficient (H1C).

Growth measures

Asset growth (AGROW): Annual percentage growth in total assets. Since assets are used to generate income and support operations, asset growth predicts future earnings (Goddard et al., 2008b). Asset growth also indicates the degree of strategic initiative success. Due to the challenges inherent in serving low-income members, I predict a negative coefficient (H1D).

Membership growth (MGROW): Annual percentage growth in number of members. Membership growth is positively associated with financial performance (Goddard et al., 2008a), therefore this is an important indicator. LIDCUs tend to grow membership at a lower rate than other credit unions (National Credit Union Administration, n.d.a), so I predict a negative coefficient (H1E).

Impact Of Benefit Usage on Financial Performance

In this section I develop hypotheses related to the usage of regulatory benefits. The regulatory waiver benefits afforded to LIDCUs are designed to help these credit unions overcome the

challenges inherent in serving low-income members. Is usage correlated with improved financial performance for LIDCUs?

I use the following variables to measure waiver benefit usage.
Member business lending (MBL): The ratio of net member business loans to total assets indicates if the credit union is taking advantage of the LID regulatory waiver benefit. This categorical variable has value of 1 when net member business loans exceed the statutory threshold of 12.25% of total assets, 0 if not.
Secondary capital (SC): The categorical variable has value of 1 if the credit union has secondary capital and value 0 if not.
Non-member deposits (NMD): The categorical variable has value of 1 if the credit union has non-member deposits and value 0 if not.

Impact Of Benefit Usage on Profitability

Goddard et al. (2008b) studied US credit union revenue diversification by testing the effect of increasing non-interest income compared to increasing interest income activities. In line with portfolio theory, they find that diversifying the type and volume of interest-generating loans improves profitability, while expanding non-interest income revenue sources is most successful only for large credit unions who can achieve economies of scale in the new service offerings. LIDCUs therefore have a unique opportunity to build their business loan portfolio and to gain efficiency due to that specialization (Eisenhardt & Martin, 2000; Gomez-Biscarri, et. al., 2021). The increased credit risk on business loans should translate to higher interest rates, and business accounts typically garner higher service fee income than consumer accounts. Therefore, I hypothesize that profitability is positively associated with utilizing the member business lending cap waiver (H2A).

Credit unions use capital to absorb financial losses and also to fund strategic initiatives. Due to the importance of the capital ratio in regulatory determination of safety and potential interventions, credit unions may restrict asset (lending) growth to limit increases in the capital ratio numerator calculation (Goddard et al., 2016). Access to secondary capital removes the need to restrict loan growth, and credit unions are more profitable when net interest income is the primary revenue source (McKillop & Wilson, 2011; Tran et al., 2016). Therefore, I hypothesize that profitability is positively associated with obtaining secondary capital (H2B).

Low-income accountholders have lower deposit balances (Board of Governors of the Federal Reserve System, 2020), which limits the LIDCUs source of funds and constrains lending activity. Accepting non-member deposits is a lower cost of funds than borrowing and provides the deposits to generate net interest income. Therefore, I hypothesize that profitability is positively associated with accepting non-member deposits (H2C).

Impact Of Benefit Usage on Credit Risk

Business loans are riskier than consumer loans, and credit unions who lack policies and systems adequate to capture the complexities of business loans experience a decline in financial performance when increasing their business loan portfolio (Gomez-Biscarri et al., 2021). Credit

unions who learn and improve upon their underwriting and monitoring of business loans see subsequent improved financial performance (Gomez-Biscarri et al., 2021). LIDCUs who exceed the regulatory restriction on member business loans have advantages due to economies of scale and sophisticated underwriting and monitoring programs compared to credit unions with smaller business loan portfolios. Therefore, I hypothesize that credit risk is inversely related to using the member business lending cap waiver (H2D).

Goddard et al. (2016) find that credit unions constrained by regulations preventing access to supplemental capital operate more cautiously and tend to hold excessive capital in order to meet NCUA net worth guidelines. The statutory threshold for "well-capitalized" is a net worth ratio of 7% or above (Capital Adequacy, 2021). LIDCUs who use the regulatory waiver to access supplemental capital have another way to achieve "well-capitalized" levels. This may increase their ability to take risks in pursuit of earnings growth. Therefore, I hypothesize that credit risk is positively correlated with obtaining secondary capital (H2E).

