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OPTIMUM CAPITAL/ASSET RATIOS IN THE CREDIT UNION INDUSTRY: A MANAGERIAL PERSPECTIVE

by

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ABSTRACT

Capital adequacy in the financial services industry has been a matter of concern for managers and regulators over the years. The topic became even more important during the deregulation era, which commenced in the early 1980's. This paper is directed towards capital management in a small but significant sector of the financial industry, credit unions.

Focus groups, personal interviews, and a survey of credit union managers throughout the United States form the basis of data reported in this paper. Ten independent variables, based on financial ratios and relationships of credit union operations, have been analyzed. Five of these ten variables have been identified as being statistically significant.

The following ratios are deemed by respondents to be most important in determining their institutions optimal capital/asset ratio policy during the 1990's. They are: total loans/total assets, real estate loans/total loans, unsecured and credit card loans/total loans, the operating expense ratio and the delinquency ratio. Two multiple regression equations form the basis of a model that operating managers could use to set target goals of gross and net capital /asset ratios for their credit unions.

The equations were tested using 1996 credit union balance sheet and income statement data. More than 70 percent of gross capital/asset ratios fell within the range of 8.5 to 11.5 percent, while net capital/asset ratios were between 7.5 and 10.5 percent. Credit union executives should manage operations to "optimize" their specific ratios within these ranges. Only extraordinary circumstances would warrant being above or below these levels over a five-year time horizon.

INTRODUCTION

The role of capital in the management of depository financial institutions has always been an important component of their business activities. Capital exists to provide a "cushion to absorb the risk of loss in the value of loans and investments on the books of the institution."[1] Furthermore, it "helps to establish a level of confidence sufficient to attract enough deposits to fund its operations."[2] This level of confidence extends beyond depositors, namely to all stakeholders of an organization.

The topic of "capital adequacy" has been of prime concern to managers, legislators and the public during the last twenty years. Inflation problems following the OPEC embargo of 1973, risky loans to developing countries in the late 1970's and excessive lending to the real estate industry through the late 1980's, created significant pressure on capital accounts at commercial banks, savings and loans, and savings banks. Deregulation of financial services in the early 1980's squeezed profit margins on these institutions as well as credit unions.

The net result of these events was a contraction of capital levels at most of these institutions, on a relative basis. Although total capital continued to grow, some firms did not survive and capital/asset ratios declined for many segments of the financial services industry in the United States. Capital adequacy became a "hot topic" over the last two decades, as most depository financial institutions struggled to repair their capital accounts and continue to be competitive in a rapidly changing financial environment.

It has only been in the 1990's, actually the last year or two, that "capital adequacy" has been achieved for most of the financial services industry. Through massive restructuring and consolidation efforts, most financial institutions existing today are strong, vibrant, lean and competitive, generating substantial benefits for their customers, shareholders, employees, members and other stakeholders.

A new phenomenon is now surfacing in the credit union industry, namely the belief that there is either enough capital or possibly too much capital. At the very least, a growing number of institutions are facing the concept of "capital maintenance" vs. "capital building," which has been a prime focus of their activities for more than two decades. It is in the context of this new environment that this study is directed. It seeks to identify not an adequate level of capital for a credit union, but an "optimum level of capital." A variety of research techniques have been utilized to estimate optimum capital/asset ratios for U.S. credit unions.

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[1] Rose, Peter S., James W. Kolari and Donald R. Fraser, "*Financial Institution: Understanding and Managing Financial Services,*" 4th ed., 1993 p. 88-89. Richard D. Irwin, Inc.

[2] Alfriend, Malcolm C. "International Risk – Based Capital Standards: History and Explanation," *Economic Review*, November/December, 1998 p. 28.

RESEARCH DESIGN AND METHODOLOGY

Over a five-month period a number of focus groups and personal interviews were conducted with credit union management personnel. Based on their input, a number of business risks facing the credit union industry were identified. The following risk factors were identified in a white paper issued by the Credit Union National Association (CUNA CFO) council. [3]

1. Regulatory risks — risk-based capital standards adopted by the National Credit Union Association (NCUA) require credit unions to increase their reserves in order to comply with these standards.
2. Credit risks — reserves are needed by a credit union to be used in charging off delinquent loans.
3. Investment risks — reserves are needed by a credit union to be used in charging off losses on investment securities.
4. Interest rate risks — when interest rates rise, net interest margins are reduced until the loan and investment portfolios can be adjusted to the new environment.
5. Sponsor risks — the downsizing trend in corporate America may result in layoffs for primary sponsor employees. This has also been true in the area of defense department base closings and cutbacks.
6. Taxation risks — the potential impact of taxing credit union activities hangs over the industry. If the credit union tax exemption is reduced or eliminated, margins will suffer.
7. Legislative risks — reducing restrictions on national interstate banking activities could result in increased competition in the financial service marketplace and a loss of membership.
8. NCUSIF write-down risk — credit unions now hold one percent of their deposits with the National Credit Union Share Insurance Fund. Congress could pass legislation to mandate that this item, currently held as an asset on the balance sheet, must be written off, thus reducing credit union capital by an equal amount.

These and other risks manifest themselves in certain key ratios, margins and relationships found in financial statements of operating credit unions. A number of these independent variables have been identified as important factors in determining the level of an optimum gross and net capital ratio.

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[3] Graham, R. Thomas, *Determining Capital Adequacy*, Credit Union National Association (CUNA) CFO Council.

Capital adequacy implies a minimum level of capital necessary to protect credit union operations and member savings from the risks identified above. This study takes this concept of capital a step further. In striving to identify and estimate "optimum capital" levels, minimum and maximum capital levels are identified using multiple regression.

Optimal capital ranges are likely to differ for each credit union at any time and also vary for the same credit union over time. Changing conditions within the credit union as well as external economic, financial, and business-related circumstances also affect maximum and minimum capital levels.

This study develops a mechanism to assist credit union management to adjust capital levels to changing conditions and to determine optimum capital/asset ratios. More importantly, it enables credit unions to adjust target capital/asset ratio as events develop, both inside and outside the institution.

For example, as the loan portfolio expands as a percent of total assets and/or becomes more risky, one would expect optimum capital/asset ratios to increase. If operating margins contract due to changing interest rate levels, or competition in the marketplace, the optimum capital/asset ratio should also rise. Conversely, if the credit unions net interest margin rises or the risk complexion of its loan portfolio declines, a reduction in the optimum capital/asset ratio would be expected.

To obtain data for this study, a questionnaire was constructed and sent to approximately 800 randomly selected chief executive officers of credit unions nationwide. Credit unions varied in asset size from under $5 million to well over $500 million. They came from three charter/insurance classifications: Federal Charter-Federally Insured, State Charter-Federally Insured and State Charter-Privately Insured. Finally, their sponsors were either associations, residential, occupational or multiple groups. One hundred and sixty-seven valid and useable responses were received and incorporated into the data analysis, a respectable 20.9 percent response rate.

