Determinants of Credit Union Deposits During Times Of An Economic Crisis: A Retrospective View

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Abstract:

This study examines the impact of credit union risk characteristics and macroeconomic events on deposits. Looking at a sample of credit unions from 2004-2008 we find that credit union depositors do not consistently punish credit union for risky behavior by deposit withdrawal, which could be explained by the existence of deposit insurance and the role of credit union depositors as shareholders. Furthermore, we find that credit union deposits increase in times of economic uncertainty. This indicates that there is a group of people that consider credit unions a safe haven during an economic crisis. If credit unions are considered safe in times of economic crises their role among financial institutions receives a whole new dimension.

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Determinants of Credit Union Deposits And Another Role During Times Of An Economic Crisis: A Retrospective View

In the fall of 2008 during the height of the financial crisis in the U.S. there was widespread anxiety among financial institution customers about the safety of their deposits. Many customers withdrew their deposits and as a result of the widespread unease about the general condition of the banking industry the Federal Deposit Insurance Corporation (FDIC) raised the insured deposit limits to US$250,000. While this was taking place deposits in U.S. credit unions were steadily increasing (According to NCUA data credit union deposits increased by 7.71% in 2008, which represents an increase from 2007 when deposits rose by 5.19%). This raises the question if there is something special about credit unions and the factors that attract depositors. In particular, do macroeconomic circumstances impact credit union deposits and what is the impact of institutional risk characteristics.

Market discipline in the financial institutions sector is a situation where bank risk taking leads to higher costs for depositors (as part of a group of private sector agents) and as a result depositors will take action such as deposit withdrawal or requiring higher interest rates (Berger, 1991). There is a large body of literature on market discipline imposed on financial institutions such as savings and loans (Goldberg & Hudgins, 2001; Park & Peristiani, 1998) and commercial banks (Avery, Belton, & Goldberg, 1988; Baer & Brewer, 1986; Peria & Schmukler, 2001). Research has been conducted on several financial instruments such as uninsured deposits ((Goldberg & Hudgins, 2001; Peria & Schmukler, 2001), the uninsured CD market (Baer & Brewer, 1986; Hannan & Hanweck, 1988; Park & Peristiani, 1998), and subordinate notes and debentures in capital markets ((Avery, et al., 1988). The majority of the studies demonstrate the evidence of market discipline regardless of whether the deposits are insured or not. Only Avery, Benton and Goldberg (1988) conclude that bank risk has no association with risk premiums (Flannery, 1998, provides a survey of the market discipline literature).

To our knowledge no studies on deposit determinants and market discipline have been conducted using credit union data. This presents a significant omission given the fact that credit unions own about 9% of the aggregate nation's deposits (Brownell, 2009). Several studies deal with the economic impact of credit unions and their impact on deposit pricing of banks. For example, Hannan (2002) finds that credit unions are a competitive force and that a strong credit union presence has a positive impact on bank and thrift deposit rates. Feinberg (2001, 2002) finds similar results for the impact on rates of bank consumer loans. He finds that increased competition from credit unions lower the rates on unsecured consumer loans and auto loans. In addition, Emmons and Schmid (2000) conclude in a similar study, that credit unions and commercial banks are indeed direct competitors in the local household deposit market.

Since all financial institutions compete knowledge about the drivers of the level of deposits at credit unions is important. This study contributes to the literature in that it looks at the determinants of deposits at credit unions and the impact of credit union risk characteristics. In addition, we attempt to answer the question if credit union deposits are driven by the same factors as bank and thrift deposits. Given the nature of credit unions and the fact that depositors are also shareholders of the institutions, depositors might not feel that their deposits just disappear into a black hole, but that they have a better way of monitoring their money. This is especially important in times of uncertainty about bank safety. This study tries to provide an answer to that question.

If our notion that credit union depositors are less worried about their deposits because they have a better way to monitor their money, we would expect that changes in the risk characteristics of a credit union do not lead to a change in deposit flow. Thus, we state our first hypothesis:

H1: Changes in credit union risk characteristics do not impact deposit flows

Second, given the notion that credit unions are more transparent than commercial banks we would expect deposits to flow into credit unions during times of economic recessions. As a result our second hypothesis is stated as follows:

H2: Credit unions experience significant deposit inflows during times of economic recession.

