AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Journal of Cooperatives

Copyright National Council of Farmers Cooperatives. Duplication is permitted for academic or research purposes but not for commercial purposes. Permission is hereby granted for the redistribution of this material over electronic networks so long as this item is redistributed in full and with appropriate credit given to the author and copyright holder. All other rights reserved.

Evaluation of Restructuring Alternatives for the Banks for Cooperatives

John A. Hopkin, Thomas L. Sporleder, Daniel I. Padberg, and Ronald D. Knutson

The farm financial crisis, combined with deregulation of the U.S. banking system, has created a new environment within which the Farm Credit System competes. Despite their unique business clientele, the Banks for Cooperatives (BCs) have been adversely affected by this changed environment. In 1987, the BCs requested an economic analysis of possible consolidation alternatives, with emphasis on the economies of size they might achieve. Summary results of that analysis are presented here. A 47 basis point reduction in interest rates charged borrowers was estimated to result from a total consolidation of the BCs.

In January 1987, committees were appointed within the Farm Credit System to supervise the assessment of alternatives for restructuring the Banks for Cooperatives (BCs). The economic difficulties within the BCs leading to this action included the loss of revenue, the high cost of providing loans, the high concentration of loan risks, and concerns over governance.

The loss of revenue is due in part to the declining share of cooperative debt supplied by BCs. For example, data for the 100 largest cooperatives indicate a decline in the BCs' share of cooperative loans from 58.4 percent in 1980 to 48.9 percent in 1986 (table 1). Total BC loans outstanding after provision for losses declined from $8.9 billion on December 31, 1984, to $7.2 billion on December 31, 1986 (Farm Credit Administration). Most of the loan loss was the result of increased competition from leases, industrial revenue bonds, and other sources such as insurance companies and investment bankers.

Partially as a result of this decline in loan volume, the average operating cost per $100 gross loans increased from 31 cents to 92 cents between 1980 and 1986 although it declined to about the 1985 level of 77 cents in 1987 (table 2). Other factors contributing to higher BC costs include increases in the average cost of the securities used in some districts. This cost varies greatly from one district BC to another.

John A. Hopkin, Thomas L. Sporleder, Daniel I. Padberg, and Ronald D. Knutson are professors, Department of Agricultural Economics, Texas A&M University.

The authors gratefully acknowledge the credit committee of the National Council of Farmer Cooperatives, Jere Thorne, and Fred Shannon for their many hours of assistance in completing this study. Of course, any errors are the sole responsibility of the authors.

Technical Article No. 24003 of the Texas Agricultural Experiment Station.

Table 1.—Changes in Sources of Debt Capital for the 100 Largest Cooperatives, 1962–86

Source	Year 1962	1970	1976	1980	1986
			Percent		
Banks for Cooperatives	49.8	61.8	57.8	58.4	48.9
Commercial Banks	9.2	9.3	9.4	12.4	5.8
Debt Securities	34.9	25.6	26.3	13.6	15.4
Leases and Industrial Revenue Bonds	[a]	[a]	2.3	7.8	13.1
Other	6.1	3.3	6.5	7.8	16.8

Source: Griffin et al., p. 149; Davidson, Street, and Wissman, p. 4; Davidson and Kane, p. 10.
[a]Less than 0.05 percent.

In addition, as one of the financially healthy segments of the Farm Credit System, the BCs were assessed to cover losses elsewhere in the system under the loss-sharing arrangement growing out of the Farm Credit Amendments Act of 1985. BC net earnings declined from $181 million in 1981 to just over $1 million in 1986, although they rebounded to nearly $79 million in 1987 (table 2). The 1987 earnings were the first since 1984 that did not reflect loss sharing.

In several districts, BC loan volume is concentrated among a relatively few large customers. Although the loan concentration risks are spread somewhat through the operations of the Central Bank for Cooperatives (CBC), loan concentration is much higher in several district BCs than most commercial banks and regulators would find acceptable.