In a cover letter sent to respondents, the definition of capital was specified as: *Gross Capital*, which includes Regular or Statutory Reserves, All Other Reserves, Undivided Earnings, a Loan Loss Allowance Account and an Investment Loss Allowance Account. *Net Capital* was defined as Regular or Statutory Reserves, All Other Reserves and Undivided Earnings.

When analyzing capital accounts of different depository financial institutions, credit unions must be placed in proper perspective. Institutions, such as publicly held commercial banks, savings and loans and savings banks, build their capital bases in two ways — generating retained earnings from operations and selling new equity to the public. In contrast, credit unions, being "financial cooperatives," do not have shareholders. Their members' capital represents the majority of the liabilities and capital side of their balance sheets. Therefore, credit union capital

may expand in only one way, the generation of an excess of income over expenses in any given period of time.

Credit union capital levels, and changes in those levels, are more difficult to plan for and manage than in other financial institutions. Most likely they move slowly upward, if that is management's strategy, although downward adjustments may occur if asset write-offs are the culprit. Therefore, it could be argued that credit unions should maintain higher capital accounts than their competitor depository financial institutions. If so, how much higher should they be? And, could they logically become too high? These issues are addressed in this study.

THE CREDIT UNION INDUSTRY IN THE UNITED STATES: A BRIEF OVERVIEW

Credit unions are one component of the depository financial institutions segment of the financial services industry. They have prospered over the years, with "the rise of the middle class, especially people employed in private industry."[4] Although credit unions are the smallest component of this industry, they continue to provide a record number of services to their members, built on a philosophy of "people helping people."

Table 1
Growth of Credit Unions - United States
1987-1997 (1)

Year	Total Membership (in millions)	Total Assets (in billions)	Number of Credit Unions
1996	71.4	$336	11,884
1995	69.3	316	12,232
1994	67.4	299	12,559
1993	65.5	287	12,960
1992	63.9	270	13,385
1991	62.4	242	13,989
1990	61.6	222	14,549
1989	60.3	206	15,121
1988	58.7	197	15,709
1987	56.5	182	16,274

(1) Year End
Source: *Operating Ratios and Spreads*, Annual Year-End Edition, Credit Union National Association.

Table 1 presents data depicting industry growth during the last decade. Total membership has expanded by 14.9 million, or 26.37 percent. Asset growth has increased by $154 billion, an expansion of 84.62 percent. At the same time the number of operating credit unions

[4] Rose, Peter S., James W. Kolari, and Donald R. Fraser, *Financial Institution: Understanding and Managing Financial Services,*" 4th ed., 1993 p. 512. Richard D. Irwin.

has contracted by 4,390, a decline of 26.98 percent. This decline mirrors industry trends in depository financial institutions consolidation while expanding services offered and assets under management.

Table 2

Measures of Credit Unions Performance
1987-1996

Year	Net Capital/Asset Ratio (1)	Net Income/ Total Assets
1996	10.8	1.10
1995	10.3	1.13
1994	9.6	1.21
1993	9.0	1.39
1992	8.1	1.37
1991	7.6	.94
1990	7.6	.89
1989	7.3	.92
1988	6.8	.98
1987	6.5	.98

(1) Net capital is defined as regular reserves, all other reserves and undivided earnings, at year-end. It specifically excludes allowances for loan losses and investment losses.
Source: *Operating Ratios and Spreads*, Annual Year-End Editions, Credit Union National Association.

On an industry wide basis, net capital/asset ratios have increased significantly and continuously during the past decade. Capital growth has been a major strategic goal of the industry since the turbulent years of the early 1980's. Progress has been exemplary and credit unions now have the strongest capital position of any class of depository financial institutions in the United States. A question addressed in this study is whether or not current levels are "strong enough?"

The industry's ability to generate net income on its working asset base has been the only contributing factor to growth in capital. They are unlike publicly held institutions that may sell new shares or, in the case of commercial banks, sell certain forms of debt instruments to enhance their capital base. Net income margins presented in Table 2 reflect declining trend from 1987 through 1990. For the next three years, margins expanded significantly, from 0.89 in 1990 to 1.39 in 1993. This was a period of generally declining interest rates. Since credit union deposits are primary short term in nature, they declined with the markets, while their assets repriced at a much slower rate, enhancing margins.

Short-term interest rates increased significantly in 1994, resulting in margin pressures and reduction in net income/total assets. Competition in the marketplace in more recent years has contributed to declining ratios through year-end 1996, although it is still above the levels of the late 1980's.

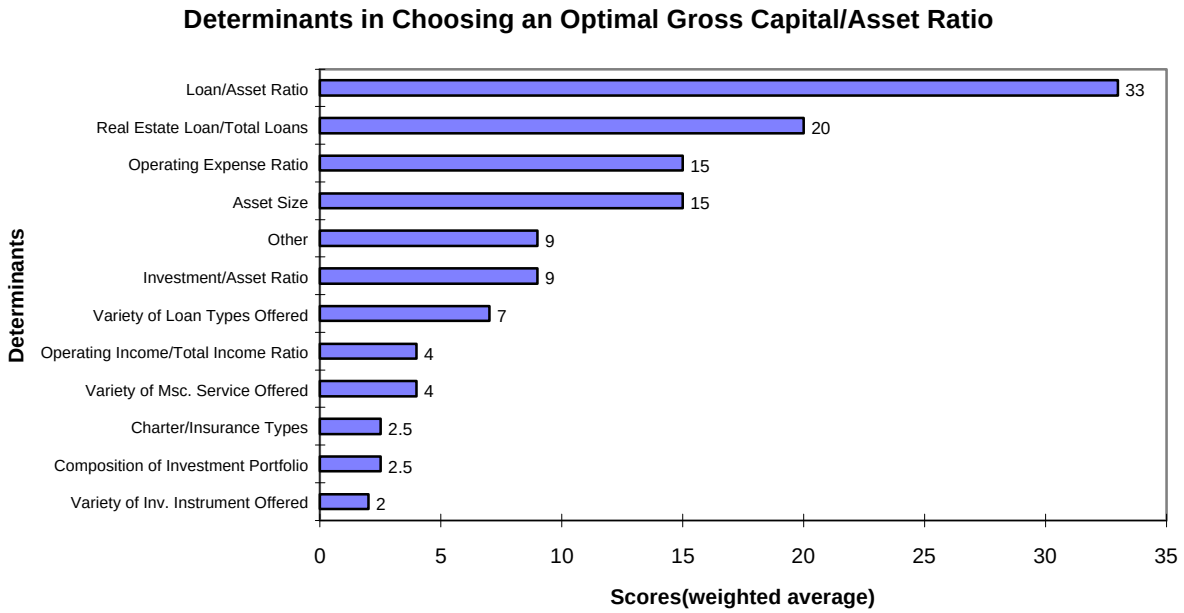
There are three broad categories of credit unions in the United States. The largest group, by number, assets and membership, is chartered by the National Credit Union Association. These credit unions also have their deposits insured, up to $100,000 each, by the NCUSIF.

