Agricultural Economics Report No. 366 **October 1996**

AGRICULTURAL LOAN OFFICERS' ROLES IN COOPERATIVE INVESTMENT IN NORTH DAKOTA

Brooks M. Wilson, Gary A. Goreham, Theron Kibbe, and David W. Cobia

Department of Agricultural Economics
North Dakota State University
Fargo, North Dakota 58105

AGRICULTURAL LOAN OFFICERS' ROLES IN COOPERATIVE INVESTMENT IN NORTH DAKOTA

Brooks M. Wilson, Gary A. Goreham, Theron Kibbe, and David W. Cobia

Department of Agricultural Economics
North Dakota State University
Fargo, ND 58105-5636

Information on other titles in this series may be obtained from: Department of Agricultural Economics, North Dakota State University, P.O. Box 5636, Fargo, ND 58105. Telephone: 701-231-7441, Fax: 701-231-7400, or e-mail: cjensen@ndsuext.nodak.edu.

ACKNOWLEDGMENTS

The Cooperative Marketing Division, United States Department of Agriculture funded this research project. Thomas Stafford of that office provided helpful guidance as the USDA liaison to this project through research agreement 43-3J31-4-0017. We received insights from many sources regarding survey design, data, and reporting. In particular, we thank the loan officers who participated in the design and pretesting of the survey. We also appreciate the valuable assistance provided by Lee Esteson of the St. Paul Bank for Cooperatives, and Marilyn Foss and James Laidlaw at the North Dakota State Department of Banking. Finally, we appreciate our colleagues and staff in the Department of Agricultural Economics and the Department of Sociology/Anthropology, North Dakota State University for their reviews and assistance in preparing this report. In particular, we thank Frayne Olson and Sanjib Bhuyan for many contributions throughout the research project, and Marvin Duncan, David Saxowsky, and Cole Gustafson for thoughtful reviews of earlier drafts of the paper.

TABLE OF CONTENTS

LIST OF TABLES

Table **Page**

LIST OF TABLES (Cont'd.)

Table **Page**

LIST OF APPENDIX TABLES

Table **Page**

LIST OF FIGURES

HIGHLIGHTS

The objective of this paper is to explain what factors influenced agricultural loan officers to make or not to make loans to farmers investing in new agricultural cooperatives. The factors considered are the characteristics of the financial institutions, the loan policies of the institutions, the lending practices of loan officers, the attitudes of loan officers toward cooperatives, and demographic characteristics of loan officers.

We conducted two surveys of the 388 agricultural loan officers and the 215 loan supervisors in North Dakota to generate the information needed in the evaluation. They were asked to complete and return questionnaires that we had mailed to them. To assure a good response rate, we made as many as three additional contacts with persons who had not returned the questionnaires. We used the crosstabulation technique to measure the relationship between the factors and the decision to make or not to make a cooperative stock loan. Following are the highlights of the paper.

- The Farm Credit Services dominated lending to farmers investing in cooperative stock. They held a larger percentage of cooperative stock loans than their market presence in agricultural lending would suggest. Despite holding only 26% of agricultural loans the FCS held approximately 64% of the value of stock loans.

- Institutions with more than $100 million in assets were more likely to have made cooperative stock loans than institutions less than $100 million in assets.

- Institutions with less than 7% capital were more likely to have made cooperative stock loans than institutions with 7% to 10% capital or more. Moderately capitalized institutions were more likely to have made stock loans than highly capitalized institutions. The results only held for the most profitable institutions, and those with low, or moderate levels of non-current loans.

- Institutions which aggressively marketed cooperative stock loans by offering special terms or conditions, such as lower interest rates or deferred principal payments, were more likely to have made the loans than institutions offering loans under normal terms and conditions.

- Loan officers used conservative lending criteria that emphasized repayment from ongoing operations, not from the investment project. For example, 83% and 79% believed that the debt-equity position and the profitability of the farm enterprise were very important. Only 66% and 56% believed that the marketing plan of the proposed cooperative or its estimated return on investment were very important.

- Venture cooperatives may have an advantage over other venture agribusiness firms in raising funds form North Dakota financial institutions.

Loans to cooperative investors allow institutions to maintain conservative lending practices because they are smaller and spread over more investors than loans to other agribusiness investors.

Loan officers may have more trust in the organizers of new cooperative ventures. The trust is based on the knowledge that the organizers do not have a profit incentive to hide information about the cooperative from investors or loan officers.

- Loan officers with extensive experience in agricultural lending were more likely to have made cooperative stock loans.

  Those with more than 10 years of experience in agricultural lending were more likely to have made stock loans than those with less experience.

  Those who attended a cooperative information meeting or reviewed a business plan were more likely to have made stock loans than those who had not.

  Those who spent more than 60% of their time in agricultural lending were more likely to have made stock loans than those who spent less time.

- Attitudes about cooperatives were positive.

  The average loan officer believed that cooperatives generally met worthwhile economic and social objectives.

  Loan officers believed that farmers were more positive than they were about the ability of new cooperatives to achieve economic objectives.

  They were more confident than they believed farmers were about the ability of new cooperatives to help farmers network and increase their knowledge base.

  Although the average lender disagreed with most negative statements about cooperatives, a number felt that cooperatives benefited only the wealthy (34%), delivery contracts were too strict (19%), and required investments were too high (30%).

- Loan officers viewed new agricultural cooperatives as risky investments.

  On average, loan officers believed that cooperative investment is riskier than alternative investments in stock, mutual funds, bonds, certificates of deposit, land, and other farm enterprises.

  As stand alone investments, loan officers viewed cooperative stock as inferior to stock or mutual funds; the average loan officer believed that cooperative stock pays a lower rate of return and incurs greater risk.

The average loan officer believed that investment in new agricultural cooperatives lowers marketing risk by a small amount.

- Loan officers' attitudes toward cooperatives and the project in question, either positive or negative, had little influence on the decision to approve loans.

AGRICULTURAL LOAN OFFICERS' ROLES IN COOPERATIVE INVESTMENT IN NORTH DAKOTA

Brooks M. Wilson, Gary A. Goreham, Theron Kibbe, and David W. Cobia

ABSTRACT

We surveyed agricultural loan officers and their supervisors in North Dakota to learn what factors influenced the decision to make loans to farmers investing in new agricultural cooperatives. We found that the Farm Credit Services and other large institutions made a disproportionately large share of the loans. Furthermore, institutions with minimal equity, but with low levels of non-current loans and a high return on equity, were more likely than others to make the loans. Experienced agricultural loan officers and those who attended a cooperative's information meeting or reviewed the business plan were more likely to make loans. Loan officers granted loans to applicants who met conservative lending criteria. The decision was not based on the loan officer's attitudes toward cooperatives. Attitudes of loan officers toward cooperatives were generally positive. Most negative attitudes were expressed about the price of the stock, and the delivery contracts required by the cooperatives. Finally, loan officers believed cooperative stock was a risky investment, inferior to stock and mutual funds as stand alone investments.

Keywords: cooperatives, cooperative stock loans, loan officers, financial institutions, North Dakota

AGRICULTURAL LOAN OFFICERS' ROLES IN COOPERATIVE INVESTMENT IN NORTH DAKOTA

Brooks M. Wilson, Gary A. Goreham, Theron Kibbe, and David W. Cobia

I. INTRODUCTION

In this paper, we report agricultural loan officers' attitudes toward new cooperative ventures, and the impact of these attitudes on their clientele: farmers seeking loans to fund investment in the ventures. We also report how the environment at financial institutions affects agricultural loan officers' decisions to grant cooperative stock loans. To understand how the factors and attitudes affected farmers, we statistically measured how they differ between institutions and between loan officers who made cooperative stock investments loans and those who did not.

Four cooperatives organized and financed by North Dakota farmers between 1991 and 1995 are the focus of our analysis. The new cooperatives were significant economic projects in their areas. Dakota Growers Pasta Company built a plant costing $40 million; North American Bison Cooperative built one costing $1.6 million; and Dakota Dairy Specialties Cooperative built another costing $1.5 million. These facilities were built in cities with populations of approximately 2,200, 1,600, and 900, respectively. Golden Growers and its two cooperative partners formed Pro-Gold Limited Liability Company, and are building a $263 million plant in a city with a population of approximately 8,800. Together, these cooperatives are expected to employ 465 (Rural Development Program Report: 1990-1995). Leistritz (1995) estimated that the secondary impact of the Pro-Gold plant would generate $251 million annually, and would create 2,700 jobs.

The farmers who started these cooperative ventures financed the organizational costs, construction or purchase of plant and equipment, and the permanent working capital needed to sustain operations. They provided between 35% and 55% of this capital by investing in the initial stock offering of the cooperative. The minimum required investment for these cooperatives ranged between $1,880 and $13,900, with the average investment exceeding $25,000. Farmers funded their investment by drawing down savings, increasing long-term debt through cooperative stock loans, increasing the balances on operating loans, or some combination of these three. Because farmers only need loan officer approval for cooperative stock loans, these loans are the heart of our study. Farmers funded the remaining 45% to 65% of new cooperatives' long-term financing needs indirectly by authorizing the cooperative to contract debt.

II. METHOD

We used two mail-out/mail-back questionnaires to collect information for this paper. The first questionnaire (Appendix B) targeted agricultural loan supervisors, and was designed to obtain information on the institutions' lending practices and policies and the demographic

characteristics of the supervisors. The second questionnaire (Appendix C) targeted agricultural loan officers and loan supervisors. It was designed to learn their lending practices, attitudes and demographic characteristics. To assure good rates of return we employed the Dillman Total Design method, which requires researchers to make as many as three additional contacts with persons who have not returned the questionnaires. The contacts occurred on a weekly basis and ended if the questionnaire was returned. The first two contacts were by mail, and the third by telephone.

First, we surveyed the 215 agricultural loan supervisors working at 161 banks, 25 credit unions, and 29 Farm Credit Services (FCS) in North Dakota. The North Dakota Bankers Association, state agencies, and FCS provided the names of the supervisors. Our overall return rate was 66%; the return rate was 65% for banks, 76% for credit unions, and 64% for FCS. The questionnaire included questions related to lending activity on cooperative stock loans, type of institution, lending policy, and personal characteristics of the supervisors. The data on financial performance for banks, credit unions, and FCS came from the *Fedgazette*, the North Dakota State Banking Department, and annual reports.

Next we surveyed the 388 agricultural loan officers and loan supervisors working at the same institutions. The loan supervisors were included in the second survey because they make agricultural loans as well as supervise loan officers. The North Dakota Bankers Association, state agencies, the FCS, and the loan supervisors provided the names of the loan officers. The overall return rate for loan officers was 69%; the return rate for banks was 67%, credit unions, 73%, and FCS, 74%. The questionnaire included questions related to lending activity on cooperative stock loans, lending practices, attitudes toward cooperatives, and demographic characteristics of the loan officers.

Response to questions and statements in the questionnaires provided the data for our variables. We statistically analyzed the differences in the variables between institutions or loan officers who made at least one loan of any amount between 1991 and 1995, and those who did not. Next, we grouped variables that are similar in subject, such as those related to financial performance, into five clusters. Large clusters were further divided into sets of similar variables. We present an outline of the clusters and their divisions into sets prior to describing them more fully.

