

12-1-2002

Managing Credit Union Capital: A Strategic Planning Tool for the New Millennium

James S. Gould
Pace University

Raymond H. Lopez
Pace University

Follow this and additional works at: http://digitalcommons.pace.edu/lubinfaculty_workingpapers

Recommended Citation

Gould, James S. and Lopez, Raymond H., "Managing Credit Union Capital: A Strategic Planning Tool for the New Millennium" (2002). *Faculty Working Papers*. Paper 19.
http://digitalcommons.pace.edu/lubinfaculty_workingpapers/19

This Article is brought to you for free and open access by the Lubin School of Business at DigitalCommons@Pace. It has been accepted for inclusion in Faculty Working Papers by an authorized administrator of DigitalCommons@Pace. For more information, please contact rracelis@pace.edu.

WORKING PAPERS

No. 193

December 2002

**Managing Credit Union Capital:
A Strategic Planning Tool for the New
Millennium**

by

**James S. Gould, Ph.D.
Professor of Marketing
Lubin School of Business
Pace University**

and

**Raymond H. Lopez, Ph.D.
Professor of Finance
Lubin School of Business
Pace University**

**MANAGING CREDIT UNION CAPITAL:
A STRATEGIC PLANNING TOOL FOR THE NEW MILLENNIUM**

By

James S. Gould, Ph.D., and Raymond H. Lopez, Ph.D.

James S. Gould is Professor of Marketing at the Lubin School of Business, Pace University.

Raymond H. Lopez is Professor of Finance at the Lubin School of Business, Pace University.

ABSTRACT

This study provides a statistical tool for assisting credit union managers in planning capital/asset ratio strategies for optimum operating efficiency. Focus groups, personal interviews, and survey data from more than 165 randomly selected responses form the basis of our model.

The survey solicited information concerning the relationship between nine independent variables and expected optimum gross and net capital/asset ratios. The most statistically significant variables were total loan/assets, real estate loans/total loans, unsecured and credit card loans, the operating expense ratio, and the delinquency ratio.

Two multiple regression equations were derived from these data. They allow operating managers to enter their specific credit union data into the equations and generate target goals for optimizing their gross and net capital/asset ratios over the next two years.

INTRODUCTION

The financial services industry has achieved an admirable record of performance in the 1990's. Operating profitability has grown fairly consistently and depleted capital accounts from the problems of the 1980s have been replenished in every segment of the industry. While shocks to the financial system have produced temporary challenges for management (rising interest rates by the Federal Reserve in 1994 to slow down the economy and the Asian financial crisis of 1997-1998) overall operating performance has resulted in current capital levels and financial strength that are the highest in more than one-half a century. The industry is entering the new century with its changing market structure and technological developments, in fine fashion.

Some segments of the financial services industry are composed of global corporations (commercial banks, insurance companies, investment banks, brokerage houses), while the credit union industry is composed primarily of domestic entities. Yet global markets are likely to have an effect on credit union operations, as well as credit union member decisions.

The capital account of any financial institution serves as a source of funds that may be used to absorb losses in the value of an organizations assets – for credit unions this means primarily loans and investments. This also contributes to establishing a level of confidence for members (depositors). Higher capital accounts contribute to the perception of an organization as a safe place to deposit a member's hard-earned funds.

From a managerial perspective, there are a number of risks that must be addressed in the efficient operation of a credit union and capital plays a critical role in achieving the goals of the institution. Directly or indirectly, the capital account will play a critical role in achieving and maintaining a credit union's competitive position in the dynamically changing financial marketplace.

RESEARCH DESIGN AND METHODOLOGY

This study represents findings from an extensive survey of credit union managers undertaken in 1999.¹ The questionnaire was sent to approximately 950 randomly-selected credit union CEOs, approximately 9 percent of the industry. Credit union asset size varied from \$2 million to well over \$1 billion, and came from three charter/insurance classifications: (i) Federal Charter – Federally Insured; (ii) State Charter – Federally Insured; and (iii) State Charter – Privately Insured. Sponsors varied from residential, associational, and occupational to multiple groups. 212 valid and usable responses were received and incorporated into our data analysis, a response rate of 22.3 percent.

¹ The questionnaire format used in 1999 is a follow-up to our 1996 survey, with modifications based on information obtained from respondents.

In a cover letter to all respondents, the definition of capital was clearly specified:

Gross Capital - Regular or Statutory Reserves, All Other Reserves,
Undivided Earnings, Loan Loss Allowance Account,
Investment Loss Allowance Account

Net Capital - Regular or Statutory Reserves, All Other Reserves,
Undivided Earnings

CREDIT UNION RISKS

The following risk categories have been identified by a number of industry executives, and placed in the context of the current economic and financial environment:

- Regulatory risks – the National Credit Union Administration (NCUA) risk-based capital standards have required higher reserve accounts at many credit unions.
- Credit risks – reserves are needed to be used to charge off delinquent loans. With strong economic activity, and current high levels of employment and earnings, credit union delinquency levels are quite low and manageable.
- Investment risks – reserves are needed to charge off losses on investment securities. Credit union average investment maturities are currently quite short. With higher turnover in the portfolio, there is reduced need to sell securities at a loss if interest rates rise.
- Interest rate risk – when interest rates rise, net margins fall until loan and investment portfolios are adjusted. With modern asset/liability management techniques in place, these adjustments may be achieved more quickly, thus reducing this risk exposure.
- Sponsor risks – Downsizing and corporate restructuring are now an integral component of organizational management in a competitive environment. Sponsor stability levels are now higher than they were in the late 1980's and early 1990's and such events are likely to result in less significant changes to credit union operations.
- Taxation risks – the potential impact of reducing or eliminating the industry's tax exemption would result in contraction of net margins. This tax debate seems to surface every few years, but recently there has not been much worry in the industry.
- Legislative risks – restrictions on interstate banking have been reduced and the Glass-Steagall Act has been repealed. Competition from broadly diversified financial services firms (such as Citigroup, etc.) has effected the traditional operations of credit unions. In order to enhance the stature of the industry Credit Union Service Organizations (CUSO) operations are becoming more important.

- National Credit Union Share Insurance Fund (NCUSIF) write-down risk – one percent of credit union deposits are now held with this fund. These accounts are assets on the credit union’s balance sheets. A write-down of this account could be legislated by Congress, reducing capital accounts by this amount. In the last few years, this share insurance fund has actually paid dividends to member credit unions, rather than seeking premium payments. NCUSIF is currently in excellent financial health, and is expected to remain so for at least the next few years.

From this brief overview of the complexion of the credit union industry it could be concluded that its overall exposure to risk has been reduced somewhat over the past few years. If this is the case, an argument could be made that capital accounts, in relation to asset levels, need not have increased in the recent past and could actually have declined, without sacrificing any of the benefits of providing services to credit union members.

