

The Effects of Credit Union Service Organizations on Credit Union Performance

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Abstract

This study examines the effects of credit union service organizations (CUSOs) on credit union performance for the period 2009 through 2014. I use random effects models with Mundlak (1978) correction to estimate the relationships between CUSOs and credit union performance variables. Credit union participation in CUSOs increased over the sample period and participation increases with credit union size. CUSO participation is divided based on whether the credit union wholly owned the CUSO or was required to collaborate with other institutions. I find evidence that participation in wholly-owned CUSOs increases the interest rate spread, collaborative consumer mortgage origination reduces loan rates, and insurance brokerage or agency significantly increases non-interest income for credit unions. The results of the study support existing findings that small organizations are reluctant to give up autonomy and offer insight on which CUSOs benefit credit unions and their members.

I. Introduction

Credit unions are a significant and growing source of retail banking services in United States. As of June 2014, approximately 100 million Americans were members of a credit union up from 80 million in 2000 following a consistent trend of two percent growth for the past several years (Marte, 2014). In May of 2015, deposits in US credit unions passed the \$1 trillion threshold (Rick, 2015). Despite the increase in demand for credit union services, the number of credit unions has been declining, primarily due to mergers of smaller institutions (Bauer, Miles, and Nishikawa, 2009). Despite this, the average credit union is still significantly smaller than the average commercial bank (Anderson and Liu, 2013). Because of their small size and restrictions on activities, credit unions finance wholly-owned firms to provide additional services, collaborate with other credit unions to offer services, or seek out non-credit union third party firms that provide specialized services to many credit unions. All of these approaches result in the formation of credit union service organizations (hereafter “CUSOs”).

Per the National Credit Unions Association Examiner’s Guide, “a credit union service organization (CUSO) is a corporation, limited liability corporation, or limited partnership that provides services primarily to credit unions or members of affiliated credit unions” (pg. 25-1). CUSOs are required to have a board of directors that is separate from the board of the credit unions and may not be dominated by the credit unions officers and directors. Federally chartered credit unions are limited to investing and/or loaning up to one percent of their unimpaired capital and surplus to CUSOs (National Credit Union Administration, n.d.). Per NCUA Regulation 712.5, there are twenty allowable types of CUSOs. The most common CUSOs are electronic transfer, shared branching, loan support services, consumer mortgage origination, and business loan origination CUSOs.

In this paper I differentiate credit union participation in CUSOs into two categories based on the ownership of the CUSO. Participation in a CUSO that the credit union wholly owns is designated

as Wholly-Owned and participation in a CUSO that the credit union owns partially or not at all is designated as Collaborative.

This paper seeks to determine if participation in a CUSO impacts credit union performance using measures for member utility, asset quality, and revenue diversification. As presented in Section IV, credit union participation in CUSOs consistently grew between the years 2009 and 2014. CUSO participation was first reported by the NCUA in the call report database in 2009. The operations of CUSOs are more opaque than those of the credit unions that participate in them as the financial information of CUSOs is not reported. This increased opacity may result in increased member vs. manager agency problems. To determine the relationships between CUSOs and credit union performance I use a panel data methodology utilizing random effects models with Mundlak (1978) corrections. The sample for the paper consists of all credit unions in the United States that have data available for the model variables for the period 2009 through 2014.

The results of this paper provide evidence that participation in CUSOs increases with the size of the credit union. The effects of CUSO participation on credit union performance is mixed. Participation in a wholly-owned CUSOs may not be beneficial for credit union members as it is positively related to the interest rate spread (difference between the rates charged for loans and paid on deposits) and negatively related to asset quality. Participation in collaborative CUSOs is negatively related to both the loan rate and saving rate, providing no significant impact on the interest rate spread for members. One type of collaborative CUSO, consumer mortgage origination, is sufficiently negatively related to the loan rate without an offsetting decrease in the saving rate to result in a negative relation with the interest rate spread.

Participation in wholly-owned insurance broker or agency CUSOs is related to a significant increase in non-interest income for the credit union. Additionally, participating in collaborative CUSOs in general, and specifically electronic transaction services or shared branch operations CUSOs that are collaborative, is positively related to non-interest income. Finally, participation in collaborative shared branch operations or business loan origination CUSOs is negatively related to asset quality.

This paper adds to the literature on financial institutions by discussing the unique ownership structure of credit unions as it relates to external stakeholders (i.e. CUSOs), the trends with regard to CUSO participation over the past several years, and the effects of CUSOs on credit union performance. The results demonstrate that wholly-owned CUSOs may result in rent-seeking behavior on the part of managers and participation in specific CUSO types may result in monitoring neglect.