I. Financial institutions
   - A. Financial condition
   - B. Institution type
   - C. Geographic location

II. Policy Regarding Loans
   - A. Loan policy
   - B. Approval mechanisms
   - C. Lending criteria

III. Lending practices

IV. Attitudes toward lending and cooperatives
   A. Assessment of farmers' investment acumen
   B. Objectives achieved by cooperatives
   C. Attitudes toward cooperatives
   D. Risk and return of cooperatives

V. Demographics

Statistical Techniques

We employed the crosstabulations technique to measure the relationship between the variable, whether or not a cooperative stock loan was made, and all other variables, as well as other possible relationships suggested by main results. The likelihood-ratio chi-square (χ^2) distribution calculated for the crosstabulations technique tested the statistical significance of the relationship between variables. The strength of the relationship increases as the chi-square value increases. We also report the p-statistic, a second method of describing the relationship between the variables. Those with a p-statistic of less than .01 are statistically significant at the 1% level and are strongly associated. Those with a p-statistic of between .01 and .05 are statistically significant at the 5% level and are associated. Finally, those with a p-statistic of .05 to .10 are statistically significant at the 10% level and are weakly associated.

III. RESULTS AND DISCUSSION

Financial Institutions

The financial condition or geographic location of an institution may affect, or, in extreme cases, dictate its ability and willingness to make loans to farmers investing in new agricultural cooperatives. To explore the impact of these factors, we created a cluster of three sets of variables (Tables 1 and 2). In broad terms, the first set contains six financial variables which measure profitability, risk, and asset management. The second and third sets divide the data into three institutional types and three regions. The institutional types are banks, FCS, and credit unions. These institutions are organized and regulated differently; these differences may affect lending. The regions are west, central, and east, and are based on the nine crop reporting regions (see the map contained in Figure 1).

Institutions that granted cooperative stock loans differed in institutional type, size, capitalization, and geographic location from those that did not. Although banks and credit

Table 1. Financial condition, institutional type, and geographic location variables of institutions making agricultural loans, North Dakota, 1995.

Variables	N	%
Financial condition[1]		
Total Assets in $ millions		
< $25	68	42
$25 to $100	78	48
> $100	17	10
Total	163	100
Capital as a % of total assets		
< 7%	8	5
7% to 10%	84	52
> 10%	70	43
Total	162	100
Ag loans as a % of total loans		
< 25	27	17
25 to 65	84	52
> 65	52	32
Total	163	100
Return on Equity		
< 8.0%	27	17
8.0 to 10.0%	47	29
> 10.0%	86	54
Total	160	100
Loan-to-deposit ratio		
< 65%	110	67
65% to 80%	26	16
> 80%	27	17
Total	163	100
Non-current loans to total loans ratio		
< 1%	107	65
1% to 4%	50	31
> 4%	6	4
Total	163	100
Geographic location		
Crop reporting regions		
West	36	31

Table 1. Cont'd.

Variables	N	%
Central	27	24
East	52	45
Total	115	100
Institutional type		
Institution		
Bank	93	79
FCS	4	3
Credit union	21	18
Total	118	100

[1] Financial variables exclude information from the farm credit services. Sources: Fedgazette, Annual Statements of the Farm Credit Services, North Dakota State Banking Department.

Table 2. Crosstabulation tests for financial condition, institutional type, and geographic location variables of institutions making agricultural loans, North Dakota, 1995.

	Made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Financial variables[1]						
Total assets in $ millions						
< $25	13	32	28	68		
$25 to $100	36	67	18	33		
> $100	7	78	2	22		
Total	56	54	48	46	14.06	0.00
Capital as a % of assets						
< 7%	5	71	2	29		
7% to 10%	36	61	23	39		
> 10%	15	40	23	60		
Total	56	54	48	46	5.29	0.07
Ag loans as a % of total loans						
< 25%	10	50	10	50		
25% to 65%	31	55	25	45		
> 65%	15	54	13	46		
Total	56	54	48	46	0.17	0.92
Return on equity						
< 8.0%	7	41	10	59		
8.0% to 12.0%	14	52	13	48		
> 12.0%	34	58	25	42		
Total	55	53	48	47	1.47	0.48

Table 2. Cont'd.

Variables	Made loans Yes N	Yes %	No N	No %	χ^2	p
Loan-to-deposit ratio						
Less 65%	34	51	33	49		
65% to 80%	15	68	7	32		
> 80%	7	47	8	53		
Total	56	54	48	46	2.44	0.29
Non-current loans to total loans ratio						
< 1%	33	49	35	51		
1% to 4%	21	68	10	32		
> 4%	2	40	3	60		
Total	56	54	48	46	3.63	0.16
Geographic variable						
Crop reporting regions						
West	12	33	24	67		
Central	12	44	15	56		
East	37	71	15	29		
Total	61	53	54	47	13.59	0.00
Intermediary variable						
Intermediary type						
Banks	50	54	43	46		
FCS	4	100	0	0		
Credit unions	10	48	11	52		
Total	64	54	54	46	5.27	0.07

[1] The financial statistics exclude information for the Farm Credit Services. The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Sources: Fedgazette, Annual Statements of the Farm Credit Services, North Dakota State.

unions actively made cooperative stock loans, the FCS granted a disproportionate share of these loans. Banks and credit unions which made the loans tended to be larger and more aggressively managed, maintaining lower levels of equity. Institutions throughout the state made stock loans, but lending was concentrated in institutions in the eastern part of the state.

The FCS were disproportionately involved in cooperative stock lending. All four FCS made stock loans, compared to only 54% of the 93 banks, and 48% of the 21 credit unions; this relationship is significant at the 10% (Table 2). They held a much larger percentage of the

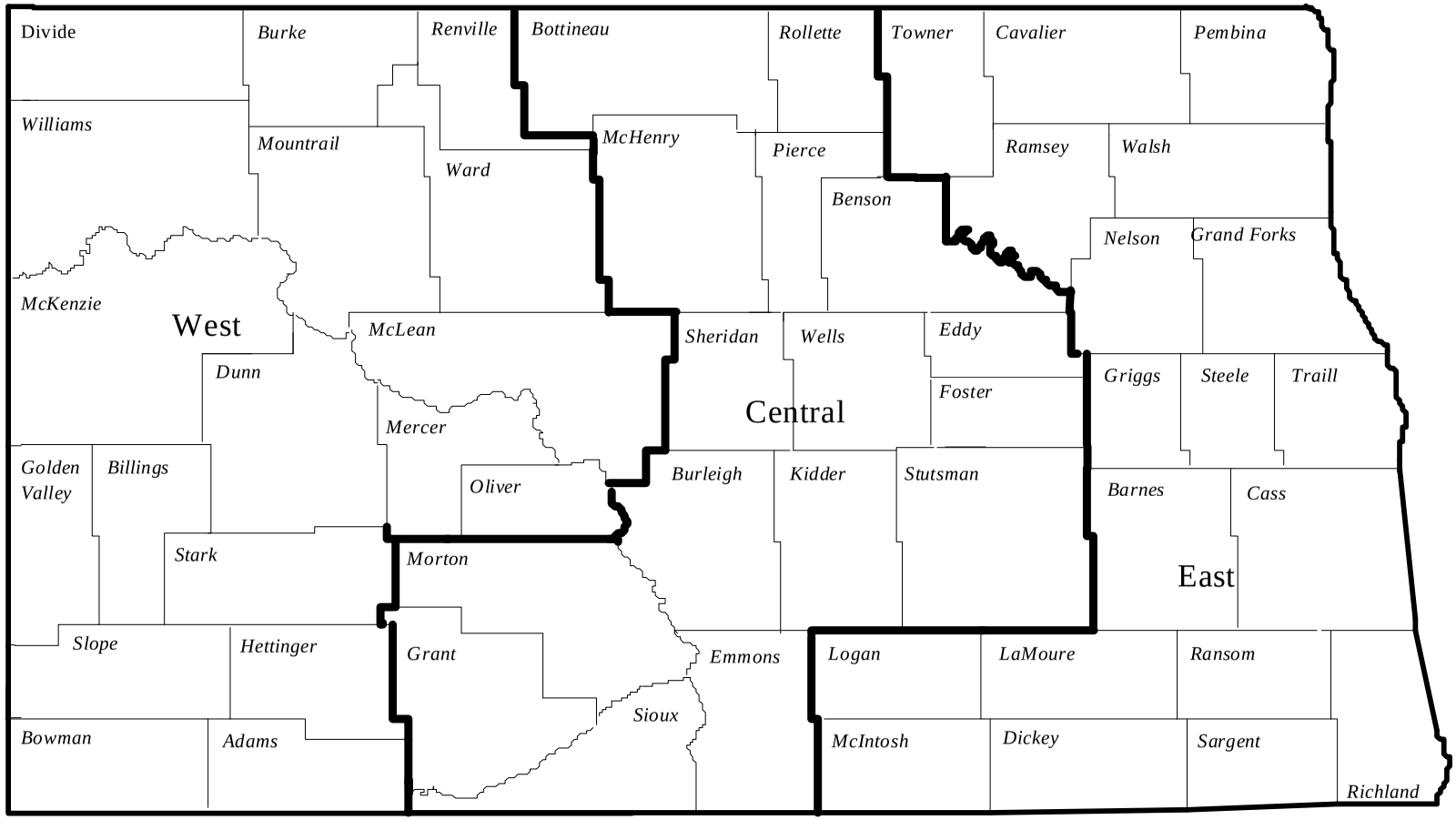

Figure 1. Combined crop reporting regions in North Dakota

cooperative stock loans, 64%, than their 12% and 26% shares of total assets or agricultural loans would suggest (Figure 2).

Because the FCS are small in number, large in size, and similar in operating performance, they had a large influence on the statistical testing of the financial variables that sometimes obscured important differences among the three types of institutions. To insure that these differences are noted, we compiled two sets of statistical test results, one which excludes the information from the FCS (Table 2), and one which includes it (Table A1).

Even after excluding the FCS, the nine institutions with more than $100 million in assets were more likely to have made stock loans than the 54 institutions with $25 to $100 million in assets or the 41 institutions with less than $25 million in assets. Seventy-eight percent of the large institutions and 67% of the medium-sized institutions made cooperative stock loans. Only 32% of the small institutions made the loans. This relationship between cooperative stock lending and size in total assets is strong as indicated by the crosstabulations test which was statistically significant at the 1% level after excluding the FCS (Table 2). The relationship is stronger when the FCS are included (Table A1). Large institutions' market share of stock loans is disproportionately large compared to their market share of agricultural loans, but not to their market share of total assets. Large institutions held 47% of the stock loan value of institutions responding to the survey (Figure 3 and Table A4). Correspondingly, they held only 16% of the agricultural loans, but 48% of the total assets.

Although small institutions were the least likely to have made cooperative stock loans, those that did were active lenders. Small institutions held 22% of the stock loan value while holding only 11% of total assets and 16% of the agricultural loans (Figure 3). Many small institutions did not experience cooperative activity in their lending area, particularly in the western region of the state where cooperative activity was lower. Financial institutions in eastern North Dakota, including the FCS, were more likely than institutions in central or western regions to have made stock loans. Only 34% of the institutions in the western region made stock loans, compared to 44% in the central region and 71% in the eastern region. The test is significant at the 1% level (Table 2).

Not only were banks and credit unions making stock loans larger, they were also more aggressively and successfully managed than the banks and credit unions that did not. The seven minimally capitalized with less than 7% equity and 59 moderately capitalized with 7% to 10% equity institutions were more likely to have made stock loans than the 38 with more than 10% equity. Seventy-one percent of institutions with low capital levels, and 61% of those with moderate capital levels made the loans. Only 40% of the well-capitalized institutions made the loans. Cooperative stock lending and the percentage of equity are weakly related as indicated by the 10% significance level of the crosstabulations test (Table 2). Minimally capitalized institutions held a larger share of stock loans than they did of total assets or agricultural loans (Figure 4).