Members of the second largest group of credit unions have charters from the state in which they are located, but also provide members deposits with insurance from NCUSIF. The final group is composed of state chartered credit unions that are privately insured.

VARIABLES INFLUENCING CAPITAL/ASSET RATIOS

Credit unions participating in this study had a profile quite similar to that of the entire industry. Federal chartered, federally insured credit unions made up 63 percent of our sample compared with approximately 59 percent for the entire industry. State chartered, federally insured credit unions were 28 percent of our sample, vs. 37 percent for the industry. State chartered, privately insured credit unions were 9 percent of our sample vs. only 4 percent for the industry at year-end 1996.

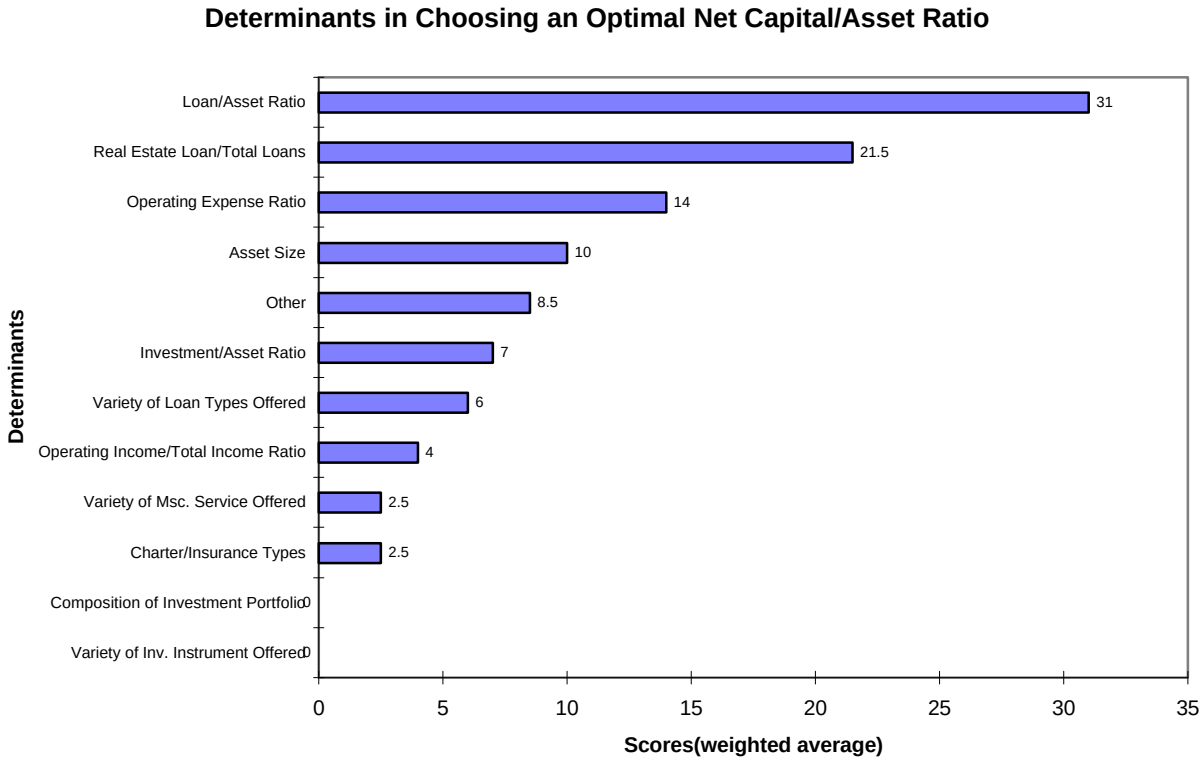
Figure 1



Study respondents were asked to choose and rank the prime determinants of an optimal capital/asset ratio, both net and gross. Figures 1 and 2 present weighted average scores of variables mentioned most frequently and valued highest by respondents.

The four most important variables are identical for both net and gross capital/asset ratios: the loan/asset ratio, composition of the loan portfolio, the operating expense ratio, and asset size. They reflect quite clearly the role played by loans in a credit union's operations, as well as the importance given by management to operating expenses. Another series of questions targets the relationships between these and other variables, and optimum target capital ratios.

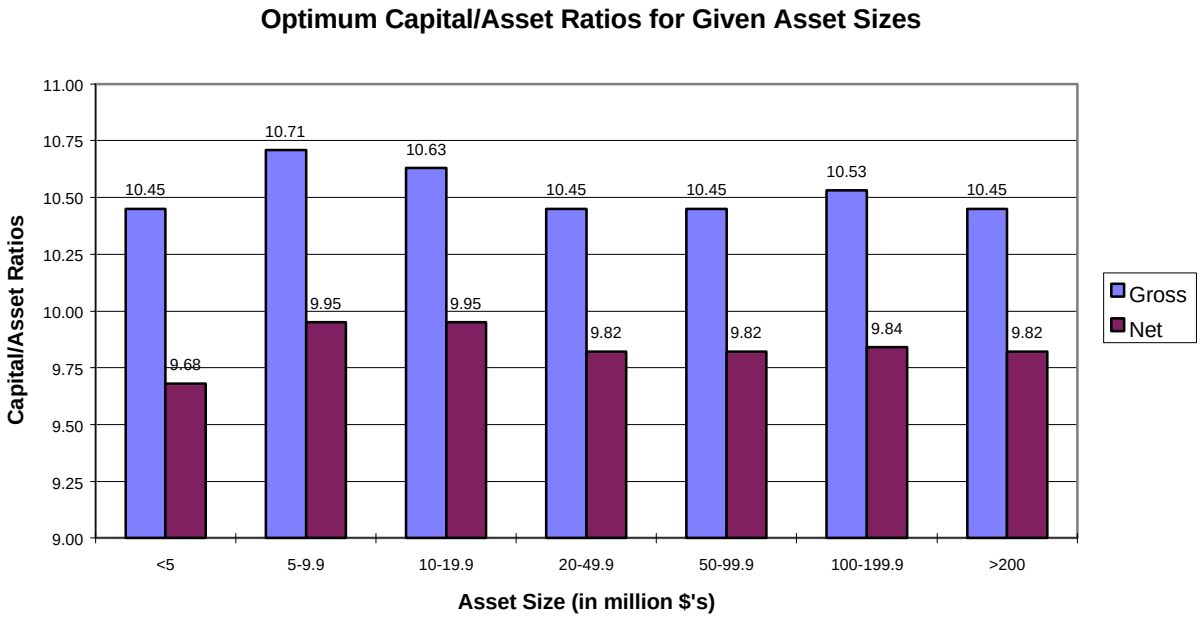
Figure 2



Asset Size

The first set of independent variables examined with the two capital/asset ratios was credit union asset size. Figure 3 presents the results in a graphic format. With the exception of the smallest asset category (under $5 million), there is a negative relationship between optimum capital ratios and asset size. For the gross capital/asset ratio, a level of 10.7 percent is identified as optimum for the $5.0-$9.9 million category, trending down to 10.5 percent for the over $200 million group. Similarly, the optimum net capital/asset ratio declines marginally from 10.0 percent to 9.8 percent.

