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# Financial Appraisal of the Banks for Cooperatives

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This study examines the financial situation of the Farm Credit System Banks for Cooperatives using comparative analysis for the period 1978 through 1991. Profitability and leverage measures of the Banks for Cooperatives are compared with similar measures of large commercial banks. The Banks for Cooperatives were found to have performed as well as large commercial banks. Some differences can be explained as compatible with differences in the goals and objectives of a cooperative versus an investor-owned firm. Most differences can be attributed to the financial strength of the Banks for Cooperatives relative to the commercial banking industry.

Early in the 1980s U.S. agriculture began a period of severe financial stress. As a result, nonfarm businesses related to agriculture, particularly agricultural lending institutions, suffered their own extended period of financial stress (Peoples et al. 1992). Agricultural bank failures, though generally small in size, accounted for more than half of all commercial bank failures during spring and summer 1984. One financial institution affected most during this period was the Farm Credit System (FCS). The FCS, authorized by a series of Congressional Acts in the 1920s and 1930s, is a group of user-owned and controlled financial cooperatives.

The financial problems of the FCS in the mid-eighties were not the result of financial difficulties of the thirteen Banks for Cooperatives (BCs), the twelve district Banks for Cooperatives, and the Central Bank. In fact, the BCs earned a profit in every year of the eighties. However, the problems of the FCS were felt by the BCs since losses were shared by all system members. The Farm Credit Act of 1987 required a merger vote of the BCs. Ten of the twelve district BCs and the Central Bank for Cooperatives voted to merge into a National Bank for Cooperatives and be renamed CoBank.<sup>1</sup>

Significant empirical effort has focused on the FCS as a unit and on the Federal Land Bank as a component of the system (Dodson and Bullock 1991). Little empirical work has focused on the BCs, the lending institution that services agricultural cooperatives and rural utilities, including financing exports for its agribusiness members. Borrowing from the BCs represented 51.3% of the total liabilities of U.S. agricultural cooperatives in 1987 (Royer, Wissman, and Kraenzle 1987).

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This article evaluates the financial performance of the BCs (the combined Districts and Central Bank) over the fourteen-year period from 1978–1991. The financial situation of the BCs is compared with similar operating results for comparably sized commercial banks (banks with assets over \$1 billion) to ascertain this important lender's competitive position. At the end of 1991, combined assets of the BCs were \$14.5 billion. For the same period the largest 365 U.S. commercial banks had average total assets of \$6.4 billion.

The BCs operate in the highly competitive financial intermediation industry. Since deregulation began in 1980 this industry has seen increased price competition, new product development, and the removal of many barriers to entry. This increased competition, along with rapidly changing technology, has produced an industry significantly different structurally from the industry that existed before the 1980s. Financially healthy institutions in the industry have a greater chance of survival. Financially weak institutions fail or are absorbed by the financially sound.

The specific objective of this financial appraisal is to assess whether the FCS financial problems of the 1980s and increased market competition have eroded any inherent competitive advantages the BCs may have had relative to their commercial counterparts. Similar financial performance would suggest the BCs operate similarly to commercial banks. Differing financial performance would be important since the level of financial security of the lending cooperative influences the financial health of its member patrons. As the cost of borrowing by the BCs increases or decreases, so does the cost of debt passed on to patron borrowers.

Similar comparisons have been made between financial conditions of nonfinancial cooperatives and investor-owned firms (IOFs). Schrader et al. (1985) observed the financial performance of small cooperative firms was better than that of small proprietary firms in terms of profitability and return on total assets. However, they found performance of large cooperatives was inferior to that of large, proprietary firms. Parliament, Lerman, and Fulton (1990) found performance of regional dairy cooperatives significantly better than that of commercial dairies in terms of leverage, liquidity, coverage, and efficiency ratios and not significantly different in terms of profitability.

### **Cooperative Banking versus Commercial Banking**

Performance of a financial institution is ultimately determined by the decisions made to deal with its two primary sources of risk: interest rate risk from its loan portfolio and composition of its liabilities, and credit or default risk.<sup>2</sup> There are several economic theories explaining how commercial banks manage their assets and liabilities in the face of these risks (Cooper and Fraser 1990; Reed et al. 1980). However, a financial intermediary such as the BCs has different characteristics than a commercial bank. It would be expected that these different characteristics could lead to different operating decisions and possibly different performance. Key BCs' characteristics to be discussed are: the form of ownership, the market for loans (composition of the loan portfolio), the source of funds for lending (composition of liabilities), and federal sponsored agency status.