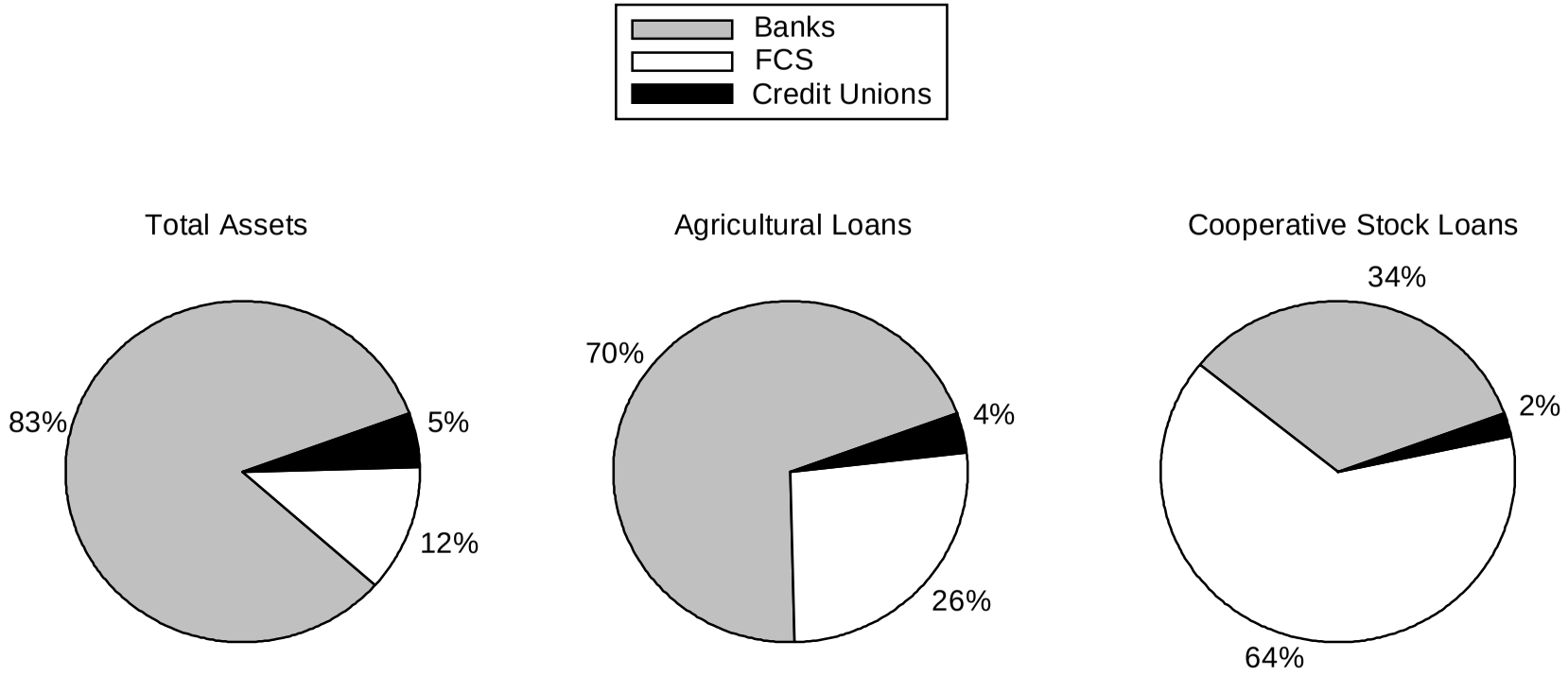

Figure 2. Market Share comparison of banks, FCS, and credit unions, North Dakota, 1994. Source: Table A3.

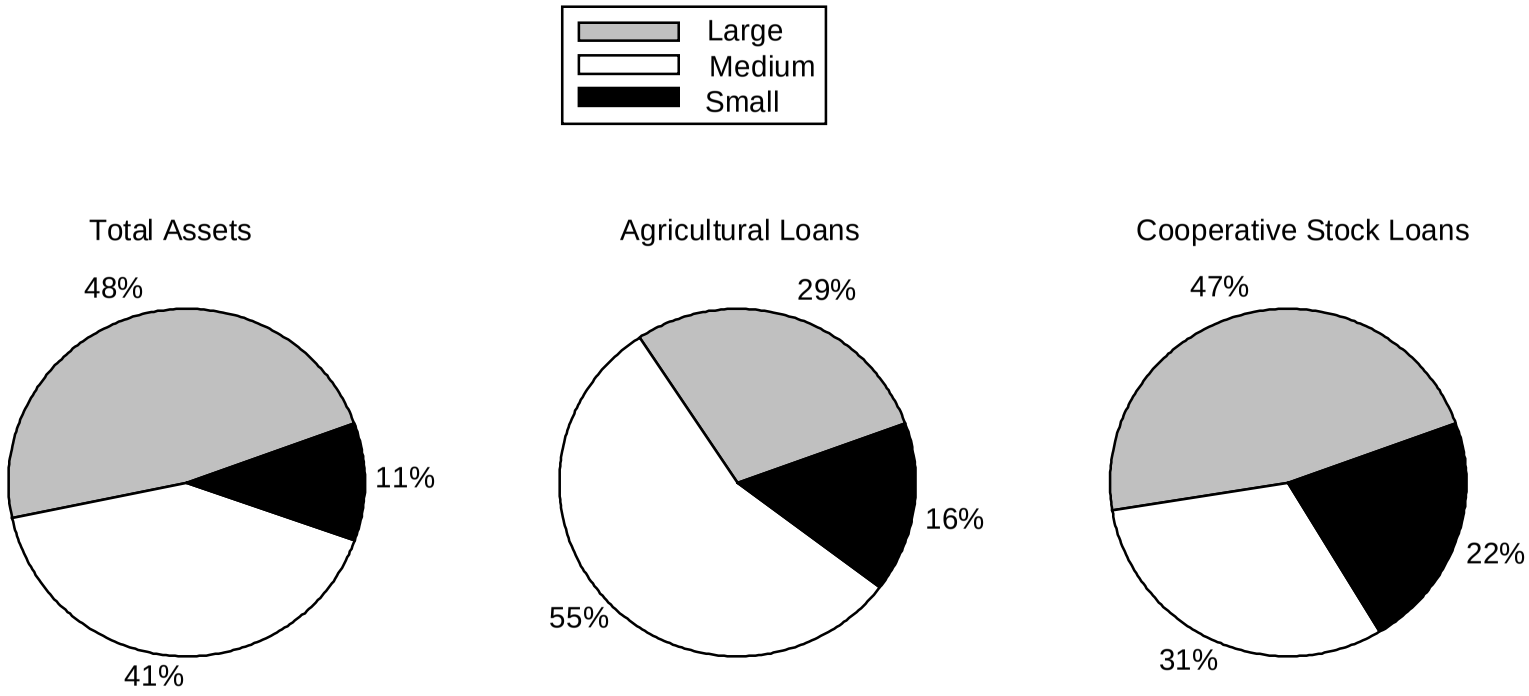

Figure 3. Market Share comparison by size of banks and credit unions, North Dakota, 1994. Source: Table A4.

10

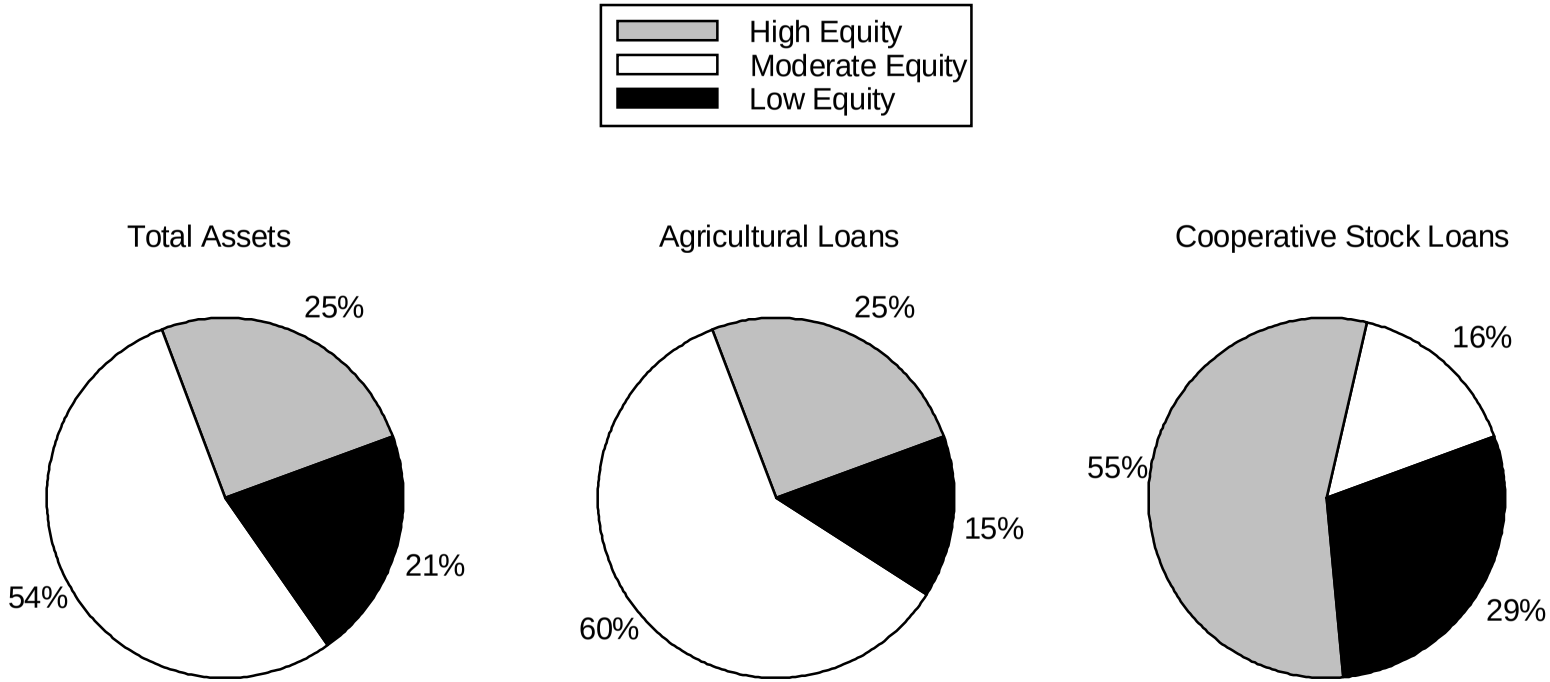

Figure 4. Market Share comparison based on percentage of equity, North Dakota, 1994. Source: Table A5.

11

Since imprudently and aggressively managed institutions have low levels of equity, we conducted additional statistical tests controlling for levels of non-current loans, and return on equity. We find that only the minimally capitalized institutions with low or moderate levels of non-current loans and high returns on equity were more likely to make the loans (Table A2).

Other tests involving the agricultural loans as a percentage of total loans, the loan-to-deposit ratio and the return-on-equity did not statistically differentiate between institutions that made the loans and those that did not.

Policy Regarding Loans

Financial institutions implement policies directing loan officers to engage in appropriate lending activities. These policies describe the type of loan portfolio desired, how loans are approved, and the lending criteria used in credit analysis. They can encourage loan officers to avoid risky loans or make valued loans. If financial institutions enact policies that grant discretionary power to loan officers, they create an environment in which the attitudes of loan officers can exert more influence on lending.