Low-income members have lower deposit balances than other income level members, and therefore reduce funds available for lending and potential for interest income revenue. Low-income designation allows credit unions to offer deposits, typically brokered certificates of deposit, to non-members as an additional source of funds for lending. Though the cost of non-member deposit funds is higher than the cost on member deposits, it is lower than the cost of borrowing to fund loan growth. Similar to using secondary capital, the credit union may take on more credit risk in pursuit of increasing interest income. Therefore, I hypothesize that credit risk is positively correlated with accepting non-member deposits (H2F).

Impact Of Benefit Usage on Growth

Credit union growth is limited by the number of potential members in the defined field of membership. The ability to grow the business loan portfolio means that credit unions can offer an additional bundle of lucrative business services to existing members. The common bond minimizes information asymmetry and credit unions are known for extending credit when other institutions may not, and at better terms for the member (Petersen & Rajan, 1994). Members can move existing services to the credit union, and positive word-of-mouth can bring in more members for business loans and other business-related services. Therefore, I hypothesize that growth is positively associated with utilizing the member business lending cap waiver (H2G).

Access to secondary capital is one of the benefits of the LID, and it provides another method of growing equity in addition to retained earnings. Credit unions can then maintain desired capital reserves and ratios even when the rate of asset growth exceeds the rate of earnings growth, which is common in the early phases of new business initiatives. Secondary capital builds capacity for new lending programs (National Credit Union Administration, 2010). Secondary capital is also useful to fund acquisitions (Seay, 2021). Therefore, I hypothesize that growth is positively associated with obtaining secondary capital (H2H).

Credit unions are cooperative financial institutions that typically rely on member deposits to fund loans. Because non-member deposits bear a higher cost of funds than member deposits, it is reasonable to assume that credit unions will only accept non-member deposits if loan demand

exceeds deposit supply. Therefore, I hypothesize that growth is positively associated with accepting non-member deposits (H2I).

Control Variables

I follow the lead of (Glass & McKillop, 2006), Goddard et al. (2008a). Goddard et al. (2008b), Athanasoglou et al. (2008), Dietrich & Wanzenried (2014), Hughes et al. (2019), and Gomez-Biscarri (2021) for control variable selection.

LID tenure (YRSLID): This variable measures the number of years since the credit union became LID. Credit unions learn and develop processes that increase profitability and reduce credit risk with more experience (Gomez-Biscarri, 2021). YRSLID displays the number of years before or after the credit union earned the LID. A negative value indicates the number of years the observations precede LID, "0" value indicates the observations are for the year the credit union became LID, and a positive value indicates the number of years since LID.
Credit union size (SIZE): Credit union size is measured by total assets. Credit union size determines certain regulatory parameters and economies of scale. Therefore, I expect a positive impact of size on performance measures.
Capital strength (CAP): The capital ratio (CAP) measures capital strength, and it is calculated as the ratio of total net worth to total assets. Because there are no stockholders to satisfy, credit unions accumulate earnings to satisfy regulatory requirements and internal risk parameters or use surplus earnings to pay additional dividends or expand services to the member-owners (Brown & Davis, 2009; Naaman et al., 2021). Credit unions also fund expansion and growth initiatives from capital reserves, and thus the capital ratio represents credit union capacity to invest in strategic initiatives (Brown & Davis, 2009; Llewellyn & Holmes, 1991; McKillop et al., 2020; Naaman et al., 2021). Credit unions may stagnant or contract if they retain earnings as net worth instead of distributing earnings to the member/owners or investing earnings toward future growth. Therefore, capital ratios that exceed regulatory requirements suggest reduced future earnings potential (Goddard et al., 2016; National Credit Union Administration, n.d.b; Rubin et al., 2013). In summary, the literature affirms the view that capital levels are an important link to financial performance.
Loan ratio (LTA): Ratio of total loans and leases to total assets. Credit unions are more profitable when interest income from lending activity is their primary source of revenue. As lending activity increases, specialization may also reduce costs and increase returns (Goddard et al., 2008b; Gomez-Biscarri et al., 2021).
Credit union age (AGE): The number of years since opening are likely to affect the credit union operations and governance, since credit unions often start as small, volunteer-led cooperative entities. Older credit unions have economic and financial advantages over younger credit unions (Glass & McKillop, 2006). However, older credit unions may also have higher saturation rates within their field of membership and therefore less growth opportunities.

