



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.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

**FINANCIAL INSTITUTIONS AND INVESTMENT COORDINATION: EVIDENCE FROM
THE BANKS FOR COOPERATIVES**

Laura M. Geis

**Proceedings of a Seminar sponsored by
North Central Regional Project NC-207
“Regulatory, Efficiency and Management Issues Affecting Rural Financial Markets”
Federal Reserve Bank of Chicago
Chicago, Illinois
October 4-5, 1993**

Department of Agricultural, Resource and Managerial Economics
College of Agricultural and Life Sciences
Cornell University, Ithaca, New York 14853

December 1993

Copyright 1992 by author. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

FINANCIAL INSTITUTIONS AND INVESTMENT COORDINATION: EVIDENCE FROM THE BANKS FOR COOPERATIVES

Laura M. Geis¹

During the last several years, farmer cooperatives in the United States have struggled to adapt to changing market conditions through restructurings and joint ventures. Cooperatives in the 1980s faced their most serious financial stress in fifty years. Many cooperatives have been saddled with excess productive capacity, particularly in grain storage, feed manufacturing, fertilizer mixing and application, farm input retailing, and many other lines of business. Despite consolidations and closings, excess capacity persists in many areas, particularly among local grain and farm supply cooperatives.

It has been estimated that excess capacity in retail fertilizer operations in a 24 county area of Missouri results in farmers paying as much as 25 percent more than if cooperatives' capacity were matched with demand (Van Dyne and Rhodes). A survey of cooperative unit train grain loading facilities found them to be operating at 17 percent of total capacity in Iowa, two percent in Nebraska, and 43 percent in North Dakota (Cobia, Wilson, Gunn, and Coon).

As further evidence of financial difficulties from excess capacity, between 1970 and 1985, the total number of cooperatives in the United States declined by more than 2,000. Half of these went out of business, and the rest merged or were acquired (National Society of Accountants for Cooperatives). Although more recently cooperative financial performance has improved, reflecting the healthier agricultural economy and the streamlining of operations, excess capacity remains a problem in many areas. This research explores whether the Banks for Cooperatives (BCs), as dominant lenders to the cooperative sector, can prevent overinvestment by their borrowers or assist them in rationalizing excess capacity.

In general, excess capacity occurs when there is overinvestment relative to future demand for a product, or when demand conditions change so that existing capacity is underutilized. The current problems with excess capacity may be explained in part by the following demand-related factors: a less-than-anticipated demand for farm inputs due to the farm debt crisis, government commodity programs (for example, the PIK program, conservation reserve, ARP, etc.), or changes in transportation systems. On the other hand, the excess capacity problem may also be explained in part by supply-related factors. Overinvestment in productive capacity may have at its root government policies promoting cooperatives, or a lack of effective mechanisms available to cooperatives for signalling investment plans to other firms in the industry.

The response of agricultural economists to conditions of excess capacity in agribusiness industries has been focused on ways to mitigate the problem. Chambonnet and Schrader; and Van Dyne and Rhodes addressed how to optimize local grain and fertilizer capacity relative to a given demand density in a specific geographic area. Van Dyne constructed a model to determine what size, location, and product mix would provide service to farmers at a minimum cost, given the existing facilities. Taylor and Vogler addressed how regional cooperatives could minimize costs to members by consolidating retail facilities and product lines. Gunn and Cobia surveyed cooperative managers about their responses to excess capacity problems.

¹ Economist, Rural Development Programs Office of Budget and Program Analysis, USDA. This research was conducted at Michigan State University and the Economic Research Service, USDA. Financial support was provided by the Agricultural Cooperative Service and the Economic Research Service at USDA, as well as the Michigan Agricultural Experiment Station.

The research thus far has focused on measuring or dealing with the consequences of excess capacity, but little emphasis has been placed on the decision making structures which allowed the problem to occur in the first place. Although excess capacity has many causes, one thing seems to be apparent: both as the dominant lenders to farmer cooperatives and as cooperatives themselves, the three Banks for Cooperatives (BCs) have a key role to play in coordinating investments in productive capacity with anticipated future demand for that capacity.

The three Banks for Cooperatives are located in St. Paul, MN, Springfield, MA, and Denver, CO. Part of the cooperatively owned Farm Credit System, the BCs provide loans and financial services to agricultural cooperatives, as well as to rural electric, water and telecommunications systems. The BCs also make loans to foreign buyers of U.S. cooperative-sourced agricultural commodities. Combined, the BCs currently serve about 2,700 borrowers and hold over \$12 billion in outstanding loans. They provide a very large share of the debt financing used by farmer cooperatives, many of which have had more limited access to alternative sources of credit than their investor-owned competitors. Moreover, because the benefits of cooperative membership can be gained only by patronizing the cooperative, there is no secondary market for the equities of cooperatively owned firms. Because of these limits on the ability of cooperatives to access many sources of both debt and equity financing, the BCs are well-positioned to coordinate investments in some agribusiness industries by extending or denying credit or influencing the expansion decisions of their borrowers.

This research asked whether the BCs would be able to "turn off the tap" of credit flowing into a market or industry when the sum of planned and existing capacity is fairly well-matched with projected demand. Three conditions are necessary for the BCs to successfully coordinate investments through their credit decisions: 1) they must provide a large share of the credit used by cooperatives, 2) their cooperative borrowers must have a large market share, and 3) the BCs must effectively use the information they receive from monitoring borrower accounts to guide the investment decisions of other borrowers wishing to expand. This study explored the extent to which each of these conditions is met for particular agribusiness industries.