To discover the impact of loan policy on cooperative stock lending, we created a three-set "loan policy" cluster. The first set describes the loan policy maintained by institutions which implemented a policy prior to receiving an application. The second describes the loan approval mechanisms. Finally, the third set measures the importance of professional lending criteria, such as the profitability of the borrower and the rate of return on investment.

The statistical analysis indicates that most institutions maintain a policy that encourages or is neutral to cooperative stock lending. Many institutions aggressively encouraged lending by arming loan officers with tools to market the loans to borrowers, such as low interest rates, or deferred principal payments. Approximately one third of the institutions enacted a policy regarding cooperative stock loans prior to receiving an application, but the policies enacted had no discernable influence on lending. Most institutions granted loan officers lending limits large enough for them to approve stock loans without oversight, thereby creating an environment in which loan officers could be influenced by their attitudes. To maintain loan portfolio quality, institutions relied on easily verifiable measures used in credit analysis to police lending after the loans were granted.

Loan Policy

The widespread use of favorable terms—lower interest rates or deferred principal payments—suggests that financial institutions maintained a benign to neutral posture toward cooperative stock loans. Statewide, one third of the institutions offered stock loans with favorable terms. As expected, institutions that aggressively marketed stock loans by granting favorable terms were more likely to have made the loans than those that did not. The relationship

between cooperative stock lending and offering favorable terms is significant at the 1% level. Eighty-three percent of the institutions that offered favorable terms made stock loans. Only 43% of the institutions not offering favorable terms made the loans. Nevertheless, 52% of the institutions making the loans did not offer special terms (Tables 3 and 5). The aggressive use of favorable terms contradicts the assertion made in the North Dakota Vision 2000 Report that financial institutions are reluctant to lend for new ventures.

Owners of financial institutions recognize that certain loans, such as loans to fund new ventures, may be inherently riskier than other loans. Rather than prohibit loan officers from making them, institutions adopted higher credit standards, or more restrictive loan covenants. Respondents measured the restrictiveness of cooperative stock loan policy compared to other agricultural loans of similar size. The variable created from their responses did not differentiate between institutions which did and did not make the loans (Table 5). Owners did not view cooperative stock loans as different from other agricultural loans.

The remaining tests involving the loan policy variables also indicate that owners do not view cooperative stock loans as different from other agricultural loans. Only 32% of the financial institutions had a specific policy regarding stock loans prior to receiving an application. Having a policy did not statistically distinguish institutions that made the loans and those that did not. Institutions which responded that they implemented a policy prior to receiving an application, answered an additional seven questions. None of the variables created from these questions is significantly related to making cooperative stock loans (Table 7).

Approval Mechanisms

An institution can grant loan officers individual loan limits, or use consensus building approval mechanisms, such as loan committees, informal discussions, management approval, and regional boards. The approval mechanisms are not mutually exclusive, and most supervisors described their institution as employing more than one.

Institutions that granted individual loan authority were more likely to have made loans than those that did not, and the relationship is significant at the 1% level. Ninety-two percent of the institutions grant loan authority to loan officers. Fifty-seven percent of the institutions granting individual loan authority made the loans, but only 11% of the institutions not granting individual authority did. The size of the limit was also important. Institutions which granted at least $100,000 of lending authority to a single loan officer were more likely to make cooperative stock loans than those that did not. Other policies governing the loan approval process, such as approval through a loan committee or a regional board or cumulative lending limits, are not statistically significant (Tables 2 and 10).

The large lending limits granted to some loan officers and the small size of most cooperative stock loans suggests that many loan officers had sufficient approval authority to grant stock loans without oversight. Eighty-six percent of the institutions granted a loan officer

Table 3. Approval mechanisms, and loan policy variables of financial institutions, North Dakota, 1995.

Variables	N	%
Approval mechanism		
Loan approval method[1]		
Individual lending limits	110	92
Loan committee	102	86
Informal discussions	49	41
Management	38	32
Regional-level board	15	13
Total	119	100
Maximum individual loan limit		
< $50,000	21	20
$50,000 to $100,000	56	52
> $100,000	30	28
Total	107	100
Cumulative lending limits?		
Yes	40	38
No	66	62
Total	106	100
Loan policy		
Terms for loans[1]		
Normal terms and conditions	75	66
Reduced or deferred principal payment	32	28
Reduced levels of interest	18	16
Longer amortization	18	16
Other	3	3
Total	114	100

[1]Items may not total 100% because each was independent of the others. Source: Ag supervisor survey, questions 2, 3, and 6.

Table 4. Loan policy variables. A comparison of the restrictiveness[1] of policy regarding cooperative stock loans and other agricultural loans of similar size, North Dakota, 1995.

	Restrictiveness/weights[2]						
	MM	M	S	L	ML	Avg.	N
Variable	5	4	3	2	1		
	% of total responses						
Lending policy compared to policy for other ag loans.	2	23	71	2	2	2.89	104

[1] Restrictive credit policy requires applicants to meet higher credit standards of more stringent loan covenants. [2] MM is much more, M is more, S is same, L is less, ML is much less, Avg. is average, and N is the number of responses. Source: Ag supervisors survey, question 5.

Table 5. Crosstabulation tests for approval mechanisms and loan policy variables of financial institutions, North Dakota, 1995.

	Made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Approval mechanism						
Individual lending limits						
Yes	60	57	45	43		
No	1	11	8	89		
Total	61	54	53	46	7.79	0.01
Loan committee						
Yes	54	56	43	44		
No	7	41	10	59		
Total	61	54	53	46	1.22	0.27
Informal discussions						
Yes	28	57	21	43		
No	33	51	32	49		
Total	61	54	53	46	0.46	0 .50
Management						
Yes	19	50	19	50		
No	42	55	34	45		
Total	61	54	53	46	0.28	0.60
Regional-level board						
Yes	10	71	4	29		
No	51	51	49	49		
Total	61	54	53	46	2.06	0.15
Maximum individual loan limit						
< $50,000	12	60	8	40		
$50,000 to $100,000	27	48	29	52		
> $100,000	20	77	6	23		
Total	59	58	43	42	6.05	0.05
Cumulative lending limits						
Yes	26	65	14	35		
No	34	55	28	45		
Total	60	59	42	41	1.03	0.31

Table 5. Cont'd.

	Made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Loan Policy						
Lending policy for ag co-ops compared to other ag loans						
More restrictive	15	63	9	37		
About the same	41	57	31	43		
Less restrictive	4	100	0	0		
Total	60	60	40	40	6.56	0.16
Terms for loans						
Favorable terms	29	83	6	17		
Normal terms	32	43	43	57		
Total	61	56	49	44	16.76	0.00

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns.
Source: Ag supervisors survey, questions 2, 3, 5 and 6.

Table 6. Loan policy variables. Financial institutions that enacted a policy prior to receiving a cooperative stock loan application, North Dakota, 1995.

Variables	N	%
Loan committee determines policy before reviewing applications		
Yes	36	32
No	78	68
Total	114	100
If the policy is predetermined, then...		
We focus on the specific characteristics of the borrower.		
Yes	32	89
No	4	11
Total	36	100
We look at each new co-op on a case-by-case basis.		
Yes	32	89
No	4	11
Total	36	100
We lend so as to reduce risks for ourselves and our borrowers.		
Yes	31	86
No	5	14
Total	36	100

Table 6. Cont'd.

Variables	N	%
We lend so as to maximize profits for ourselves and our borrowers.		
Yes	29	81
No	7	19
Total	36	100
Our mission determines the areas in which we lend.		
Yes	26	72
No	10	28
Total	36	100
Although we never advise our borrowers where to *invest*; we do advise them where *not to invest*.		
Yes	21	58
No	15	42
Total	36	100
We don't distinguish investment in a new ag co-ops from any other ag loan.		
Yes	21	58
No	15	42
Total	36	100

Sources: Ag supervisor survey, question 4.

Table 7. Crosstabulations tests for loan policy variables. Financial institutions that enacted a policy prior to receiving a cooperative stock loan application, North Dakota, 1995.

	Made loans					
	Yes		Row %			
Variables	N	%	yes	no	χ^2	p
Loan committee determines policy before reviewing applications						
Yes	19	61	12	39		
No	42	54	36	46		
Total	61	56	48	44	0.50	0.48
If the policy is predetermined, then...						
We focus on the specific characteristics of the borrower.						
Yes	18	62	11	38		
No	2	50	2	50		
Total	20	61	13	39	0.21	0.65
We look at each new co-op on a case-by-case basis.						
Yes	19	66	10	34		
No	1	25	3	75		
Total	20	61	13	39	2.39	0.12

Table 7. Cont'd.

Variables	Made loans: Yes N	Yes %	Row % yes	Row % no	χ^2	p
We lend so as to reduce risk for our self and our borrowers.						
Yes	17	59	12	41		
No	3	75	1	25		
Total	20	61	13	39	0.42	0.52
We lend so as to maximize profits for ourselves and our borrowers.						
Yes	16	59	11	41		
No	4	67	2	33		
Total	20	61	13	39	0.11	0.73
Our mission determines the areas in which we lend.						
Yes	13	57	10	43		
No	7	70	3	30		
Total	20	61	13	39	0.54	0.46
Although we never advise borrowers where to *invest*, we do advise them where no to invest						
Yes	12	63	7	37		
No	8	57	6	43		
Total	20	61	13	39	0.12	0.73
We don't distinguish investment in a new ag co-op from any other ag loan.						
Yes	12	63	7	37		
No	8	57	6	43		
Total	20	61	13	39	0.12	0.73

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Source: Ag supervisor survey, question 4.

Table 8. Lending criteria variables. Characteristics of the borrower and the cooperative investment, North Dakota, 1995.

	Relative importance/weights[1]						
	VI	I	Ne	U	VU	Avg.	N
Variables	5	4	3	2	1		
Characteristics of the borrower	% of total responses						
High debt/low equity	83	15	1	1	0	4.79	222
Low profitability	79	19	1	1	0	4.76	221
Knowledge of the investment's impact on the farm	69	28	2	1	0	4.66	223
Is poorly prepared	58	33	7	1	1	4.47	222
Past failure to distinguish between good and bad opportunities	55	36	8	1	0	4.46	222
Use the loan officers' review to "test" the merit of investment	18	34	40	7	1	3.60	222
Characteristics of the cooperative investment							
Marketing Plan	66	27	6	1	0	4.59	221
Costs of investment outweighed benefits	56	35	8	1	0	4.46	222
Feasibility study	53	39	6	1	1	4.41	221
Commodity production concerns	38	52	9	1	1	4.25	221
Producer interest	38	48	12	2	0	4.20	222
Loan committee	41	38	18	3	0	4.16	222
Offering circular	21	51	22	6	0	3.87	220
Plant location	23	43	26	7	1	3.81	221
Support of other lenders	18	44	29	7	2	3.69	219
Cooperative board	19	38	33	6	5	3.59	221
Media coverage	2	18	54	19	7	2.89	222

[1] VI is very important, I is important, Ne is neutral, U is unimportant, VU is very unimportant, Avg. is average, and N is the number of responses. Source: Ag loan officers survey, questions 10 and 12.