Table 2.—Annual Net Earnings and Operating Cost per $100 Gross Loans, Banks for Cooperatives, 1980–87

Year Ending December 31,	Net Earnings	Operating Cost per $100 Gross Loans
	Thousand Dollars	*Dollars*
1980	139,367	0.313
1981	181,402	0.404
1982	154,804	0.538
1983	114,587	0.580
1984	133,061	0.675
1985	65,330	0.772
1986	1,045	0.920
1987	78,799	0.775

Source: Calculated from Farm Credit Administration data.

The BC governance controversy concerns both the one-member/one-vote structure and the inability of BC representatives on the district boards to determine BC policy. Large regional cooperatives, which supply most of the BCs' capital, have no more votes than small cooperatives supplying little capital. This is the same "equity vs. equality" issue that faces any cooperative whose patrons are of significantly different sizes. In addition, cooperatives believe that, with only two BC representatives on the district boards, they are never in a majority position to set policy.

This article reports the results of an assessment of the BC system in terms of the financial requirements of BC borrowers, the emerging competitive environment in which the BCs operate, and an assessment of organizational restructuring alternatives, including estimates of savings from a consolidated BC system.

The Dynamics of BC Customers

A basic premise of this study was that if the BCs are going to survive as an institution enjoying the privileges of the Farm Credit System such as agency status, it is essential that they be in a competitive position to supply credit to the major regional farmer cooperatives. The management of major regional cooperatives stressed their need for access to financial arrangements that would allow them to compete for the business of the commercial farmers that produce most of total production.

Cooperatives' Ability to Serve Farmer Needs

For cooperatives to continue to be viable in the long term, they must be able to serve a complete size distribution of farmers, both small and large. In 1986, half of all production was produced by 5 percent of farmers (U.S. Department of Agriculture). If cooperatives are going to be a competitive factor in the future, these farmers must not only be able to buy supplies or market products under competitive arrangements, but they must also have a voice in the cooperative that reflects their volume of business.

Smith, in a 1982 study of cotton producers in the Texas High Plains, suggested that membership in cooperatives falls dramatically as farm size increases beyond 2,500 acres. On the other hand, more recent research by Babb on Midwest grain farms suggests there is little difference in cooperative patronage among farmers having different gross sales. However, questions exist regarding the extent to which the Babb data reflect the behavior of the very largest farmers who produce the majority of total production. Finally, 1987 Agricultural Cooperative Service data suggest that the number of farmers using a marketing cooperative increases with gross sales of farm, except for the very largest (Kraenzle et al.). In the category of annual sales equal to $500,000 or more, the share of farms patronizing cooperatives fell slightly compared with all other size categories.

Looking ahead, a combination of new technology and integration is increasingly challenging the position of farmer cooperatives as handlers of farm products and suppliers of farm inputs. Competitive pressures to control markets for farm inputs and products will intensify. These pressures will be manifested in more complex inputs used more extensively by competitors to achieve integration and control agriculture; more differentiated

products, perhaps through genetic engineering, with patent rights tied to specific genetic traits; more market-oriented production designed and controlled to meet specific customer needs; and more complete packages of unique production inputs, credit terms, and access to a differentiated market offered selectively to progressive farmers (American Bankers Association).

Cooperatives must be in a position to meet these new sources of competition. Contractual arrangements involving inputs, product sales, and credit are becoming more common in agriculture. Complex new patented technologies present major challenges to cooperatives that have done no basic research and are experiencing a capital-rationing crunch.

There is danger that as agriculture continues to progress toward increasing concentration of sales in large farms, cooperatives may become organizations of smaller, part-time farmers. Likewise, there is danger that the BCs may become associations of small cooperatives. The issues at the root of both these problems include proportional voting and uniform pricing.

BCs face the same set of problems in competing for the loan volume of cooperatives of different sizes and risk levels. As with farmers, the trend clearly is toward fewer but larger cooperatives. The number of farmer marketing and supply cooperatives fell from 8,949 in 1960 to 6,177 in 1980 (Richardson et al.) and is projected to be 3,426 in year 2000 (Hopkin and Associates). Larger cooperatives have more alternative sources of capital. The management of large cooperatives made it very clear that an increase in the cost of debt capital is more meaningful to them than to smaller cooperatives.