Data in Table 2 present the actual performance of the credit union industry with respect to profitability and capital position in the 1990’s. Even with what seems to be a lower overall risk environment, the net capital/asset ratio has increased every year and appears to have leveled out at approximately 11 percent. This is the strongest capital position of any class of depository financial institution in the United States. Although the net income/asset ratio has been declining since 1993, it still shows up as a very competitive 1+ percent for the last eight years. These margins have allowed the industry to grow its capital each year.

The profile of credit unions responding to this survey closely mirrors the structure of the entire industry. Federally chartered, federally insured credit unions made up 62 percent of our sample compared with 60 percent for the entire industry. State chartered, federally insured credit unions were 34 percent of our sample vs. 38 percent for the industry. State chartered, privately insured credit unions were 4 percent of our sample vs. 2 percent for the industry at year-end 1999.

VARIABLES INFLUENCING CAPITAL/ASSET RATIOS

Our survey asked credit union respondents to choose and rank the prime determinants of an optimal capital/asset ratio, on both a gross and net basis. The variables mentioned most frequently and valued highest are presented in Figure 1. The underlying variables come from both the balance sheets and income statements and may be grouped into these two categories.

The four most significant variables are identical for both gross and net optimal capital/asset ratios. From the balance sheet, they identified the loan/asset ratio and the absolute size of a credit union’s assets. From the income statement, they identified the operating expense ratio and from both statements the operating expense/asset ratio. These choices clearly reflect the importance of the loan portfolio in credit union operations, as well as management’s ability to control operating expenses. A second series of questions was directed towards quantifying a number of specific financial ratios and/or relationships.

Asset Size

A negative relationship was found between asset size and optimum capital/asset ratios, both gross and net. In smaller credit unions, a limited variety of loans and savings instruments is likely to be found. As asset size increases, so does the diversity of most balance sheet categories. With more balanced loan and investment portfolios, larger credit unions are able to achieve a greater degree of cash flow stability. These lower risk levels, complemented by professional managers found throughout the organizations, allow for the prudent achievement of lower capital/asset ratios. The result is a credit union that is able to be even more efficient and competitive in the financial markets for loans and savings balances. With risks under control, members benefit from lower loan rates, higher savings rates and a broader variety of financial services.

An interesting comparison of respondents to this survey, compared with a previous research effort three years ago, is that the target optimum capital/asset ratios are lower now, for every asset category except the under \$5 million asset group. These results indicate that respondents perceive reduced levels of business risk for every asset category in the industry, except the smallest credit unions. The economy of the United States has performed with exceptional vitality during this period, contributing to high levels of confidence by most segments of the nation. This is not the case for the smallest credit unions, that are losing their competitiveness to larger ones, as well as to other financial institutions (thus, the need for higher capital levels compared to three years ago).

It is interesting that at the same time credit union managers have lower target capital positions than three years ago, they have, in this interim period, continued to maintain their overall industry capital accounts (Table 2). If these survey results are implemented, this leveling off of capital/asset ratios would be expected to decline marginally over the next few years.

Loans/Assets Ratio

Credit union loan portfolios are the largest category of assets and are likely to generate the greatest risks to operations. Delinquency results in lost income that may or may not be collected at a later date, while defaults result in absolute declines in credit union assets. It is the capital account that ultimately covers these losses and/or writeoffs in order to protect the accounts of the membership.

One hypothesis of this research is that as the loan portfolio grows in both absolute dollars and relative to total assets, the credit union becomes exposed to greater risks. Therefore, a larger capital account would be needed to balance out these risks and protect member deposit positions.

Survey results support this perceived relationship. With low loan/asset ratios, under 35 percent, an optimum gross capital/asset ratio of 9.19 percent is considered optimum, increasing to 11.08 percent as the loan ratio rises above 80 percent. Similarly, the net capital ratio range target moves from 8.41 percent to 10.22 percent.

Comparisons with our previous study results show only slight variations in response. Overall target ratios for every loan level have decreased between 5 and 10 basis points, while the rate of ascent in the target capital/asset ratios is only slightly lower in the new environment. One may conclude that today's expectations are for marginally reduced levels of risk in credit union loan portfolios, resulting in the need for lower optimal capital levels.

Real Estate Loans/Total Loan Portfolio

Real estate loans are generally the largest loans in a credit union portfolio in terms of dollar amounts, and they also generally have the longest duration. They provide the borrower with many years to repay, but also many years for their financial condition to change, for better or for worse.

Real estate loans come in a wide variety of forms. While all are collateralized with a residential property (most likely a primary residence), the lien may be first or second and the interest rate may be variable or fixed. In a rising interest rate environment, the fixed rate loan will provide a stable expenditure for the member. However, credit union operations are likely to suffer as higher savings rates result in smaller net interest margins or possibly even losses on that account. Conversely, in a declining interest rate environment members may seek to "renegotiate" terms to a lower rate, even if they are charged fees for this transaction.

Variable rate mortgages and home equity loans and lines of credit have been designed to address these challenges and provide benefits to both lender and borrower. As interest rates rise, the lender is able to reprice the financial product, at least once a year, with a lifetime maximum. This addresses the operational issue of narrowing net interest margins, however, it does not protect the borrower from having to absorb higher financing charges to keep the use of these funds.

With a declining interest rate environment, rates on these variable instruments decline, benefiting the borrower but resulting in lower earnings for the credit union. Further, when members perceive "a bottom" to the interest rate environment, they are likely to refinance the variable rate instrument into another loan with a fixed rate. When rates turn upward credit union margins will once again experience a squeeze.

There is another element involved in the management of a real estate portfolio. Since most of these loans are made to allow members to purchase their primary residence, they are likely to experience the lowest delinquency rates of any loan category. Therefore, default risk is quite low for these loans and it is the loan portfolio mix between fixed and variable rates that is critical to the efficient management of these assets.

Given the risk complexion of these real estate loans, it may be hypothesized that the larger their percentage of the total loan portfolio, the greater the capital levels needed by a credit union for efficient operating management. Survey results support these expectations. With real estate loans making up less than 20 percent of a loan portfolio, an average gross capital ratio of 9.94 was considered optimum. When these loans exceeded 80 percent of that portfolio a target of 11.51 percent was considered optimum. For the net capital/asset ratio, the comparable range was 9.27 percent to 10.92 percent.

Once again, these target levels are below those considered optimum in our last survey. The differences generally fall between 5 and 15 basis points, implying that these real estate loans are expected to generate less risk than they have previously.