DATA, METHODS, AND SAMPLE DESCRIPTION

Data and Sample Description

The sample for the study consists of 56,262 observations of annual information for U.S. credit unions who had the LID for at least one year during the 2000 – 2020 data collection period. The

twenty-year period includes different macroeconomic conditions, including the 2008 financial crisis, thereby controlling for the effect of macroeconomic conditions on financial performance. This panel data set provides consistent data appropriate for cross-sectional and longitudinal analysis of a range of factors using Stata 17.0.

Credit unions must file extensive quarterly informational reports with the National Credit Union Administration (National Credit Union Administration, n.d.b). These filings include the Form 5300 Consolidated Reports of Condition and Income, commonly referred to as "Call Reports". These filings include incredibly detailed information regarding the balance sheet, income statement, risk factors, and operational details and are publicly available.

I obtained the data points for the year credit unions were designated as low-income under a Freedom of Information request to the NCUA. The remainder of the data was downloaded from the public websites of the NCUA. I identified and removed credit unions with outlier data, namely a) zero loan balance (217 observations), b) zero or negative net worth (92 observations), and c) missing low-income identifier (29 observations).

Table 1 shows the summary statistics for the variables used in the model to test hypotheses 1A – 1E grouped by LID status and in total. There are a total of 56,262 observations with 23,353 in non-LID years and 32,909 in LID years and the statistics are similar between the groups for most variables. The average credit union has $120 million in assets with a standard deviation of $412 million; asset sizes range from $9,748 to $16.3 billion. The mean ROA is .41%, and of note is that the mean ROA for LID is lower than pre-LID (.32% to .54%) and has a higher standard deviation (1.92% to .95%). The mean NIM is 3.26%. Average CR is 3.11%, and of note is that the mean CR for LID is higher than pre-LID (3.66% to 2.33%) and has a higher standard deviation (7.79% to 3.35%). The average AGROW is 5.86% and average MGROW is 4.47%. The average CAP is 13.27% and of note is that even in the 25% percentile, credit unions have ROA of 9.48%, which is well above the NCUA's 7% guideline for "well-capitalized". The average LTA is 56.67%. The average AGE is 55 years.

TABLE 1

Summary statistics

This table shows the number of observations, mean, standard deviation, minimum value, and maximum value for variables used in the regression models except for MBL, SC and NMD (see table 2). Results are shown for the full sample which includes annual data from 2000 to 2020 for US credit unions who had the low-income designation in at least one year between 2000 and 2020, N = 56,262. LID is a categorical variable with the value 1 if the credit union had the LID in that data year, 0 if not. YRSLID is the number of years before or after LID, with a value of 0 in the designation year. ROA is return on assets calculated as the ratio of net income to total assets. NIM is the net interest margin calculated as the ratio of interest income minus interest expense, divided by total assets. CR is credit risk, calculated as the ratio of delinquent loans plus net charged-off loans, divided by total loans. AGROW is the annual percentage change in total assets. MGROW is the annual percentage change in number of members. SIZE is credit union total assets, logarithm. CAP is the capital ratio, calculated as net worth divided by total assets. LTA is the ratio of total loans to total assets. AGE is the number of years the credit union has been open.