Rural Utility Financing

With changes in legislation, most BCs are seeking to expand rural utility financing to offset the decline in farmer cooperative financing. Some look to public utility financing as a major profitable alternative to financing regional farmer cooperatives. However, this study questions the viability of the BCs as competitors in the public utility market. Public utilities are particularly sensitive to interest rates. To materially expand the BC share of utility financing, uniform, highly qualified expertise in utility financing, serving all districts, would be required; a uniform national lending instrument would be required; BC operating cost per $100 loans would need to be lowered; and problems with member equity rotation would need to be solved.

It was concluded that even if the current BC structure could overcome the problems of competing for the business of utilities, the bulk of BC business must continue to be with farmer cooperatives to justify and maintain Farm Credit System benefits.

The Changing Competitive Environment for the BCs

A combination of financial deregulation, new technology, and increased customer mobility is intensifying the BCs' problems of competing for the business of financially viable cooperatives. Commercial banks are losing consumer and industrial customers to savings and loan associations, credit unions, and other nonbank financial institutions such as insurance companies, security brokerage firms, and large manufacturers and retailers. As a consequence, commercial banks are looking for new customers. Local and regional cooperatives are targets of the competitive struggle in the new financial regulatory environment (American Bankers Association).

New and growing agricultural credit corporations represent a new breed of agricultural lender looking for quality loans relating to agriculture. They also are beginning to show interest in financing smaller but viable farmer cooperatives. Another development that began a decade ago, but is now increasing sharply, is the invasion of foreign agricultural cooperative banks into the U.S. farm credit market. Several of these banks, including Rabobank, Credit Agricole, Norinchukin, and the D.G. Bank, are competitive threats to the BC system (Hopkin and Associates).

Trends if the BCs Did Not Change

If the BC system did not change, its loan volume could have been expected to decline in the long term as more regional cooperatives were attracted to competitors. Discussions with regional cooperatives indicated that competition in the farm supply and marketing business was so keen that even small differences in interest rates were enough to force consideration of alternative sources of debt capital. Even larger local cooperatives indicated that cost of capital was a critical factor in their performance.

Reduced loan volume increases BC operating cost per dollar lent and further jeopardizes capital rotation. As a consequence, effective rates could have been expected to increase for all BC borrowers relative to other borrowers. Reduced earnings inevitably lead to a decline in services. In addition, the quality of BC loans could have been expected to decline as financially viable cooperatives shifted to other lenders. Unless reversed, this trend ulimately would have led to the BCs becoming "lenders of last resort."

Plans for restructuring should attempt to preserve the unique advantages that BCs have had over their competitors. Their agency status as part of the cooperative Farm Credit System is perceived to have given the BCs an advantage over competitive sources of finance (Harl). Access through the Federal Farm Credit Banks Funding Corporation provides a variety of debt maturities for interest-rate risk management through improved asset-liability matching. Utilization of these tools requires sophisticated financial skills, and acquisition of personnel with these skills should be enhanced by larger loan volumes and the greater variety of loans resulting from consolidation. BC consolidation offers the ability to spread loans over broader geographic areas and types of supplies and services. This risk pooling within the BC system could be materially enhanced through merging.

BC consolidation increases the potential for cooperatives taking advantage of unique features relating to capital formation, pricing, and taxation. Loan officers familiar with the inner workings of cooperatives have an advantage over competitors in identifying and projecting cash flows and monitoring credit problems of cooperatives.

Assessing Alternatives for Consolidation

A BC restructuring committee worked with the authors of this study to set priorities on the criteria utilized in evaluating alternatives and reviewed the proposed methods for evaluating the consolidation impacts.

Criteria and Methods

Alternative criteria for evaluation were presented to the supervisory committee. Priorities were established utilizing a consensus technique that gave members of the committee an opportunity to argue their ranking and revote after each discussion period. This process resulted in the following priority of criteria for evaluating the consolidation alternative structures:

1. Net interest rate to borrowers, including consideration of the cost of Farm Credit System securities, cost of operation per $100 loan volume, and net present value of borrowers' equities.
2. Effective delivery system to local and regional cooperatives.
3. Reducing loan risks.
4. Governance of the BC system.
5. Adequacy of capital.