Data was obtained from two surveys: a census of the 290 largest agricultural cooperatives and a series of face-to-face interviews with senior members of the BC credit staff. Survey results indicate that the BCs have had a significant impact on the match of industry capacity and long-run demand among local farm supply and grain cooperatives, where they have the largest market share among lenders and the greatest influence over borrowers. In some parts of the country, the banks have played a very active role in rationalizing excess capacity by initiating mergers and joint ventures among their borrowers based on their analysis of borrower financial data. However, as discussed below, several factors limit the BCs' influence over their borrowers.

Conceptual Framework

The activities of thousands of people may contribute to the production of a single good. Economic agents scattered over thousands of miles make decisions and act based on imperfect information and rules of thumb. A central economic problem is how to coordinate their contributions across space and time in an efficient manner, given that information and control mechanisms are imperfect (Shaffer).

"Coordination" refers to the matching of the supply of a good with the demand for it at every step of the vertical production sequence, at prices consistent with costs of production (Shaffer and Staats, 1988). Neoclassical economic theory tells us that when supply of a good is precisely matched with demand at prices equal to the marginal cost of production, resources are efficiently allocated. Much of the study of economics is concerned with how prices perform this coordinating function. However, markets are only one of several ways of coordinating supply and demand.

Investment coordination, or the matching of the capacity to produce a good with the long-run demand for it, is accomplished by a mix of institutions including markets for goods and services, as well as bond and equity markets and financial institutions. Although some periods of excess capacity may signal the transition of an industry to a new technology or new demand conditions, the presence of persistent excess capacity may also be an indication that some part of this system of coordinating institutions has failed for a particular industry.

In general, coordinating mechanisms can be classified into three categories (markets, cooperatives, and integration), which refer to the type of transaction whereby the task of coordinating the actions of economic agents is accomplished. The value of this categorization is that it can assist the economist in diagnosing the sources of coordination failures, as well as the factors contributing to effective coordination of investments. The investment of farm supply cooperatives in capacity to produce and distribute far more fertilizer than is demanded by farmers (resulting in either higher prices than necessary or lower or even negative patronage dividends to cover the investment error) is an example of a coordination failure.

Investment coordination has both a vertical and a horizontal dimension. Vertical coordination takes place with respect to complementary investments, i.e., it determines whether the investments of an input industry are sufficient to allow firms in the next stage of the vertical production sequence to expand output as needed. Horizontal coordination takes place with respect to competitive investments in the same industry. The main focus of this research is on the horizontal coordination of investments, although the BCs are important in both.

The process of investment by firms in productive capacity is a particularly difficult coordination problem. It takes place in an environment of pervasive uncertainty. This uncertainty derives not only from the inability of the firm to predict events which will affect future demand (primary uncertainty), but also from its inability to predict the investments that will be undertaken by rival firms in the industry (secondary uncertainty). The degree of secondary or "game-theoretic uncertainty" is a function of the way in which the economic system is organized. The degree of game-theoretic uncertainty that a firm faces when undertaking an investment may be greater or lesser, depending on the effectiveness of the mix of coordinating institutions guiding the investment decision. The problem of investment coordination requires that the game-theoretic uncertainty imposed on one firm by another firm's actions be minimized. Since game-theoretic uncertainty is a function of how the economy is organized, it can only be reduced by appropriate mechanisms for influencing or at least signalling the investment plans of competing firms.

According to neoclassical economic theory, the prices that result from perfectly competitive markets are the ideal mechanism for allocating resources. However, critiques of neoclassical theory have centered on the inability of markets to allocate investment opportunities (Richardson). If demand for a good increases, prices rise, and many firms rush to expand capacity, some institution is needed to determine at what point the expansion of capacity should stop in order to avoid the waste of resources involved in unnecessary investments and subsequent bankruptcies. Because of game-theoretic uncertainty, a competitive system does not convey the appropriate information to effectively deal with the investment coordination problem.

Game theory has been used to model the coordination of investments by firms competing in an industry. (See, for example, Porter and Spence; and Farrell). The capacity expansion process of an industry can be modelled as a noncooperative coordination game, in which the players (firms) cannot communicate with one another or make binding commitments to behave in a certain way. The payoff structure of this type of game is such that they can only achieve the highest payoffs if they act in concert. The intellectual process of a player in a coordination game involves more than just predicting what other players will do. Tacit coordination involves predicting what they will predict about what you will predict they will do, etc. Complicating this process of coordination for common gain is the fact that there is rivalry among alternative common courses of action. In the capacity expansion process of an industry, competing firms do not communicate

investment plans to one another, each seeking to preempt its rivals' investments. If many firms respond to a general profit opportunity by rushing to expand capacity, overinvestment (and an unstable dynamic equilibrium) may result.

In game theory, the only solution concept for a noncooperative game is the Nash equilibrium, at which each player's strategy is the best response he could make to the strategies chosen by each of his opponents. However, a game may have more than one equilibrium. When multiple Nash equilibria are possible, it is difficult to predict which equilibrium will result based only on a formal description of the game. Schelling argues that it is possible to predict the outcome of games of tacit coordination only if you have some understanding of the context of the game and the likely expectations of participants. He believes that players will settle on a Nash equilibrium that has some kind of salience or conspicuousness for the persons playing the game. Such solutions are called "focal points." An example of a focal point solution to an investment coordination problem would be for all the firms in an industry to expand enough to maintain historical market shares in an expanded market.

