Credit Union Growth in Mid-sized Markets

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The credit union movement in the U.S. began in 1909 (National Credit Union Association, 2010). Credit unions differ from banks in that they are member-owned cooperatives that operate as nonprofits with restricted fields of membership. Since they are nonprofits, they cannot raise capital by issuing stock in financial markets. Rather, all capital comes from retained earnings. In addition, members of the board of directors cannot be paid for their services (Robbins, 2005). Nevertheless, competition of credit unions with banks has been well documented in studies such as Tokle and Tokle (2000), Heinrich and Kashian (2008), and Feinberg (2001).

The financial crisis of 2008-09 has affected financial institutions across the U.S., including credit unions. And, credit unions, like other depository institutions, will face challenges in the years ahead. One challenge facing credit unions will be growth. A recent CEO Advisory Group's study warns of stagnant growth. The study states that "since 2000, 45 percent of all CU's have had a net loss of members, and a shocking 59 percent of all CU's under $10 million in assets had net losses" (http://www.ceoadvisory.com/page.php?page=76, 2008).

Corporate credit unions, which provide services such as check clearing to natural person (consumer) credit unions, have encountered difficulties in the 2008-09 financial crisis, as two of them were placed in conservatorship by the National Credit Union Administration (NCUA) in early 2009. This presents a further challenge to credit unions because actions taken to stabilize the corporate credit unions are being paid for by the natural person credit unions. Thus, NCUA estimates that the net worth ratio of natural person credit unions will be lowered by 65 basis points (American Bankers Association, 2009).

Credit unions grow at different rates for various reasons. While the number of credit unions peaked at 23,866 in 1969, there were just 8,147 credit unions at year-end 2008 (CUNA, 2009). Many of the remaining credit unions have grown larger, and Wilcox (2006) states that "by various measures, larger credit unions have recently had stronger financial performance than smaller credit unions, indicating that these institutions face large and pervasive economies of scale" (p. 1). A number of factors affect credit union growth and performance, and this study in particular examines growth factors beyond credit union size, including the role of capital/asset ratios.

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While consistent with previous studies, this work adds to the literature in a number of ways. Most previous studies of credit union growth used data from the 1990s. This study uses 2002-2004 data from mid-sized cities, in order to be more representative of distinct local markets. In addition, two new independent variables, used vehicle loans rates and loan-to-total asset ratios, were included.

The Literature Review discusses the main findings of credit union growth studies in the U.S. and Europe. Some studies have found that small credit unions grow faster than large ones, while others find the opposite is true. Bank growth studies report mixed results as well.

Our model includes variables used in other growth studies, such as credit union size, previous growth, ratio of loans charged off, operating expense ratio, capital-asset ratio, and the ratio of fee income to total assets. The expected effect of each of these variables is discussed in the Model section of the paper. In addition, the two new independent variables listed above add to our knowledge of factors that influence credit union growth.

The Results section details the effect of various factors on credit union growth. When comparing average growth rates of different size credit unions, large credit unions grew faster than small credit unions. However, the regression results show that once we hold other factors constant, small credit unions grew faster. In other words, differences in growth rates may be explained by characteristics other than size alone.

Like other studies, we found that growth persists; credit unions that grew in the previous time period tended to keep growing. High levels of bad debt hamper growth, as do higher expenses. On the other hand, credit unions with higher proportions of fee income tended to grow faster. The capital-asset ratio was not a significant factor in explaining growth, but this was not surprising in light of results of previous studies.

Of the two variables not previously tested in other studies, the loan-to-asset ratio, as expected, had a positive effect on growth. This suggests that credit unions with tighter liquidity are more aggressive in attracting deposits, which leads to higher growth rates. However, higher used vehicle loan rates were associated with higher growth—an unexpected finding.

The Limitations section discusses potential shortcomings of the study. For example, the quality of a credit union's management team could not be modeled with available data. And, current market conditions are considerably different from those prevailing in 2004, making extrapolation to today's market problematic.

We conclude by noting that although most credit unions are small in size, they have been growing larger due to both credit union growth as well as smaller credit unions merging with larger ones. This trend is likely to continue, especially in light of our current financial market conditions.

Literature Review

Many studies of firm growth test the hypothesis that firm growth is random. See, for example, the Law of Proportionate Effect, first developed by Gibrat (1931). These studies usually examine whether growth rates are related to firm size, whether growth tends to persist, and whether variability of growth is related to firm size. For credit unions, growth of assets is typically used to measure firm growth, although membership growth is sometimes used. Other variables that may affect credit union growth include age of the firm, bad-debt ratios, efficiency, return on assets and capital-asset ratios.