A variety of methods were used in evaluating alternatives. A questionnaire seeking opinions and ideas on consolidation alternatives was mailed to all BC directors and district chief executive officers (CEOs). The CEOs strongly preferred total consolidation to either partial consolidation or no change (Hopkin and Associates). Responses to the questionnaires provided input useful in defining the combination of district BCs into regions for testing partial consolidation alternatives. In addition, previous studies of consolidation and other economic literature were used as input into the evaluation process. Statistical models were estimated and cost functions were used to analyze the economies of size that would result from BC consolidation. Detailed cost data covering the period 1981–86 for each BC were used in the cost analysis.

Consolidation Alternatives

Three alternatives to the current BC structure were evaluated: (1) total consolidation, (2) consolidation into five regions, and (3) consolidation into four regions. The details of these consolidations, including the structures of the banks that would be created, were specified (Hopkin and Associates). Financial data were assembled based on December 31, 1986, balance sheet data, and generally accepted analytical models were used in analyzing the cost data. Cost comparisons are summarized in table 3.

Economies of Size and Operating Costs

Economies of size were measured by estimating a long-run average cost function (figure 1). The model has been used for several years to estimate the costs of retail stores (National Commission on Food Marketing). It involves data describing costs, output, and capacity. Operating cost by district per $100 loans was chosen as the measure of cost in this study and taken directly from the operating records of all 12 BC districts. Operating costs of the CBC were allocated proportionately to each district before the parameters were estimated. The volume of gross loans was used as the measure of output for each district.

The measure of capacity is more difficult to specify but necessary if the model is to distinguish between short-run and long-run influences on cost.

Table 3.—Estimated Cost Differences among Total and Partial Consolidations Compared with Present Structure, Banks for Cooperatives, 1987

Item	Operating Cost per $100 Loans[a]	Cost of Funds	Total Cost
		Basis Points	
Estimated Costs:			
Present Structure	63.0	973.0	1,036.0
Five-Region Consolidation	47.0	974.0	1,021.0
Four-Region Consolidation	42.6	972.0	1,014.6
Total Consolidation	38.0	951.0	989.0
Advantage of Total Consolidation:			
Over Present Structure	25.0	22.0	47.0
Over Five-Region Consolidation	9.0	23.0	32.0
Over Four-Region Consolidation	4.6	21.0	25.6

[a]Adjusted to a 10-to-1 ratio of loans to net worth.

Net worth data were available and were used as the measure of capacity. For a retail store, square feet of selling area is a direct and tangible measure of capacity. For a bank, however, net worth should be a better indication of capacity than any physical measurement such as the size of the bank's building.

The form of this cost equation has a special feature. The short-run variable is a ratio of capacity, similar to bushels per acre or sales per square foot. As a consequence of this choice, the short-run cost curves for smaller banks are steeper than for larger banks. Although economic theory textbooks usually do not show cost curves that look that way, a moment's reflection will affirm that they should. It is input proportionality that gives these cost curves their shape. A unit increase in volume will result in a smaller proportional increase in a large plant than in a small one. Therefore, the slope of a curve indicating cost per unit of volume will be less for large plants.

The statistical model was specified as a cross-sectional model and estimated using 1981 and 1986 annual data:

$$C_i = \beta_0 + \beta_1 T + \beta_2(GL_i / NW_i) + \beta_3(GL_i / NW_i)^2 + \beta_4 NW_i + \beta_5(NW_i)^2 \quad (1)$$

where:

C_i = operating cost per $100 gross loans in district i,
T = a dummy variable for year,
GL_i = gross loans in district i, and
NW_i = net worth in district i.