	SIZE	ROA	NIM	CR	AGROW	MGROW	CAP	LTA	AGE
	LID=0								
N	23353	23353	23353	23353	21670	21659	23353	23353	23353
Mean	113,000,000	0.0054	0.0325	0.0233	0.0636	0.0304	0.1339	0.5749	54
SD	310,000,000	0.0095	0.0115	0.0335	1.1676	2.1654	0.0543	0.1761	15
Min	19,348	-0.2872	-0.3099	-0.0905	-0.6458	-0.9976	0.0196	0.0007	0
Max	7,900,000,000	0.4343	0.4905	1.2630	169.8514	310.0000	0.5691	1.0191	107
p25	9,115,691	0.0020	0.0262	0.0084	0.0025	-0.0218	0.0977	0.4592	45
p50	25,200,000	0.0058	0.0320	0.0154	0.0445	0.0037	0.1202	0.5922	54
p75	75,900,000	0.0096	0.0380	0.0278	0.0929	0.0313	0.1540	0.7057	66
	LID=1								
N	32909	32909	32909	32909	32157	32108	32909	32909	32909
Mean	124,000,000	0.0032	0.0326	0.0366	0.0552	0.0543	0.1319	0.5609	55
SD	471,000,000	0.0192	0.0154	0.0779	0.5006	6.9784	0.0627	0.2001	17
Min	9,748	-1.1881	-0.7175	-0.5188	-0.7877	-0.9991	0.0007	0.0004	0
Max	16,300,000,000	0.7158	0.2372	3.7049	46.6521	1248.0000	0.8692	1.5893	111
p25	3,517,682	0.0005	0.0252	0.0081	-0.0075	-0.0264	0.0927	0.4239	45
p50	14,700,000	0.0043	0.0312	0.0166	0.0373	0.0028	0.1142	0.5825	56
p75	62,200,000	0.0087	0.0390	0.0354	0.0895	0.0342	0.1521	0.7164	67
	Total								
N	56262	56262	56262	56262	53827	53767	56262	56262	56262
Mean	120,000,000	0.0041	0.0326	0.0311	0.0586	0.0447	0.1327	0.5667	55
SD	412,000,000	0.0160	0.0139	0.0637	0.8358	5.5650	0.0594	0.1906	17
Min	9,748	-1.1881	-0.7175	-0.5188	-0.7877	-0.9991	0.0007	0.0004	0
Max	16,300,000,000	0.7158	0.4905	3.7049	169.8514	1248.0000	0.8692	1.5893	111
p25	5,371,713	0.0011	0.0256	0.0082	-0.0032	-0.0244	0.0948	0.4399	45
p50	19,200,000	0.0050	0.0315	0.0160	0.0403	0.0032	0.1166	0.5870	55
p75	68,900,000	0.0091	0.0385	0.0315	0.0907	0.0329	0.1530	0.7118	66

Table 2 (Appendix 1, available upon request) shows the summary frequency statistics for the categorical variables added to the model to test hypotheses 2A – 2I; namely MBL, SC, and NMD benefit usage frequency by year. The number and percentage of credit unions using waiver benefits has increased from 2000 to 2020. Non-member deposit taking is the most frequently used benefit. For example, in 2020, 4.2% of LIDCUs had member business loan portfolios exceeding 12.25% of total assets, 2.7% obtained secondary capital, and 21.9% accepted non-member deposits.

Table 3 (Appendix 1, available upon request) displays the correlations among variables.

EMPIRICAL METHODS

To measure the effect of LID on CU profitability, risk, and growth I run the following models:

$$FP = \beta_0 + \beta_1 LID + \beta_2 YRSLID + \beta_3 SIZE + \beta_4 CAP + \beta_5 LTA + \beta_6 AGE + U \quad (1)$$

$$FP = \beta_0 + \beta_1 MBL + \beta_2 SC + \beta_3 NMD + \beta_4 LID + \beta_5 YRSLID + \beta_6 SIZE + \beta_7 CAP + \beta_8 LTA + \beta_9 AGE + U \quad (2)$$

FP represents financial performance and is measured as (a) profitability, (b) risk, and (c) growth measures. Model 1 uses the LID dummy to capture the effect of LID. LID is categorical and the value is 1 for LID and 0 if not for that year of Call Report data. Model 2 uses specific provisions of the LID (MBL, SC, NMD) to capture the effect of LID. MBL, SC, and NMD are categorical variables representing LID benefits usage. YRSLID, SIZE, CAP, LTA, and AGE are control

variables, and *U* is an error term. The following sections discuss the tests and results for each hypothesis.