**Form of Ownership.** Cooperatives differ in a very basic way from investor-owned firms. As a result, the operation or management decisions of a cooperative may be different from that of an IOF. The BCs operate as an input supply cooperative providing a broad and growing set of financial products and services. The BCs aspire to reduce prices paid (cost of debt) by members for these products.

Earlier studies for modeling cooperative behavior hypothesized the objective of cooperatives to be maximizing the total profit, after taxes, of the members (Ladd 1982). This is in contrast to assumed maximizing of net worth or shareholder wealth of an IOF. Theoretically different optimizing behavior of cooperatives and IOFs would suggest different levels of financial performance along with different levels of risk.

**Market for Loans.** The portfolio of loans for the BCs is, in one sense, limited to cooperatives serving farmers and ranchers. However, it is also diversified geographically with national and international loans and by loans for member borrowers ranging from input supply cooperatives (including rural utilities), to food marketing, processing, distribution, and retailing cooperatives. Commercial bank lending is also highly diversified. Their loans range from consumer credit cards to loans for construction, real estate, agriculture, and for commercial and government purposes.

**Nondepository Institution.** The FCS is different from commercial banks in terms of acquiring funds and liability management. Commercial banks secure most of their funds from deposits—transactions, savings, and time deposits. Other commercial bank liabilities include borrowing short term in the federal funds market and the money market.

The BCs acquire funds through the FCS directly from money markets by selling consolidated system-wide bonds, medium-term notes, and discount notes. The effect of raising funds almost exclusively by the sale of notes and bonds is to eliminate short term liquidity risk for the BCs. It also minimizes liability from management decisions dealing with competitive pressures for customer deposits. On the other hand, the BCs' liability management problem is complicated by borrowing intermediate and long term while providing length-of-term loans and products competing with those offered by commercial banks.

**Federal Sponsored Agency Status.** Another aspect of the Banks for Cooperatives that differentiates it from investor-owned banks is the agency status under which the FCS markets its bonds. This characteristic involves the special relationship between the FCS and the federal government. Though initially funded by the government, the FCS is now private, but it is still supervised as an independent agency by the government. It has been argued that, with this relationship, FCS bonds carry a "de jure" or "de facto" backing by the federal government (Stigum 1986). Thus, although the federal government is not liable for bonds issued by the FCS for the BCs, investors perceive such backing exists and thus reduce the interest rate demanded.

Evidence of the implicit backing is both anecdotal and empirical. Passage of the Farm Credit Act of 1987 is an explicit example of government support. Several studies provide empirical evidence that investors perceived FCS-issued securities similar to Treasury securities (Singer 1991; Moss and Shonkwiler 1989).

## Evaluating Bank Performance

Financial bank analysis traditionally evaluates the liquidity, solvency or leverage, and profitability of the bank (Reed et al. 1980; Fraser and Fraser 1990). Since historically the BCs are not depository institutions and have minimal current liabilities, a comparison of liquidity<sup>3</sup> is not applicable. Other important indicators could be considered in evaluating performance, particularly interest rates charged. However, this study will focus on the profitability and leverage of the financial institutions.

Profitability is an important measure of the health and viability of the IOF. This is equally true for a cooperative. In terms of the operation of the BCs, a positive net income is preferred since income and expenses cannot be forecasted perfectly. Net income for the BCs also provides the reserve surplus needed to build a strong equity position.

Profit is generally measured by net income or net profit after taxes. Profitability is a relative assessment and is measured in this study as the ratio of net income to assets (ROA) and the ratio of net income to equity (ROE). The ROA evaluates the bank's ability to generate profit from its assets. However, it ignores the financial structure of the business and measures the net income generated per dollar of asset. The ROE evaluates the bank's effectiveness at producing profit from equity and focuses on the return per dollar invested—an important consideration for the investor in a commercial bank.

A third measure of profit used in this study is the adjusted net interest margin (Goudreau 1992; Fraser and Fraser 1990). The adjusted net interest margin is the net interest revenue (net of loan loss provisions) minus interest expense divided by average interest-earning assets. This measure corresponds to a firm's gross business margin. It evaluates the core lending profitability of the institutions. This measure is important for two reasons. First, by subtracting out loan loss provisions, the measure reduces the impact of high-interest-rate/high-credit-risk loans that increase interest revenue. This makes the measure more credit risk neutral. Second, it ignores noninterest revenues associated with the nonlending services of banking.

The equity funds, or total assets minus liabilities, of a bank reflect the amount of assets owned by the bank owners or member patrons. Management of these equity funds is crucial to bank performance. Equity capital protects against unexpected losses, ensures solvency, and funds bank expansion.