This model fits very well (table 4). All parameter estimates are significant, the signs are as expected, and the adjusted R^2 is .91. There is every reason to have confidence in the results. The long-run average cost in figure 1 is

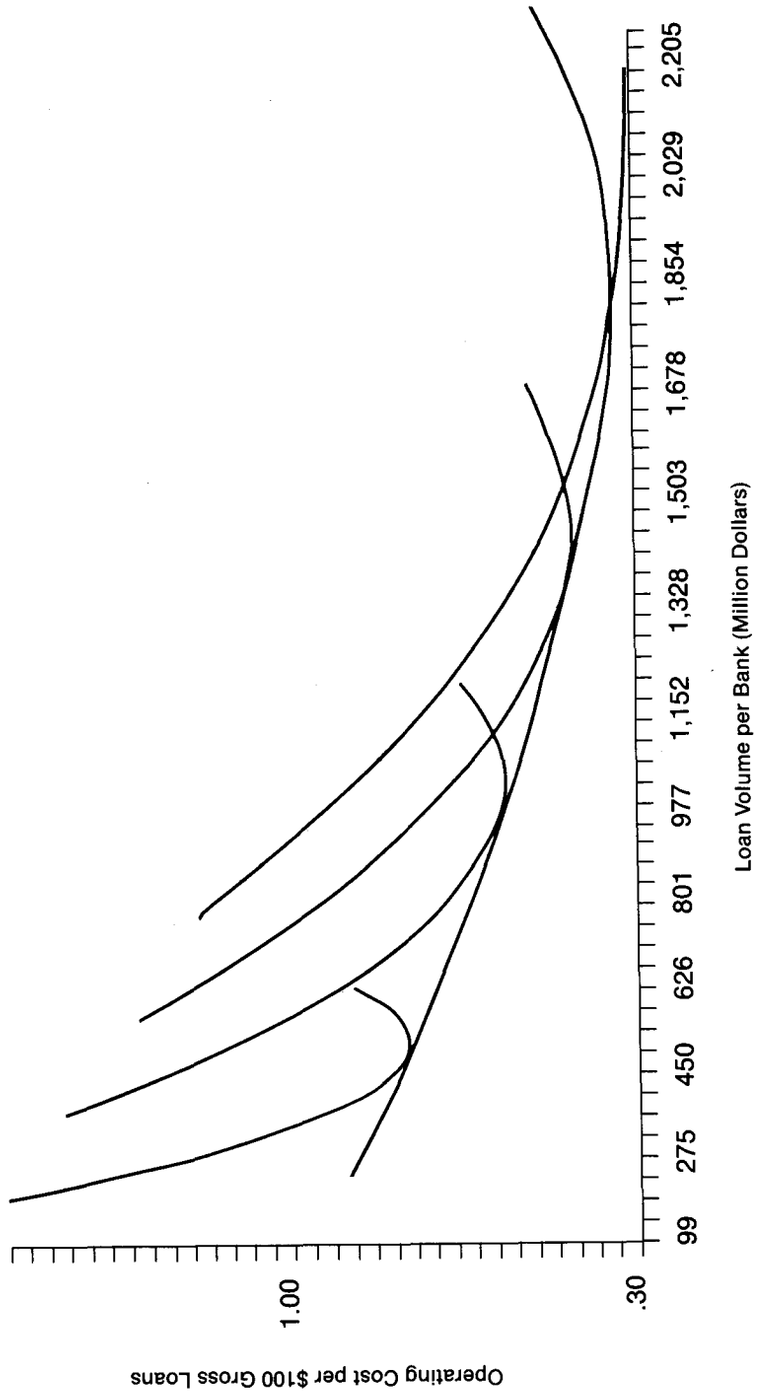

Figure 1.—Average Operating Cost, District Banks for Cooperatives

Table 4.—Results of Regression for Average Cost Envelope, Banks for Cooperatives, 1981 and 1986 Annual Data

Variable	Symbol	Parameter Estimate	t-value
Intercept	β_0	2.429543	7.89***
Time	T	0.436837	6.54***
Gross Loans per Dollar Net Worth	GL/NW	−0.261134	−3.38***
(Gross Loans Per Dollar Net Worth)^2	$(GL/NW)^2$	0.010751	2.03*
Net Worth	NW	−0.007911	−4.09***
(Net Worth)^2	$(NW)^2$	0.000020	2.50**
	Adjusted R^2 = .91		

*Significant at the .90 confidence level.
**Significant at the .95 confidence level.
***Significant at the .99 confidence level.

based on this estimated regression.[1] Several other variations of this model were run—data for different years and net loans as the measure of volume were used for example—and they all performed well. This particular specification was chosen as most representative of cost influences from volume and bank size.