Economic information plays a vital role in the creation of expectations of how other firms in a market will act. If all the firms in an industry obtain information about future demand prospects and rivals' investment plans from common sources, their expectations may converge on a common equilibrium. Common information sources often include the pool of prospective customers, the capital markets, public statements by industry participants, and actual decisions to commit resources.

Capital markets play an extremely important role in the creation of expectations. Security analysts develop predictions of future demand that are published and widely read by the firms in an industry, contributing to a common set of expectations. However, because there is no secondary market for cooperative stock, the cooperative segment of agribusiness industries is lacking an important source of information for tacitly coordinating investment decisions. This study hypothesizes that the BCs substitute for the missing stock market signals by using "inside" information gained from some borrowers to guide the investment decisions of others.

According to Schelling, in recurrent coordination games, players have an incentive to create institutions or rules to render the behavior of their cohorts more predictable. A particular type of institution for resolving coordination problems is a mediator. A mediator has the capacity to absorb and analyze huge amounts of complex information in a way that could not be handled by pre-specified rules. As a source of credit for new investments, banks have a central role as mediators in the capacity expansion process. By interacting with investors who are prohibited by legal or competitive considerations from interacting with each other, bankers may filter information and use it to make lending decisions that lead to a stable expansion of industry capacity. A mediator may be converted into an arbitrator if the players irrevocably surrender authority to him to make binding decisions. A bank may become a *de facto* arbitrator with the power to coordinate investments when a large number of the firms in an expanding industry have few alternative sources of financing.

A primary role of financial institutions in all economies is to serve as screening agents for the allocation of credit. Banking systems and financial (bond and equity) markets interact to determine which firms gain access to financing in order to undertake investments. The organization of a banking system may facilitate information flows which aid banks in their investment coordination role. In Japan and Germany, for example, banks have large shareholdings in the major commercial and industrial firms, as well as interlocking directorates, which enable the banks to exert considerable influence over the investment decisions of their borrowers. Banks provide the majority of financing to industry, and stock markets are relatively weak. In the United States, in contrast, legal barriers exist which prevent banks from owning the stock of their borrowers, strengthening the role of the stock market as a source of discipline on the investment decisions of firms. In general, countries which allow banks liberal powers tend to have weaker stock and bond markets, and those which restrict bank powers tend to have stronger stock and bond markets.

Interesting parallels can be drawn between the banking systems of Japan and Germany and the cooperative sector of the U.S. The signals of the stock market, a common source of discipline and convergent expectations for investor-owned firms, are missing for cooperatives as no secondary market exists for the stock of patron-owned firms. Therefore, this study hypothesizes that the role of the Banks for Cooperatives in monitoring and influencing their borrowers' decisions is enhanced.

Research Methods

Information on issues relevant to investment coordination was gathered from surveys of both borrowers and lenders. The survey of potential borrowers was a mail survey, and the survey of lenders was a series of face-to-face interviews with senior credit officers at each of the BCs.

A census of cooperatives eligible to borrow from the BCs was undertaken, targeting the largest cooperatives in the country, which had sales ranging from \$30 million in 1990 to almost \$4 billion. The total response rate for the survey was 61.4 percent, or 178 firms responding out of 290 in the survey population.

The 290 firms in the survey population are very representative of the U.S. cooperative sector as a whole and account for the majority of cooperative sales. Respondents reported levels of borrowing from the BCs that ranged from nothing to \$400 million. The mean level of borrowing was \$21.6 million. Table 1 shows the breakdown of respondents by commodity group. The largest category is farm supply cooperatives, comprising 20.8 percent of all respondents.

Table 1. Breakdown of Respondents by Commodity Group

How would you classify your cooperative by commodity group? (Choose one)		
Response	Frequency	Percent ^a
Fruits/Vegetables	27	15.2
Farm Supply	37	20.8
Dairy	34	19.1
Grain	27	15.2
Sugar	6	3.4
Rice	2	1.1
Cotton	8	4.5
Poultry/Livestock	10	5.6
Farm Supply and Grain ^b	20	11.2
Other ^c	7	3.9

^a Percentages based on 178 valid cases (i.e., no missing values).

^b A separate category was added for the cooperatives that reported their business was evenly divided between farm supply and grain.

^c The category "other" includes: seed marketing, honey, petroleum, catfish and dry beans.

In addition to the survey of potential borrowers, senior representatives of the credit staff were interviewed at CoBank, the St. Paul BC and the Springfield BC. These people were generally

at the senior vice president level in their respective banks and were in charge of credit decision making. They were identified by other BC officials as those playing a key role in loan decision making or the setting of loan policies.

A total of nine BC credit officers were interviewed, including the senior credit officers in each of the three banks. They were initially approached for the interviews with a letter describing the research project and requesting an interview. This was followed up with telephone calls to make arrangements for meeting. Each person was interviewed individually, with the exception of two people at the St. Paul Bank, who requested a joint interview. The meetings with officials at CoBank and the St. Paul BC lasted approximately one hour, and were taped. The interview with a representative of the Springfield BC was conducted over the telephone, and was not taped.

Research Findings

Research findings in each of three areas are discussed below. The survey of cooperatives elicited information in two key areas: the investment decision making practices of cooperative firms, and the decision of cooperatives to obtain financing from a BC as opposed to an alternative credit source. The survey of lenders sought information to evaluate the effectiveness of the BCs in coordinating investments.

Investment Decision Making by Cooperative Firms

The survey of cooperatives disclosed that considerable excess capacity exists in many parts of the cooperative system, particularly in grain storage, feed manufacturing, fertilizer mixing and application, farm input retailing, and many other lines of business. Over a fourth of the respondents which are engaged in the assembly and handling of member products, a traditional economic role for cooperatives, were operating at less than half of their capacity. (See Table 2).