Recent studies of credit union growth include those by Ward and McKillop (2005), Goddard et al. (2002) and Goddard and Wilson (2005). The studies by Goddard et al. used samples of U.S. credit unions from the 1990s, while Ward and McKillop used a sample of credit unions from the U.K. in the 1990s. In the U.S., large credit unions tended to grow faster than small credit unions, although an earlier study by Barron et al. (1994), which used NYC credit unions from 1914-1990, found that small credit unions tended to grow faster. Ward and McKillop found that in the U.K., small credit unions grew faster. Goddard et al. (2002) emphasized that "although large credit unions grew faster than small ones, they tended to do so for specific reasons: because they were more efficient, or because they had lower capital or bad debt ratios" (p. 2354). These studies also tested whether growth persisted over time. Ward and McKillop (2005) and Goddard and Wilson (2005) found that growth did persist. On the other hand, Goddard et al. (2002) found negative persistence of growth, i.e., "credit unions that achieve above-average growth in one period tend to grow more slowly in the next" (p. 2345).

More recently, Goddard et al. (2008b) used a sample of credit unions from the NCUA data base (1991-2001) to identify sources of variation in financial performance, as measured by growth of membership and assets, using nested analysis of variance. They found that geography, type of common bond and type of charter (federal vs state) effects make only minor contributions to variation in credit union growth; individual credit union effects explain a large portion of variation in growth. These individual effects, which may include staffing decisions and product portfolio choices, are more pronounced for small credit unions than for large ones. Another study by Goddard et al. (2008a) used a sample of U.S. credit unions from a different time period (1993-2004) to examine diversification and financial performance using instrumental variables regression. They found that small credit unions do not have the scale or expertise to benefit from diversification in the way that larger credit unions do. Similarly, Wilcox (2006) reported a widening gap in the financial performance of large and small credit unions from 1980-2004, attributable to the cost advantages of large credit unions and the fact that expanding fields of membership allow consumers to choose among competing institutions.

Stern et al. (2009) used a sample of 490 credit unions with data from the second quarter of 1994 to the first quarter of 2006 to examine factors that affect the growth of credit union liabilities rather than assets. Specifically, they disaggregated deposits into share drafts, regular shares, money market accounts, share certificates, and IRA/Keogh accounts, and included deposit rates as explanatory

variables in explaining growth of these various deposits. They found that the "growth rate of a deposit category is negatively related to interest rates offered on other types of accounts" (p. 259). Share certificate rates had the largest impact on total share growth.

Although not directly addressing growth issues, a couple of studies have examined efficiency of credit unions. Tripp et al. (2004) used NCUA data from 1998-2002 in a linear programming study of efficiency. They found that multiple bond credit unions were more efficient than single bond credit unions. Glass and McKillop (2006) used large credit unions from the NCUA data base (1993-2001) to examine net and gross cost inefficiency. They found increasing returns to scale and limited cost complementarity. Larger credit unions had lower average costs; cost efficiency tended to improve with age.

Since credit unions and banks are both depository institutions, it may be useful to consider some of the results that have been reported in bank growth studies. Recent examples include those of Cyree et al. (2000a), Cyree et al. (2000b), Goddard et al. (2004), and Wilson and Williams (2000). These studies analyzed U.S. banks, with the exception of Wilson and Williams who examined European banks. The studies found mixed results regarding the Law of Proportionate Effect. Banks that did not grow tended to be smaller in the Cyree et al. (2000b) study, while Goddard et al. (2004) and Wilson and Williams (2000) found little evidence of a relationship between size and growth (except in Italy). In addition, banks with lower capital ratios were more likely to grow.

This study adds to the previous studies in a number of ways. While most of the previous credit union growth studies examined time periods from the 1990s, our study uses sample from a more recent time period of 2002-04. Second, the mid-sized cities in the sample were selected to be in rural areas rather than from larger urban areas so that they would be more representative of distinct local markets (Tokle and Tokle, 2008). And, finally, we include used-vehicle loan rates and the loan-to-total asset ratios as two new independent variables in a credit union growth model.

Sample

Credit unions in 25 mid-sized cities in rural areas of the U.S. were selected for study. Credit unions with extremely large growth rates (more than 35 percent) were excluded to avoid using those that merged during the sample period. The cities were not part of larger urban areas so that the municipalities represented distinct local markets. A total of 296 credit unions were included in the sample. During this time period, the number of credit unions fell from 9,688 in 2002 to 9,014 in 2004, while their total assets rose from $557 billion to $647 billion (Census Bureau). These trends are expected to continue (Nikolopoulous and Handrinos, 2008). All data were taken from NCUA's individual credit union call reports for June 2004 unless otherwise noted under the descriptions of the variables in the next section.