Figure 3



Based on the responses of study participants, the following explanations may help to support and explain the data. Smaller asset credit unions tend to be "plain vanilla," offering a very limited array of savings instruments and loan types. Although risks on some loans may be substantial, the general conservative nature of their operations limits the need for a large capital base.

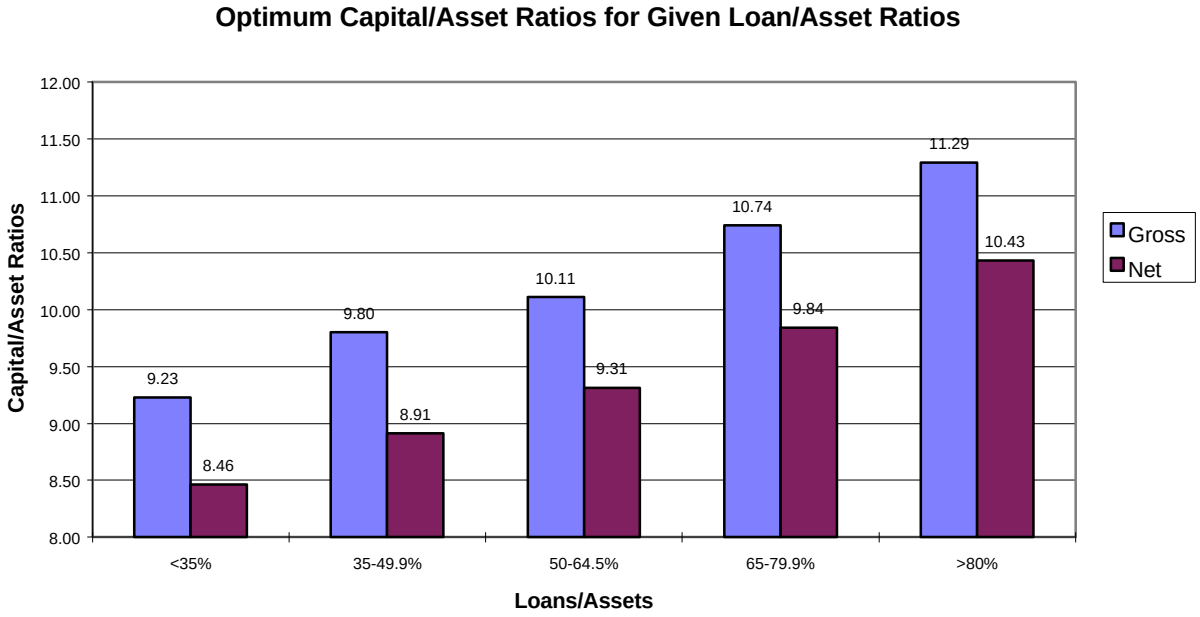
As a credit union's assets expand, so does the diversity of its operations. Diversification tends to spread risks and enhance the stability of cash flows. Prudent management may determine that somewhat lower capital levels are needed to support the safety and soundness of the business.

Diversification trends continue to affect the very largest asset categories, where professionals may be found in every aspect of credit union operations. Capital needs are reduced, allowing the credit union to be even more competitive in its financial service niche. Higher savings rates, lower loan rates, and a broader array of financial services are then available to members, benefiting all stakeholders of the organization.

Loan/Asset Ratio

Loan portfolios represent the largest asset category for the majority of credit unions operating today. It is also the source of greatest risk associated with credit union activities. Delinquencies and/or defaults result in lost income or reduction in credit union assets. The capital account is available to absorb losses and write-offs before member savings accounts are adversely affected.

Figure 4



Therefore, it is hypothesized that larger loan portfolios, in absolute dollars and as a percentage of credit union assets, would expose the institution to greater risk levels. Prudence suggests that greater loan levels would thus be balanced with higher capital ratios.

Survey results support this hypothesis (Figure 4). As the loan portfolio rises as a percentage of total assets, so do the optimum capital ratios, both gross and net. With loan/asset ratios under 35 percent, a gross capital ratio of only 9.2 percent is considered optimum. With loans rising, so does this target, until it reaches 11.3 percent when the loan/asset ratio exceeds 80 percent. Similarly, the optimum net capital/asset ratio the rises from 8.5 percent to 10.4 percent over the same range of loan ratios.

Real Estate Loans/Total Loan Portfolio

Real estate loans in credit union portfolios are of various types. They may be first or second mortgages, as well as home equity loans. In each case, they are generally the largest in average size and the longest in duration, up to 30 years.

In terms of risk, their long life gives the borrower many years to repay, but also longer exposure to changes in financial circumstances, for better or for worse. For fixed rate loans of long duration, the credit union must absorb the risk of not being able to re-price the instrument if interest rates rise. Variable rate mortgages and home equity loans and lines have been designed to address this challenge.

On a positive note, real estate loans tied into a member's primary residence have some of the lowest delinquency rates of any loan category. After all, if the residence is repossessed and

sold, where does one live? Therefore, members are most diligent about paying these loans on time and in full.

In balancing each of these forces, one would hypothesize that a larger portfolio of real estate loans would bring greater risks to a financial institution and, therefore, require a larger capital base in compensation. Although these real estate loans have low default rates, only one significant loss may have the same adverse effect on credit union operations as the default of six to ten automobile loans

Figure 5

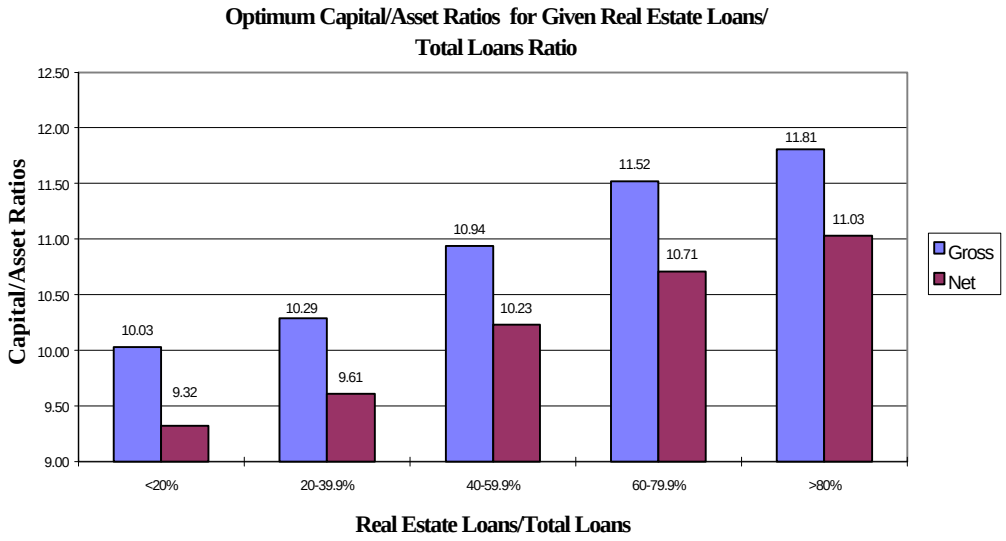


Figure 5 supports this hypothesis and depicts a positive relationship between real estate loan volume and capital ratios. With under 20 percent of loans supporting real estate, the optimum gross capital ratio would be expected to be 10 percent. With over 80 percent of real estate to total loans, the optimum ratio is 11.8 percent. Using the net capital ratio definition, the range runs from 9.3 percent to 11.0 percent.