Unsecured and Credit Card Loans/Total Loan Portfolio

Unsecured and credit card loans are arguably the most risky components of a credit union's loan portfolio. The size of each of these loans is likely to be significantly smaller than real estate loans. However, without collateral they are likely to be more risky in terms of repayment, thereby necessitating larger capital levels to provide a prudent balance to these credit union operations.

Our survey respondents supported this hypothesis with their opinions. When these loans amount to less than 20 percent of a loan portfolio, optimum gross capital/asset ratios averaged 9.92 percent. As the percentage of these loans increased so did the target capital/asset ratio, up to a level of 12.59 percent when these loans aggregated 80 percent or more of the loan portfolio. The net capital/asset ratio also increased over this range, from 9.26 percent to 11.69 percent.

We also compared the targeted capital/asset ratios for the real estate loans with the unsecured and credit card loans. For low levels of portfolio percentage these ratios are almost identical. However, as the percentages increase, the capital/asset targets increase faster for the unsecured and credit card category. These responses clearly reflect the perceived riskiness of each type of loan, because the unsecured and credit card category requires an additional 1.08 percentage points to reach an optimum gross capital/asset ratio and a .77 percentage point increase for the net capital/asset ratio.

When comparisons are made between the current survey and the last one, lower gross and net capital/asset ratios are observed for every level of portfolio percentage. Once again, the environment in which credit unions will be operating in the next few years is expected to be more stable and less risky than the recent past, thereby necessitating reduced capital positions.

Investments/Assets Ratio

Investment portfolios of credit unions, as well as other depository institutions, are held as a "secondary liquidity reserve." Their prime purpose is to have funds available to make loans to members, even when cash inflows are not large enough to meet current needs.

The securities that make up this portfolio of assets are severely restricted by the NCUA, at least for Federally Chartered and Federally Insured Credit Unions. The portfolio is composed of primarily high quality, low risk instruments that are generally clustered around the shorter-maturity end of the yield curve. Therefore, the larger the percentage of these investments in the asset portfolio the lower the risks to the credit union. This conclusion would follow the logic that more investments implies less loans, and thus, the need for less capital to protect the credit union in a prudent manner.

Survey data support this hypothesis. With more than 60 percent of assets in investments, an optimum target gross capital/asset ratio of 9.72 is reported. As the investment percentage declines, the ratio rises, to 10.56 percent for less than 10 percent investments/assets. The comparable range for the net capital/asset ratio is 9.31 percent to 9.84 percent.

These findings are the opposite of those found in our previous study, where higher investment portfolio percentages resulted in higher capital/asset ratios. We believe that these new findings are the result of trends in the industry, which result in more efficiently-managed institutions. The consolidation trend in the industry, now more than twenty years old, continues unabated. More and more industry assets are held and managed by larger, more sophisticated, and professionally managed organizations. Modern portfolio management techniques are being applied to the assets and investments of these institutions, to control risk and maximize returns for the benefit of the membership. These trends are expected to continue in the new century, resulting in enhanced effectiveness of credit unions in the financial services industry.

Investments With Maturities Under One Year/Total Investments

As previously mentioned, credit union investment portfolios are primarily composed of shorter-term instruments. These securities have lower risk characteristics than those with longer maturities. The underlying value of short-term securities are much more stable, since they will be repaid, at par value in a relatively short period of time regardless of changes in market interest rates. Owners of these securities pay a “price” for their stability in the form of generally lower interest rates earned by holding them.

Survey data support this risk hypothesis. With low percentages of the investment portfolio in short-term instruments, risks are greater and higher optimum capital/asset ratios are expected. When these securities represent less than 20 percent of the overall investment portfolio, a gross capital/asset ratio of 10.41 is considered optimum. By the time portfolio composition is over 80 percent short term, the target is reduced to 9.62 percent. The trend of the net capital/asset range is similar, moving from 9.61 percent to 9.04 percent. In each case, current survey targets are lower than those observed in our previous study, by approximately 10-15 basis points. We can conclude that as long as there is a tendency towards larger quantities of shorter-term investment instruments, the result will be lower risks and lower target capital ratios.

The independent variables presented above reflect relationships dealing with the asset structure of credit unions. We also identified a number of operating variables also expected to influence optimum capital/asset ratios.

Delinquency Ratio

Delinquency rates create the potential for actual defaults on loans, and therefore, are quite likely to have an effect on credit union capital accounts. Higher delinquency rates could lead to higher charge-offs against reserves and therefore translate into higher target capital/asset ratios.

Our survey supports this expectation. For delinquency rates under 1 percent a gross capital/asset ratio of 9.77 is considered optimum. As delinquency rises so does the target, reaching 12.96 percent for a level of 4 percent or more. For the net capital/asset ratio, the comparable range is 9.11 percent to 12.02 percent.

It is significant to identify delinquencies as the only independent variable that requires higher capital/asset ratio targets than were identified in our study three years ago. Credit union managers are now requiring slightly higher capital positions for specific delinquency ratios. They feel it will be more difficult to collect on these accounts, and therefore, higher capital levels will be needed in the next few years.

Operating Expense/Total Assets

Efficient management of a credit union requires careful control of expenses. With expenses kept low, funds may be directed towards paying higher rates on savings and/or charging less for loans. When costs are higher, flexibility of operations is reduced and competitiveness in the marketplace could be adversely affected. Therefore, it may be expected that higher operating expense levels would require higher capital accounts.

Our study results support this relationship. With expense ratios under 2 percent, a gross capital/asset ratio of 9.71 is targeted, rising consistently to 13.81 percent when expenses exceed 5 percent. Over the same expense range, net capital/asset targets rise from 9.09 percent to 12.92 percent.

When these results are compared to our previous study, we find lower target capital levels currently. Again this would imply that respondents are comfortable with slightly lower capital accounts as we enter the new millennium.

Net Interest Margins

Our final independent variable was the net interest margin. As the margin increases, cash flows of the organization expand. Additional funds are made available to cover expenses, compete more aggressively in the loan and savings markets and/or contribute to reserves. These excess funds should reduce many of the risks inherent in credit union operations, thus requiring lower capital levels.

Survey results support these views. With net interest margins under 2 percent, a target gross capital/asset ratio of 11.89 is expected. By the time margins exceed 5 percent, the capital target is reduced to 9.97 percent. The pattern for net capital/asset ratios is similar, declining from 11.02 percent to 9.19 percent. Interestingly, these target levels are higher for the latest study, by approximately 20 to 30 basis points at each level. With a relatively low interest rate environment, it is more difficult to expand the net interest margin, without taking on significantly higher risks, primarily in the loan portfolio. If these risks are taken, higher capital account levels would therefore be needed to keep credit union operations in balance.