The equity to asset ratio used in the study indicates the adequacy of the equity capital relative to the asset size of a bank. This leverage measure is important in describing the relationship between the ROA and ROE measures used in this study.

## Analysis of Bank Performance

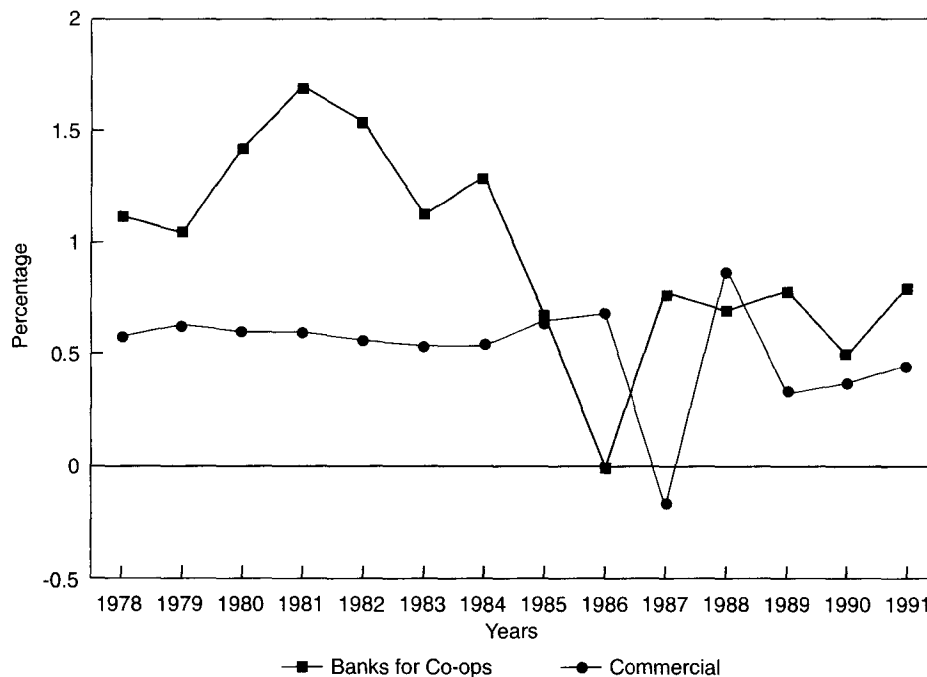
The source of the data for the BCs is the combined statements (balance sheet and income statements) of financial conditions from the Farm Credit Administration Annual Report (Farm Credit Administration 1978–1991). Commercial bank averages are from reports filed by commercial banks

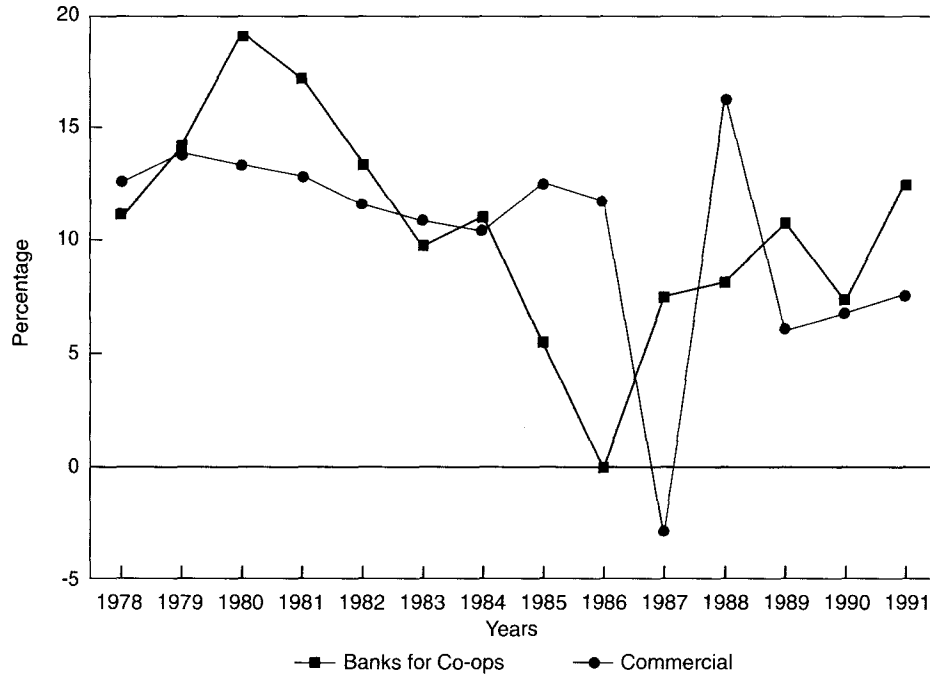
with the Federal Deposit Insurance Corporation (Goudreau 1992; Goudreau and King 1990; Wall 1985). Figures 1, 2, 3, and 4 graph time-series observations for the ROA, ROE, adjusted interest margin, and equity to asset ratios for the BCs and large commercial banks. Actual values are given in table 1.