II. Literature Review

Credit unions are similar to commercial banks in the types of services that they provide to borrowers and savers. Unlike commercial banks, credit unions are nonprofit organizations. Existing theoretical literature on the governance of for-profit firms ties the connection between stockholders and managers together through a relationship in which the managers and stockholders both seek to maximize their own utility through the firm. As the desires for both parties likely conflict with regard to the activities of the firm, monitors exist to diminish

managerial rent extraction from shareholders via excessive compensation, non-pecuniary compensation, shirking, and risk avoidance. These monitors include the board of directors, active shareholder groups, and government agencies. Traditional tools used to deter rent extraction include performance-based pay and the threat of termination (Jensen and Meckling, 1976). This explanation for the relationship between managers and stockholders, their motivations, and the resulting tools to minimize rent extraction is commonly referred to as agency theory.

Counter to agency theory, the predominant governance theory for nonprofit organizations, stewardship theory, suggests that principals of the organization seek to fulfill the objectives of the organization and are effective monitors of its resources (Donaldson and Davis, 1991; and Muth and Donaldson, 1998). As a result, the role of the board is as a partner offering guidance on strategic planning and community contacts and the role of government monitoring is virtually non-existent.

Eikenberry and Kluver (2004) describe the resource dependency theory for nonprofit firms and state that it assumes that organizations need resources to survive and must interact with other organizations to acquire these resources. For credit unions, the emergence of CUSOs largely comes as a result of increasing competition among financial institutions in two areas. The first providing services that generally fall outside of the traditional depository/lending role of credit unions, to which credit unions are constrained due to regulations. The second providing affordable access to services that credit unions can provide, but are cost prohibitive due to the small size of individual credit unions when compared to other financial institutions, such as commercial banks. Eikenberry and Kluver raise the point that reliance on organizations that may include for-profit firms and other organizations with contradictory missions can result with the organization diverging from its own mission and no longer serving its intended purpose.

Because of a general lack of quantifiable goals, the nonprofit organizational structure allows for less external governance of mission achievement and greater autonomy for expert workers. Guo and Acar (2005) explore the idea of a desire for autonomy by examining collaboration among ninety-five charitable organizations in Los Angeles. They find that collaboration is more likely and more significant among organizations that would lose less autonomy as a result of collaboration. Specifically, they find that nonprofits that have greater resource sufficiency and have been in existence longer engage in more formal collaboration than younger, less financially secure nonprofits. Their results provide evidence that nonprofit managers do desire autonomy and react to dependence on external resources in such a way as to maintain autonomy. A lower level of monitoring and governance is a natural result of maintaining autonomy.

Credit unions differ from many other types of nonprofits in that their customers may take an active role in the management of the organization by voting for the board of directors and other organizational decisions. In the United States, each member of a credit union receives a “share” which allows them a single vote. The dilution of ownership due to credit unions’ one vote per member results in member passivity. Per Hoel (2011), since switching costs are low, credit union members will often choose to move their financial relationship, in part or in whole, rather than become active participants in the governance of the credit union. Moreover, the existence of deposit insurance generally eliminates potential losses that members would have should the credit union fail.

The lack of external investors and protection afforded to depositors results in the primary monitors of credit unions being regulatory agencies and deposit insurers. Both of these monitors focus on risk reduction rather than maximizing member utility. As a result, when compared to for-profit financial institutions, credit unions may take on less risk by having higher capital ratios which often result in lower returns for their members.

The literature on agency costs for for-profit firms effectively establishes significant evidence demonstrating a negative relation between firm performance and the extent of agency problems. For example, Core, Holthausen, and Larcker (1999) find a significant negative relation between excess executive compensation (a visible agency cost) and firm financial performance. Additionally, excess compensation is limited through effective governance by easily identifiable agents, specifically the board of directors and external institutional shareholders (Fahlenbrach, 2009). Contrasted with that is the weak governance provided by boards of nonprofits (Chait, Ryan, and Taylor, 2005) and a lack of significant block stockholders.

Unlike most nonprofit organization types, credit unions have governance measures that have been identified in the existing literature. Two agency conflicts dominate the discussion of the governance of credit unions: 1) members vs. managers conflict, and 2) net-borrower vs. net saver conflict (Cuevas and Fischer, 2006). The identifiable and measurable governance measures tend to revolve around the members vs. managers conflict.

Brown and Davis (2009) identify capital structure as a potential source of agency conflict between managers and members. Because credit unions have limited access to external capital markets to raise funds, they rely largely on retained earnings to accumulate capital for economic downturns and future growth. Unlike for-profit financial institutions, credit unions do not face capital market discipline so their managers have the discretion to target capital structure weights that differ significantly from industry norms and set capital ratios that exceed regulatory minimums. Capital market discipline in the United States forces for-profit banks to converge to regulatory minimum capital ratios, which increases the risk associated with the industry. Conversely, risk-averse behavior on the part of credit union monitors may result in the credit union accumulating more equity than is optimal for maximizing member utility with lower interest rates on loans and higher rates on deposits (Rasmusen, 1988).