Table 2. Number and Percent of Firms Utilizing 50 Percent of Capacity or Less, by Enterprise

Line of Business	Number of Firms	Percent of Firms in that Line of Business
Retailing of Farm Inputs	5	6.3
Manufacturing of Farm Inputs	8	20.0
Assembly and Handling of Member Products	19	25.3
Processing of Member Products	9	12.7
Other ^a	7	63.6

^a "Other" includes: bulk petroleum distribution, petroleum retailing, regional wholesale farm supply, and warehousing.

Excess capacity appears to be widespread across many industries. To circumvent the thorny problem of defining when capacity is "excess" for different industries, the assumption was made that those involved would know it when they see it. Cooperative managers were simply asked to report whether they were suffering from problems of excess capacity in any of their lines of business. Excess capacity was most often reported by grain, farm supply, rice, and fruit and vegetable cooperatives. (See Table 3).

Table 3. Cooperatives with Excess Capacity, by Commodity Group

Are you suffering from serious problems of excess capacity in any of your lines of business?	
Commodity Group	Percent Reporting Excess Capacity
Fruits/Vegetables	40.7
Farm Supply	38.9
Grain	63.0
Farm Supply and Grain	50.0
Dairy	27.3
Sugar	33.3
Rice	50.0
Cotton	0
Poultry/Livestock	30.0
Other	14.3

Although the excess capacity in the cooperative system appears to be extensive, this study made no attempt to diagnose its causes, which undoubtedly vary from one industry to the next, or the role the BCs may have played in contributing to excess capacity in particular industries. This can only be done effectively in detailed case studies of individual industries. However, the research did explore a number of barriers to investment coordination which are unique to agribusiness industries, the cooperative form of business organization, and the attitudes of typical cooperative members and directors.

First, the structural characteristics of agribusiness industries often make investment planning difficult. Farmer-owned cooperatives have traditionally participated in low value-added commodity industries adjacent to farming, which means that they often face highly volatile markets for their inputs and outputs. As one seasoned agribusiness lender commented,

Agribusiness is so dynamic that you can't attempt to see what is coming next. When you are making major capital expenditure decisions, it is simply not possible to foresee accurately what government policies will be, what export markets will be like, and so forth. Instead, you just prepare for anything.

The firms in these industries are primarily commodity businesses in low value-added and low differentiation markets, facing unstable demand and prices. They have little brand differentiation to insulate them from the effects of competitors' investment decisions. Many of these firms face significant barriers to exit. For example, it is not easy to sell a grain elevator when the local market will no longer support it. Because cooperatives are closely tied to farm production, their markets often have a strong spatial dimension. Therefore, coordination of investments takes on added importance as an efficient distribution system is needed to transport bulky commodities in a cost-effective manner.

Second, several characteristics of cooperatively owned firms complicate the investment planning process. The stockholders of cooperatives are the major patrons, the return on investment is gained through patronage of the firm, and the firm is under democratic control.

These characteristics of cooperatives have many implications for investment coordination, particularly in the areas of investment strategy, access to different types of financing, and governance of investment decisions (Staatz, 1984, 1987).

Farmer-owned cooperatives pursue investment strategies that are often quite different from investor-owned firms in the same industries. There is a strong complementarity between investments at the farm level and those undertaken by cooperatives. Often the cooperative and members' farms are run as fairly integrated operations, rather than as completely separate profit centers. In addition, it is a common belief among cooperative managers that an important role for marketing cooperatives is to provide a marketing outlet for members' production, which may lead to a bias towards overinvestment by cooperatives if excess capacity exists at the farm level. The stockholder/patron identity results in a horizon problem for some cooperatives, in which older members may not want the cooperative to expand since they will not be around to reap the benefits of the investment. This can create difficulties for these firms in raising new equity capital for financing an investment. In addition, the democratic governance structure sometimes complicates the investment decision-making process, although most cooperatives do not feel the ownership structure of their firm greatly inhibits their ability to respond to investment opportunities. For the majority of cooperatives, management and the board take the lead in analyzing investments, with very little direct member involvement. Thus, management attitudes are of primary importance in matching industry capacity and demand.

A third factor impacting on investment coordination is the attitudes and selective perceptions of cooperative members, directors and managers. Many cooperative members believe that competition among cooperatives is desirable and maintain membership in more than one cooperative, leading to redundant capacity from the point of view of the cooperative system as a whole. The majority of cooperative managers believe that large-scale preemptive capacity expansion is an appropriate strategy. Even though the majority of survey respondents had experienced competitors using such a strategy, few had reconsidered or abandoned expansion plans in response to a rival firm's preemptive strategy. When analyzing investments, most cooperative managers consider their competitors' expansion plans to some extent, relying mainly on customers for information about the capacity of their rivals as well as market growth. This common information source may contribute to convergent expectations among competing firms and contribute to a stable expansion of capacity.

Cooperative managers in general seem to be fairly unsophisticated in their use of financial analysis techniques in feasibility studies for major expansion projects, although the larger cooperatives exhibit a greater degree of financial sophistication. Often cooperatives ignore the cost of equity capital (which is difficult to estimate for a patron-owned firm) and simply use the cost of debt as the discount rate when analyzing the feasibility of a proposed expansion, which has the effect of making projects appear more profitable than they may in fact be. This bias may contribute to overexpansion in cooperative-dominated industries.