ANALYSIS OF FINANCIAL RELATIONSHIPS

All of the above independent variables were evaluated in order to measure their absolute and relative importance for estimating optimum target capital/asset ratios. Five variables proved to be statistically significant and were incorporated into two multiple regression relationships. These equations are presented below:

(1-1) Gross Capital Ratio

$$= 5.63 + 1.49 \left(\frac{TL}{A} \right) + .63 \left(\frac{REL}{TL} \right) + .62 \left(\frac{UCCL}{TL} \right) + .39(OER) + .35(DR)$$

(35) (31) (29) (32) (28)

(1-2) Net Capital Ratio = 4.93 + 1.68 $\left(\frac{TL}{A} \right)$ + .65 $\left(\frac{REL}{TL} \right)$ + .61 $\left(\frac{UCCL}{TL} \right)$ + .41(OER) + .33(DR)

(31) (28) (33) (28) (24)

Where TL = Total Loans, A = Assets, REL = Real Estate Loans, UCCL = Unsecured and Credit Card Loans, OER = Operating Expense Ratio and DR = Delinquency Ratio.

Included in these two equations are results of the T test, in parenthesis that indicates that each independent variable is statistically significant at the .05 level.

The coefficient of correlation (R) was estimated at .84, slightly lower than the .87 of our previous study. Similarly, the coefficient of determination (R²) was .71, again lower than the .76 of our previous work. Additional tests using randomly selected data for different sized credit unions with different operating characteristics generated similar measures for both coefficients. Data for these tests were derived from 1998 financial statistics. Tests for multicollinearity between the variables were also prepared, with results presented in Table 3.

The orders of magnitude for each test have not changed by more than a few percentage points since our last study. As before, only two variables generate a statistically significant relationship: real estate loans, and unsecured and credit card loans.

Our model for planning credit union optimum capital/asset ratios uses the two regression equations. To test its effectiveness, randomly selected credit union variables from 1998 financial statements were plugged into the equations. A majority of the outcomes fell into the following ranges: 8.25 to 11.25 for the gross capital/asset ratio and 7.25 to 10.25 for the net capital/asset ratio. These results are approximately ¼ percentage point lower than our previous study test results. Respondents data, incorporated into this model, project lower optimum capital positions, even though actual capital accounts have risen in the last few years.

CONCLUSIONS

In addition to the findings presented above a number of classification data categories were asked of respondents. Based upon these responses the following information has been generated through further analysis.

Respondents of larger credit unions consistently supported generally lower capital/asset ratio targets. At the same time, these were also the credit unions offering a broader variety of loans, savings instruments and other miscellaneous services. Taken together, these credit unions experience more diversified operating characteristics that contribute to more stability in their financial performance, reducing the need for higher capital accounts. In contrast, smaller credit unions have less diversified operations and generally believe they need higher capital accounts to support their goals and meet the needs of their members.

The common bond classification of credit unions also affects their capital target levels. Respondents from the Multiple Group category required slightly lower optimum capital ratios than the Occupational Group. The Association credit unions had generally higher targets while the Residential Group desired the highest capital targets. However, the variance from average targets was not more than .55 percent for any group.

A growing number of credit unions now participate in the ownership and operations of a Credit Union Service Organization (CUSO). In fact, the number of respondents indicating a CUSO relationship was 27 percent higher than our study of just three years ago. In general, respondents with credit unions operating a CUSO (wholly owned or shared) had lower targeted capital/asset ratios. Initially we expected that the added risks of CUSO operations that did not fit into the traditional business of credit unions might result in the need for higher capital levels. However, our results, as well as anecdotal evidence, suggest that CUSO services broaden the competitive strength of a credit union in the financial services industry. In addition, it suggests that CUSO services will become even more important to the viability of the credit union industry in future periods.

A solid majority of respondents, 72 percent, indicated that they should manage operations towards an optimum capital/asset ratio goal (gross and net). Even more (81 percent) were emphatic in responding that capital ratios were not simply the result of meeting member needs effectively. Capital management is a critical element in credit union management.

When credit union managers and directors determine that current capital ratios are not optimum, how should they go about moving to their agreed-upon targets? Once new targets are in place, most respondents from all classifications support a gradual approach. A period of 3 to 5 years was the time frame most believed should be used for adjustment purposes.

RECOMMENDATIONS

Over the last few years, consolidation has continued to be a trend in the credit union industry. At the same time asset levels, membership and capital/asset ratios have all reached record-high levels. Yet respondents feel that lower capital/asset ratios are considered optimum for the next few years. This dichotomy between expectations and actual operating performance is hard to explain. It may be that boards of directors, as well as federal and state regulatory authorities have more influence on credit union operations than operating executives responding to this study. Where these trends will lead in the next few years will be followed with a great deal of interest by researchers as well as industry stakeholders.

From the authors' perspective, we support the ideas and views of our respondents; specifically, that the industry, in general, is overcapitalized. Prudent management principles suggest lowering capital levels and returning these funds to the members who generated that capital. Lower loan rates and higher savings rates can do the job in an efficient manner and in a reasonable period of time. These adjustment processes should take place as soon as possible, so that those members who have contributed to the excess capital accounts get the benefits to be generated by their reduction! Although every credit union operates with a unique set of members, products, opportunities and risks, optimizing capital accounts can only result in stronger bonds between the organization and its members (owners).

Table 1
Growth of the Credit Union Industry In the United States – the 1990's

Year	Total Membership (in millions)	Total Assets (in billions)	Number of Credit Unions
1999	77.5	\$423	11,016
1998	75.6	\$399	11,392
1997	73.5	\$361	11,652
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

Source: "Operating Ratios and Spreads" Annual Year-End Edition, Credit Union National Association, www.cuna.org, Research and Statistics, Credit Union Statistics, Annual Credit Union Data.

Table 2
Measures of Credit Union Performance In the 1990's

Year	Net Capital/Asset Ratio²	Net Income/ Total Assets
1999	11.0	.93
1998	10.9	.95
1997	11.1	1.02
1996	10.8	1.13
1995	10.3	1.13
1994	9.6	1.21
1993	9.0	1.39
1992	8.1	1.36
1991	7.6	.94
1990	7.6	.95

Source: Operating Ratios and Spreads, Annual Year-End Edition, Credit Union National Association, www.cuna.org, Research and Statistics, Credit Union Statistics, Annual Credit Union Data.