Brown and Davis (2009) hypothesize that the optimal “profit” for credit unions working on behalf of their members is zero, resulting in no capital accumulation. A profit of zero provides for the greatest amount of present day benefit to savers and borrowers of the institution. However, regulatory requirements often force credit unions to accumulate capital. Brown and Davis examine the determinants of return on assets (ROA) for fifty Australian credit unions for the period of 1992 through 2004. They find that ROA is negatively related to the capital adequacy ratio, indicating that regulations do affect the capital structure of credit unions; ROA is negatively related to the firm recently acquiring another firm; and ROA is negatively related to firm size. The last result is somewhat surprising as the authors hypothesized that profitability (resulting in capital accumulation) reduces the benefit to current members and that smaller credit unions should be more, not less, sensitive to the desires of their members. The accumulation of capital may be due to additional risk-aversion on the part of credit union CEOs as the ratio of

their incentive-based compensation to salary is consistently lower than that of commercial bank CEOs (Dettmann and Cartwright, 2013).

III. Data and Methodology

I use call report data provided by the NCUA for the years 2009 through 2014. Panel data was used to examine the effects of the explanatory variables on the spread, savings rate, loan rate, delinquencies-to-total loans and leases, and non-interest income-to-assets over a six year period from 2009 through 2014. A firm was included in the sample if it had data available for each of the variables for each of the six years. A panel data approach was chosen as the results for a single year might be due to macroeconomic conditions for that year, especially for those years at the beginning of the sample period. CUSO data was first made available by the NCUA for 2009.

Panel data methodologies are generally limited to pooled OLS regression, fixed effects, or random effects models. Pooled OLS regression assumes that there are no differences among the firms (or other treatment levels). A fixed effects model controls for the time invariant relation between each firm and the dependent variable. This model is generally used when differences among firms are of concern to the study. A random effects model is appropriate when the study is not concerned with the differences among treatment levels, but when the variance in the dependent variable due to the variance of means across the levels of a random factor needs to be accounted for. The Durbin-Wu-Hausman test indicates if a random effects model is appropriate by determining if the random effects estimator is consistent (Greene, 2011).

The results of this test for the models presented in this study indicate that the random effects estimators are inconsistent. However, the CUSO variables are generally constant for each firm across the sample period. Out of 37,764 firm-year observations, there were only 786 incidences (2.08% of observations) of a firm beginning or ending participation in wholly-owned or collaborative CUSOs. A fixed effects model would provide consistent estimators; however the variation in the dependent variables due to the CUSO variables would largely be attributed to the firm, rather than to the CUSO variables. Mundlak (1978) recommends a correction which allows for inclusion of time invariant and time variant dependent variables to control for both the between and within variability. Bell and Jones (2012) propose a method in which the means of the time variant regressors for each group are used to model fixed effects within the framework of a random effects model. Hedman, Manley, van Ham, and Östh (2015) construct a model based on this proposition which includes the means of the independent regressors and takes the form of:

$$y_{ij} = \beta_0 + \beta_1(x_{ij} - \bar{x}_j) + \beta_2\bar{x}_j + (u_{0j} + \varepsilon_{0i})$$

The within estimator, β_1 , is unbiased because the between firm-level variations are modelled in β_2 . The residuals, u_{0j} and ε_{0i} , for the within and between estimators, respectively, are assumed to be normally distributed.

The model for this study regresses the dependent variables on the demeaned time variant control variables, CUSO variables, and the mean for each firm of the control variables, and dummy variables for the year using a random effects model.

Three of the dependent variables are based on Bauer (2008), which calculates Savings Rate as the sum of interest expense and dividends divided by average total shares and deposits and Loan

Rate as interest income on loans divided by average total loans and leases. These are used as measures of credit union member utility. Member utility should be higher with a higher savings rate and with a lower lending rate. A third measure, Spread, which is the Loan Rate less the Savings Rate, is used as a measure of total utility. A lower Spread is indicative of higher member utility.

Two additional dependent variables included to determine the effect of CUSOs on asset quality and income diversification are Delinquencies-to-Loans and Leases and Non-Interest Income-to-Assets, respectively. The Savings Rate, Loan Rate, Spread, and Non-Interest Income-to-Assets are reported in basis points. One percent is 100 basis points.

The control variables are also based on the variables in Bauer (2008) and include the natural log of the inflation-adjusted assets of the credit union (Size), net income less dividends divided by total assets (ROA), the percent change in total assets from the prior year (Asset Growth), and a measure of the capitalization of the firm (Reserves-to-Assets). Using ROA net of dividends is based on the reporting of net income of credit unions net of dividends. The ROA measure represents the additional percent of assets that is retained within the firm at the end of the year.

The CUSO variables consist of dummy variables for if the firm participates in a wholly-owned CUSO, if the firm participates in a collaborative CUSO, and variables for subcategories of CUSOs that can be either wholly-owned or collaborative. A wholly-owned CUSO is a CUSO that is owned entirely by the credit union. A CUSO that is not wholly-owned by the credit union is considered to be collaborative as the credit union will have to engage with outside parties to be a part of the CUSO as officers and directors of a credit union are not allowed have ownership of a CUSO in which their credit union participates. Additionally, a CUSO can be defined based on whether a credit union would be allowed to engage in the primary activity of the CUSO if the CUSO didn't exist. For example, credit unions can and do actively engage in electronic transaction services, so this is an allowable activity for a credit union. Alternatively, credit unions are not allowed to engage in insurance brokerage, so this is a not allowable activity. Figure 1 summarizes the major types of CUSOs and the categories in which they lie.