Cooperative managers' own analysis of their failed investments, as well as their failure to invest when opportunities were available, reveals that their selective perceptions may have a large impact on industry-wide investment coordination. They acknowledged that game-theoretic uncertainty contributed to the failure of some investments. Most firms that had experienced unprofitable investments blamed the failure on lower-than-anticipated demand, although more than a third of them said that expansion by rivals was a factor in the failure of their investments to turn a profit. The most commonly cited reason that cooperatives fail to invest when an opportunity is available was that management was unaware of the opportunity. This indicates that the differential responsiveness of management is an important factor in investment coordination. Denial of credit by lenders appears to be a much less important coordinating factor in the opinion of cooperative managers.

BC Market Share

In order for the BCs to play a large role in coordinating investments, they must first have a large share of the credit market for farmer cooperatives, and second, cooperatives must in turn have a large market share relative to investor-owned firms in the industries they participate in. If these two conditions are met, the BCs will have access to the investment plans of many firms in an industry. This creates the information base necessary for the banks to have an impact on investment coordination.

The survey of cooperatives eligible to borrow from the BCs, as well as interviews with the senior credit officers, revealed that the BCs' greatest potential for coordinating investments is with local (i.e., retail) grain and farm supply cooperatives. The BCs provide over 70 percent of the long-term debt financing used by grain and farm supply cooperatives, and these firms in turn account for a large share of their local markets. Table 4 presents a breakdown of the BC percentage of cooperatives' long-term debt by commodity group among the survey respondents. Other sources of long-term debt for cooperatives are presented in Table 5.

Table 4. Percent of Long-Term Debt Financing Obtained from the Banks for Cooperatives by Commodity Group

Commodity Group	Mean	Standard Deviation	Number of Firms
Fruits/Vegetables	52.9	43.9	24
Farm Supply	70.5	37.6	36
Dairy	40.1	42.2	32
Grain	70.0	38.9	21
Sugar	56.3	45.3	6
Rice	42.5	46.0	2
Cotton	64.3	47.6	7
Poultry/Livestock	46.1	41.9	8
Other	65.0	44.8	7
Farm Supply and Grain	73.4	31.5	19

When the BCs' share of long-term financing for the industry groups noted above is matched up with the cooperatives' share of product markets, a more complete picture of the BCs' coordinating potential emerges. (See Table 6). The BCs provided 70 percent of the long-term debt used by grain cooperatives, and they in turn accounted for 57 percent of wheat, 40 percent of feed grains, and 46 percent of soybeans marketed in the U.S. at the first-handler level. The banks provided about 70 percent of long-term debt to farm supply cooperatives, and they accounted for about a third of the market for farm inputs. Dairy cooperatives, which have a 68 percent market share, get 40.1 percent of their debt financing from the BCs, on average. However, these figures on cooperative market shares by industry may mask much higher or lower shares in particular local markets, which may be more important than industry shares for purposes of investment coordination.

Table 5. Sources of Long-Term Debt Financing to Cooperatives

Over the past five years, approximately what percent of your firm's long-term debt financing was obtained from each of the following sources?

Source	Mean Percent ^a	Standard Deviation	Minimum	Maximum
Banks for Cooperatives	59.6	41.2	0	100
Bonds, notes or debt certificates issued to members	4.1	13.9	0	100
Commercial Banks	14.9	31.6	0	100
Insurance Companies	4.2	15.4	0	95
Capital Lease Obligations	4.6	13.0	0	100
Industrial Development Revenue Bonds	2.6	8.7	0	53
Other ^b	4.6	19.1	0	100

^a Percentages based on 162 valid cases.

^b "Other" includes: contract purchases with the seller of the assets, government programs, and the National Cooperative Bank.

The BCs are clearly the dominant lenders to the cooperative sector in the United States. Not only do they provide more long-term debt financing to cooperatives than any other lender, they are looked to by cooperatives as an important source of financial and management advice. They are well-positioned to influence the investments of their borrowers in an effort to avoid excess capacity. Whether they actually do so is addressed in the next section.

Effectiveness of BCs in Coordinating Investments

In the terminology of systems science, a stable dynamic equilibrium is only possible in a closed system, that is, one that is free of influences from the environment outside the system. By analogy, if the Banks for Cooperatives provided all of the credit to the cooperatives in an industry, and those cooperatives faced no competition from investor-owned firms, the BCs would be able to control the flow of credit into the industry, simply turning off the tap when investments in capacity are fairly well-matched with demand. In the real world, however, such control by a single institution is not possible (and, many would argue, not desirable). Cooperatives do not have a 100 percent market share in any industry, and the Banks for Cooperatives do not supply 100 percent of the credit used by cooperatives. Therefore, "control" becomes "influence." In the absence of a stock market-based coordinating mechanism, the BCs do have considerable influence on the capacity expansion decisions of their borrowers. This section explores the factors which contribute to and detract from the banks' ability to influence the match of industry capacity and long-run demand. The information presented is based on interviews with senior members of the credit staff at each of the BCs.

The BCs seem to be effectively organized to make good use of available information in their credit decisions. All three banks have electronic databases of borrower financial information which they are able to access in order to assess the financial performance of a borrower relative to its peers. These databases are unique to the BCs among agribusiness lenders and are made economically feasible only by the concentration of the banks' loan portfolios in these industries.

Reliable information on the cooperative portion of many agribusiness industries exists only by virtue of it being gathered by the BCs from their borrowers for use in credit decisions.