² Notes: Regular or Statutory Reserves, All Other Reserves, Undivided Earnings

Table 3
Multicollinearity Tests Between Variables

	Total Loans Assets (TL/A)	Real Estate Loans Total Loans (REL/TL)	Unsecured & Credit Card Loans Total Loans (UCCL/TL)	Operating Expense Ratio (OER)	Delinquency Ratios (DR)
TL/A	1	.36	.43	.12	.22
REL/TL		1	.63	.43	.33
UCCL/TL			1	.29	.26
OER				1	.39
DR					1

Source: Original Survey Data

Table 4
Optimum Credit Union Capital/Asset Ratios for Key Asset Categories

Asset Size (in millions)	Gross	Net
Less than \$5	10.61	10.32
5 – 9.9	10.52	9.91
10 – 19.9	10.47	9.88
20 - 49.9	10.44	9.86
50 – 99.9	10.41	9.84
100 – 199.9	10.38	9.77
200+	10.24	9.71
Loans/Assets	Gross	Net
Less than 35%	9.19	8.41
35 – 49.9	9.71	8.79
50 – 64.9	9.98	9.21
65 – 79.9	10.67	9.77
80+	11.08	10.22
Real Estate Loans/Total Loans	Gross	Net
Less than 20%	9.94	9.27
20 – 39.9	10.15	9.51
40 – 59.9	10.79	10.12
60.79.9	11.34	10.57
80+	11.51	10.92
Unsecured and Credit Card Loans/Total Loans	Gross	Net
Less than 20%	9.92	9.26
20 – 39.9	10.51	9.78
40 – 59.9	11.19	10.27
60 – 79.9	11.77	10.92
80+	12.59	11.69
Investments/Assets	Gross	Net
Less than 10%	10.56	9.84
10 – 19.9	10.37	9.67
20 – 39.9	10.01	9.46
40 – 59.9	9.94	9.33
60+	9.72	9.31
Investments with Maturities less than one year/Total investments	Gross	Net
Less than 20%	10.41	9.61
20 – 39.9	10.17	9.42
40 - 59.9	9.89	9.19
6- - 79.9	9.81	9.12
80+	9.62	9.04

Source: Original Survey Data

Table 5
Optimum Credit Union Capital/Asset Ratios for Key Operating Variables

Delinquency	<u>Gross</u>	<u>Net</u>
Less than 1%	9.77	9.11
1 – 1.99	10.41	9.76
2 – 2.99	11.33	10.58
3 – 3.99	12.18	11.22
4+	12.96	12.02
Operating Expenses	<u>Gross</u>	<u>Net</u>
Less than 2%	9.71	9.09
2 – 2.99	10.45	9.76
3 – 3.99	11.61	10.84
4 – 4.99	13.29	12.67
5+	13.81	12.92
Net Interest Margin	<u>Gross</u>	<u>Net</u>
Less than 2%	11.89	11.02
2 – 2.99	11.14	10.48
3 – 3.99	10.59	9.84
4 – 4.99	10.21	9.42
5+	9.97	9.19