Table 9. Crosstabulation tests for an assessment of farmers' investment acumen, and lending criteria of the borrower variables, North Dakota, 1995.

	made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Assessment of farmers' business acumen						
% with a very good understanding of how the co-op will affect the farm enterprise.						
< 40%	110	52	102	48		
> 40%	36	78	10	22		
Total	146	57	112	43	11.41	0.00
Characteristics of the borrower						
High debt/low equity						
Unimportant	1	33	2	67		
Neutral	2	100	0	0		
Important	143	66	74	34		
Total	146	66	76	34	2.98	0.22
Low profitability						
Unimportant	1	50	1	50		
Neutral	3	100	0	0		
Important	142	66	74	34		
Total	146	66	75	34	2.72	0.26
Knowledge of the investment's impact on the farm						
Unimportant	2	100	0	0		
Neutral	3	75	1	25		
Important	142	65	75	35		
Total	147	66	76	34	1.84	0.40
Is poorly prepared						
Unimportant	1	33	2	67		
Neutral	12	75	4	25		
Important	133	66	70	34		
Total	146	66	76	34	1.95	0.38
Past failure to distinguish between good and bad opportunities						
Unimportant	2	100	0	0		
Neutral	15	83	3	17		
Important	130	64	72	36		
Total	147	66	75	34	4.62	0.10
Uses the loan officers' review to "test" the merit of the investment						
Unimportant	11	61	7	39		
Neutral	66	74	23	26		
Important	69	60	46	40		
Total	146	66	76	34	4.74	0.09

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Source: Ag loan officers survey, questions 7 and 12.

Table 10. Crosstabulations tests for lending criteria variables of the cooperative investment, North Dakota, 1995.

	made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Characteristics of the cooperative investment						
Marketing plan						
Unimportant	1	100	0	0		
Neutral	10	71	4	29		
Important	135	66	71	34		
Total	146	66	75	34	1.04	0.59
Costs of investment outweighed benefits						
Unimportant	1	50	1	50		
Neutral	10	56	8	44		
Important	134	67	66	33		
Total	145	66	75	34	1.15	0.56
Feasibility study						
Unimportant	4	80	1	20		
Neutral	11	79	3	21		
Important	130	64	72	36		
Total	145	66	76	34	1.77	0.41
Commodity production concerns						
Unimportant	3	75	1	25		
Neutral	10	53	9	47		
Important	132	67	66	33		
Total	145	66	76	34	1.62	0.45
Producer interest						
Unimportant	4	67	2	33		
Neutral	17	65	9	35		
Important	125	66	65	34		
Total	146	66	76	34	0.00	1.00
Loan committee						
Unimportant	6	86	1	14		
Neutral	29	73	11	27		
Important	111	63	64	37	2.69	0.26
Total	146	66	76	34		
Offering circular						
Unimportant	8	62	5	38		
Neutral	29	60	19	40		
Important	108	68	51	32		
Total	145	100	75	100	1.03	0.60
Plant location						
Unimportant	16	94	1	6		
Neutral	42	72	16	28		
Important	89	60	59	40		
Total	147	66	76	34	11.16	0.00

Table 10. Cont'd.

Variables	made loans Yes N	Yes %	No N	No %	χ^2	p
Support of other loan officers						
Unimportant	16	80	4	20		
Neutral	37	58	27	42		
Important	92	68	43	32		
Total	145	66	74	34	4.04	0.13
Co-op board						
Unimportant	17	71	7	29		
Neutral	45	62	28	38		
Important	84	68	40	32		
Total	146	66	75	34	1.03	0.60
Media coverage						
Unimportant	37	64	21	36		
Neutral	84	70	36	30		
Important	25	57	19	43		
Total	146	66	76	34	2.59	0.27

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns.
Source: Ag loan officers survey, question 10.

a limit in excess of $50,000 and only 26% of the institutions granted a stock loan in excess of this amount (Tables 3 and A6). This indicates that many loan officers had the freedom to be influenced by their attitudes toward cooperatives.

Lending Criteria

Owners regulate the quality of loans by requiring loan officers to approve loans based on recognized criteria in loan analysis. If loan officers ignore those criteria and lend to an unqualified borrower they face possible discipline by their financial institution through a post approval loan review. Reviews occur at regular intervals and cover all delinquent loans and a random selection of other loans. Occasionally, institutions review applications that have been have been denied. Consequently, loan officers are disciplined more often for making bad loans than not making good loans.

Loan officers determine if a borrower can repay a loan by a quantitative examination of financial information, and a subjective evaluation of the borrower. They organize this information into a credit report which evaluates factors such as the borrowers' financial condition, character, and collateral which influence the quality of a loan. Like Gustafson, Beyer, and Saxowsky (1991), who conducted a small sample oral survey of ten loan officers, we find that loan officers follow conservative lending practices, emphasizing criteria that stress the importance of repayment from current operations first and from the investment second. This practice allows borrowers who can repay the loan from other sources to make investments as they choose, but precludes others from investing in projects with strong earnings potential.

Our variables which measure the importance of different criteria in loan evaluation are divided into two classes. The first contains variables measuring the importance of the borrower's farm enterprise, and the second, variables measuring the importance of the cooperative investment. Respondents ranked the importance of each on a scale of five to one, with five being very important, and one being very unimportant. The scores were averaged by criterion and are reported in order of perceived importance in Table 8.

Loan officers regarded all the criteria related to the borrower as important. The two which rated as most important form the backbone of standard credit analysis. The most important criterion was a low debt-equity position by the borrower. Scoring an average of 4.79, 85% of the loan officers thought that this criterion was "very important." The second most important criterion was the farmer's lack of profitability, scoring an average of 4.76 (Table 8).

Loan officers subjectively measure the last four criteria in credit analysis. The third and fourth most important criteria were the borrower's knowledge of the impact of the investment on the farm enterprise and poor preparation by the borrower. These criteria score an average of 4.66 and 4.47 (Table 8). The average score of the former criteria indicates that loan officers believe the interaction of the farm enterprise with the investment is important, but not as important as the overall financial condition of the borrower (Table 8). The two final criteria were the applicant's inability to distinguish between good and bad opportunities in the past and use of the loan officer's review to test the merit of the investment. Both criteria are statistically significant at the 10% level (Table 9). In both cases, the loan officers' responses were intuitive. If they thought that these were important criteria they were less likely to have made the loans. Yet in both cases the majority, or the plurality of loan officers who made the loans came, from these groups.

In general, loan officers did not consider the criteria regarding the cooperative investment as important as those of the borrower. The marketing plan has an average score of 4.59, the highest score of the investment criteria, but this score would rank as only the fourth highest if the criteria of the borrowers and the investment were combined. The quality of the investment, which has the second highest score among the investment criteria, tied the score of the sixth ranking criteria of the borrowers. Nevertheless, the majority of respondents viewed all but one of these criteria, media coverage, as "very important" to "important" (Table 8).

As with the loan criteria of the borrower, those that are more easily quantified generally were viewed as more important. The loan officers viewed the marketing plan, the quality of the investment, the feasibility study, and commodity production concerns as more important than less quantifiable objectives such as producer interest and the names of the cooperative board members. Loan officers also placed less importance on characteristics that did not directly involve the finances or management of the cooperative. The financial institution's loan committee, support of the cooperative venture by other loan officers, and the media coverage ranked sixth, ninth, and eleventh in importance (Table 8).

Only one investment characteristic, the plant location, is statistically related to cooperative stock lending and the relationship is significant at the 1% level. Sixty percent of the 100 loan officers who believed this criterion was important made stock loans, compared to 72% of 58 and

94% of 17 loan officers that were neutral or thought the characteristic was unimportant (Table 10).

Lending Practices

Within policy guidelines loan officers have discretion in conducting their activities. The way they spend their time and their skill in writing cooperative stock loans may affect lending to farmers investing in new agricultural cooperatives. The third cluster measures the impact of these practices and skills on cooperative stock lending. The first variable separates loan officers into two groups based on the percentage of their time taken by agricultural loans. The second and third compare the time and difficulty of loan preparation to other agricultural loans of similar size. The fourth and fifth variables separate loan officers who have reviewed a new cooperative's business plan or attended an orientation meeting from those who have not (Tables 11 and 12).

Table 11. Lending practices variables, North Dakota, 1995.

Variables	N	%
Years in ag lending (loan officers)		
< 10	81	31
>10	179	69
Total	260	100
% of time taken by ag loans		
< 60%	67	26
> 60%	193	74
Total	260	100
Reviewed a new ag co-op's business plans during[1].		
Yes	158	68
No	74	32
Total	232	100
Attended an orientation meeting of a new ag co-op[1].		
Yes	153	66
No	79	34
Total	232	100

[1] The time period for the question was the past four years.
Source: Ag loan officers survey, questions 2, 3, 16, and 17. Ag supervisors survey, question 10.

Table 12. Lending practice variables—a comparison of cooperative stock loans and other agricultural loans of similar size, North Dakota, 1995.

	Comparison/weight						
	MM	M	S	L	ML	Avg.	N
Variables[1]	5	4	3	2	1		
	% of total responses						
How time consuming are loans compared to other ag loans?	3	15	79	2	1	3.16	195
How difficult are loans compared to other ag loans?	2	23	74	1	0	3.25	197

[1] MM is much more, M is more, S is same, L is less, ML is much less, Avg. is average, and N is the number of responses. Source: Ag loan officers survey, questions 8 and 9.

Loan officers who reviewed a new cooperative's business plan, or attended an orientation meeting were more likely to have made stock loans. Seventy-three percent of the 153 loan officers who attended an orientation meeting made stock loans, compared to 44% of the 79 who had not. Seventy-seven percent of the 158 loan officers who had reviewed a business plan made the loans, but only 34% of the 74 who had not, made the loans. As shown in Table 13, attending an orientation meeting or reviewing a business plan are statistically related to cooperative stock lending at the 1% significance level.

Cooperative organizers who provide loan officers and potential members with the same information may facilitate lending to potential members by eliminating a cause of credit rationing. Credit rationing occurs when part of a group of loan applicants who appear to be equally credit worthy to the loan officer are denied a loan. It is caused by an asymmetry of information between loan applicants and the loan officer. If applicants can hide information about the risk of their investment projects, loan officers cannot distinguish between the credit worthiness of projects. The projects appear equally credit worthy based on measurable criteria such as the rate of return but the loan officers know that some projects may contain hidden risk. Disreputable applicants will seek debt financing to shift risk from themselves to their financial institutions. To protect their institutions' financial well-being, loan officers will ration credit (Stiglitz and Weiss, 1981 and Calomiris, Hubbard, and Stock, 1986). Because cooperative organizers only benefit if the cooperative venture is successful and their return is the same as other investors, they do not have a profit motive for withholding information from farmers who might invest in the cooperative. The information presented to loan officers at organizational meetings and through business plans is identical to that presented to farmers considering the cooperative investment. Borrowers do not have private information about the project, eliminating the cause of credit rationing.

Loan officers with more than 10 years of experience in agricultural lending were more likely to have made stock loans than those with less experience and the relationship is statistically significant at the 1% level. Sixty-six percent of the 179 loan officers who made the loans had more than ten years of experience, compared to 34% of the 81 loan officers with less than ten years of experience (Table 13).

Table 13. Crosstabulation tests for lending practice variables,

North Dakota 1995.