Table 6. Market Share of Cooperatives

Commodity	Cooperative Market Share
<i>Marketing Cooperatives</i>	
Milk	68
Broilers	12
Eggs	2
Turkeys	18
Hogs	17
Fed Beef	10
Wheat	57
Rice	59
Feed Grains	40
Soybeans	46
Cotton	30
Fresh Vegetables	7
Processing Vegetables	20
Citrus Fruits	67
Other Processing Fruit	65
Other Fresh Fruit	40
<i>Farm Supply</i>	
Feed	16
Fertilizer	44
Petroleum	44
Chemicals	29
Seed	15
Machinery	2

Sources: Knutson, Penn and Boehm.

In many cases, the BCs have used information from their borrower databases to facilitate a more effective match between capacity and demand in particular markets. For example, the St. Paul BC was able to influence the consolidation of grain cooperatives into more economically viable units which optimized storage capacity and access to rail lines on a system-wide basis. In addition, by facilitating mergers to rationalize duplicative capacity in mature industries, the BCs have enabled

many cooperatives to adjust to changing economic conditions in a less costly manner than through bankruptcy.

There are two broad factors which facilitate the coordination of investments by the BCs: their market share and the closeness of their relationships with their borrowers.

The most important factor facilitating investment coordination is the BCs' share of the cooperative credit market. BC officials reported that their greatest market share, and thus their greatest potential for coordinating investments, is with local grain and farm supply cooperatives. They subjectively estimated their market share among these firms to be about 80 percent, only slightly higher than the figure obtained in the survey of the 290 largest cooperatives (see Table 4).

Maintaining lending relationships with a large number of the firms in an industry enables the BCs to construct a database useful for analyzing various ways to optimize investments in productive capacity. During the period in which the former St. Louis BC actively encouraged its borrowers to consolidate (1984-86), it was lending to about 175 local farm supply and grain cooperatives across three states. All of the locals were being audited by the same firm (the Illinois Agricultural Auditing Association). A former loan officer with the St. Louis BC reported that it was exceedingly easy to set up a database of borrower financial information because, for the most part, these firms were in the same type of business and were audited by the same firm using the same reporting format to provide comparable information for each cooperative. He commented that once the database was established, the BC functioned in many ways like the finance department of a large firm with many locations. This financial coordination role was not adopted by the regional grain and farm supply cooperatives because they were dominated by people with marketing backgrounds who were more concerned with pushing the regional's products through the local outlets than with optimizing investments in the system as a whole.

The closeness of relationships between the BC credit staff and their borrowers also gives the BCs greater influence over borrowers' decisions. Loyalty contributes to the BCs' coordinating ability. When loyalty to the BC is strong, loan officers have greater latitude to influence borrowers without worrying that they will alienate them and lose their business. Many borrowers reported that they only borrow from a BC and do not even "shop around" when seeking credit.

The BCs are somewhat unique in their relationship orientation to banking, which has both positive and negative aspects. While other lenders to agribusiness may gain or lose customers fairly often based on the deals they are able to offer prospective borrowers, most of the BCs' borrowers are long-term customers with close personal relationships with the BC credit staff. A former BC loan officer who later worked for a major international agribusiness lender commented, "A lot of banks talk about 'relationship banking' and think they do business that way, but the BCs really do it." Another loan officer noted that BC lending differs from commercial bank lending in that BC loan officers are "more maternal" and do a lot more "hand-holding" with their borrowers. With regard to investment coordination, a potential negative aspect of the close relationship is that the borrowers as owners may also pressure the banks to make loans they might not otherwise have made.

Although the BCs have been successful in coordinating investments in some areas, they have been less successful in others. A variety of forces, including competition from other lenders, conflicting pressure from other sources of discipline on cooperatives, the banks' concern with lender liability issues, and the cooperative nature of BC ownership, have limited the banks' influence over their borrowers' investment decisions.

Competition from other lenders is keenest for the business of large, financially successful cooperatives. These firms are courted by a wide variety of lending organizations, both international and domestic, and are more price-sensitive and likely to shop around than smaller customers. The BCs face much less competition for the business of smaller cooperatives, many of whom have

outgrown the capacity of local banks to serve their needs. They have much greater influence over the decisions of these firms than the larger ones with greater access to alternative sources of financing.

The BCs are but one of many sources of discipline on cooperatives. Regional cooperatives, other lenders, members, and competing firms influence investment decisions and may be motivated toward different ends than the BCs, reducing their ability to coordinate investments.

In some cases, particularly those involving stressed borrowers, BC management may be reluctant to exert a strong influence on borrowers' decisions for fear of being held liable if the borrower experiences losses and the bank is perceived as participating too closely in the management of the firm.

The cooperative structure of BC ownership also places some limits on the extent to which BC management tries to influence borrowers' decisions. Because the borrowers own the banks, there may be a reluctance on the part of BC management to actively influence certain borrowers, particularly the larger ones. Because a few very large cooperatives make up a disproportionately large share of the BCs' loan portfolios, BC officials are less likely to influence their decisions, although many of these borrowers mentioned that they view the BCs as an important source of advice and information.

The financial status of the borrower also affects whether or not a BC will make a loan to expand capacity when they have doubts about the success of the venture. As long as a borrower has the financial depth to repay a loan even if the venture proves to be unprofitable, the BC will probably make the loan. A senior credit official at CoBank commented,

I think we have some influence, but does that mean this plant gets built even though it shouldn't be? Yes, it does. Because if the borrower has the ability to finance it, and we are comfortable that we'll get repaid, the plant gets built. We'll certainly encourage dialogue and communication to the extent that we don't violate confidentiality and those types of things, but in the end, the borrower gets to make the investment decision. That's not a decision we make. The issue really becomes one of "Does it impact our ability to get repaid?" If we have doubts about that, we're going to have a major say in it because we don't think it's feasible.