The Model

The dependent variable is the credit union's logarithmic growth between 2003 and 2004. Previous studies of credit union growth have used similar measures over various time periods. Goddard and Wilson (2005) used a three-year horizon; Goddard et al. (2002) used a 6-month time frame; and Goddard et al. (2004) used a 1-year change in their study of bank growth. Regression corrected for heteroscedasticity with White standard errors was used to fit the model.

Most studies of credit union growth (for example, Goddard et al 2002; Ward and McKillop 2005) state the relationship between credit union growth and size as follows:

$$\ln S_{i,t} - \ln S_{i,t-1} = \beta_0 + (\beta_1 - 1)\ln S_{i,t-1} + \varepsilon_{i,t}$$

$S_{i,t}$ is credit union size (assets) at time period t and $S_{i,t-1}$ is the size in the previous time period; ε is a random disturbance. β_1 represents the effect of initial size on the credit union's later growth. If $\beta_1 = 1$, then the Law of Proportionate Effect holds and firms size does not affect growth; if $\beta_1 > 1$, then large firms grow faster than small firms, and if $\beta_1 < 1$, then small firms grow faster than large firms. (For a thorough explanation see Ward and McKillop (2005), p. 1835.)

To include previous growth, the equation can be modified to include:

$$\ln S_{i,t} - \ln S_{i,t-1} = \beta_0 + (\beta_1 - 1)\ln S_{i,t-1} + \beta_2(\ln S_{i,t-1} - \ln S_{i,t-2}) + \varepsilon_{i,t}$$

If $\beta_2 > 0$, growth trends persist into the next time period.

Additional variables expand the model to include:

$$\ln S_{i,t} - \ln S_{i,t-1} = \beta_0 + (\beta_1 - 1)\ln S_{i,t-1} + \beta_2(\ln S_{i,t-1} - \ln S_{i,t-2}) + \beta_3 X_{3,i,t} + \ldots + \beta_8 X_{8,i,t} + \varepsilon_{i,t}$$

The X's represent the remaining independent variables. The empirical results of this model are reported in a later section.

One-tailed hypothesis tests of the following variables were used unless otherwise noted.

Credit Union Size. The logarithm of the credit union's total assets in 2003 was used to represent size. The Law of Proportionate Effect (Gibrat, 1931) suggests that growth is unrelated to size of the firm. However, some studies of credit union growth have found that large firms tend to grow faster than small firms (Goddard and Wilson, 2005, and Goddard, et al. 2002), while others have found that small credit unions grow faster than large credit unions (Ward and McKillop, 2005, and Barron et al., 1994). This is a two-tailed test.

Previous growth. The credit union's logarithmic growth between 2002 and 2003 was used as an explanatory variable to test for the persistence of growth. Ward and McKillop (2005) found that if growth was above average in one period, it tended to be above average the next period. Goddard and Wilson (2005) also found a positive persistence of growth. Some studies of bank growth report the same effect (Goddard et al., 2004 and Wilson and Williams, 2000). However, Goddard et al. (2002) did not find a positive persistence for credit union growth. Therefore, this hypothesis test will be two-tailed.

Net Charge-offs/Average Loans. Charge-offs are measured as the total loans charged-off during the previous 12 months divided by total loans. Goddard et al. (2002) reported that high levels of bad debt may indicate a poorly run credit union, with below average growth. Therefore, the sign of this variable's coefficient is hypothesized to be negative.

Net Operating expenses/average assets. Goddard et al. (2002) found the highest growth from the most cost efficient credit unions, using a cost-income ratio to capture efficiency. Leggett and Strand (2002) found that as credit unions grow and add members, "benefits are transferred from members to management," so that economies of scale experienced from growth may be offset by agency problems. We use net operating expenses/average loans as a measure of efficiency. A higher expense ratio suggests the credit union is less efficient and hence will experience lower growth; thus, the coefficient of this variable is expected to be negative.