Figure 1
Major Types of Collaborative and Wholly-Owned Cusos

	Collaborative	Wholly-Owned
Allowed	Electronic Transaction Services Shared Branch Operations Loan Support Services Business Loan Origination	
Not Allowed	Consumer Mortgage Origination	Insurance Brokerage or Agency Financial Counseling Services Consumer Mortgage Origination

Notes: Allowed activities are activities in which credit unions can legally engage. *Not Allowed* are activities in which credit unions cannot legally engage, but are services that are provided to members through third party CUSOs.

IV. Results and Discussion

The National Credit Union Administration began reporting CUSO information for credit unions beginning in 2009. Per Table 1, while the number of credit unions has declined over the six year period, the number of CUSOs and the percent of credit unions that participate with a CUSO has increased for the same time period.

Table 1. Credit Union Participation In Cusos By Year For The Population Of Credit Unions In The United States.

Year	2009	2010	2011	2012	2013	2014
Number of Credit Unions	7710	7491	7240	6960	6687	6402
Number of Credit Unions that participate in a CUSO	2457	2489	2562	2588	2659	2698
Mean number of CUSOs per credit union that participates in a CUSO	2.26	2.3	2.36	2.35	2.41	2.5
Percent of Credit Unions that participate in a CUSO	31.87%	33.23%	35.39%	37.18%	39.76%	42.14%
Percent of Credit Unions that have a wholly-owned CUSO	6.33%	6.69%	6.86%	7.10%	7.58%	7.78%
Percent of Credit Unions that participate in a collaborative CUSO	30.19%	31.60%	33.87%	35.70%	38.25%	40.66%
Percent of Credit Unions that participate in both	4.66%	5.06%	5.35%	5.62%	6.07%	6.29%

Comparing the information provided in Tables 1 and 2 demonstrates that the trend and rates of CUSO participation between the population and the sample are consistent. Between wholly-owned and collaborative CUSOs, participation in collaborative CUSOs has been growing at a greater pace and a significantly larger proportion of credit unions participate through collaboration than in wholly-owned CUSOs. Within the sample set, the participation rate in CUSOs grew from 34.06 percent in 2009 to 41.75 percent in 2014. CUSO participation through collaboration dominates, with 40.40 percent of credit unions participating through collaboration in 2014. Collaboration may require the participating credit union give up autonomy over its operations.

Table 2. Sample Statistics For Credit Union Participation In Cusos By Year.

Year	2009	2010	2011	2012	2013	2014
Number of Credit Unions	6294	6294	6294	6294	6294	6294
Number of Credit Unions that participate in a CUSO	2144	2218	2336	2411	2525	2628
CUSO	2.29	2.33	2.37	2.36	2.41	2.47
Percent of Credit Unions that participate in a CUSO	34.06%	35.24%	37.11%	38.31%	40.12%	41.75%
Percent of Credit Unions that have a wholly-owned CUSO	7.05%	7.31%	7.34%	7.39%	7.63%	7.55%
Percent of Credit Unions that participate in a collaborative CUSO	32.21%	33.44%	35.32%	36.73%	38.56%	40.40%
Percent of Credit Unions that participate in both	5.20%	5.51%	5.70%	5.82%	6.07%	6.05%

As presented in Table 3, CUSO participation rates increase with credit union size. The lower participation rate for smaller credit unions is consistent with Guo and Acar's (2005) findings that organizations with fewer resources engage in fewer collaborative efforts to preserve autonomy. Additionally, per 12 CFR 712.2, federally-chartered credit unions are limited to investing no more than one percent of paid-in and unimpaired capital and lending no more than one percent of its paid-in and unimpaired capital to CUSOs (Legal Information Institute, n.d.). While state-chartered credit unions may exceed the one percent rule, each state does place a limit on the percent of capital that a credit union may use to finance CUSOs (Leggett, 2011). Finally, many smaller credit unions exist solely to provide depository services to a few members. The average size in assets of credit unions in the smallest decile at the end of 2014 was \$862,000. These credit unions may simply have too few members interested in services provided by CUSOs to participate in one.

Table 4 provides descriptive statistics for the sample. The sample is a balanced panel of 6,294 credit unions over six years. The variability of the Delinquencies-to-Total Loans and Leases is due in part to overall improving credit quality for the six year period following the 2008 financial crisis. The mean (median) Delinquencies-to-Total Loans and Leases for 2009 is 2.32 percent (1.37 percent) compared to 1.76 percent (0.86 percent) for 2014. The subcategories of the Wholly-Owned CUSOs make up a small percent of the overall sample, but a significant portion of the Wholly-Owned CUSOs. The Insurance Broker or Agency, Financial Counseling, and Consumer Mortgage Origination CUSO make up 38.5 percent, 12.6 percent, and 8.5 percent of the wholly-owned CUSOs, respectively.