Test statistics<sup>4</sup> (Mood, Graybill, and Boes 1974) for determining whether financial ratios are significantly different are presented in table 2. In addition, table 2 gives the averages, standard deviations, and coefficients of variation for the financial measures.

**ROA.** For the entire fourteen-year period, the ROA for the BCs averaged .969%, while the average ROA for large commercial banks was .526%. The standard deviation for the BCs for the entire period was .44, for the commercial banks .23, and the coefficients of variation were .45 and .43 respectively. The test statistic indicates a significant difference in ROAs over the entire period. However, the first seven years and the second seven years were quite different for both time-series. The ROA for the 1978-84 period averaged 1.33% for the BCs and .59% for commercial banks, while for the period 1985-91 the ROA averaged .61% for the BCs and .46% for commercial banks. Over the 1978 to 1981 period the BCs' asset size, through increased loan volume, grew from \$6.9 billion to \$10.4 billion, while net income grew from \$74.1 million to \$181.4 million. During the 1982 to 1984 period the BCs started to feel the effects of the financial

**Figure 1.—Return on Assets**



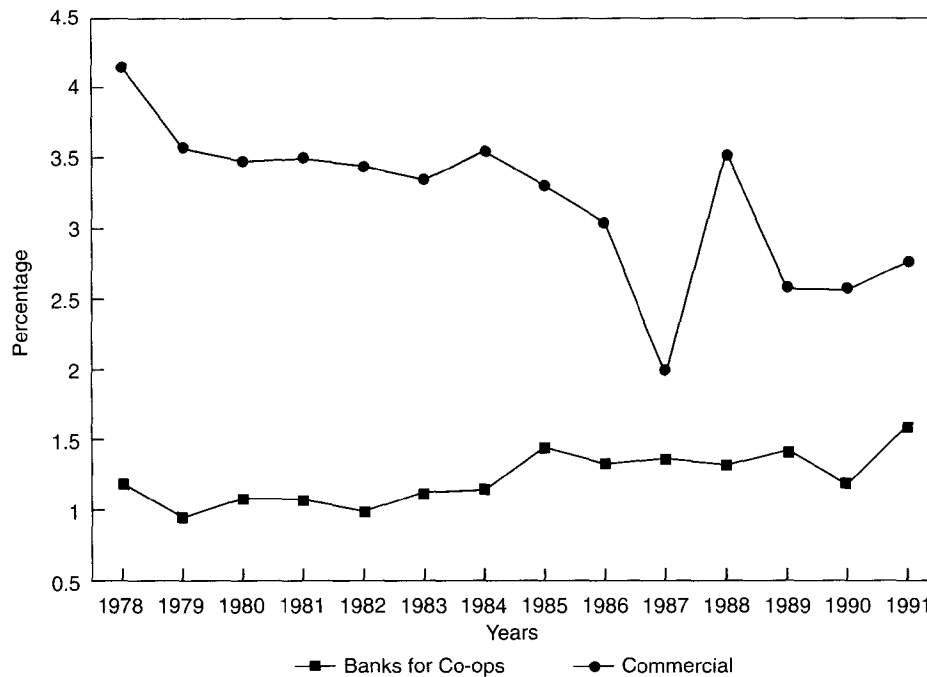
**Figure 2.—Return on Equity**

crisis hitting agriculture. Loan volume and assets growth were minimal, while net income fell 10%.

During the second period, the BCs experienced lower ROAs and much greater variability. In 1985 net loans for the BCs fell by over 10%, however, total assets grew slightly as significant investments were made in securities. Net income fell significantly, by 50% from 1984 to 1985. This decrease in income was the result of three factors attributed to the agricultural financial crisis: (1) reductions in operating income by the BCs, (2) increases in loan losses, and (3) the BCs' initial contributions to the losses being realized by the other parts of the FCS. In spite of these problems, the BCs were the only unit of the FCS to earn a positive net income in 1985. These problems continued into 1986. Loans and asset values fell 10%, while net income fell from \$66 million in 1985 to \$.6 million in 1986. However, virtually all of the decrease in net income was to provide approximately \$77 million in funds to the other financially weaker FCS units. Over the last five years of the study period, loan and asset values grew about 40%, and net income was in the \$80 to \$120 million range, except for 1990 when a large international loan loss reduced income significantly. Since the restructuring of the FCS the BCs' ROA has improved and in 1991 was .83%.