Unsecured and Credit Card Loans/Total Loan Portfolio

Unsecured and credit card loans represent another risky category of assets in credit union portfolios. Although they are generally smaller in magnitude than real estate loans, credit cards are not backed by specific collateral that could be accessed under delinquency and/or default conditions. Therefore, it may be hypothesized that the greater the percentage of the loan portfolio allocated to these items, the greater the capital amount of needed to provide a prudent balance to the credit unions operations.

Figure 6

Optimum Capital/Asset Ratios for Given Unsecured & Credit Card Loans/Total Loans

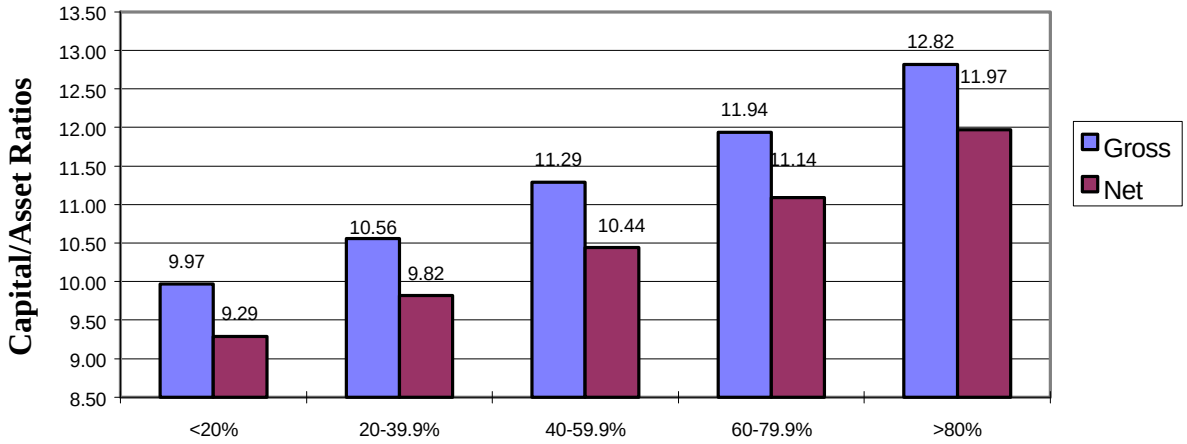


Figure 6 indicates that respondents support this hypothesis. With low ratios (under 20 percent) in this loan category, a gross capital ratio of 9.97 is considered optimum. As the percentage of unsecured and credit card loans increases, so does the target, until a level of 12.82 percent, which is considered optimum above the 80 percent level. Similarly, the net capital ratio also rises inexorably from 9.29 percent to 11.97 percent over the same portfolio parameters.

Another interesting perception of risk may be made by comparing the rate of increase in capital ratios for real estate loans with unsecured and credit card loans (Figures 5 and 6). While both optimum ratios are almost identical for the under 20 percent category of portfolios percentage, the rate of increase is greater for other loan categories. With portfolio percentages exceeding the 80 percent level both optimum capital ratio categories are more than one percentage point higher to prudently support the unsecured and credit card loan categories. This clearly indicates the greater inherent risks perceived by respondents in this portfolio category, when compared with real estate loans.

Share Drafts/Total Asset Ratio

Share drafts are balance sheet items that may produce risks to the cash flows and potential solvency of a credit union. Therefore, the greater the proportion of these items are of total assets, the more capital needed for prudent and efficient management of the organization.

Figure7

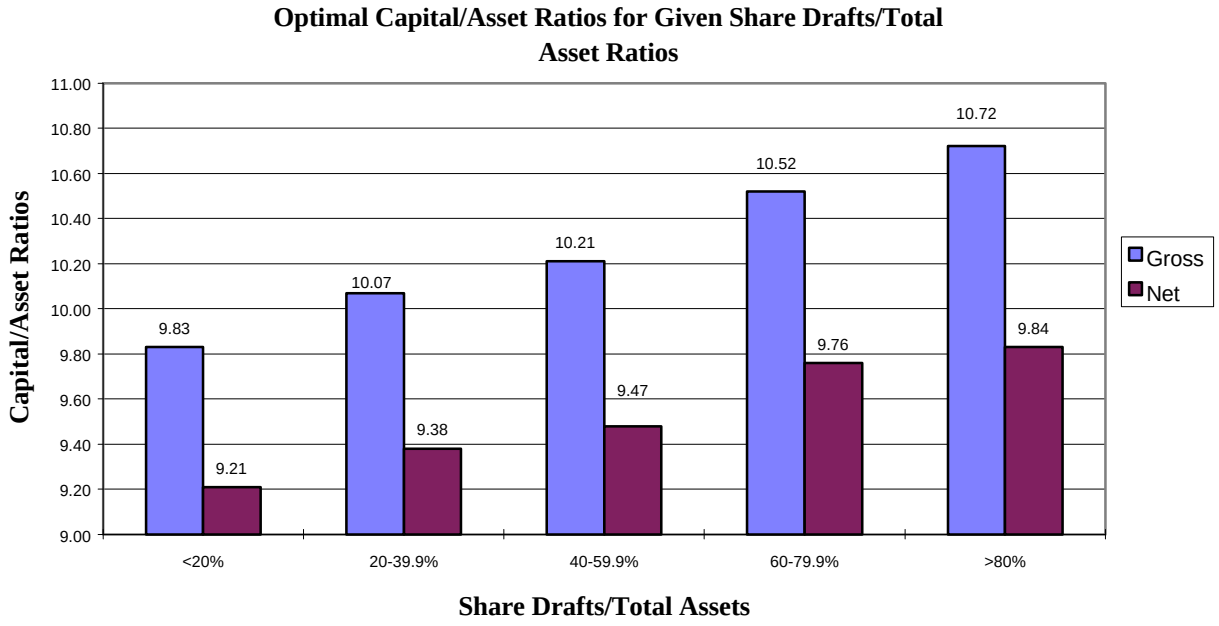


Figure 7 presents positive relationships between share drafts/total assets and each capital/asset ratio. With share draft accounts under the 20 percent level, a 9.8 percent gross capital/asset ratio is deemed optimum. This ratio rises consistently to 10.72 percent when share drafts exceed 80 percent of total assets. Similarly, the optimum net capital/asset ratio over the same range of portfolio percentages rises from 9.2 percent to 9.84 percent.