Variables	made loans Yes N	Yes %	No N	No %	χ^2	p
Years of ag lending (loan officers)						
< 10	30	37	51	63		
> 10	118	66	61	34		
Total	148	57	112	43	18.98	0.00
% of time taken by ag loans.						
< 60%	19	28	48	72		
> 60%	129	67	64	33		
Total	148	57	112	43	30.30	0.00
How time consuming are loans compared with other ag loans?						
Less	3	50	3	50		
Same	117	76	37	24		
More	26	74	9	26		
Total	146	75	49	25	1.81	0.40
How difficult are loans compared to other ag loans?						
Less	2	67	1	33		
Same	109	75	36	25		
More	35	71	14	29		
Total	146	74	51	26	.35	0.84
Reviewed a new ag co-op's business plans[1]						
Yes	121	77	37	24		
No	25	34	49	66		
Total	146	63	86	37	39.28	0.00
Attended an orientation meeting of a new ag co-op[1]						
Yes	111	73	42	27		
No	35	44	44	56		
Total	146	63	86	37	17.60	0.00

[1] The time period for the question was the past four years. The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the numbe of columns. Ag loan officers survey, questions 2, 3, 8, 9, 16, and 17. Ag supervisors survey, question 10.

Table 14. Assessment of farmers' investment acumen variable by loan officers, North Dakota, 1995.

Variable	N	%
% of farmers with a very good understanding about how the co-op will affect the farm enterprise.		
< 40%	212	82
> 40%	46	18
Total	258	100

Source: Ag loan officers survey, question 7.

Loan officers who devoted most of their work day to agricultural lending, and who evaluated a new cooperative proposal were more likely to have made loans than those who did not. There is a stark difference in the willingness of loan officers to make stock loans based on the percentage of time spent in agricultural lending. Sixty-seven percent of the 193 loan officers who spent more than 60% of their time in agricultural lending made the loans, compared to 28% of the 67 who spent less time. This relationship between time spent in agricultural lending and cooperative stock lending is significant at the 1% level (Table 13).

Loan officers may avoid difficult or time-consuming loans. Two variables measure a problem known as "shirking," the avoidance of difficult assignments. The variables compare the time needed to prepare a stock loan and the difficulty of that preparation to other agricultural loans. If loan officers were shirking, they would avoid making loans that are more time consuming, or more difficult to prepare. In both cases, we find no statistically significant evidence of shirking (Table 13).

Attitudes Toward Lending and Cooperatives

When considering a cooperative stock loan request, loan officers analyze information in the loan application using professional lending criteria that is both objective and subjective. Loan officers' attitudes toward cooperatives could bias their interpretation of the criteria, particularly the subjective criteria, which may influence loan officers to make loans to unqualified borrowers or deny loans to qualified borrowers.

The fourth cluster measures attitudes of loan officers toward lending and cooperatives; it has four sets. Each set measures different types of views or attitudes held by loan officers.

In general, loan officers had positive attitudes about new cooperative ventures. Nevertheless, their two most negative responses were to questions that most clearly differentiate new from traditional cooperatives. Approximately half of the loan officers believed that the delivery contracts of new cooperatives were too strict and that the purchase price of the stock was too high. Furthermore, the average loan officer believed that stocks and mutual funds offered a better risk adjusted rate of return as a stand alone investment than cooperative stock. Finally, the attitudes expressed by loan officers had relatively little impact on lending, reinforcing and

extending a conclusion reached earlier in the paper. Loan officers made loans that met conservative lending standards regardless of their opinion of the quality of the investment.

Assessment of Farmers' Investment Acumen

Loan officers reported their assessment of the farmers' investment acumen by stating the percentage of farmers that they believed had a very good understanding of the impact of the cooperative investment on their farm enterprise. We report those who thought that more than 40% of farmers had a very good understanding as having high assessments and others as having low assessments. Loan officers with high assessments were more likely to have made cooperative stock loans than those with low assessments, yet most loans were made by loan officers with low assessments. Seventy-eight percent of the 46 loan officers with high assessments made stock loans. Only fifty-two percent of the 212 loan officers with low assessments made the loans. The relationship between the loan officers' assessment of the business acumen of farmers and cooperative stock lending is statistically significant at the 1% level (Table 9).

Objectives Achieved by Cooperatives

The "objectives achieved by cooperatives" set measures the likelihood that cooperatives achieve seven economic and two social objectives. In the questionnaire, loan officers identified how often farmers believed that new agricultural cooperatives accomplish these objectives. Loan officers also stated how often they believed that the cooperatives achieved them. Their responses ranged from "very often," which was scored as a five, and "almost never," which was scored as a one. An average score based on their responses was calculated (Table 15 and Figure 5).

Loan officers believed that farmers were more positive than they were about the cooperatives' ability to achieve economic objectives and less positive about social objectives (Table 15 and Figure 5). Nevertheless, loan officers expressed positive attitudes about cooperatives. As with loan officers' perceptions of borrower and investment criteria, both loan officers that made the loans and those that did not have remarkably similar views. Only two of 18 crosstabulation tests were statistically significant. These tests dealt with the loan officers' view, and the loan officers' perception of the farmers' view of the cooperative's ability to reduce marketing risk (Tables 16 and 17).

According to loan officers, farmers believed that cooperatives could achieve each of the objectives listed in Table 15. In loan officers' view, farmers most strongly believed that the new cooperatives increase farm income. Scoring an average of 4.19, 37% of the loan officers stated that farmers believed that new cooperatives "very often" achieved this objective. Loan officers also view farmers as believing that cooperatives gave them access to value-added markets, and a

Table 15. Objectives achieved by cooperatives variables, North Dakota, 1995.

	Objective achieved/weight[1]						
	VO	O	Oc	S	AN	Avg.	N
Variables	5	4	3	2	1		
Loan officers' perception of farmers' views	% of total responses						
Increase farm income	37	46	16	1	0	4.19	218
Gain access to value added markets	31	55	12	2	0	4.15	216
Consistent outlet to market products	29	53	16	2	0	4.09	218
Reduce marketing risk	13	48	35	4	0	3.71	218
Provide new services	8	44	40	7	1	3.51	218
Increase farm productivity	15	40	29	14	2	3.50	218
Network with people with similar interests	6	34	46	13	1	3.30	217
Increase their knowledge base	4	33	49	14	1	3.24	218
Speculate in stock	12	29	33	19	7	3.21	218
Loan officers' views							
Gain access to value added markets	14	59	24	3	0	3.85	227
Network with people with similar interests	11	55	27	7	0	3.71	226
Consistent outlet to market products	8	56	32	4	0	3.66	228
Increase their knowledge base	8	55	31	7	0	3.64	228
Provide new services	7	41	42	10	0	3.44	228
Reduce marketing risk	2	38	53	7	0	3.36	227
Increase farm income	2	33	61	4	0	3.33	227
Increase farm productivity	2	22	54	18	4	3.01	227
Speculate in stock	1	16	60	20	3	2.91	228

[1] VO is very often, O is often, Oc is occasionally, S is seldom, AN is almost never, Avg. Is the average, and N is the number of responses. Source: Ag loan officers survey, questions 11 and 20.

consistent outlet to market farm output. These objectives have average scores of 4.15 and 4.09—the second and third highest. Loan officers stated that farmers least often believed that cooperatives allowed them to network with people of similar interests (3.30), increase their knowledge base (3.24), and speculate in the price of cooperative stock (3.21).

Loan officers were also optimistic. They most strongly believed that cooperatives gave farmers access to value-added markets. Scoring an average of 3.85, 14% of the loan officers believed that cooperatives "very often" achieved this objective. The average loan officers believed that the second most achievable objective was helping farmers network; this objective had an average score of 3.71. Likewise, they believed that the cooperatives give farmers a consistent outlet to market products. This objective had an average score of 3.66—the

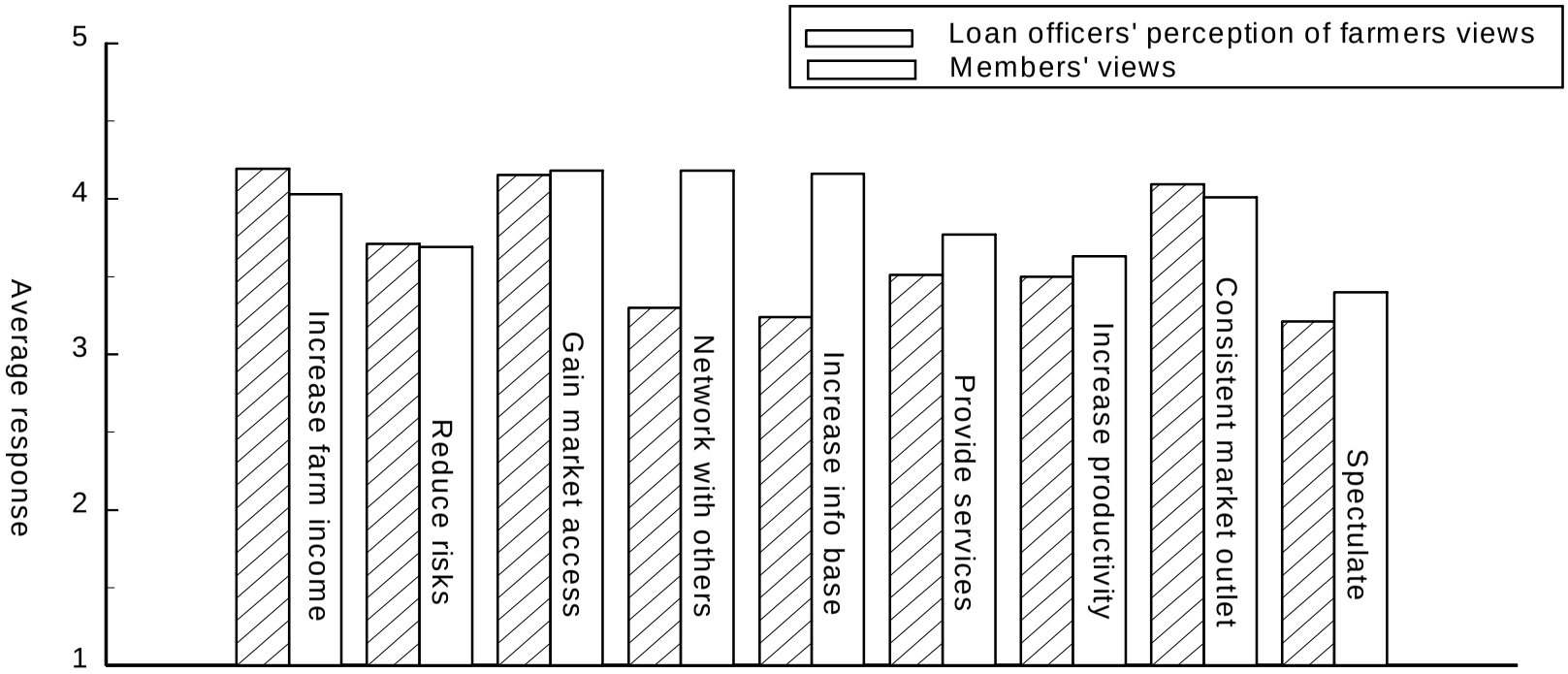

Figure 5. Comparison of loan officers' views and loan officers' preeception of farmers' veiws. Source: Table 15. Based on 5-pt Likert scale: 5=Very Often and 1=Almost Never

Table 16. Crosstabulation tests for objectives achieved by cooperatives variables—the loan officers' perceptions of farmers' views, North Dakota, 1995.

	made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Increase farm income						
Seldom	2	100	0	0		
Occasionally	24	69	11	31		
Often	121	67	50	33		
Total	147	67	71	33	1.62	0.44
Gain access to value added markets						
Seldom	3	75	1	25		
Occasionally	16	62	10	38		
Often	127	68	59	32		
Total	146	68	70	32	0.57	0.75
Consistent outlet to market products						
Seldom	2	50	2	50		
Occasionally	24	69	11	31		
Often	121	68	58	32		
Total	147	67	71	32	0.54	0.76
Reduce marketing risk						
Seldom	7	88	1	12		
Occasionally	57	75	19	25		
Often	83	62	51	38		
Total	147	67	71	33	5.60	0.06
Provide new services						
Seldom	11	61	7	39		
Occasionally	58	67	29	33		
Often	78	69	35	31		
Total	147	67	71	33	0.47	0.79
Increase farm productivity						
Seldom	28	78	8	22		
Occasionally	44	69	20	31		
Often	75	64	43	36		
Total	147	67	71	33	2.72	0.26
Network with people with similar interests	22	71	9	29		
Seldom	73	73	27	27		
Occasionally	51	59	35	41		
Often	146	67	71	33	4.13	0.13
Total						
Increase their knowledge base						
Seldom	26	79	7	21		
Occasionally	68	64	38	36		
Often	53	67	26	33		
Total	147	67	71	33	2.61	0.27

Table 16. Cont'd.