During this later period commercial banks also experienced major variability in ROA. Most of the decrease in profitability in 1987 and 1989 was



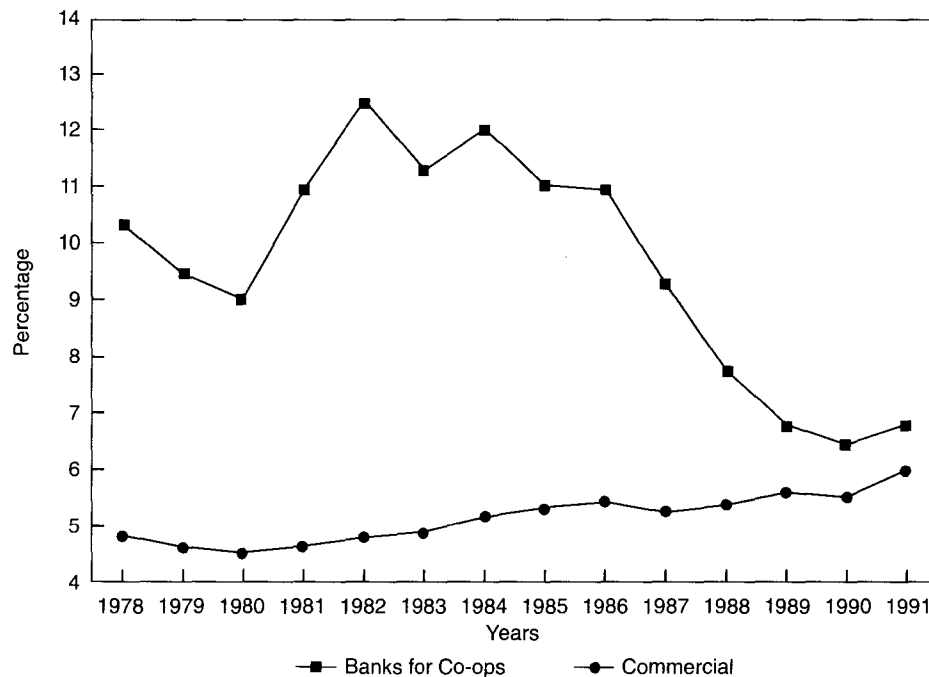
**Figure 3.—Adjusted Net Interest Margin as a Percentage of Interest Earning Assets**

attributed first to major losses on loans made to developing countries and later to bad real estate loans.

**ROE.** From an investor standpoint the ROE of the bank can be compared to alternative or competitive investments. Over the entire period the ROE of the BCs and commercial banks was 10.6% and 10.4%, respectively. The correspondence of these values is also reflected in the fact that in nine years the ROE of the BCs exceeded that of commercial banks, while commercial banks earned on average a higher ROE in five years. The test statistic indicates no significant difference in the ROE for the lending institutions.

Between 1978 and 1982 the equity of the BCs increased by two-thirds and peaked at \$1.2 billion in 1984. As a result, even though income was strong during the period, ROE fell from 1980 to 1984. In 1985 and 1986 equity decreased, but the previously discussed decreases in income pushed ROE close to zero. Over the last five years of the analysis the equity position of the BCs stabilized at about \$1 billion.

**Adjusted Net Interest Margin.** The adjusted net interest margin averaged 1.22% for the BCs and 3.20% for commercial banks, a difference of 1.98%. Mean values tested significantly different for the fourteen-year period. The coefficient of variation is similar for the two.

**Figure 4.—Equity to Asset Ratio**

The margin trended up for the BCs, while the commercial banking margin trended down causing the difference to narrow. In 1978 the gap was 2.95%, while in 1991 the gap had narrowed to 1.11%. This change in the difference can be attributed to two of the three measures used to calculate the net interest margin. Commercial banks had a significantly higher interest revenue rate over the period (figure 5), but a significantly worse loan loss as a percent of interest earning assets (figure 6). Interest expenses as a percentage of interest earning assets were not significantly different (figure 7). However, what had been a minimal difference in loan loss (.15%) had increased to where the loan losses of commercial banks exceeded those of the BCs by 1.15%.

**Equity to Asset.** Over the 14-year period commercial banks were significantly more leveraged than the BCs. The average equity to asset ratio was 9.6% for the BCs and 5.2% for commercial banks. This leverage difference is not surprising since commercial banks are perhaps the most highly leveraged firms operating nationally.