In this regard, the behavior of the BCs is much like that of any other bank: getting their money back is the bottom line.

Conclusions and Policy Implications

This study addressed three separate but related questions: 1) Can the BCs coordinate investments? 2) Do the BCs coordinate investments? and 3) Should the BCs coordinate investments?

The banks can coordinate investments in some industries, mostly where they have a large share of the cooperative credit market, and where that market consists mostly of a large number of smaller firms which, when combined, account for a large portion of the industry. These conditions characterize first handling of grain and farm supply retailing at the local level. The banks have much less influence on larger borrowers, such as Sunkist or Ocean Spray.

Although the BCs can coordinate investments in some industries, whether they do so when possible is another story. BC officials revealed in interviews that they do attempt to coordinate investments, but they do it mostly through "moral suasion" rather than denial of credit. However, they also stressed that there are many factors which limit their ability to influence their borrowers'

investment decisions. They are often unwilling to take a very proactive role in encouraging mergers or joint ventures or in discouraging certain investments, in part because they do not feel it is the appropriate role of bankers, and in part because they fear alienating the borrowers/owners.

There is a fear among bankers of being held liable for borrower losses if they intervene too closely in the management of a borrower, as well as losing the priority of their claims in any bankruptcy proceedings. This leads them to be cautious about trying to influence borrower investment decisions. Also, they sometimes face confidentiality problems in using inside information. Although the courts have ruled that banks are free to use internally, for example in credit decisions (Brick), any information obtained from borrower accounts, they are careful not to disclose information about one borrower to another.

When asked what they would do if two competing, long-term borrowers requested financing for similar projects when the market would only support one of them, BC credit officials responded that, first of all, they would never disclose proprietary information of one borrower to another. If both cooperatives were committed to the project and had the necessary financial strength, they would both get loans. However, if each knew of the other's plans, BC officials might discuss the possibility of a joint venture with them:

If we knew in fact that both knew that they were going after the same market with basically the same expansion program, then we would not in that instance be

reserved about saying, "Maybe you all ought to be talking about how you'll work that out, otherwise you're going to beat each other's brains out in the marketplace."

Even in instances when the banks are in a position to influence borrowers' decisions to prevent overinvestment, whether they should or not is debatable. The existence of excess capacity in many parts of the cooperative sector suggests that the BCs do have a role to play in encouraging mergers to rationalize excess capacity and trying to prevent investments that would lead to excess capacity from being undertaken. The lack of a secondary market for cooperative stock also points to the appropriateness of a more interventionist role for the BCs.

Although cooperatives as a group could benefit from more active investment coordination by the BCs, the majority of those responding to the survey (57.9 percent) do not feel that the BCs should be more active than any other lender in trying to coordinate investments. Many cooperatives, failing to recognize their interdependence with others in the same line of business, view any attempts by the BCs to influence their decisions as undue interference. Those who do not want the BCs to actively coordinate investments cited the banks' lack of industry expertise as a primary reason for their opinions. While they generally welcome advice from the BCs, cooperative managers also feared losing autonomy in decision making if the banks were to more actively intervene. Cooperative managers who favored investment coordination by the BCs tended to focus on the interdependence of cooperatives, both as industry participants and as shareholders of a commonly owned bank.

Many in the cooperative system have recognized a need for some kind of system-wide coordinating institution. In 1987, the Senate Agricultural Appropriations Subcommittee directed the Agricultural Cooperative Service to conduct a study on what cooperatives need to do to remain viable businesses. ACS enlisted the expertise of a wide range of cooperative leaders in identifying and analyzing strategies for helping cooperatives face future challenges (ACS).

One need identified in this report was for an institution to coordinate the resources of the existing cooperative system to allow it to compete more effectively with the extremely large and complex firms that dominate much of the food and fiber sector. The broad cooperative system designs they considered included: 1) a "National Cooperative System" involving complete horizontal integration of cooperative involvement in a given commodity, coupled with vertical

integration to move the product from farm to end-user in cooperative hands; 2) a "Cooperative Trading Bloc" approach, which would organize cooperatives into geographically defined blocs dealing with all commodities and inputs common to a specific region; and 3) a "Holding Company or Cooperative Umbrella" approach, allowing cooperatives to centralize under a holding company certain functions, such as accounting and financial management, that have significant economies of scale.

In considering schemes for improving coordination among cooperatives and promoting the position of the cooperative system as a whole vis-a-vis investor-owned competitors, cooperative leaders completely ignored the existing role and potential contributions of the Banks for Cooperatives. This study provides some analysis of how an existing set of institutions might and does coordinate the activities of hundreds of cooperatively owned firms.

Given the lack of a secondary market for cooperative stock, the BCs assume a role of critical importance in coordinating the investments of the cooperative sector. Although they do perform a coordinating function, there are actions that could be taken to augment their coordination role. These include demanding of their borrowers more rigorous analysis of proposed investment projects, devoting more resources to gathering information to be used in credit analysis, and taking a more proactive stance in identifying and encouraging mergers or joint ventures among borrowers where they make economic sense.

What will happen to the BCs if no actions are taken to augment their coordinating role? There is clearly excess capacity in many parts of the U.S. banking industry, a situation that is likely to continue over the next several years. Until the industry consolidates, competition among lenders will continue to be fierce, with different lenders seeking specialized market niches (Duncan, 1992). The credit staff of the Banks for Cooperatives, however, expects that the BCs will stay viable into the future. They cite several reasons for the banks' expected continued success.