Source: Original Survey Data

Figure 1
Variables Influencing an Optimal Gross
Capital/Asset Ratio

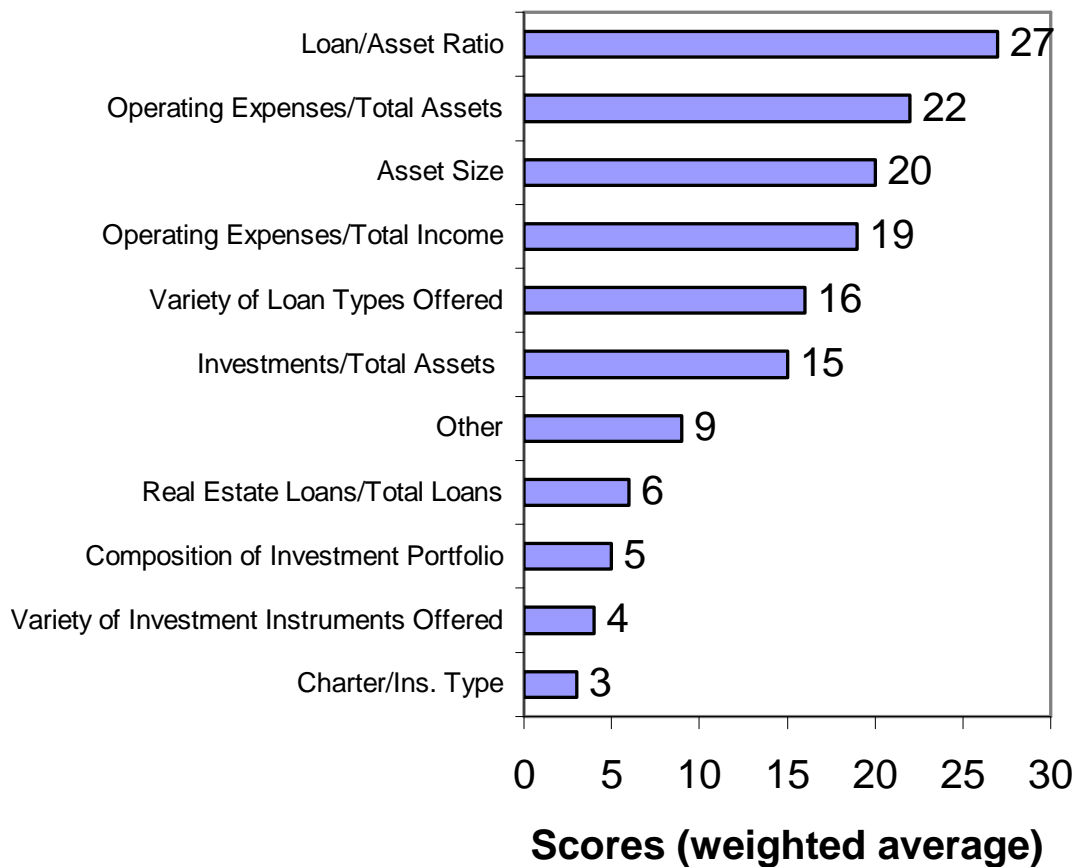


Figure 2
Variables Influencing an Optimal Net
Capital/Asset Ratio

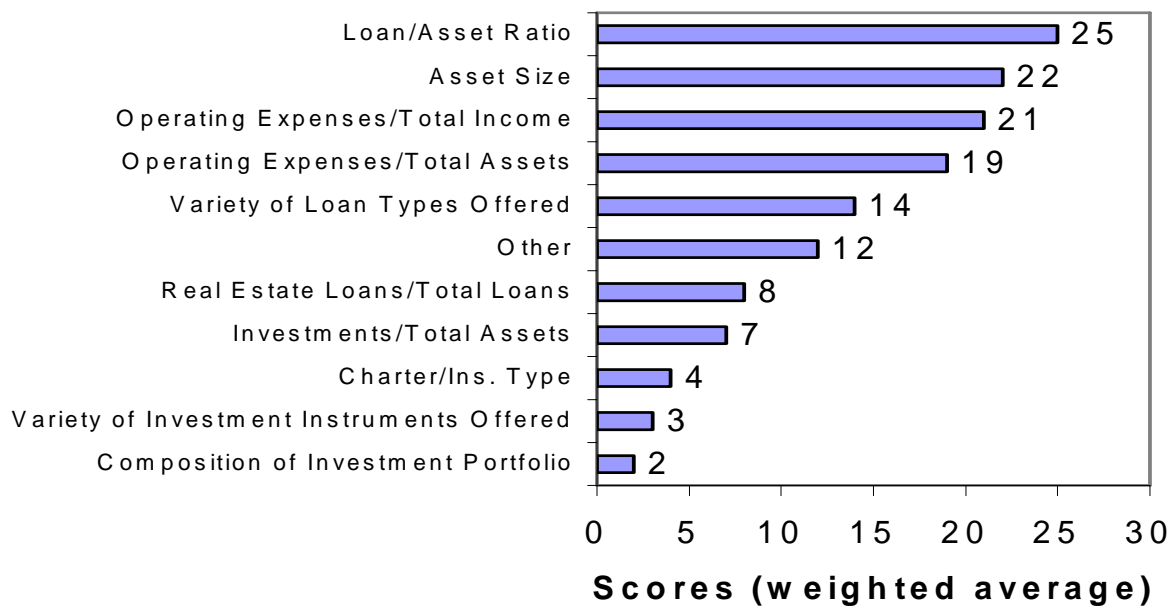


Figure 3
Optimum Capital/Asset Ratios for
Given Asset Sizes

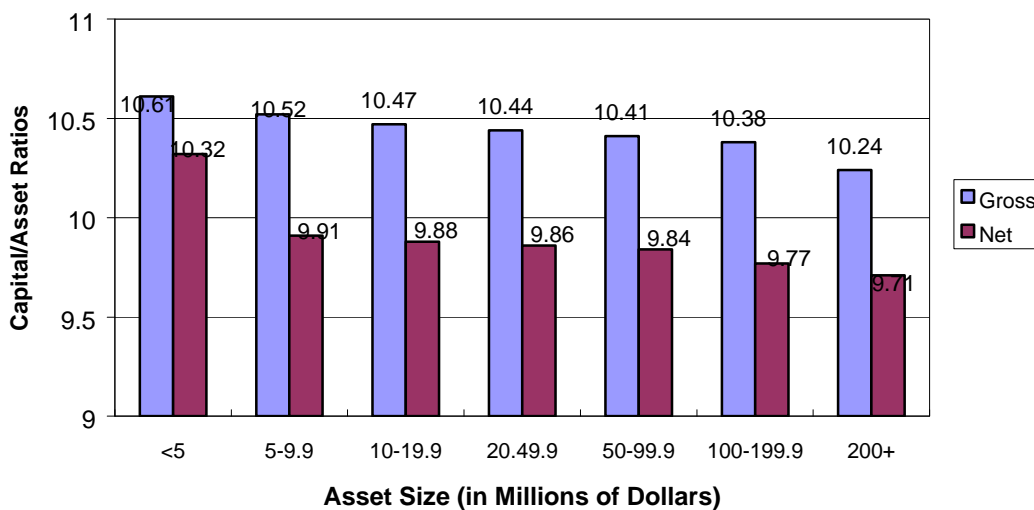


Figure 4
Optimum Capital/Asset Ratios for
Given Loan/Asset Ratios

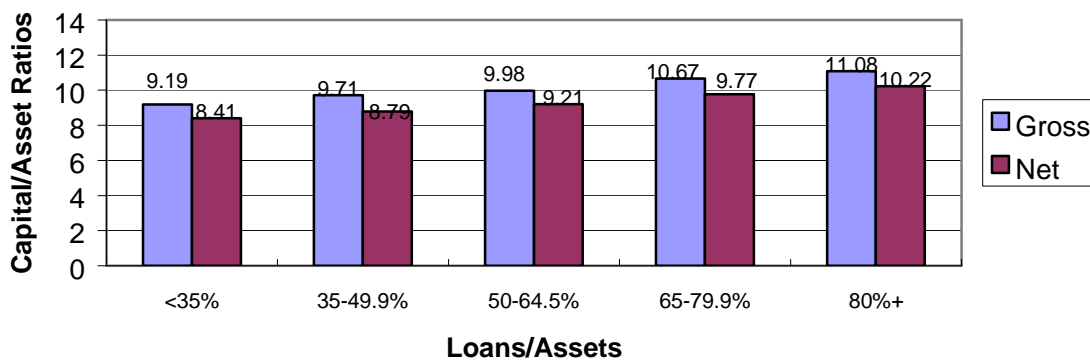


Figure 5
Optimum Capital/Asset Ratios For Given
Real Estate Loans/Total Loans Ratio

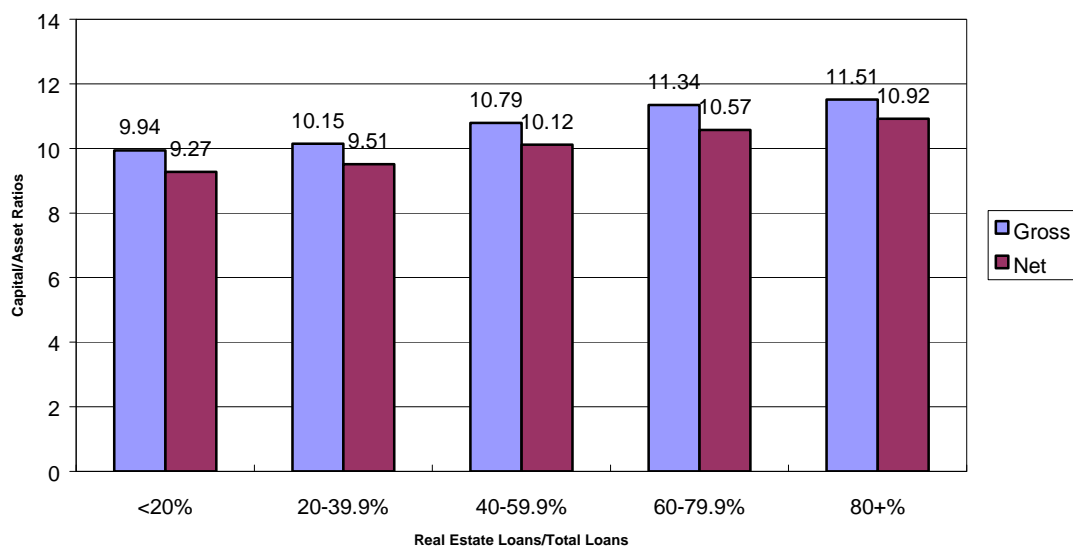


Figure 6
Optimum Capital/Asset Ratios for Given
Unsecured and Credit Card Loans/Total Loans