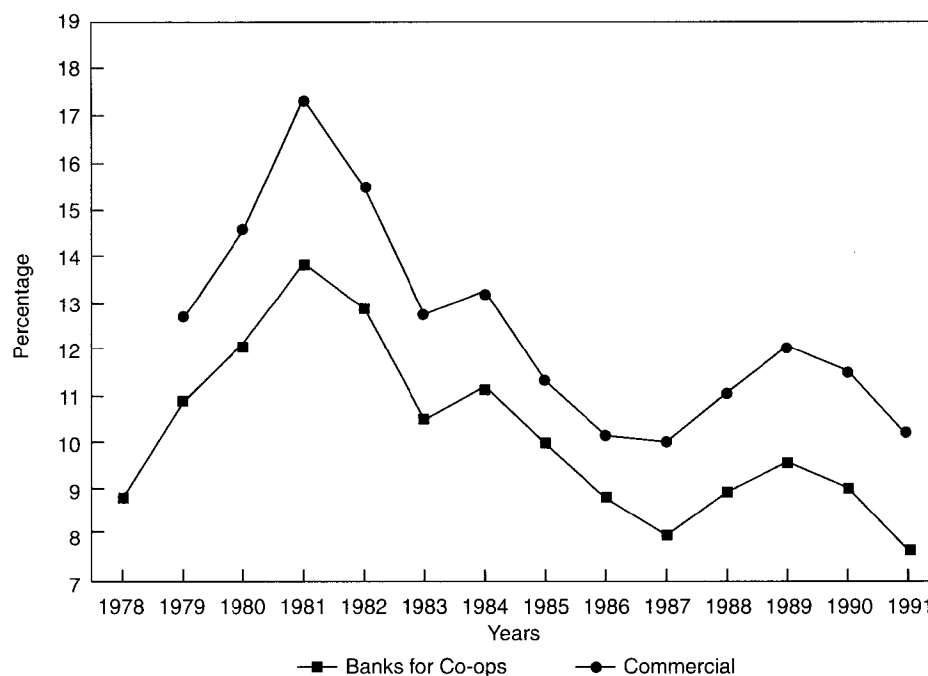
The BCs' highest equity to asset was 12.5% in 1982 when they had an equity position close to \$1.2 billion. Since then, the equity to asset ratio fell to 6.8% in 1991. This reduction came from an increase in assets and a decrease in equity. Assets were 50% greater in 1991 compared to 1982, while equity was \$200 million smaller. The decrease in equity was split between reduced capital and reduced reserved earnings.