RESULTS AND DISCUSSION

This study analyzes the relationship of the low-income designation and regulatory waiver benefit usage to credit union financial performance. The results section is organized by the three financial performance variables of interest, followed by discussion of a robustness test conducted on a sub-sample of credit union observations four years pre-LID through four years post-LID. The regression results are displayed as follows: Table 4, H1; Table 5, H1 fixed effects; Table 6, H2; Table 7, H2 fixed effects (Tables 4, 5, 6, and 7 in Appendix 1, available upon request).

Profitability

The results of the regression analysis to test LID impact on ROA, H1A, show a positive and significant coefficient for LID as displayed in Table 4. The surprising results may be due to the fact that the designation may not signal a change in a credit union's membership base but is, rather, an ex-post acknowledgement of the low-income membership base.

The findings in the fixed effects model to test the relationship between LID and NIM (H1B) are significant and positive as expected, coefficient .000831 and T-statistic 4.32, as shown in Table 5. Usage of the MBL cap waiver is significant and positively associated with ROA as hypothesized (H2A). Usage of SC (H2B) has a slightly significant and negative association with ROA that becomes insignificant in the fixed effects model (Table 7). Usage of NMD has a positive coefficient for ROA as expected (H2C) and the results are significant. The impact of usage on NIM results are surprising. Usage of SC (H2B) has a slightly significant and negative association that becomes insignificant in the fixed effects model (Table 7). I expected MBL (H2A) and NMD (H2C) to have positive coefficients, but they are negative. One explanation may come from Stevenson and University (2020), who follow Taylor (1971) in using net interest margin as a measure of performance where a smaller margin represents better performance in terms of benefit to the member-owners because it implies better rates for both. This is based on the logic that member-owners are both borrowers and savers, so benefits are shared equally in both lending and saving activities. A reduced NIM may reflect the strong mission-focus ascribed to LIDCUs who are actively using the LID benefits.

Risk

The coefficient of LID on CR is positive and significant as hypothesized (H1C) in the fixed effects model (Table 5). In terms of LID benefit usage, the association is also positive as expected for SC (H2E) and NMD (H2F). However, MBL was predicted to reduce CR (H2D), and instead the coefficient is positive and significant. Future tests will include lag effect to determine if credit unions who exceed the cap improve their underwriting and monitoring capabilities to reduce credit risk over time.

Growth

The coefficient of LID on AGROW is positive, which is the opposite of the prediction (H1D), as shown in Table 4. MBL is positively associated with AGROW as hypothesized (H2G) as shown in Table 6, though the coefficient in the fixed effects model is not significant. NMD has the expected positive coefficient (H2I) in both models.

TABLE 4

Regression results H1

	ROA	NIM	CR	AGROW	MGROW
LID	0.000720***	-0.000636***	-0.000878	0.0240**	0.0928
	(3.46)	(-3.95)	(-1.11)	(2.13)	(1.24)
YRSLID	-0.0000697***	0.00000588	0.000316***	-0.000938***	-0.00286
	(-11.17)	(1.22)	(13.32)	(-2.75)	(-1.26)
SIZE	0.00144***	-0.00179***	-0.00918***	0.0124***	-0.00773
	(36.19)	(-58.18)	(-60.79)	(5.70)	(-0.53)
CAP	0.000307***	0.000384***	-0.000101**	-0.00173***	-0.00226
	(25.65)	(41.57)	(-2.21)	(-2.64)	(-0.51)
LTA	0.00595***	0.0348***	-0.0236***	-0.00804	0.105
	(16.29)	(123.10)	(-16.97)	(-0.40)	(0.78)
AGE	-0.000109***	-0.0000184***	-0.000198***	-0.00144***	-0.00157
	(-24.75)	(-5.43)	(-11.87)	(-5.97)	(-0.98)
_cons	-0.0212***	0.0390***	0.208***	-0.0477	0.203
	(-31.35)	(74.43)	(80.77)	(-1.28)	(0.82)
N	56262	56262	56262	53827	53767
R-sq	0.047	0.249	0.132	0.002	0.000
Fixed effects	No	No	No	No	No

Robustness Test

As a robustness test, I ran the regression models (1) and (2) using data from credit unions in the years four years prior to LID through four years after LID. Due to the limitation of only having the LID designation year data from 2000 – 2020, this sample includes call report credit union data from 2004 to 2016. This sample has 11,010 observations. Table 8 (Appendix 1, available upon request) shows the summary statistics for the variables, which are consistent with the summary statistics for the entire sample. Table 9 (Appendix 1, available upon request) shows the frequency by year and by number of years pre-or post-LID. Of note is the large spike in value "0" representing the year of designation of 509 in 2012, when the NCUA began to notify credit unions of their eligibility for the LID.