Table 3. Sample Statistics for Credit Union Participation in Cusos at The End of 2014.

Size Decile	1	2	3	4	5	6	7	8	9	10
N	629	629	630	629	629	629	630	629	630	629
Average Asset Size (in \$000s)	862	3,389	6,937	11,886	19,204	30,629	51,282	91,182	198,728	1,330,191
Percent of Credit Unions that participate in a CUSO	2.23%	7.00%	12.06%	22.89%	34.18%	43.24%	53.65%	71.54%	79.84%	90.94%
Mean number of CUSOs per Credit Union that participates in a CUSO	1.07	1.18	1.16	1.32	1.6	1.79	1.97	2.19	2.69	4.04
Percent of Credit Unions that have a wholly-owned CUSO	0.00%	0.16%	0.16%	0.16%	1.11%	0.95%	2.22%	4.77%	17.62%	48.33%
Percent of Credit Unions that participate in a collaborative CUSO	2.23%	7.00%	11.90%	22.73%	33.39%	42.77%	52.70%	69.79%	75.08%	85.06%
Percent of Credit Unions that participate in both	0.00%	0.16%	0.00%	0.00%	0.32%	0.48%	1.27%	3.02%	12.86%	42.45%

Notes: N is the number of credit unions in each size decile.

Table 4. Sample Statistics for The Dependent and Independent Variables

Variable	N	Mean	Percent of Sample	Median	Standard Deviation
(1) Dependent Variables					
Savings Rate (in basis points)	37764	83.45		66.17	72.92
Loan rate (in basis points)	37764	670.78		638.98	178.35
Spread (in basis points)	37764	587.33		554.23	180.05
Delinquencies-to-Total Loans and Leases	37764	2.03		1.09	3.92
Non-Interest Income-to-Assets	37764	102.37		85.37	115.31
(2) Control Variables					
Size	37764	16.89		16.88	1.97
Return on Assets	37764	0		0	0.27
Asset Growth	37764	0.04		0.03	0.18
Reserves-to-Assets	37764	0.14		0.12	0.07
(3) CUSO Variables					
Wholly-owned CUSO	37764		7.38%		
Insur. Broker or Agency	37764		2.84%		
Financial Counseling Services	37764		0.93%		
Consumer Mtg. Origination	37764		0.62%		
Collaborative CUSO	37764		36.11%		
Electronic Transaction Services	37764		16.43%		
Shared Branch Operations	37764		11.87%		
Loan Support Services	37764		5.04%		
Business Loan Origination	37764		5.45%		
Consumer Mtg. Origination	37764		4.80%		

Notes: *N* is the number of firm-year observations in the sample. The sample is a balanced panel of 6,294 credit unions for each of the six years beginning in 2009 through 2014. *Savings Rate* is the sum of interest expense and dividends divided by average total shares and deposits. *Spread* is the Loan Rate less the Savings Rate. *Loan rate*, *Savings Rate*, and *Spread* are reported in basis points. *Delinquencies-to-Loans and Leases* is the ratio of loan delinquencies-to-total loans and leases multiplied by 100. *Non-Interest Income-to-Assets* is non-interest income divided by total assets. *Size* is the natural log of the inflation-adjusted assets of the credit union. *Return on Assets* is net income divided by total assets. *Asset growth* is the percent growth in assets from the previous year. *Reserves-to-assets* is the reserves in equity divided by total assets.

An Insurance Broker or Agency CUSO sells insurance products to credit union members. A Financial Counseling Services CUSO provides financial planning services to members. Consumer Mortgage Origination CUSOs provide services to credit unions that usually include the processing, funding, and servicing of consumer mortgages. Consumer mortgages may then be sold off or retained by the credit union. Electronic Transaction Services CUSOs provide ATM network services and debit, credit, and prepaid credit card services to credit unions. Shared Branch Operations CUSOs are collaborative CUSOs by nature as they allow members of participating credit unions to use any credit union branch that is served by the CUSO as a branch of their home credit union. Loan Support Services CUSOs provide loan origination services, such as automatic underwriting and approval, often for automobile loans, for members of participating credit unions. Business Loan Origination CUSOs offer business loan underwriting, loan documentation, loan review, and loan participation services to participating credit unions.

Table 5 provides the results of the multivariate models for each of the dependent variables. The CUSO variables used are the dummy variables for if the firm participates in a wholly-owned CUSO and/or in a collaborative CUSO. No significant relation is reported for the Loan Rate and Saving Rate and the firm participating in a wholly-owned CUSO. However, the Spread is positively related to participating in a wholly-owned CUSO. A positive coefficient on the Spread coefficient indicates that credit union member utility declines with participation in a wholly-owned CUSO, as members should prefer narrower to wider spreads. Specifically, participation in a wholly-owned CUSO results in a 7.5 basis point increase in the spread. The results for participation in a collaborative CUSO show a negative relation (-6.5 basis points) between the loan rate and participation and a negative relation (-5.3 basis points) between the saving rate and participation. The net effect is that there is no significant relation between the spread and participation in a collaborative CUSO. These results provide evidence that a credit union's participation in a collaborative CUSO benefits borrowers at the expense of savers.