Important differences also were found in the cost of funds among the 13 banks and from one period to another. These differences are due to many factors, some associated with size of operation. No theoretically elegant method is available for measuring the relationship of size to cost of funds. Instead, about one-third of the difference in the average cost of funds for the 12 districts and CBC (which had from 4 to nearly 20 times the loan volume of each of the district banks) was attributed to size.

This difference in average cost was considered to be a conservative estimate of the potential savings associated with consolidation. Increased loan volume and loan activity provide greater flexibility in the timing and maturity of new debt sold. More important, the increased volume of loans makes it possible to attract and hold people with superior financial management skills.

Conclusions and Recommendation

The differences between the results for the four- and five-region consolidations were not substantial (table 3). Thus the relevant economic comparisons were between no change, partial consolidation, and total consolidation.

A total consolidation of all 13 BCs into a single, unified BC was recommended, based on: (1) a projection of the changing financial service require-

ments of successful cooperatives, (2) an assessment of the trends in the relative importance of BCs in financing those cooperatives, (3) the changing competitive environment in which BCs will supply those services, (4) an assessment of the cost savings projected for the restructuring alternatives considered, and (5) the opinions of cooperative and BC system leaders. The consolidated bank would have the following characteristics:

1. A decentralized credit delivery system with a focus at the district level would continue to exist. The delivery system would be designed to achieve a maximum lending authority at the district level, consistent with credit quality control and district need. Branch service offices would be maintained in each of the 12 Farm Credit districts. Cost savings associated with consolidation were based on economies of size instead of severely cutting services at the district level.
2. The new bank would have centralized administration, finance, legal, credit analysis, and related operations to achieve economies of management and control.
3. A central management of specialty programs, such as international and utility financing, would be established to implement unified procedures, documents, and policies and to achieve a uniformly high level of service.
4. A dual loan review process would be continued for larger, more complex loans to ensure a high level of loan quality.
5. A new board of directors would be elected for the consolidated BC. The study report suggested that this board initially comprise two BC representatives from each merging district and one BC representative from each nonmerging district (Hopkin and Associates). However, the Agricultural Credit Act of 1987 specifies the composition of both the initial and permanent boards for the consolidated BC.

Advantages of Total Consolidation

Total consolidation would offer several important economic advantages over regional consolidation. It would provide lower interest rates to borrowers, which were estimated to be 25.0 basis points lower than for the existing structure, 9.0 points lower than for five-region consolidation, and 4.6 points lower than for four-region consolidation. In addition, a lower cost of funds was estimated to result from greater flexibility in financial management and the likelihood of acquiring and holding people with superior financial management skills that is associated with increased volume. The cost of funds under total consolidation was estimated to be 22.0 basis points lower than for the present structure, 23.0 points lower than for five-region consolidation, and 21.0 points lower than for four-region consolidation. Moreover, future technologies in analysis and communication will increasingly favor the larger size achievable only through total consolidation.

Total consolidation would make possible unified policies and programs for improved market penetration. An immediate opportunity could occur, for example, with an expanded program for utilities. Specialized skills also would permit a consolidated bank to be competitive for large cooperative accounts. Because there would be qualified loan officers in each currently existing district, the current capacity to serve the financial needs of members in the district would not be diminished by total consolidation. In the process, a single voice for cooperative financing would be provided on public policy issues.