Net Worth/Total Assets (Capital/asset). Goddard et al. (2008a) studied factors that influence financial performance of U.S. credit unions. They state that credit unions with a high capital-asset ratio may be operating overcautiously and hence are missing investment opportunities. However, "the cost of insurance against bankruptcy be high for a credit union with a low" ratio (p. 1841). They found that risk-adjusted rate of returns (rate of return divided by its standard deviation) are positively influenced by increases in capital-asset ratios, which is similar to findings for banks. They state that "a higher capital-assets ratio is unambiguously associated with increased risk-adjusted profitability" (p. 1846). Since profitability is necessary for future growth, this would suggest that this variable should have a positive coefficient. However, Goddard et al. (2004) found that banks with high capital-asset ratios tend to grow slowly. Similarly, Cyree et al. (2000b) found that banks with lower capital are more likely to grow. In light of mixed results reported in the studies cited here, this hypothesis test will be two-tailed.

Used-vehicle loan interest rate. Stern et al. (2009) found that interest rates on various credit union liabilities do affect growth of those deposits. Here we include the rate on used vehicle loans (an asset) to test its effect on growth in assets. Used vehicle rates were used rather than new vehicle rates because financing for used vehicles occurs in more of a local market than for new vehicles, which are frequently financed through auto manufacturers' finance companies that may provide rates as low as 0 percent. Since credit unions typically do not borrow to finance loans over the longer term, if their loan volume increases, they may offer higher rates on liabilities in order to grow those liabilities so they can fund the loans, which would increase asset size. If a credit union charges higher used-vehicle loan rates, we

would expect to see lower growth and vice versa for lower loan rates. Hence, this coefficient is expected to be negative.

Total loans/total assets. Credit unions that have a higher loan-to-asset ratio will experience tighter liquidity and thus need to be more competitive in attracting sources of funds (liabilities). For most credit unions, this source of funds would come from deposits and in particular from certificates of deposit, since their flow is sensitive (very elastic) to the level of interest rates offered. And, a faster growth in liabilities means a faster growth in assets on the other side of the balance sheet. Hence, a positive coefficient is expected.

Fee Income. Increasingly, noninterest income (from fees for services) is becoming an important source of revenue for financial institutions. Esho et al. (2005) reported that between 1993 and 2001, transaction fees on loans and deposits of Australian credit unions increased from 2 percent to 8.5 percent of total revenue. They found that "increased reliance on fee income generating activities is associated with increased risk," and that "credit unions that generated a higher proportion of gross revenues from non-interest income had higher risk and lower returns than those that had relatively small proportions of non-interest income" (p. 279). Here we use the ratio of noninterest income to total assets to capture the effect of fee income on growth. A positive coefficient is expected since we expect increased risk taking to be associated with growth.

Results

Descriptive statistics for the entire sample are reported in Table 1. Table 2 reports descriptive statistics broken down by size of credit unions, with large defined as more than $50 million in assets.

Table 1. Descriptive statistics for whole sample (n = 296)

Variable	Mean	Standard deviation
Growth (2003-2004)	.031	.076
Previous growth (2002-2003)	.065	.075
Total assets	$59.6 million	$217 million
Charge-offs	.615	1.07
Net operating expenses	3.054	1.03
Capital/asset ratio	13.19	4.95
Used vehicle loan rate	.065	.018
Loans/assets	.581	.162
Fee income/assets	.0042	.0041

The average growth for all credit unions in the sample was 3.1 percent between 2003-2004, less than the average previous growth of 6.5 percent between 2002-2003. The typical credit union in this sample had assets of approximately $60 million. The average capital/asset ratio of 13.19 was relatively high in comparison to the credit union industry as a whole, and the ratio of loans to assets of .581 was relatively low.

Table 2. Descriptive statistics by credit union size. Large credit unions: ≥$50 million in assets (n = 67); small credit unions: <$50 million in assets (n = 229).

Variable	Mean: large	Mean: small	Std dev: large	Std dev: small
Growth (2003-2004)	.064	.021	.078	.072
Previous growth (2002-2003)	.098	.055	.058	.077
Total assets	$230 million	$14.2 million	$448 million	$12.8 million
Charge-offs	.504	.648	.307	1.213
Net operating expenses	2.899	3.100	.661	1.113
Capital/asset ratio	10.943	13.854	2.836	5.235
Used vehicle loan rate	.054	.068	.010	.019
Loans/assets	.649	.561	.124	.167
Fee income/assets	.0060	.0037	.0038	.0040

Table 2 shows that growth was much higher for large credit unions (6.4 percent) vs. small credit unions (2.1 percent). However, these credit unions differed in ways other than size which may account for variation in growth. For example, small credit unions had higher charge-offs (.65) than large credit unions (.50), had higher net operating expenses (3.1 vs. 2.9), higher capital/asset ratios (13.9 vs. 10.9), lower loan/asset ratios (.56 vs. .65), and less fee income relative to assets (.004 vs. .006). They also had lower previous growth (5.5 percent) than larger credit unions (9.8 percent).