The results in Table 5 also reveal a negative relation between asset quality and credit union participation in a collaborative CUSO with a positive and significant relationship between delinquencies-to-loans and leases and the collaborative CUSO dummy. The final estimation in the table, unsurprisingly, shows a positive and significant relation between non-interest income and participation in a CUSO.

The significant results for the CUSOs in Table 5 may be driven by participation in the specific CUSO types. Table 6 presents the number of CUSOs per service type per year between the two primary categories of Wholly-Owned and Collaborative. The numbers of the service types presented are not cumulative between the two larger categories, e.g. there are a total of 228 Consumer Mortgage Origination CUSO in 2009, 29 in the Wholly-Owned category, and 199 in the Collaborative category. The service types included in Table 5 and the following analysis are the types that make up five percent or more of the total CUSO service types for the respective CUSO participation category, Wholly-Owned or Collaborative, for the sample period.

Table 6 provides the statistics on the number of CUSOs by service type for each year of the study. Participation in CUSOs grew for each of the service types during the sample period.

Table 7 provides the regression results when the individual CUSO service types are included. Controlling for the marginal effects of the major service types reveals significant positive coefficients for the Wholly-Owned CUSO variable in the Spread and Delinquencies-to-Total Loans and Leases regressions. Having a wholly-owned insurance brokerage or agency is a negatively related to both the Loan Rate and the Savings Rate. Having a wholly-owned insurance brokerage or agency increases the non-interest income-to-assets ratio for the firm by 27 basis points.

The negative relations between collaborative participation in a CUSO and the Loan and Savings Rates provided in Table 5 are maintained with the inclusion of the individual service types. Electronic Transaction Services CUSOs are negatively related to both the Loan Rate and Savings Rate, but not the spread. Shared Branch Operations CUSOs are positively related to the Loan Rate, Delinquencies, and Non-Interest Income. Loan Support Services CUSOs are

negatively related to the Loan and Savings Rates. Business Loan Origination CUSOs are negatively related to the Loan Rate and positively related to Delinquencies. Consumer Mortgage Origination CUSOs that aren't wholly-owned are negatively related to the Loan Rate and Spread.

Table 5. Multivariate Results of The Estimation Of The Credit Union Performance Variables On The Wholly-Owned And Collaborative CUSO Variables.

	Loan Rate		Savings Rate		Spread		Delinq.-to-Total Loans and Leases		Non-Interest Income-to- Assets	
	Coef.	Std. Error	Coef.	Std. Error	Coef.	Std. Error	Coef.	Std. Error	Coef.	Std. Error
(1) Time Variant Variables (deviation from individual mean)										
Size	-48.99***	3.22	8.97***	2.16	-58.02***	3.76	0.12	0.15	-43.05***	3.35
Return on Assets	-8.25***	1.31	4.07***	0.88	-13.33***	1.53	-0.47***	0.06	-7.05***	1.36
Asset Growth	30.72***	1.9	12.78***	1.28	17.91***	2.22	-0.46***	0.09	13.37***	1.98
Reserves-to-Assets	-83.09***	17.06	-217.11***	11.46	133.86***	19.93	3.38***	0.79	191.03***	17.79
(2) CUSO Variables										
Wholly-Owned CUSO Dummy	5.3	3.4	1.25	1.82	7.48*	3.84	0.03	0.12	12.20***	3.17
Collaborative CUSO Dummy	-6.52***	1.83	-5.33***	1.01	-2.14	2.08	0.15**	0.07	10.62***	1.74
(3) Individual Means of Time Variant Variables										
Size	-39.53***	1.01	5.70***	0.36	-45.31***	1.03	-0.60***	0.02	9.14***	0.72
Return on Assets	-20.62	15.91	-0.83	5.25	-19.83	15.89	1.11***	0.32	10.97	10.81
Asset Growth	123.54***	21.96	57.51***	7.25	66.09***	21.93	-1.94***	0.44	95.84***	14.92
Reserves-to-Assets	394.44***	29.7	133.20***	9.83	259.69***	29.67	1.49**	0.6	-219.76***	20.2
Constant	1332.55***	18.55	47.86***	6.47	1286.58***	18.71	12.23***	0.4	-21.50*	12.99
N	37748		37748		37748		37748		37748	
R-Square	0.38		0.54		0.14		0.04		0.04	

Notes: This table presents the coefficients and standard errors of the random effects model with Mundlak (1978) correction for each of dependent variables provided. Year dummies are included in the models but not shown. *Loan Rate* is interest income on loans divided by average total loans and leases. *Savings Rate* is the sum of interest expense and dividends divided by average total shares and deposits. *Spread* is the Loan Rate less the Savings Rate. *Loan rate*, *Savings Rate*, and *Spread* are reported in basis points. *Delinquencies-to-Loans and Leases* is the ratio of loan delinquencies-to-total loans and leases multiplied by 100. *Non-Interest Income-to-Assets* is non-interest income divided by total assets. *Size* is the natural log of the inflation-adjusted assets of the credit union. *Return on Assets* is net income divided by total assets. *Asset growth* is the percent growth in assets from the previous year. *Reserves-to-assets* is the reserves in equity divided by total assets. *N* is the number of firm-year observations in the sample. The sample is a balanced panel of 6,294 credit unions for each of the six years beginning in 2009 through 2014. * Significance at the 10% level. ** Significance at the 5% level. *** Significance at the 1% level.