Loan risks would be lowered by total consolidation. Loan volume would be spread over broader and more diverse geographic areas, and greater commodity and product service diversity would exist. Portfolio concentration from a few large loans would be reduced, and asset-liability management would be improved. Credit management would be improved as a result of more effective utilization of top-quality credit personnel and more uniform credit analysis and supervision. Reduced loan risks could make a shorter and more predictable equity rotation possible, thereby reducing the effective interest rate to borrowers. This benefit was conservatively estimated to be equivalent to nine basis points (Hopkin and Associates).

Capital adequacy would be improved by greater efficiency of capital use under total consolidation. In addition, uniform equity revolvement and larger volume would allow increasing the capital ratio to improve capital efficiency.

Minimum Requirement for Consolidation

Because of important differences among BCs within the system, no voluntary consolidation plan was thought likely to be totally acceptable to all 12 district banks. Therefore, it was recommended that at least 7 of the existing 12 districts plus the CBC agree to voluntary consolidation before any consolidation occurred. In addition, it was recommended that at least 75 percent of the total gross loan volume, including participations from nonconsolidating banks, should be included in the new consolidated bank and that the combined equity capital of the new bank should not be less than $700 million.

These recommendations were superseded by the Farm Credit Act of 1987. This act required that a plan of merger of all BCs be developed and submitted for stockholder vote. The stockholders of eight of the district BCs approved the merger, which will result in consolidation of the approving district banks and the CBC into the National Bank for Cooperatives (NBC). The NBC may serve eligible borrowers within any geographic area in which the Farm Credit System operates.

In summary, the BC system is at a critical point in its history. Consolidation should allow the system's largest, lowest risk, and most preferred customers to continue to be served by the cooperative system.

Note

1. The Agricultural Credit Act of 1987 mandated that the Federal Land Banks and Federal Intermediate Credit Banks within each district merge into a Federal Credit Bank on or before July 6, 1988. Because each BC would, in the absence of additional merger action, operate as a "stand-alone" unit within its district, the operating economies to be derived from merging would be larger than indicated by equation (1).

References

American Bankers Association. *Transition in Agriculture: A Strategic Assessment of Agriculture and Banking.* Washington, D.C., 1986.

Babb, Emerson M. *Farmers' Buying and Selling Patterns: Implications for Cooperatives.* Washington, D.C.: USDA ACS Res. Rep. 73, July 1988.

Davidson, Donald R., and Michael D. Kane. "Restructurings Accelerate as Co-ops Struggle to Adapt to Sagging Economy." *Farmer Cooperatives,* Sept. 1987, pp. 4–10.

Davidson, Donald R., Donald W. Street, and Roger A. Wissman. "Top 100 Cooperatives Dominate Business Scene; Sales Hit $50.3 Billion by '80." *Farmer Cooperatives,* Nov. 1981, pp. 4–7.

Farm Credit Administration. "Summary Reports of Condition and Performance," selected years.

Harl, Neil E. "Policy Considerations Related to Further Intervention in the Farm Credit System." *Journal of Agricultural Cooperation* 2(1987):57–73.

Griffin, Nelda, et al. *The Changing Financial Structure of Farmer Cooperatives.* Washington, D.C.: USDA ESCS Farmer Coop. Res. Rep. 17, Mar. 1980.

Hopkin and Associates. *An Assessment of Restructuring Alternatives for Banks for Cooperatives.* Farm Credit System, July 1987.

Kraenzle, Charles A., et al. *Farmer Cooperatives: Members and Use.* Washington, D.C.: USDA ACS Res. Rep. 77, Oct. 1988.

National Commission on Food Marketing. *Organization and Competition in Food Retailing.* Washington, D.C.: Technical Study 7, June 1966.

Richardson, Ralph M., et al. *Farmer Cooperative Statistics, 1986.* Washington, D.C.: USDA ACS Serv. Rep. 19, Dec. 1987.

Smith, Edward G. "Economic Impact of Alternative Farm Programs on the Southern High Plains of Texas." Ph.D. dissertation, Texas A&M University, 1982.

U.S. Department of Agriculture. *Economic Indicators of the Farm Sector: Farm Sector Review, 1986.* Washington, D.C.: ERS NAD ECIFS 6-3, Jan. 1988.