Variables	made loans Yes N	Yes %	No N	No %	χ^2	p
Speculate in stock						
Seldom	33	59	23	41		
Occasionally	49	68	23	32		
Often	65	72	25	28		
Total	147	67	71	33	2.75	0.25

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Source: Ag loan officers survey, question 11.

Table 17. Crosstabulation tests for objectives achieved by cooperatives variables—the loan officers' views, North Dakota, 1995.

Variables	Made loans Yes N	Yes %	No N	No %	χ^2	p
Gain access to value added markets						
Seldom	5	83	1	17		
Occasionally	33	60	22	40		
Often	105	63	61	37		
Total	143	63	84	37	1.42	0.49
Network with people with similar interests						
Seldom	10	63	6	37		
Occasionally	41	68	19	32		
Often	91	61	59	39		
Total	142	63	84	37	1.10	0.58
Consistent outlet to market products						
Seldom	6	55	5	45		
Occasionally	49	68	23	32		
Often	89	61	56	39		
Total	144	63	84	37	1.30	0.52
Increase their knowledge base						
Seldom	9	60	6	40		
Occasionally	49	70	21	30		
Often	86	60	57	40		
Total	144	63	84	37	2.07	0.36
Provide new services						
Seldom	14	61	9	39		
Occasionally	61	64	35	36		
Often	69	63	40	37		
Total	144	63	84	37	0.06	0.97
Reduce marketing risk						
Seldom	9	56	7	44		

Table 17. Cont'd.

Variables	Made loans Yes N	Yes %	No N	No %	χ^2	p
Occasionally	83	70	36	30		
Often	51	55	41	45		
Total	143	63	84	37	4.91	0.09
Increase farm income						
Seldom	5	56	4	44		
Occasionally	89	65	49	35		
Often	49	61	31	39		
Total	143	63	84	37	0.45	0.80
Increase farm productivity						
Seldom	32	65	17	35		
Occasionally	76	62	47	38		
Often	36	66	19	34		
Total	144	63	83	37	0.31	0.85
Speculate in stock						
Seldom	32	60	21	40		
Occasionally	81	60	55	40		
Often	31	80	8	20		
Total	144	63	84	37	5.81	0.05

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns.
Source: Ag loan officers survey, questions 20.

third highest. Loan officers least often believed that cooperatives increased farm income (3.33), increased farm productivity (3.01), and allowed farmers to speculate in the price of cooperative stock (2.91) (Table 15).

Loan officers believed they were less optimistic than farmers about economic objectives, but more optimistic about social objectives. The average score of loan officers' responses to the statement that the new cooperatives increase farm income was 3.33. The average score that loan officers accorded farmers was 4.19. Similarly, the average score to the statement that farmers gained access to value-added markets for loan officers was 3.85 compared to 4.15.
Loan officers were more confident than they believed farmers to be about the cooperatives ability to achieve the two social objectives, allowing farmers to network, and increasing their knowledge base. Among loan officers, these objectives ranked second and fourth, and had average scores of 3.71 and 3.64. When stating their perception of the farmers' views, loan officers ranked these objectives seventh and eight, and gave average scores of 3.30 and 3.24 (Table 15).

Only one objective, lowering marketing risk, is statistically related to cooperative stock lending. Loan officers preferred to make stock loans to farmers who had conservative beliefs about this objective. Eighty-eight percent of the eight loan officers who believed that farmers thought that cooperatives "seldom" lowered marketing risk made the loans. Seventy-five percent and 62% of the 76 and 134 loan officers who believed that farmers thought that cooperatives

"occasionally" or "often" reduced marketing risk, made the loans (Table 16). Loan officers who believed cooperatives occasionally lower marketing risk were more likely than other loan officers to make stock loans (Table 17).

Attitudes Toward Cooperatives

The third set measures loan officers' attitudes regarding nine potentially negative aspects of the performance of new cooperatives. The questions from which these variables were created distinguish between the performances of new and of traditional cooperatives. The new cooperatives link the level of patronage to stock ownership and rely on strictly enforced delivery contracts. Loan officers scored their attitude on a scale from one to five, with five being "strongly agree," and one, "strongly disagree." The statements are ordered from the least negative to the most negative, based on the average response (Table 18). The final two questions rank the performance of the closed-membership and delivery proportional to stock ownership features of the new cooperatives. Loan officers ranked the performance from five to one with five being "much better" and one being "much worse" (Table 19).

Table 18. Attitudes toward cooperatives variables—loan officers responses to negative statements about agricultural cooperatives, North Dakota, 1995.

	Degree of agreement/weight[1]						
	SA	A	N	D	SD	Avg.	N
Variables	5	4	3	2	1		
	% of total responses						
Co-ops offer inferior quality products	0	2	10	41	47	1.69	228
Farmers should not own food companies	1	3	15	34	47	1.77	228
Co-ops are get-rich-quick schemes	0	6	14	33	47	1.82	228
Farmers use these co-ops as last-ditch efforts to survive financially	1	11	15	39	34	2.05	228
Co-ops cannot compete with investor owned firms	0	10	24	44	22	2.25	227
Managers have too much control	2	7	46	34	11	2.56	228
Co-ops benefit only the wealthy producers	4	30	27	32	7	2.91	228
Delivery contracts are too strict	1	18	56	23	2	2.93	226
Required investments are too high	3	27	54	12	4	3.13	226

[1] SA is strongly agree, A is agree, N is neutral, D is disagree, SD is strongly disagree, Avg. Is average, and N is the number of responses. Source: Ag loan officers survey, question 21.

Table 19. Attitudes toward cooperatives—a comparison of the performance of new and traditional cooperatives, North Dakota, 1995.

	Comparison/weight[1]						
	MB	B	S	W	MW	Avg.	N
Variables	5	4	3	2	1		
	% of total responses						
Performance of closed-membership feature	12	45	37	6	0	3.61	199
Delivery proportional to stock ownership	11	60	24	4	0	3.79	214

[1] MB is much better, B is better, S is same, W is worse, MW is much worse, Avg. is average, and N is the number of responses. Source: Ag loan officers survey, questions 18 and 19.

Like other variables measuring attitudes, these also demonstrate that loan officers generally had positive views of cooperatives. Statistical tests continue to show that loan officers' attitudes had little impact on lending (Table 20). Three variables dealt with competition between cooperatives and investor-oriented firms. Loan officers indicated that cooperatives can effectively compete in the food processing industry. They strongly disagreed with the statements cooperatives offer inferior products, farmers should not own food companies, and cooperatives cannot compete with investor-owned firms. The first two statements drew the least negative responses; the average responses are 1.69 and 1.77, placing them between "strongly disagree" and "disagree." The variable created from the second statement, that farmers should not own food companies, is the only one statistically related to cooperative stock lending. Seven of nine loan officers who agreed with this statement did not make cooperative stock loans. The result is significant at the 5% level (Table 20). The average response to the third statement, cooperatives cannot compete with investor-owned firm, is 2.25 and indicates disagreement (Table 18).

Loan officers believed that cooperatives were legitimate and appropriately priced investments. Four statements centered on the stock investment. Loan officers disagreed with the statements that cooperatives are get-rich-quick schemes and last-ditch efforts of farmers to survive financially. These statements had average scores of 1.82 and 2.05. The statement that the cooperatives benefit only wealthy producers had the third most negative response with an average of 2.91. This response rate is best described as "neutral." The final statement, that the required investments are too high, had an average response rate of 3.13, the only response with an average higher than three. This is another "neutral" response indicating that the average loan officer believed that cooperative investments were appropriately priced (Table 18).

Two statements, that managers have too much control and that delivery contracts are too strict, describe the relationship between the cooperative and the farmer-investor. Respondents disagreed with the first statement with an average score of 2.56. They were neutral on the second statement with an average score of 2.93 (Table 18).

While the overall results are positive, the responses to the last two statements demonstrate that important elements of the new cooperatives are controversial. Loan officers

Table 20. Crosstabulation tests for attitudes toward cooperatives variables—a comparison of the performance of new and traditional cooperatives, and responses to negative statements about new cooperatives, North Dakota, 1995.

	made loans					
	Yes		No			
Variables	N	%	N	%	χ^2	p
Performance of closed-membership feature						
Better	72	64	40	36		
Same	49	66	25	34		
Worse	9	69	4	31		
Total	130	65	69	35	0.17	0.93
Delivery proportional to stock ownership						
Better	98	64	55	36		
Same	34	65	18	35		
Worse	7	78	2	22		
Total	139	65	75	35	0.76	0.68
Required investments are too high						
Disagree	26	72	10	28		
Neutral	74	60	49	40		
Agree	44	66	23	34		
Total	144	65	82	35	1.95	0.38
Co-ops benefit only the wealthy producers						
Disagree	56	63	33	37		
Neutral	37	61	24	39		
Agree	52	67	26	33		
Total	145	64	83	36	0.56	0.75
Delivery contracts are too strict						
Disagree	36	64	20	36		
Neutral	85	67	42	33		
Agree	24	56	19	44		
Total	145	64	81	36	1.70	0.43
Farmers should not own food companies						
Disagree	122	66	63	34		
Neutral	21	62	13	38		
Agree	2	22	7	78		
Total	145	64	83	36	6.92	0.03
Co-ops are get-rich-quick schemes						
Disagree	114	63	66	37		
Neutral	21	64	12	36		
Agree	10	67	5	33		
Total	145	64	83	36	0.07	0.97
Farmers use these co-ops as last-ditch efforts to survive financially						
Disagree	108	65	59	35		
Neutral	21	62	13	38		
Agree	16	59	11	41		
Total	145	64	83	36	.35	.84

Table 20. Cont'd.

Variables	made loans Yes N	Yes %	No N	No %	χ^2	p
These co-ops cannot compete with investor-owned firms						
Disagree	95	64	53	36		
Neutral	36	67	18	33		
Agree	14	56	11	44		
Total	145	64	82	36	.85	.66
Managers have too much control						
Disagree	66	65	36	35		
Neutral	64	62	40	38		
Agree	15	68	7	32		
Total	145	64	83	36	.45	.80
Co-ops offer inferior quality products						
Disagree	127	64	72	36		
Neutral	16	67	8	33		
Agree	2	40	3	60		
Total	145	64	83	36	1.25	.54

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns.
Source: Ag loan officers survey, questions 18, 19 and 21.

gave their most negative responses to the statements regarding delivery contracts and the cost of required investment. These two statments most clearly differentiate new and traditional cooperatives.