Table 6. Sample Statistics Of CUSO Variables By Year And Type.

Year	2009		2010		2011		2012		2013		2014		Total	
	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent
Wholly-Owned	551		569		572		583		614		608		2914	
Insur. Broker or Agency	138	25.05%	139	24.43%	138	24.13%	207	35.51%	233	37.95%	233	38.32%	881	30.23%
Financial Counseling Services	40	7.26%	36	6.33%	34	5.94%	74	12.69%	88	14.33%	82	13.49%	280	9.61%
Consumer Mtg. Origination	29	5.26%	29	5.10%	29	5.07%	50	8.58%	49	7.98%	52	8.55%	188	6.45%
Collaborative	4352		4589		4961		5097		5471		5885		25258	
Elect. Transaction Services	1045	24.01%	1094	23.84%	1140	22.98%	1429	28.04%	1710	31.26%	1789	30.40%	6778	26.84%
Shared Branch Operations	705	16.20%	711	15.49%	743	14.98%	849	16.66%	915	16.72%	972	16.52%	4046	16.02%
Loan Support Services	220	5.06%	243	5.30%	272	5.48%	458	8.99%	548	10.02%	577	9.80%	1860	7.36%
Business Loan Origination	283	6.50%	290	6.32%	305	6.15%	407	7.99%	442	8.08%	464	7.88%	1784	7.06%
Consumer Mtg. Origination	199	4.57%	210	4.58%	242	4.88%	369	7.24%	430	7.86%	457	7.77%	1538	6.09%

Notes: This table provides the number and percentages of CUSO types by year that make up an average of 5% or more of all CUSOs within the sample during the sample period. The amounts provided in the Percent columns are the percentages that the CUSO service type makes up of the overall category (Wholly-Owned or Collaborative). The numbers of the service types presented are not cumulative between the two larger categories, e.g. there are a total of 228 Consumer Mortgage Origination CUSO in 2009.

Table 7. Multivariate Results Of The Estimation Of The Credit Union Performance Variables On The Wholly-Owned And Collaborative CUSO Variables.

	Loan Rate		Saving Rate		Spread		Delinq.-to-Total Loans and Leases		Non-Interest Income-to-Assets	
	Coef.	Std Error	Coef.	Std Error	Coef.	Std Error	Coef.	Std Error	Coef.	Std Error
(1) Time Variant Variables (deviation from individual mean)										
Size	-47.53***	3.23	9.65***	2.17	-57.50***	3.78	0.1	0.15	-44.51***	3.37
Return on Assets	-9.10***	1.31	4.41***	0.88	-13.27***	1.53	-0.48***	0.06	-7.21***	1.37
Asset Growth	30.63***	1.9	12.73***	1.28	17.88***	2.22	-0.46***	0.09	13.35***	1.98
Reserves-to-Assets	-80.01***	17.06	-215.81***	11.46	135.30***	19.94	3.37***	0.79	188.82***	17.79
(2) CUSO Variables										
Wholly-owned CUSO	9.98***	3.73	3.96*	2.07	8.95**	4.24	0.83*	0.14	2.25	3.54
Insur. Broker or Agency	-9.09**	4.22	-4.61*	2.54	-2.4	4.86	-0.04	0.17	26.68***	4.18
Finan. Counseling Services	-7.74	5.71	-5.05	3.5	-3.21	6.6	-0.1	0.23	-4.56	5.71
Consumer Mtg. Origination	-6.71	7.44	-4.09	4.48	-1.66	8.57	0.06	0.3	7.13	7.38
Collaborative CUSO	-3.71*	2.02	-3.42***	1.16	-1.32	2.31	0.04	0.08	7.91***	1.95
Elect. Transaction Services	-3.86*	2.16	-4.62***	1.25	0.47	2.48	0.09	0.08	4.34**	2.08
Shared Branch Operations	4.77*	2.54	1.15	0.82	3.99	2.89	0.24*	0.09	4.36*	2.42
Loan Support Services	-6.07**	2.77	-2.98*	1.66	-2.33	3.2	-0.01	0.11	-0.29	2.75
Business Loan Origination	-5.15*	3	0.72	1.75	-4.42	3.44	0.20*	0.12	3.66	2.93
Consumer Mtg. Origination	-10.37***	2.94	-2.75	1.75	-7.43**	3.38	-0.03	0.12	0.66	2.9
(3) Firm-Level Means of Time Variant Variables										
Size	-39.39***	1.02	5.81***	0.36	-45.37***	1.03	-0.61***	0.02	8.77***	0.72
Return on Assets	-20.5	15.91	-0.77	5.25	-19.8	15.89	1.11***	0.32	10.8	10.81
Asset Growth	124.87***	21.97	57.95***	7.25	66.87***	21.94	-1.95***	0.44	95.61***	14.92
Reserves-to-Assets	384.13***	29.71	133.15***	9.82	259.21***	29.68	1.47**	0.6	-220.81***	20.19
Constant	1329.95***	18.64	45.80***	6.52	1286.58***	18.81	12.39***	0.4	-15.38	13.08
N	37748		37748		37748		37748		37748	
R-Square	0.38		0.54		0.14		0.04		0.04	