The remainder of the paper is organized as follows. Section I describes the empirical methodology. Section II discusses the data and variables. Section III presents the results and section IV concludes.

I. Methodology

In order to test our hypotheses we estimate a model for the determinants of deposits using bank risk characteristics and a macroeconomic dummy. We estimate the following fixed effect regression:

$$Ln\ Deposits_{i,t} = \alpha + \mu_i + \beta\ Credit\ Union\ Risk\ Characteristics_{i,t} + d_t + \varepsilon_{i,t}$$

With $t = 1,…,T$ and $i = 1,…,N$. T is the number of quarterly data reports. The panel is unbalanced, meaning that N, the number of credit unions, varies across time. We assume that the error term $\varepsilon_{i,t}$ is independently distributed with mean zero and variance $\sigma^2_{i,t}$.

Ln Deposits is the log of total deposits for each reporting credit union per quarter. The vector of credit union risk characteristics is described in the next section. We measure this vector as a set of coincident variables, as well as with a one quarter lag. We include the lag to account for the fact that the level of deposits might not be affected until after the quarterly report is made available. d_t is a macroeconomic dummy indicating if the economy was officially in a recession during the quarter (for our sample the economy was in a recession in the last quarter of 2007 and in all of 2008) and μ_i captures credit

union specific or fixed effects. We conducted a Hausman test to confirm that this model specification is the most efficient configuration. We use this model to test the hypothesis that credit union depositors have more confidence in the management of their institution and that the levels of deposits are not affected by institution specific risk characteristics. Credit unions are not driven by a shareholders' value objective, which favors risk taking on behalf of shareholders that don't have deposits in the institution, but charged with the management of their members' deposits. Furthermore, we test the hypothesis that credit unions serve as a safe haven for depositors in times of economic uncertainty and thus, that credit unions experience higher levels of deposits during recessions. All credit unions in the sample are members of the National Credit Union Share Insurance Fund (NCUSIF) and thus, if depositors were to act rationally a change in risk should only have a negligible effect on deposits. Depositors should only withdraw because they fear a temporary cash flow problem if the credit union fails or they don't want to deal with the inconvenience of having to claim their deposits. For that reason only depositors exceeding the insurance limit should closely monitor the credit union. Thus, we also implicitly test the need for deposit insurance.

II. Data and Variables

For this study we use the quarterly credit union call data which we obtain from the National Credit Union Administration (NCUA). We collect quarterly data for a period from the first quarter of 2004 through the fourth quarter of 2008. We collect the quarterly data for each credit union over a 5 year period. Data is not available for all credit unions in all quarters and thus, our panel is unbalanced (The number of credit unions declines by more than a thousand over the sample period. This is due to mergers, acquisitions and failures. However, each credit union has an unique identifier that is not reassigned). We have a maximum of 9,601 credit unions reporting for a total of 173,315 observations.

Table 1 provides the summary statistics for the credit unions in our sample. The average size of the credit unions in the sample is fairly small with total assets equaling $83,700,000. Total deposits average about 85.1% of total assets and more than 50% of the loans in the average loan portfolio are real estate loans. It is interesting to note that less than 1% of the loans are non-performing indicating very sound loan portfolios.

Table 1: Summary Statistics

	Mean	Std. Dev	Min	Max	# Observations
Total Assets	83,700,000	449,000,000	1	3,640,000,000	173,315
Total Deposits	71,200,000	364,000,000	0	2,480,000,000	173,315
Total Loans	56,100,000	333,000,000	0	3,110,000,000	173,315
Total non-performing loans	440,036	2,630,875	0	362,000,000	173,315
Real Estate loans	27,800,000	197,000,000	0	1,820,000,000	173,315

We define our risk characteristics similar to Peria and Schmukler (2001). They used variables that mimic the CAMEL rating system. We follow their approach. The CAMEL rating system is a rating scheme in which bank supervisory agencies rate financial institutions based on a set of risk factors. These are Capital adequacy, Asset quality, Management quality, Earnings, and Liquidity. We measure capital adequacy using the capital ratio (*Capratio*). Given that capital adequacy is a measure of credit union failure risk, we would expect deposits to be positively correlated with this measure.