Again, comparing levels of these ratios to real estate and unsecured and credit card categories, the optimum capital ratios are significantly lower. Because share drafts generally account for relatively smaller sums of money extended to any single member, it is not surprising that perceived risks are lower, resulting in lower capital needs to prudently manage these credit union operations.

Investment/Asset Ratio

Credit union investment portfolios are highly restricted as to security selection by NCUA requirements and guidelines. High-quality, low-risk instruments make up investment portfolios of most credit unions. A significant majority of these investment holdings are clustered at the shorter maturity end of the yield curve. Therefore, a logical hypothesis would be that the larger the percentage of high-quality low-risk short-maturity investments in the asset portfolio, the lower the

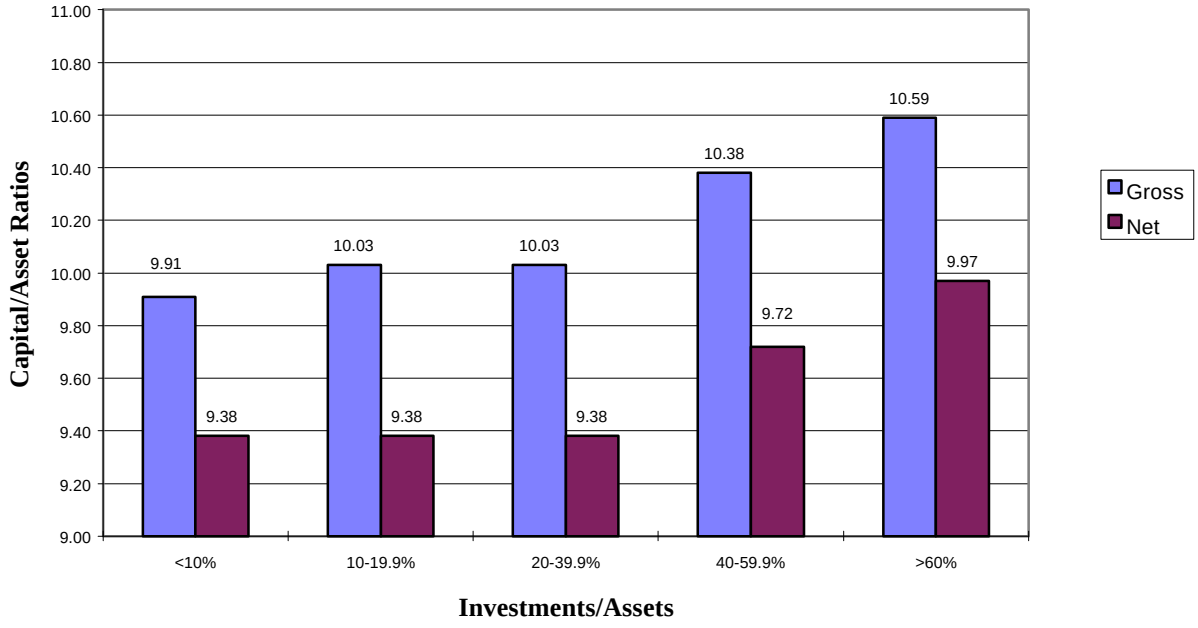
overall risk to the credit union. By deduction, loans would be a smaller percentage of assets resulting in a reduced need for capital, all other things held constant.

Data reported in Figure 8 suggest just the opposite of what might be expected. Respondents came to the conclusion that higher investment portfolio percentages required higher target optimum capital/asset ratios. These portfolios are more liquid, lower yielding and less risky than the average loan portfolio.

How can these findings be reconciled? Another hypothesis is needed. The history and tradition of credit union operations has been and continues to be centered on making loans to members. This is the area of expertise that managers feel they know best. Investment portfolios have grown in relative importance over the last 20 years, from approximately 20 percent to 30 percent of assets. However, they have not been managed effectively or efficiently by many credit unions, especially those with assets under $50 million. This results in the misperception that underlies the findings reported earlier. With the continuing consolidation trend affecting credit unions, as well as most other depository financial institutions, we would expect this finding to be reversed in future studies. However, until that happens, we must accept the results given by our respondents.

Figure 8

Optimum Capital/Asset Ratios for Investment/Asset Ratios

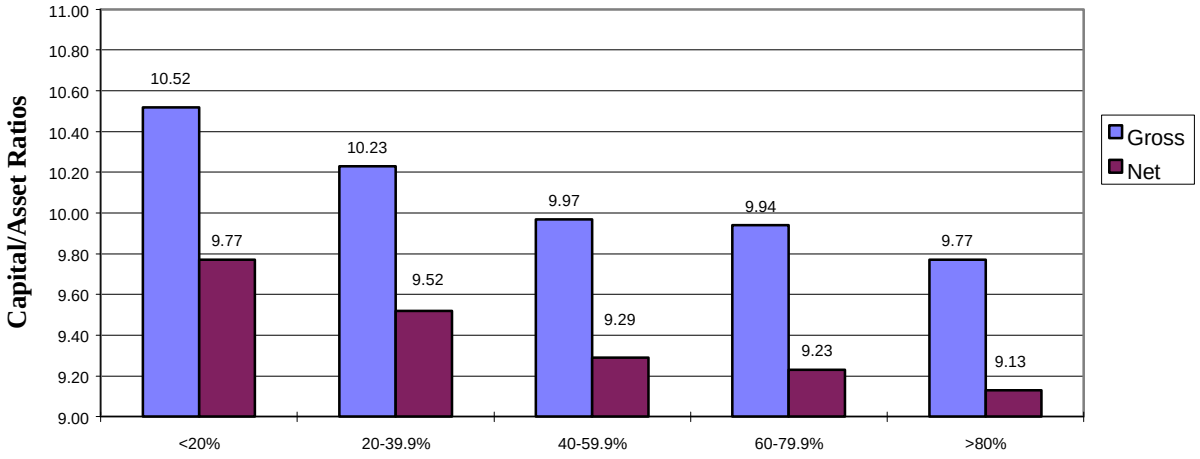


Investments with Maturates Under 1 Year/Total Investments

The maturity structure of credit union investment portfolios would be expected to influence the level of capital carried by an organization. Shorter-term securities have lower risk characteristics than those with longer expected lives. Volatility of the securities underlying value is reduced because, with short maturities, there is less reason for the price to fluctuate and less time before redemption. Of course, the downside to shorter maturities is lower yields and rates of return.

Figure 9

Optimum Capital/Asset Ratios for Given Investments With Maturities Under 1 Year/Total Investment Ratios



Data presented in Figure 9 follow the pattern of our original hypothesis. With smaller percentages of an investment portfolio composed of shorter-maturity instruments (and thus larger percentages of longer-maturity instruments) optimum capital/asset ratios are expected to be higher.