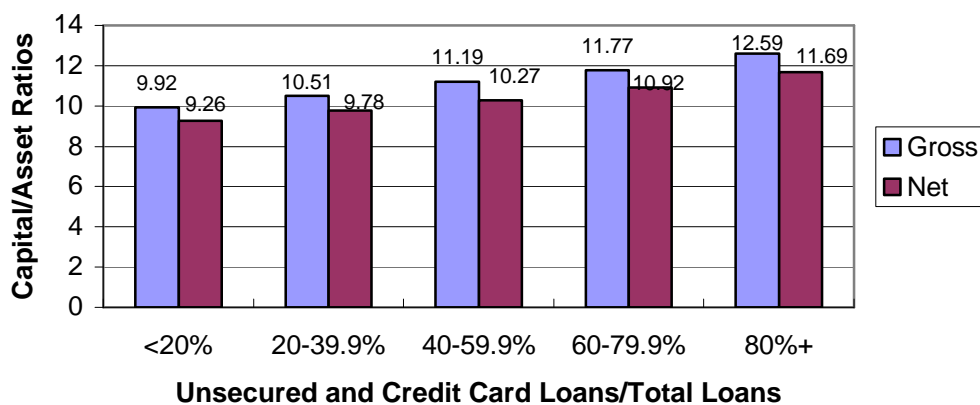


Figure 7
Optimum Capital/Asset Ratios for Given
Investment/Asset Ratios

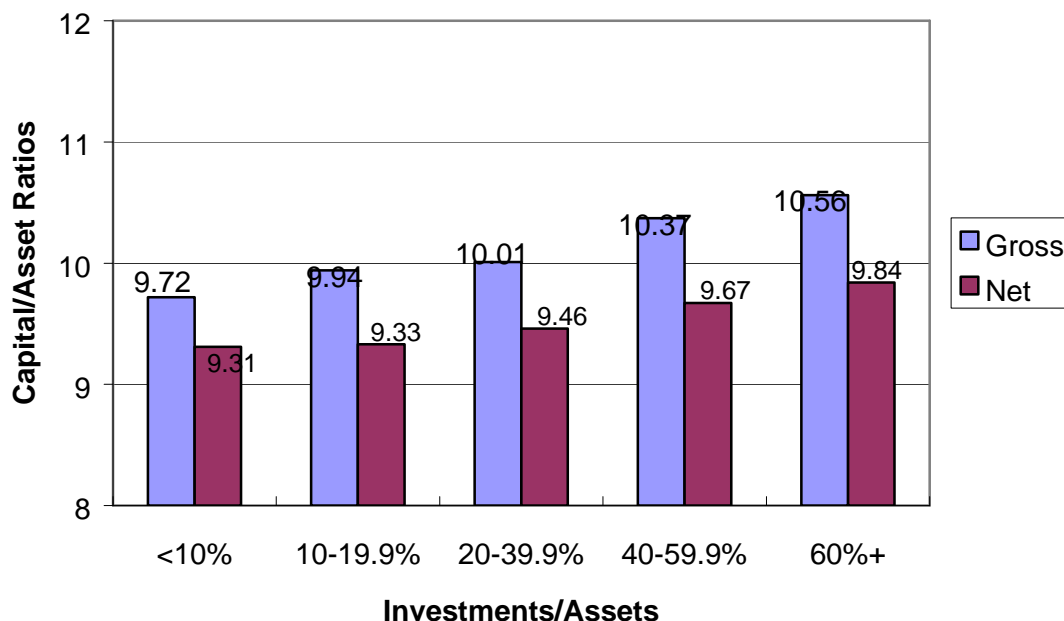


Figure 8
Optimum Capital/Asset Ratios for Given
Investments With Maturities Under One Year/Total
Investment Ratios