To measure asset quality we use the ratio of non-performing loans to total loans, *Nploans*. These loans might eventually have to be written off and could threaten the viability of the institution. Thus, we expect a negative relationship with deposits.

Next we account for loan concentration. Having a large concentration of loans in a vulnerable sector increases the risk of the credit union. We measure concentration risk with two variables. *Reloans* is the ratio of real estate loans to total loans. Prior to 2007 real estate loans were considered relatively safe loans due to the ever increasing value of the underlying collateral. That perception changed in 2007 and 2008. Thus, the effect of real estate loans on deposits is ambiguous. *Otherloans* measure the percentage of all other business loans made to credit union members. Since all members of the credit union are depositors and many credit unions can only make business loans to members one could expect a positive relationship. However, defaulting on a business loan is lees consequential for the borrower than default on a home mortgage (foreclosure, eviction, etc.). Thus, more business loans could indicate higher risk. For this reason, we expect the relationship to be neutral.

The efficiency of the credit union is measured by *Efficiency*, the ratio of non-interest expenses to total assets. Less efficient banks are expected to have higher expenditures. A less profitable credit union is more likely to fail and thus, we expect a negative relationship.

Finally, we account for liquidity with the ratio of cash and cash equivalents to total assets, *cashratio*. Depositors perceive financial institutions with a higher amount of liquid assets as safer. More liquidity allows the credit union to more easily meet unexpected withdrawals. Less liquidity risk should have a positive effect on deposits.

Table 2 reports the correlation matrix of the independent variables. There is no significant correlation between any of the variables except for *Capratio* and *Cashratio*. Due to the high level of correlation between those two variables we have to specify two models. One with the vector of risk characteristics including *Capratio* and one including *Cashratio*.

Table 2: Correlation Coefficients of the independent variables in the model

	Capratio	Nploans	Reloans	Otherloans	Cashratio	Efficiency
Capratio	1.0000					
Nploans	0.0381	1.0000				
Reloans	-0.0099	-0.2155	1.0000			
Otherloans	0.0325	0.0270	-0.0055	1.0000		

Cashratio	0.9186	0.1035	-0.0914	0.0297	1.0000	
Efficiency	-0.0006	0.0083	-0.0156	0.0026	0.0039	1.0000

III. Results and Discussion

Table 3 reports the results of our analysis. We test two different models under two different settings. We first look at coincident factors and in a second step we lag all explanatory variables by one quarter to account for the fact that depositors will see the quarterly report and make a decision about deposit withdrawal subsequently. In addition, we include a macroeconomic dummy to control for a recession during any time period. At a first glance, there is no difference in sign and significance of the explanatory variables between the coincident and lagged model. The lagged model has a slightly higher R^2 indicating that using lagged variables creates a better fit. That is expected, assuming that depositors react to quarterly financial reports.

Table 3: Effect of Risk Characteristics on Credit Union Deposits

The table reports fixed effect regression results of deposits on credit union risk characteristics. Estimators for the constant term are not reported even though they are included in the regressions. T-statistics are in parentheses. Robust standard errors with the Huber-White corrections for heteroskedasticity are obtained. The variables in panel A are coincident, whereas the variables in panel B are lagged one quarter. The dependent variable *deposit*s has been transformed to a logged variable.