As portfolios shorten their average maturity level, the need for capital is reduced and optimum ratios fall continuously over the range of options chosen for this survey.

The range of ratios and rates of decline are also interesting. For longer-term portfolios, gross capital/asset ratios of 10.52 are considered optimum. As the portfolio time horizon shortens, the ratio declines, but by only about 3/4 of a percentage point, to 9.77 for the 80 percent plus category. The net capital/asset ratio declines even slower over the same range, from 9.77 percent to 9.13 percent. These changes are significantly less than those observed for the loan categories. Two reasons may be given for these findings. First, volatility of most loan categories and their inherent risks are greater than those expected in the limited investment securities held by most credit unions. And second, investment portfolios of most credit unions are significantly smaller than their loan portfolios. Thus, variations in the composition of investment portfolios produce smaller changes in risk, resulting in smaller variances in optimum capital/asset ratios.

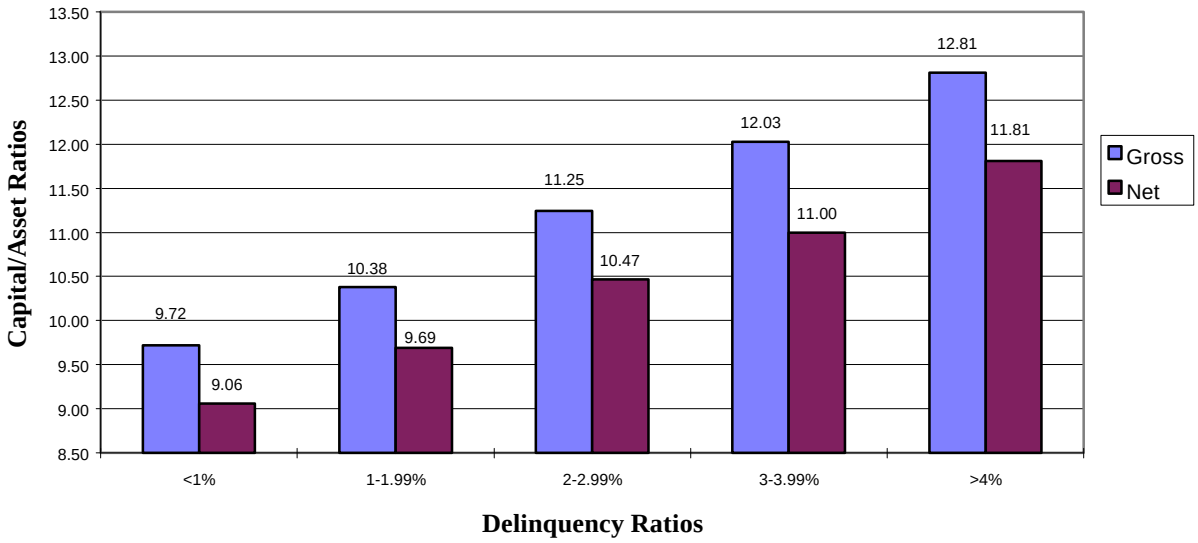
Delinquency Ratio

In addition to examining relationships dealing with the asset structure of credit unions, the survey also identified a number of operating variables expected to influence optimum capital/asset ratios. The delinquency ratio experienced by an organization would be expected to influence target capital ratios in a positive way. Specifically, higher delinquency ratios, with all that they imply about the risks of operating a credit union, would be expected to result in higher optimum capital ratios. Delinquencies, if they turn into defaults, result in direct reductions to a credit union's capital account.

Figure 10 presents survey findings that indicate how higher delinquency ratios translate into higher optimum capital ratios. For delinquencies under 1 percent, a 9.72 percent gross capital target is deemed optimum. By the time the 4 percent delinquency level is reached, this number rises to 12.81 percent for the gross capital ratio. The range for the net capital ratio is 9.06 percent to 11.81 percent. Clearly, delinquencies are an important element in credit union management and affect optimum capital levels.

Figure 10

Optimum Capital/Asset Ratios for Given Delinquency Ratios



Operating Expense Ratios/Total Assets

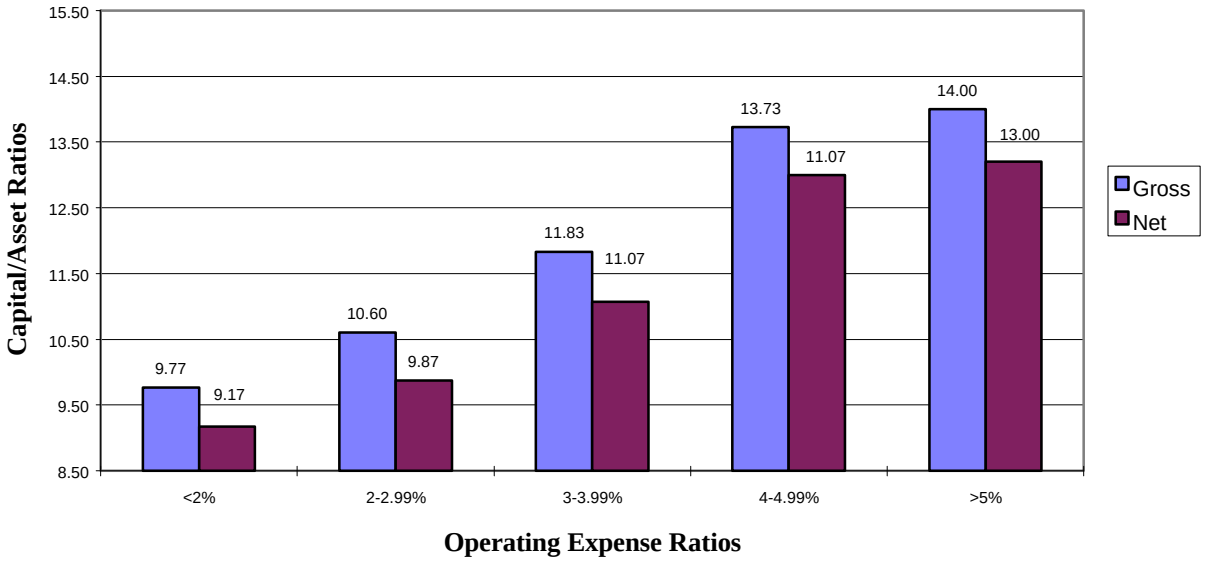
Controlling expenses is an integral component of credit union operations. Higher expenses must be offset by higher revenues, thus contributing to the risks of competing in the

financial markets. In contrast, if expenses are relatively low, these operational savings may allow the credit union to offer enhanced savings rates and lower loan rates. This performance contributes to member satisfaction and lower risk levels for which capital is held as a reserve. Consequently, one would expect to see higher operating ratios requiring higher optimum capital ratios.

Data in Figure 11 depict this positive relationship. With operating ratios under 2 percent, a optimum gross capital ratio of just under 10 percent is expected. When operating ratios exceed 5 percent, a 14 percent gross capital ratio is needed. Similarly, the net capital ratio range is 9.17 percent to 13.20 percent. The actual operating expense ratio for the credit union industry in 1995 was approximately 3.25 percent, which would translate into a optimum gross capital ratio of 11.75 percent and an optimum net capital ratio of 11.00 percent.