**Table 1.—ROA, ROE, Equity to Asset and Net Adjusted Interest Margin**

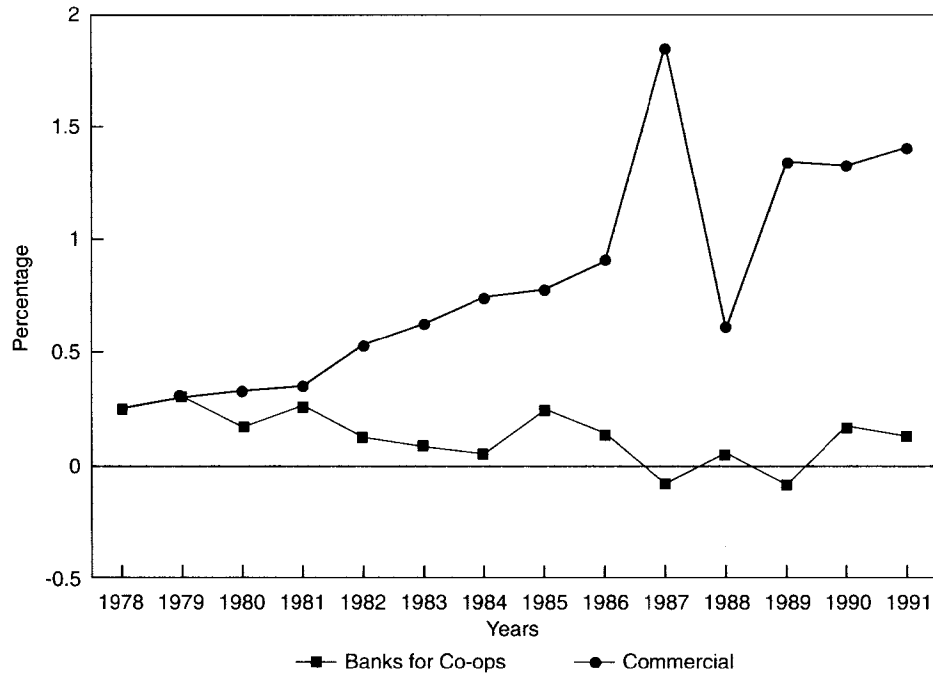
Year	Return on Assets		Return on Equity		Equity to Asset Ratio		Net Adjusted Interest Margin		Net Interest Revenue		Net Interest Expense		Net Loan Loss	
	(percent)													
	BCs	Comm.	BCs	Comm.	BCs	Comm.	BCs	Comm.	BCs	Comm.	BCs	Comm.	BCs	Comm.
1978	1.13	0.61	11.09	12.70	10.40	4.80	1.22	4.17	8.81	na.	7.33	na.	0.26	na.
1979	1.06	0.64	13.97	13.80	9.45	4.64	0.95	3.57	10.85	12.66	9.57	8.76	0.33	0.33
1980	1.41	0.61	18.92	13.40	9.09	4.55	1.08	3.46	12.05	14.61	10.78	10.80	0.20	0.35
1981	1.71	0.61	17.16	13.17	10.89	4.63	1.10	3.49	13.81	17.45	12.45	13.59	0.26	0.36
1982	1.56	0.57	13.39	12.16	12.54	4.69	0.99	3.41	12.74	15.60	11.59	11.65	0.16	0.54
1983	1.16	0.54	9.74	11.10	11.33	4.86	1.16	3.30	10.41	12.70	9.14	8.76	0.12	0.64
1984	1.31	0.54	11.20	10.51	11.98	5.14	1.19	3.55	11.18	13.27	9.90	8.98	0.09	0.73
1985	0.64	0.67	5.59	12.53	10.98	5.35	1.43	3.30	9.91	11.33	8.24	7.26	0.25	0.76
1986	0.01	0.65	0.05	11.84	10.95	5.49	1.26	3.06	8.65	9.93	7.26	5.99	0.14	0.88
1987	0.76	-0.15	7.57	-2.80	9.29	5.27	1.31	1.98	7.94	9.81	6.70	5.98	-0.07	1.84
1988	0.71	0.89	8.40	16.40	7.65	5.43	1.25	3.55	8.84	10.87	7.49	6.66	0.09	0.66
1989	0.78	0.35	10.88	6.21	6.78	5.65	1.37	2.61	9.55	11.90	8.24	7.96	-0.06	1.33
1990	0.51	0.39	7.64	6.86	6.45	5.64	1.19	2.60	9.02	11.49	7.64	7.58	0.20	1.31
1991	0.83	0.45	12.50	7.49	6.80	6.04	1.63	2.74	7.52	10.09	5.72	5.95	0.17	1.40

**Table 2.—Averages, Standard Deviations, Coefficients of Variation, and T Statistics**

Performance Measure	Average		Standard Deviation		T stat.	Coef. Variation	
	BCs	Comm. (percent)	BCs	Comm.		BCs	Comm.
ROA	0.969	0.526	0.4389	0.2264	3.2339	0.4528	0.4300
ROE	10.579	10.384	4.5949	4.5711	0.1088	0.4343	0.4402
Equity to Capital	9.615	5.156	1.9500	0.4498	8.0333	0.2028	0.0872
Adjusted Net Interest	1.223	3.199	0.1721	0.5323	-12.74	0.1406	0.1664
Interest Revenue	10.0923	12.4392	1.7833	2.2228	-2.921	0.1767	0.1787
Interest Expense	8.7162	8.4554	1.8698	2.2647	0.3149	0.2145	0.2678
Net Loan Loss	0.1527	0.8562	0.1111	0.4544	-5.402	0.7277	0.5308

**Figure 5.—Interest Revenue as a Percentage of Interest Earning Assets**

The equity to asset ratio for commercial banks was lowest in 1980 at 4.55%, but has trended steadily up over the last eleven years. Part of this can be explained by the increased number of banks that moved into the classification of banks with assets over \$1 billion. Part of this increase can also be explained by decreases in leverage by the industry. In recent