Tables 10 through 13 (Appendix 1, available upon request) display the regression results to see if the findings differ from those of the full sample. LID has a positive coefficient for ROA that is not significant in the fixed effects model. The sub-sample test is consistent with the findings in the full

sample of positive coefficient of NMD for ROA. In terms of NIM, the coefficients are negative and significant in all models for MBL, SC, and NMD, consistent with the full sample results.

The sub-sample results for CR are consistent with the full sample in finding higher CR associated with MBL, SC, and NMD. The coefficient for LID, however, is not significant in the sub-sample. The sub-sample SC and NMD coefficients are positive and significant for AGROW, but the results are not significant in the fixed effects model. Under the fixed effects model the only significant growth measure result is the positive coefficient of NMD for MGROW. This differs from the lack of significant results between the variables of interest and MGROW in the full sample.

In summary, findings in the sub-sample testing are consistent with the results of the full sample, though several previously significant coefficients do not meet significance in the sub-sample.

LIMITATIONS AND FUTURE RESEARCH SUGGESTIONS

There are several limitations to this study. First, this study is hampered by the fact that a credit union may serve the underserved prior to obtaining the LID so the designation may mark an acknowledgement of the fact rather than an actual change in the credit union's strategy or service profiles. Second, data is not available to test the effect of the percentage of low-income members; LID designation indicates more than 50.1% of members are low-income, but I am not able to distinguish between a credit union with 50.1% low-income membership base and a credit union with 90% low-income membership base. Third, the main analyses may suffer from endogeneity issues, such as a correlated omitted variable problem. To address this issue, I suggest including additional credit union-specific and environmental control variables in the model testing.

Future studies can re-visit the impact of the regulatory waivers as LID has become more commonplace and there is increasing interest in using the waiver benefits. Macroeconomic issues are also changing dramatically; interest rates are beginning to increase in 2022 after being relatively flat for over a decade. In addition, historic inflation rates and near-record low unemployment contribute to exogenous conditions that most LIDCUs have not experienced since receiving the LID, if ever.

Future studies can also extend this research model to determine if the results are similar for other types of financial institutions in the US as well as for credit unions, cooperative banks, and regional banks that serve low-income customers in other countries.

CONCLUSION

More than 50% of US credit unions are recognized for serving the underserved by the NCUA's low-income designation. This is the first study to analyze the association of LID and credit union financial performance.

As regulations evolve, these findings are instructive for practitioners and regulators. For example, as of January 1, 2022, complex credit unions (defined as credit unions with $500 million or more in assets) and new credit unions are also allowed to issue unsubordinated debt that is classified as capital (Subordinated Debt, 2021). Industry analysts note an increasing trend and forecast

continued growth of secondary capital usage to increase capital ratios and fund growth strategies, including bank acquisitions (Seay, 2021). This study's findings suggest that credit unions who use secondary capital take on more credit risk and may experience a decline in profitability. This is useful for creating and evaluating secondary capital plans and estimating their impact on credit union performance.

In conclusion, this paper provides findings that are useful for practitioners and regulators. The results of this study suggest that regulatory waiver benefits provide some earnings and growth improvements for LIDs. However, usage is also associated with increased credit risk, which will eventually reduce earnings. Financial inclusion, often measured by access to services provided by federally regulated and insured financial institutions, is recognized as being crucial for economic development and societal well-being (Benjamin et al., 2003; Birkenmaier & Fu, 2018; Cotten, 2018; Cooper, 2019; Mylonidis et al., 2019; Rhine & Robbins, 2012). Additional research is needed to further our understanding of what determines a financial institution's capability to serve the underserved while remaining economically viable.

REFERENCES

Appendix 2 displays the References.