	Model 1	Model 2
Panel A: Coincident Variables		
Capratio	-0.00007	
	(-0.53)	
Cashratio		0.00469*
		(1.81)
Nploans	-0.14487***	-0.14683***
	(-7.17)	(-7.27)
Reloans	0.06223***	0.06234***
	(6.99)	(7.01)
Otherloans	-0.00003	-0.00003*
	(-1.12)	(-1.21)
Efficiency	-0.42583***	-0.42441***
	(-16.24)	(-16.20)
Recession	0.03549***	0.03546***
	(39.60)	(39.55)
N	173,061	173,061
Number of credit unions	9,601	9,601
R^2	0.2647	0.2566
Panel B: Lagged Variables		
Capratio	0.00000	
	(-0.05)	
Cashratio		0.00364*
		(1.78)
Nploans	-0.18952***	-0.19092***
	(-7.72)	(-7.78)
Reloans	0.05308***	0.05314***
	(7.97)	(7.98)
Otherloans	-0.00005	-0.00006
	(-1.18)	(-1.22)
Efficiency	-0.21439***	-0.21344***
	(-12.88)	(-12.83)
Recession	0.03709***	0.03705***
	(35.04)	(35.00)
N	163,468	163,468
Number of Credit Unions	9,499	9,499
R^2	0.2869	0.2800

Most of the coefficients return the expected sign and all but *Capratio* and *Otherloans* are statistically significant. Interestingly, the net worth ratio does not have an impact on deposits. Changes in the amount of failure risk do not seem to deter depositors. This could be explained with the existence of deposit insurance. Depositors do not factor failure risk into their decision making process, because their deposits are safe in the event of a credit union failure. Furthermore, an increase in real estate loans leads to an increase in deposits whereas deposits are unaffected by the level of business loans to credit union members. As mentioned earlier we expected a positive relationship between deposits and loan volume considering that most credit union borrowers are also depositors. Clearly, this assumption holds for real estate loans, but not for business loans. Thus, the deposit effect of business loans is offset by the higher failure risk of these loans. Also as expected, depositors turn away from inefficiently operating credit unions.

One remarkable finding is the positive effect of a recession on credit union deposits. This result provides evidence for our initial hypothesis that credit unions are considered safer for depositors in times of financial crisis. One would have to survey customers that moved their deposits to a credit union during uncertain economic times to find the exact reasons, but one can speculate that the fact that the membership structure of credit unions gives depositors the feeling that they have more control over the institution than in a bank or other thrift institutions. The result is consistent for all models.

IV. Conclusion

The purpose of this study was to explore if credit union depositors react to changes in risk characteristics (as has been shown to be true for banks) and how credit unions fare in uncertain economic times. Both of these issues are largely unexplored in the current literature.

The results show that credit unions are generally not punished by their depositors for risky behavior. Only the amount of non-performing loans and a lack of cost efficiency result in a negative impact on deposits. On the other hand, capitalization does not seem to be a concern for depositors in credit unions. This can partially be explained by the structure of credit unions. By being not only a depositor, but also a shareholder, depositors seems to have more trust in their institution's management. This finding also underlines the role of deposit insurance. Depositors do not react to an increased failure risk and thus, might imperfectly monitor the credit union's risk behavior. However, this might be offset by the role of the depositor as a shareholder. In addition, credit unions are not driven by the objective to maximize shareholder value and are more concerned to protect their shareholders against losses because they are also depositors. This point is emphasized by the finding that depositors flock to credit unions in times of uncertain economic circumstances. Anecdotal evidence has suggested this in the past, but this is the first study that analyzes the NCUA data to prove that point. This finding has policy implications in that it shows the importance of credit unions as safe havens for scared depositors. Given the fact that almost all financial institutions are part of some deposit insurance scheme, deposits should not be moved out of fear of bank failure. Yet, we have experienced this in the past and the events of the autumn of 2008 have shown that despite deposit insurance bank runs are still possible. This study suggests that in uncertain times when depositors look for a safer place for their money, they come to credit unions. Thus,

credit unions play a major role in preserving depositors' confidence during economic recessions. One could argue that the deposit inflows to credit unions during the recession are due to reverse disintermediation where money from the stock markets flowed into deposits. However, during the sample period we observed a decline in commercial bank deposits at the same time as credit union deposits increased. That leads to the conclusion that consumers left less transparent commercial bank to deposit their money into less risky credit unions. Our findings support that argument.

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