**Figure 6.—Loan Loss as a Percentage of Interest Earning Assets**

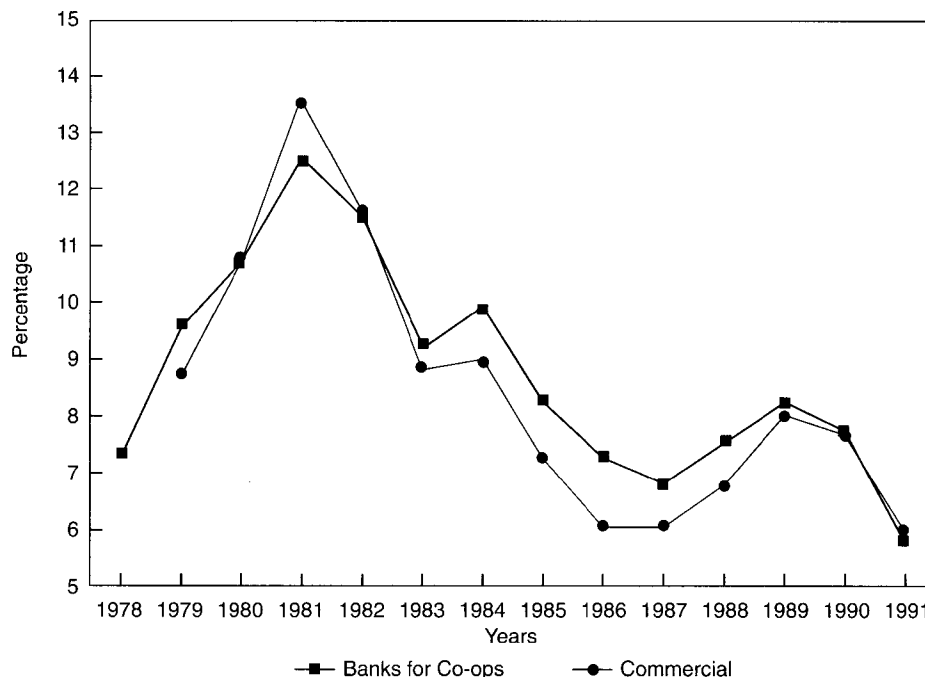
years the equity to asset ratio has increased for all size categories of banks (Goudreau 1992).

The test statistic for this ratio indicates a significant difference between the means of the two lending institutions. However, in 1991 the equity to asset ratio was 6.8% and 6.0% for the BCs and commercial banks respectively. This .8% difference is small compared to the 5% and 6% differences measured in the early 1980s.

## Conclusions

Results of the comparative analysis indicate that the Banks for Cooperatives withstood the financial turmoil and restructuring of the 1980s. Implications for cooperative borrowers are that a lending institution has survived for the 1990s that is financially strong and competitive with other lending intermediaries.

Over the fourteen-year period the ROA of the BCs was significantly superior to that of large commercial banks. The difference would have been even greater except for the net income losses incurred due to problems in other parts of the FCS. Even though the ROA in recent years has not recovered to prefinancial crisis magnitudes, it still is at a level that suggests the BCs are efficiently managing their portfolio of loans. They are generat-

**Figure 7.—Interest Expense as a Percentage of Interest Earning Assets**

ing profit while, at the same time, providing member-borrowers very competitively priced credit.

The BCs' ROE was not significantly different from that of commercial banks, while the BCs' equity to asset ratio was superior but approaching that of commercial banks. The competitive ROE is another indication of sound financial performance. Moreover, the BCs generated the similar ROE with lower leverage. The equity to asset ratio is consistent with how cooperatives operate. It is also in line with capital adequacy requirements imposed on the BCs by the Farm Credit Administration as a consequence of the Farm Credit Act.

The low adjusted net interest margin is consistent with differences in operating objectives of a cooperative versus an investor-owned firm. It is facilitated by the BCs' nondepository situation and federal agency status that allow it to borrow money at rates comparable with large commercial banks. The lower margin during the period provided a lower cost of debt for BCs' member-borrowers compared to the cost of debt they could have obtained from commercial banks. In addition, the low loan loss rates of the BCs were below those of commercial banks as the BCs apparently were marketing loans to a financially strong cooperative industry.

The BCs' management practices over the last fourteen years in a highly competitive international industry resulted in the adequate to superior

profitability and leverage measured in this study. Though not specifically quantified in this study, the performance of the BCs is probably closely related to the economic health of the market it serves.

### Notes

1. The cooperative banks of St. Paul, Minnesota, and Springfield, Massachusetts, remain as independent Banks for Cooperatives, but are authorized to make loans nationally. CoBank has the authority to lend to national and international agricultural cooperatives.

2. Inflation and fraud risk are also important but have a similar effect on all financial institutions.

3. One result of the Farm Credit Act of 1987 is that minimum liquidity standards are imposed on the BCs by the Farm Credit Administration. Consequently, today liquidity is significantly more important to the BCs.

4. The test statistic used:

$$T = \frac{\sqrt{n_1 n_2 / (n_1 + n_2)} (\bar{X}_1 - \bar{X}_2)}{\sqrt{[\Sigma(x_{1i} - \bar{x}_1)^2 + \Sigma(x_{2i} - \bar{x}_2)^2] / (n_1 + n_2 - 2)}}$$

has a t distribution with  $n_1 + n_2 - 2$  degrees of freedom.

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