Figure 11

Optimum Capital/Asset Ratios for Given Operating Expense Ratios



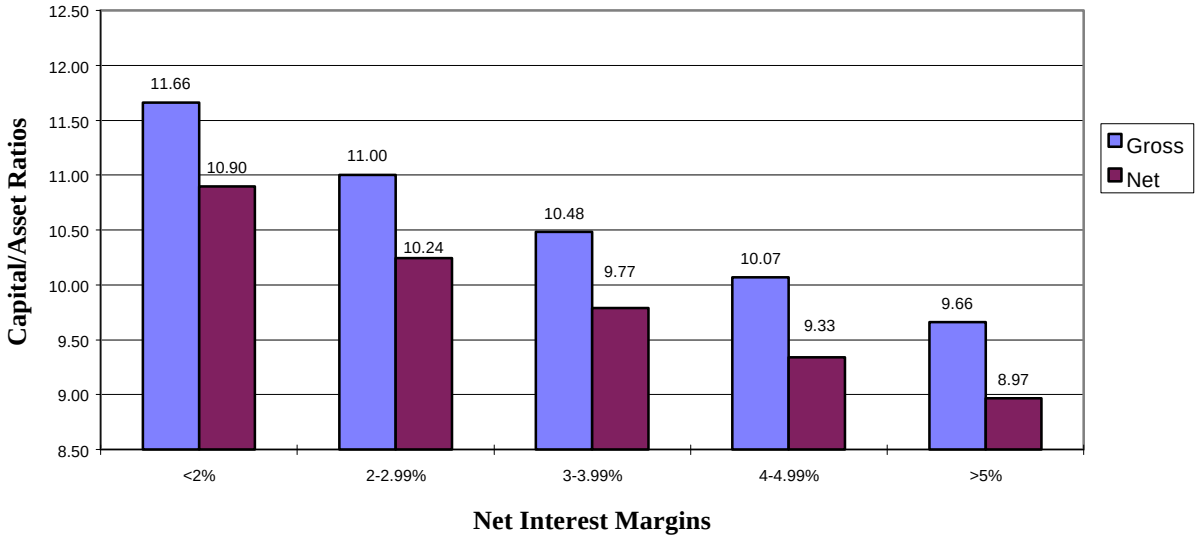
Net Interest Margin

The final independent variable examined in the study was the net interest margin generated by credit union operations. As this margin expands, excess revenues over these expenses grow, contributing to the cash flows of the institution. Therefore, more funds are available, on an ongoing basis, to pay operating expenses, compete in the marketplace, and contribute to reserves. Risk levels should be lower and therefore, lower optimum capital ratios would be needed and/or desired for prudent managerial purposes.

Figure 12 data indicate that respondents support this hypothesis. With low interest margins (under 2 percent), a gross capital ratio of 11.66 is considered an optimum target. With a 5 percent or better margin, this ratio declines to 9.66. Similarly, the net ratio moves from 10.9 percent to 8.97 percent over the same net interest margin range.

Figure 12

Optimum Capital/Asset Ratios for Given Net Interest Margins



Statistical Analysis of Financial Relationships

Two multiple regressions were constructed to identify and quantify the statistical relationships between the variables examined in this study and the two capital/asset ratios. The equations are as follows:

$$\text{(1-1)}\quad \text{Gross Capital Ratio} = 5.87 + \underset{(3.7)}{1.62}\left(\frac{TL}{A}\right) + \underset{(3.3)}{.56}\left(\frac{REL}{TL}\right) + \underset{(2.9)}{.59}\left(\frac{UCCL}{TL}\right) + \underset{(3.4)}{.42}(OER) + \underset{(2.2)}{.37}(DR)$$

$$\text{(1-2)}\quad \text{Net Capital Ratio} = 5.04 + \underset{(3.4)}{1.74}\left(\frac{TL}{A}\right) + \underset{(2.9)}{.63}\left(\frac{REL}{TL}\right) + \underset{(2.4)}{.67}\left(\frac{UCCL}{TL}\right) + \underset{(2.6)}{.37}(OER) + \underset{(2.1)}{.31}(DR)$$

where TL= Total Loans, A= Assets, REL= Real Estate Loans, UCCL= Unsecured and Credit Card Loans, OER= Operating Expense Ratio and DR= Delinquency Ratio. From equations 1-1 and 1-2 it may be observed that the T test, in parenthesis, indicates each independent variable to be statistically significant at the .05 level.

The coefficient of correlation (R) was estimated to be .87 while the coefficient of determination (R^2) was .76. Further tests using randomly selected statistics for various sized credit unions generated similar orders of magnitude for R and R^2. Financial data for the year 1996

were used in the tests. Multi-collinearity tests between the variables are reported in Table 3. In only one case is there a significant relationship between two variables, namely UCCL/TL and REL/TL. Not surprisingly, they are in the loan categories: real estate loans/total loans and unsecured and credit card loans/total loans.

Table 3

	TL/A	REL/TL	UCCL/TL	OER	DR
TL/A	1	.32	.41	.09	.19
REL/TL		1	.67	.47	.38
UCCL/TL			1	.34	.29
OER				1	.43
DR					1

The two regression equations form the basis of a model that could be used by credit union managers to generate estimates of their optimum gross and net capital asset ratios. After testing these models with various combinations of variables from 1996 income statements and balance sheets of randomly selected credit union's financial statements, the optimum gross capital/asset ratio fell within a range of 8.5 to 11.5. The net capital/asset ratio is slightly lower, generally between 7.5 and 10.5.

CONCLUSIONS AND RECOMMENDATIONS

The authors believe that most credit unions applying these equations to their own financial data will fall comfortably within the ranges suggested by our study. For credit unions falling below these ranges, management should focus on building capital. Enhanced loan volume, lower delinquencies, write-offs, and better control of operating expenses are obvious areas to target for improvement.

At the other end of the spectrum are credit unions whose capital/asset ratios exceed our stated "optimum range," in some cases, by significant amounts. The obvious question raised by this study is, why are these ratios so high? How could the achievement and maintenance of high capital/asset ratios possibly benefit memberships? Safety and security are needed to prudently manage a credit union in the dynamic financial marketplace of the 1990s. However, these capital accounts could only have grown this large if members were paid relatively lower rates on savings and/or charged relatively higher rates on loans and other services.

Our recommendations to the managements of these credit unions are to slowly but steadily "de-cumulate" excess capital and distribute it to its rightful owners, your members! Bring the capital/asset ratios back into the "optimum ranges" and maintain those levels on an annual basis. Membership of efficient and well-managed credit unions will be very grateful to receive benefits in the form of enhanced savings rates and/or reduced loan rates. These actions can only enhance the already strong bonds that have been built between credit unions and their members.

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