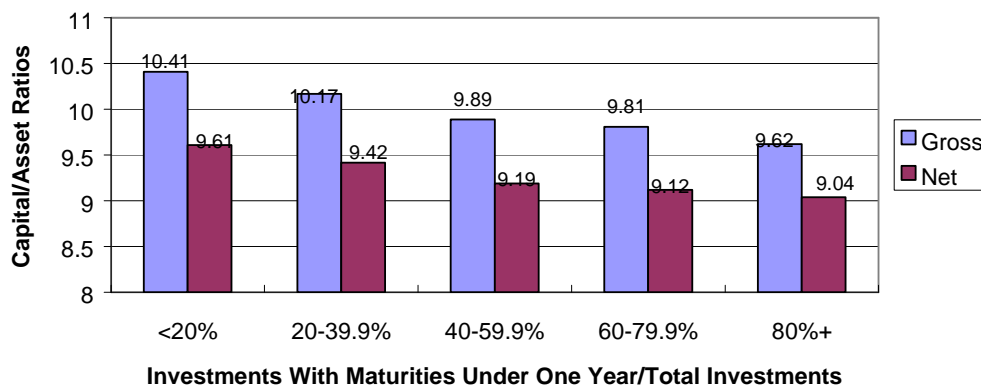


Figure 9
Optimum Capital/Asset Ratios for
Given Delinquency Ratios

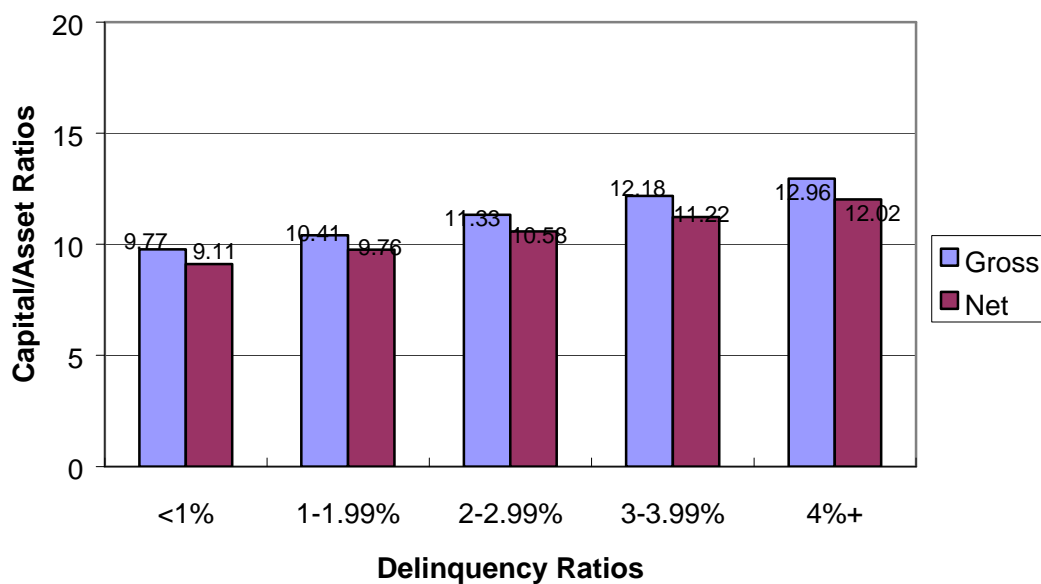


Figure 10
Optimum Capital/Asset Ratios for
Given Operating Expense Ratios

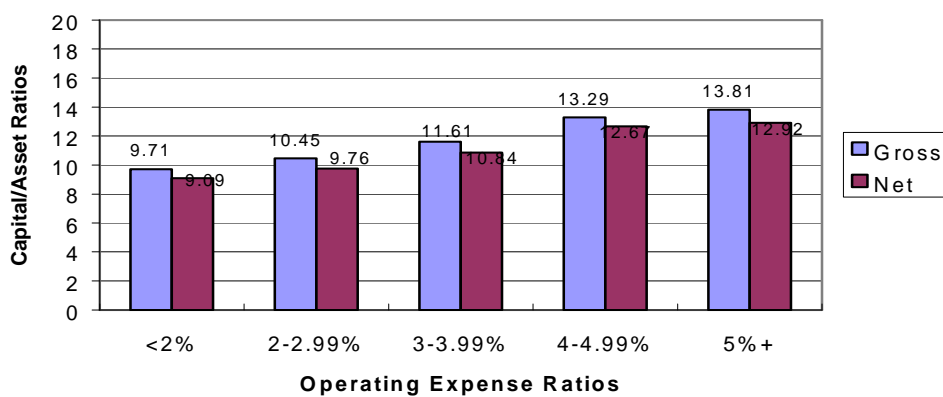
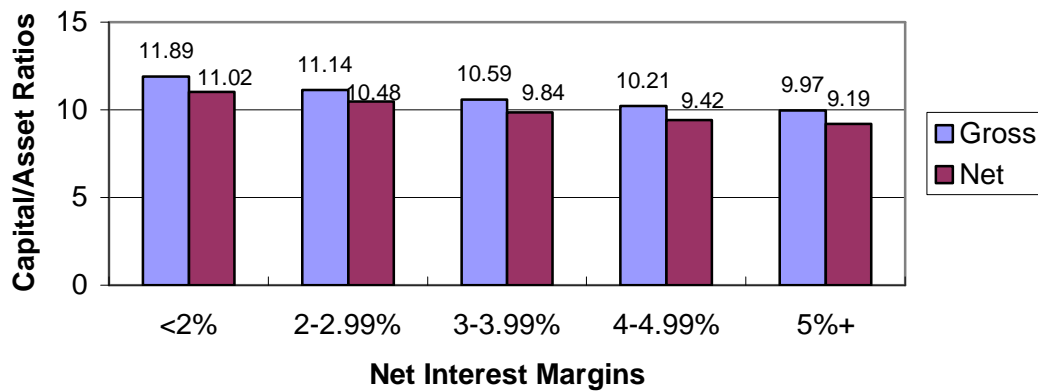


Figure 11
Optimum Capital/Asset Ratios for
Given Net Interest Margins



REFERENCES

- Alfriend, Malcolm C., "International Risk-Based Capital Standards: History and Explanation," *Economic Review*. Federal Reserve Bank of Richmond, November/December, 1988. p. 8.
- Baker, Paul, "Capital," *Credit Union Magazine*. August, 1992. p. 49-52.
- Blanden, Michael, "Framing Capital Adequacy," *The Banker*. London, January, 2000. Volume 150, Issue 887, p. 38.
- Bliss, Robert R., "Risk-Based Bank Capital: Issues and Solutions," *Economic Review*. Federal Reserve Bank of Atlanta, September/October, 1995. p.32-40.
- Cox, William N., "The New Situation Requires Better Planning," *Credit Union News*. 1 December 1995. p.11, 17.
- Cox, William N., "Hold Your Capital at 10 Percent," *Credit Union News*. 24 November 1995. p. 7.
- Cox, William N., "Capital: How Much Is Enough?" *Credit Union News*. 10 November 1995. p. 21.
- Cox, William N., "High Capital Ratios Could Tempt Takeovers," *Credit Union News*. 21 April 1995. p. 24.
- Dwyer, Hubert J., James S. Gould and Raymond H. Lopez, "Optimum Capital/Asset Ratios in Credit Unions," *Credit Union Executive*. January/February, 1999. Volume 39, Issue 1, p. 34-42.
- Ehlen, James G., Jr., "The Role of Capital and Capital Standards," *Economic Review*. Federal Reserve Bank of Atlanta, November, 1983. p. 50-61.
- Filby, David, "Investment Management: Measuring Balance Sheet Risk," *Credit Union Magazine*. January/February, 1999. Volume 39, Issue 1, p. 14.
- Furlong, Frederick T., "Adequate's Not Good Enough," *FRBSF Weekly Letter*. Federal Reserve Bank of San Francisco, Number 93-32, 22 September 1993.
- Graham, R. Thomas, "Determining Capital Adequacy," A Report from the CUNA Chief Financial Officer Council, March, 1996.
- Hampel, William, "Enough Already," *Credit Union Magazine*. November, 1995, p. 79, 80.

“How Much Capital Is Enough?,” Credit Union Directors Newsletter, Volume 20, May, 1996, pp. 1, 2.

Peterson, Keith, “High Capital Ratios Present Challenges,” Credit Union Magazine, January, 1996, pp. 49, 50.

Rick, Steve, “CU Capital Hits Record Highs,” Credit Union Magazine, May, 1998, Volume 64, Issue 5, pp. 77, 78.

Sollenberger, Harold M., “Capital Adequacy: Will Risk-Based Management Help?” Credit Union Executive Journal, November/December, 1999, Volume 39, Issue 6, pp. 14-21.

Sollenberger, Harold M., “Risk-Based Capital Briefly Explained,” Credit Union Executive, July, 1999, Volume 65, Issue 7, pp. 101, 102.

Solomon, Matt, “Towering Capital – Can Credit Unions Build Too High?,” Credit Union Magazine, April, 1996, pp. 48-52.

“The Financial Condition of the Credit Union Industry,” Hearings Before the Committee on Banking, Finance and Urban Affairs, House of Representatives, One Hundred Third Congress, Second Session, September 29, 1994.