Notes: This table presents the coefficients and standard errors of the random effects model with Mundlak (1978) correction for each of dependent variables provided. Year dummies are included in the models but not shown. *Loan Rate* is interest income on loans divided by average total loans and leases. *Savings Rate* is the sum of interest expense and dividends divided by average total shares and deposits. *Spread* is the Loan Rate less the Savings Rate. *Loan rate*, *Savings Rate*, and *Spread* are reported in basis points. *Delinquencies-to-Loans and Leases* is the ratio of loan delinquencies-to-total loans and leases multiplied by 100. *Non-Interest Income-to-Assets* is non-interest income divided by total assets. *Size* is the natural log of the inflation-adjusted assets of the credit union. *Return on Assets* is net income divided by total assets. *Asset growth* is the percent growth in assets from the previous year. *Reserves-to-assets* is the reserves in equity divided by total assets. *N* is the number of firm-year observations in the sample. The sample is a balanced panel of 6,294 credit unions for each of the six years beginning in 2009 through 2014.

* Significance at the 10% level. ** Significance at the 5% level. *** Significance at the 1% level.

The six basis point decrease in the loan rate attributable to collaborative Loan Support Services indicate improved efficiency through collaborating in processing and managing loans. The negative coefficient for the collaborative Business Loan Origination CUSO in the Loan Rate regression and the positive coefficient for the same CUSO for the Delinquencies regression may be indicative of competition among credit unions seeking to diversify their loan portfolios into more business loans and/or lower quality underwriting of business loans by the CUSOs.

The negative coefficient for the Consumer Mortgage Origination CUSO variable in the Loan Rate and Spread regressions indicate that this collaborative CUSO type may provide value for credit union members without increasing the risk of the credit union.

V. Concluding remarks

This study investigates the trends of CUSO participation for the time period 2009-2014 and provides evidence of the effects of CUSO participation on credit union performance in the areas of pricing benefits to members, asset quality, and income from non-interest sources. Credit union participation in CUSOs grew over the sample time period and increases with the size of the credit union. Small credit unions may not be able to participate in wholly-owned CUSOs due to the capital required and capital restrictions for CUSO investment. However, collaboration with other credit unions to provide service may also be limited by an unwillingness to surrender autonomy.

Relations between performance variables and the CUSO types provide mixed results regarding the effects of CUSOs on credit union performance. The multivariate tests provide evidence that wholly-owned CUSOs might not benefit credit union members as they are associated with a larger interest rate spread. Collaborative CUSOs are negatively related to both Loan and Saving Rates, resulting in no significant relation with the Spread, but indicating that the CUSOs may benefit borrowers at the expense of savers. Collaborative Consumer Mortgage Origination is associated with higher member utility due to a 7.4 basis point reduction in Spread, indicating improved efficiency. The results indicate that some of the wholly-owned CUSOs in general and two service types of collaborative CUSO participations are related to lower asset quality. These results indicate that monitoring may decrease with participation in these CUSOs. In two of the three cases, the CUSOs are also related to higher Loan Rates, which may be a reward for taking on lower-quality loans.

Wholly-Owned Insurance Broker or Agency, Collaborative CUSOs in general, and Electronic Transaction Services and Shared Branch Services are positively related to Non-Interest Income-to-Assets. Per Goddard et al. (2008) the impact of income diversification on credit union performance is mixed, with benefits accruing to larger credit unions in their study. However, collaboration through CUSOs may help smaller credit unions overcome their reliance on non-specialist workers to provide specialized services that Goddard et al. cite in their study as a possible reason for the poor results of diversified small credit unions.

This paper adds to the literature for credit unions as it is the first to examine the effects of CUSOs on credit union performance. Additionally, it also introduces the use of the Mundlak (1978) correction for panel data studies to this area of the literature.

Further work on this topic should identify the whether the status of the CUSO as a for-profit or nonprofit organization impacts outcomes for credit union members or otherwise affects the ability of credit unions to achieve their missions. To this end, future work should specifically identify the nature of the wholly-owned CUSOs that result in the increase in interest rate spread and investigate whether the increases in non-interest income benefit credit union members and the communities that credit unions serve.

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