They anticipate being able to fill the market niche comprised of cooperatives partly because of their relationship orientation to banking. Most of their borrowers are long-term customers with strong personal relationships with the BC credit staff. Moreover, BC officials anticipate being able to continue their industry specialization, which allows them to offer meaningful advice to their borrowers. They perceive this advice to be of primary importance to their ability to maintain sound long-term relationships with their customers. Moreover, they feel that the vast majority of their customers have a sense of ownership toward the BCs, which adds to their loyalty.

However, the long-term survival of the BCs is directly dependent on the long-term survival of their borrowers. BC officials reported that, for the most part, cooperatives have weathered the financial difficulties they faced in the 1980s. Many have rid themselves of excess capacity through mergers and joint ventures (although more remains to be done in some areas), and have improved decision making, becoming more sophisticated and market-oriented. Because cooperatives and the BCs are dependent on each other for their survival, the BCs have played a key role in their borrowers' adjustments to changing economic conditions. One lender, however, remarked that it is hard to kill a cooperative, given their advantages in sourcing inputs, taxation, and financing. As long as the BCs continue to advise cooperatives in such a way to keep them competitive and maintain their market share relative to their investor-owned competitors, and especially if government policy remains favorable toward cooperatives, the banks will continue to exist and be profitable into the future.

References

- Agricultural Cooperative Service. 1987. "Positioning Farmer Cooperatives for the Future: A Report to Congress." USDA: Agricultural Cooperative Service.
- Brick, J.R. 1984. "Commercial Banking: Text and Readings." Haslett, MI: Systems Publications.
- Chambonnet, C. and L.F. Schrader. 1988. "Optimum Organization of Local Cooperative Grain and Fertilizer Operations: A Research Approach." Agricultural Experiment Station, Purdue University, Station Bulletin No. 535.
- Cobia, D.W., W.W. Wilson, S.P. Gunn, and R.C. Coon. 1986. "Pricing Systems of Trainloading Country Elevator Cooperatives." Agricultural Economics Report No. 214, Fargo, ND: North Dakota State University.
- Davidson, D.R. and M.D. Kane. 1988. "Top 100 Cooperatives, 1986 Financial Profile." Agricultural Cooperative Service Research Report No. 71.
- Dillman, D.A. 1978. "Mail and Telephone Surveys: The Total Design Method." Wiley-Interscience.
- Duncan, M. "Agricultural Lending Into the Twenty-first Century." Presentation for the National Agricultural Credit Committee, Federal Reserve Bank of Chicago, September 21, 1992.
- Erickson, W.H. 1989. "An Analysis of Cost Allocation and Loan Pricing in the Banks for Cooperatives." Unpublished Masters Thesis, Michigan State University.
- Farrell, J. 1987. "Cheap Talk, Coordination, and Entry." *Rand Journal of Economics*. 18:34-39.
- Geis, L.M. 1993. "The Role of the Banks for Cooperatives in Coordinating Investments in Industry Capacity." Unpublished Ph.D. dissertation. Michigan State University.
- Gunn, S. and D. Cobia. "Country Elevators Make Plans for Survival Without Government Storage Income." *Feedstuffs*, May 29, 1989, pp. 16-17.
- Knutson, R.D., J.B. Penn, and W.T. Boehm. 1983. "Agricultural and Food Policy." Englewood Cliffs, NJ: Prentice-Hall, Inc., p. 246.
- National Society of Accountants for Cooperatives. "Crisis or Opportunity? What Must Agricultural Cooperatives Do to Survive in the 1990s?" *Cooperative Accountant*, 38:(1985)7-19.
- Porter, M.E. and A.M. Spence. 1982. "The Capacity Expansion Process in a Growing Oligopoly: The Case of Corn Wet Milling." John J. McCall (ed.). *Economics of Information and Uncertainty*. Chicago: University of Chicago Press.
- Richardson, G.B. 1960. "Information and Investment: A Study in the Working of the Competitive Economy." London: Oxford University Press.
- Schelling, T. 1960. "The Strategy of Conflict." New York: Oxford University Press.
- Shaffer, J.D. 1987. "Thinking About Farmers' Cooperatives, Contracts, and Economic Coordination." *Cooperative Theory: New Approaches*. Agricultural Cooperative Service Report No. 18.

- Shaffer, J.D. and J.M. Staats. 1986. "Potential Coordination Functions of Farmer Cooperatives." *Farmer Cooperatives for the Future*. NCR-140 Research on Cooperatives and Extension Committee on Organization and Policy.
- Staatz, J.M. 1984. "A Theoretical Perspective on the Behavior of Farmers' Cooperatives." Ph.D. dissertation, Michigan State University.
- _____. 1987. "The Structural Characteristics of Farmer Cooperatives and Their Behavioral Consequences." *Cooperative Theory: New Approaches*, ACS Service Report No. 18.
- Taylor, W.J. and L.L. Vogler. 1990. "An Analysis of Consolidation for the Farm Supply Sector." *Journal of Agricultural Cooperation*, pp. 36-44.
- Van Dyne, D.L. 1988. "A Method of Optimizing Feed and Fertilizer Service With Existing Production and Distribution Facilities." Agricultural Economics Working Paper 1988-13, Columbia, MO: University of Missouri.
- Van Dyne, D.L. and V.J. Rhodes. 1988. "The Costs to Farmers of Competition Among Local Cooperatives and Other Farm Supply Firms." Agricultural Economics Working Paper 1988-9, Columbia, MO: University of Missouri.