Regression results, corrected for heteroscedasticity with White Standard Errors, are shown in Table 3. Relevant measures include: R^2 = .18; adjusted R^2 = .16; F = 8.00; p-value of F-test <0.0001.

Table 3. Regression results, corrected for heteroscedasticity. Dependent variable = logarithmic growth in assets, 2003-2004

Variable	Coefficient	White Standard Error	p-value*
Intercept	-0.09449	0.06657	0.1569
Size	0.00659	0.00343	0.0557
Previous growth (2002-2003)	0.12602	0.07586	0.0978
Charge-offs	-0.01837	0.00483	0.0002
Net operating expenses	-0.01360	0.00507	0.0077
Capital asset ratio	-0.00070	0.00081	0.3913
Used vehicle loan rate	0.48160	0.20986	0.0225
Loan to asset ratio	0.04428	0.03390	0.1926
Fee income to asset ratio	2.7841	1.07549	0.0101

*Reported p-values are for two-tailed tests.

The size variable shows that small firms grow faster than large firms, holding other factors constant, since the coefficient is less than one. This effect is statistically significant at the 10 percent level. The difference in growth by size of credit union reported in Table 2, which showed large credit unions growing faster than small ones, does not hold other factors constant that may influence growth. Differences in growth rates may be explained by characteristics other than size alone.

The credit unions in this sample show positive persistence in growth, as the coefficient of previous growth is positive and significant at the 10 percent level. Credit unions that grew in 2002-2003 also tended to grow in 2003-2004. This result has been reported in other studies (Goddard and Wilson, 2005 and Ward and McKillop, 2005).

The coefficient of charge-offs is negative and significant at the 1 percent level, as expected. Goddard et al. (2002) suggested that high levels of bad debt may indicate a poorly run credit union, and that seems to be the case in this sample.

Net operating expenses had a negative and strongly significant coefficient, as expected. This suggests that higher expenses reduce growth. The capital/asset ratio was not significant, which was not surprising in light of the mixed results reported in other studies. Credit unions with high capital/asset ratios may be overcautious, but on the other hand they may be avoiding higher costs associated with taking greater risks.

The used vehicle loan rate was expected to have a negative coefficient, but had a positive and significant coefficient instead. One would expect that credit unions with lower loan rates would make more loans and hence grow more quickly.

The coefficient of the loan-to-asset ratio was positive and significant at the 10 percent level (since this is a one-tailed test, the p-value for a two-tailed is divided by two). This would suggest that the credit unions that have a tighter liquidity due to being more loaned out are more aggressive in attracting deposits, which in turn lead to higher credit union growth rates.

The coefficient of fee income to total assets was positive and significant at the 1 percent level. Credit unions with a higher proportion of noninterest income grew faster than those with a lower proportion of fee income. While this may be associated with increasing risk (Esho et al. 2005), it appears to help promote growth.

Limitations

Factors other than the ones used here may influence how quickly individual credit unions grow, but these characteristics are not easily identified or captured with available data. For instance, the quality of a credit union's management team and their willingness (or unwillingness) to take on risk may influence their institution's performance. Even though these credit unions were all selected from similar sized communities, there may be differences in local markets that may explain some of the variation in growth, although previous studies have not found compelling differences due to local factors (Goddard et al., 2008b). Furthermore, the results of this study may not be extrapolated to current market conditions, as the data cover 2002-2004, before the recession and credit crisis of 2008-09.

Conclusions

Credit unions are an important part of our financial system. Like banks, credit unions take in deposits and make loans, but unlike banks, they are owned by members, not shareholders. Most credit unions are small in size but smaller credit unions have been merging with larger credit unions, leaving ever larger credit unions in existence. This study examines characteristics of credit unions that lead to higher growth.

Results of this study for the most part agree with previous studies. Once other factors have been held constant, smaller credit unions grow faster than large credit unions. The other characteristics that influence growth, aside from size, include previous growth, charge-offs, net operating expenses, and fee income-to-asset ratios. Credit unions with higher charge-offs tend to grow more slowly, indicating that higher levels of bad debt may be associated with poorly managed institutions. Higher operating expenses also lead to slower growth due to lesser efficiency than credit unions with lower operating expenses. Credit unions with higher fee income-to-asset ratios also tend to grow more quickly, most likely due to their seeking additional sources of funds. Finally, one of the new variables, the loan-to-asset ratio, had a positive, significant effect on growth, suggesting that credit unions that are more loaned out are more aggressive in attracting deposits.

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