Risk and Return of Cooperatives

Variables in the fourth and final set measure loan officers' attitudes about the risk and rate of return of new cooperatives. Loan officers stated their estimate of the rate of return, and risk of cooperatives compared to six other investment alternatives: stocks, bonds, mutual funds, CD's, land, and other farm enterprises. The comparison ranged from five to one, with five being "much higher" and one "much lower." The cooperative investment and its alternative form an investment pair measured in risk and return (Table 21). The final variable measures the degree to which loan officers believe cooperative investment lowers long-term marketing risk. (Table 22).

As a whole, loan officers believed that stocks and mutual funds are better stand alone investments than cooperative stock. They also believed that new cooperatives lower marketing risk. The other noteworthy aspect is that these attitudes did not affect lending—the variables again fail to statistically differentiate between loan officers who made the loans and those who did not (Tables 23 and 24).

Table 21. Risk and return variables—a comparison of the long-term return of cooperatives and alternative investments, North Dakota, 1995.

	Comparison/weight[1]						
	MH	H	S	L	ML	Avg.	N
Variables	5	4	3	2	1		
	% of total responses[1]						
Return on investment of cooperatives compared to...							
Stocks	2	27	31	34	6	2.84	215
Bonds	3	34	36	25	2	3.12	214
Mutual funds	3	30	31	32	4	2.95	214
CDS	11	39	27	20	3	3.36	215
Land	5	32	39	21	3	3.15	215
Other farm enterprises	2	26	54	17	1	3.10	213
Perception of risk of cooperatives compared to...							
Stocks	7	50	34	9	0	3.56	217
Bonds	27	48	17	7	1	3.95	217
Mutual funds	16	50	26	7	1	3.72	217
CDS	66	18	6	3	7	4.32	217
Land	28	44	17	9	2	3.86	218
Other farm enterprises	9	36	49	5	0	3.50	214

[*]MH is much higher, H is more, S is same, L is less, ML is much less, Avg. is average, and N is the number of responses. Source: Ag loan officers survey, questions 13 and 14.

Table 22. Risk and return—reduction of long-term marketing risk, North Dakota, 1995.

	Reduction/weight[1]						
	VL	L	S	VS	AN	Avg.	N
Variable	5	4	3	2	1		
	% of total responses[1]						
New ag co-ops lower long-term marketing risk	2	25	61	8	4	3.13	224

[1] VL is very large, L is large, S is small, VS is very small, AN is much almost never, Avg. Is average, and N is the number of responses. Source: Ag loan officers survey, question 15.

Table 23. Crosstabulation tests for risk and return variables—a comparison of the long-term return of cooperatives and alternative investments, North Dakota.

		made loans					
		Yes		No			
Item		N	%	N	%	χ^2	p
Perception of return on investment of cooperative compared to...							
Stocks							
	Lower	55	63	32	37		
	Same	48	73	18	27		
	Higher	36	58	26	42		
	Total	139	65	76	35	3.19	0.20
Bonds							
	Lower	34	59	24	41		
	Same	52	68	25	32		
	Higher	52	66	27	34		
	Total	138	65	76	35	1.23	.54
Mutual funds							
	Lower	51	65	27	35		
	Same	45	68	21	32		
	Higher	42	60	28	40		
	Total	138	65	76	35	1.03	.60
CDS							
	Lower	27	55	22	45		
	Same	41	71	17	29		
	Higher	71	66	37	34		
	Total	139	65	76	35	2.94	.23
Land							
	Lower	30	59	21	41		
	Same	53	62	32	38		
	Higher	56	71	23	29		
	Total	139	65	76	35	2.32	.31
Other farm enterprises							
	Lower	21	54	18	46		
	Same	79	69	35	31		
	Higher	38	63	22	37		
	Total	138	65	75	35	3.07	.22

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns.
Source: Ag loan officers survey, question 13.

Table 24. Crosstabulation tests for risk and return variables—a comparison of the long-term risk of cooperatives and alternative investments, and reduction of long-term marketing risk, North Dakota, 1995.

	made loans					
	Yes		No			
Item	N	%	N	%	χ^2	p
perception of risk of cooperatives compared to...						
Stocks						
Lower	11	58	8	42		
Same	47	64	26	36		
Higher	82	66	43	34		
Total	140	65	77	35	.42	.81
Bonds						
Lower	13	81	3	19		
Same	21	57	16	43		
Higher	106	65	58	35		
Total	140	65	77	35	3.12	.21
Mutual Funds						
Lower	10	56	8	44		
Same	36	63	21	37		
Higher	94	66	48	44		
Total	140	65	77	35	.83	.66
CDS						
Lower	13	59	9	41		
Same	6	43	8	57		
Higher	121	67	60	33		
Total	140	65	77	35	3.43	.18
Land						
Lower	14	58	10	42		
Same	25	66	13	34		
Higher	102	65	54	35		
Total	141	65	77	35	.47	.79
Other farm enterprises						
Lower	7	64	4	36		
Same	63	60	42	40		
Higher	68	69	30	31		
Total	138	65	76	35	1.96	.37
Degree to which investment lowers long-term marketing risk						
Lower	17	61	10	39		
Same	92	68	44	32		
Higher	37	63	24	37		
Total	146	65	78	35	0.97	0.62

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Source: Ag loan officers survey, question 14.

Figure 6 is a graph of the loan officers' views of return and risk for the cooperatives compared with the investment alternatives. The horizontal axis measures the average response for risk and the vertical axis the average response for return. The graph is divided into four quadrants at the point (3, 3). At this point a cooperative investment has the same risk and rate of return as the investment to which it is compared; from the perspective of the loan officers they are identical investments.

If an investment pair is situated in quadrant I, loan officers believed that cooperative investment offered a higher return but more risk than the investment alternative. Typically, higher return can only be earned by incurring more risk, both investments, the cooperative investment and its alternative, are logical alternatives, neither inferior to the other. Loan officers place bonds, CD's, land, and other farm enterprises in this quadrant; they are acceptable alternatives to investments in cooperatives.

Any investment pair in quadrant II indicates that loan officers viewed the cooperative investment as offering lower return and higher risk than the alternative investment. The combination of lower return and higher risk indicates that loan officers believed the cooperative investment is inferior to the alternative investments of stocks and mutual funds as a stand alone investment.

Points in quadrant III, like those in quadrant I, show that neither investment in the pair is clearly superior to the other. If an investment pair is located in this quadrant, the cooperative investment offers both lower return and lower risk. Points in quadrant IV indicate that the cooperative investment is superior to its investment pair, offering both higher return and lower risk. None of the investment pairs lie in these quadrants.

Figure 7 shows the views of loan officers, of farmers who invested and of farmers who did not invest in cooperative stock about return and risk for the cooperatives compared with the investment alternatives (Wilson, Goreham and Kibbe, 1996). Loan officers are risk averse compared to both cooperative members and non-members. Loan officers viewed cooperative investment as riskier relative to the alternatives than did members and non-members. Loan officers thought that cooperative investment returned less relative to its alternative than did the members. They thought that it returned more relative to its alternative than did the non-members. Even if they relied more heavily on the investment criteria when evaluating a cooperative stock loan, their conservative attitudes toward risk and return relative to those of cooperative stock loan applicants would limit the number of projects that they viewed as acceptable.

Cooperative investment is not held in isolation, and the risk of the farmers' investment portfolios, which are mainly composed of their farm enterprises, is affected by the investment in a cooperative. Additional investments which do not have perfectly correlated income streams reduce portfolio risk. To assess the loan officers' view of the reduction of portfolio risk that cooperative investment could provide, loan officers ranked from five to one the degree to which cooperative investment lowers long-term marketing risk with one being "not at all," and five being "very large." The average response was 3.13, where three was to a "small degree." The

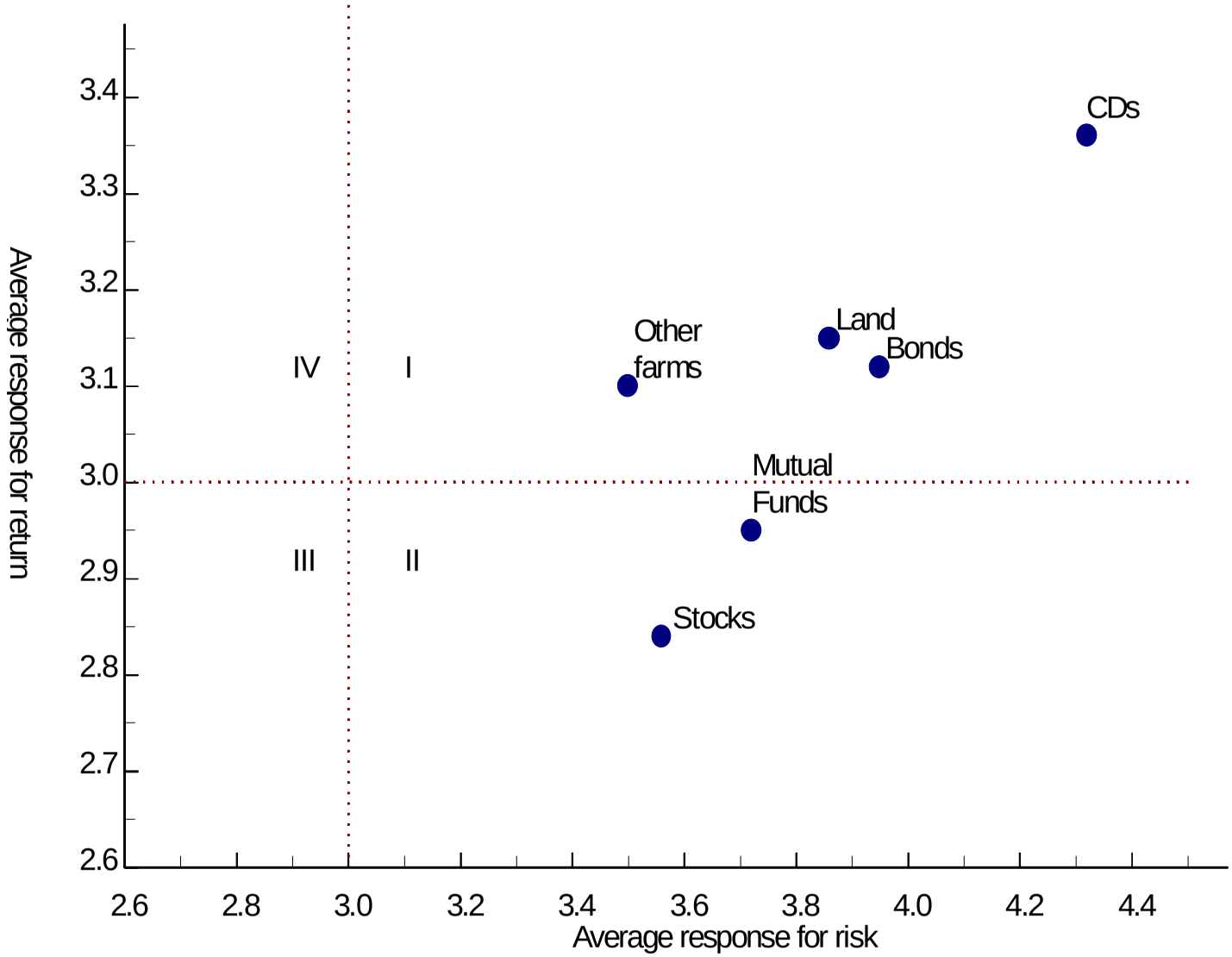

Figure 6. Average estimate of risk and return of co-op investments compared to alternative investments by agricultural loan officers, North Dakota, 1995. Source: Table 21. Based on 5-pt Likert scale: 5=Much Higher and 1=Much Lower.

42

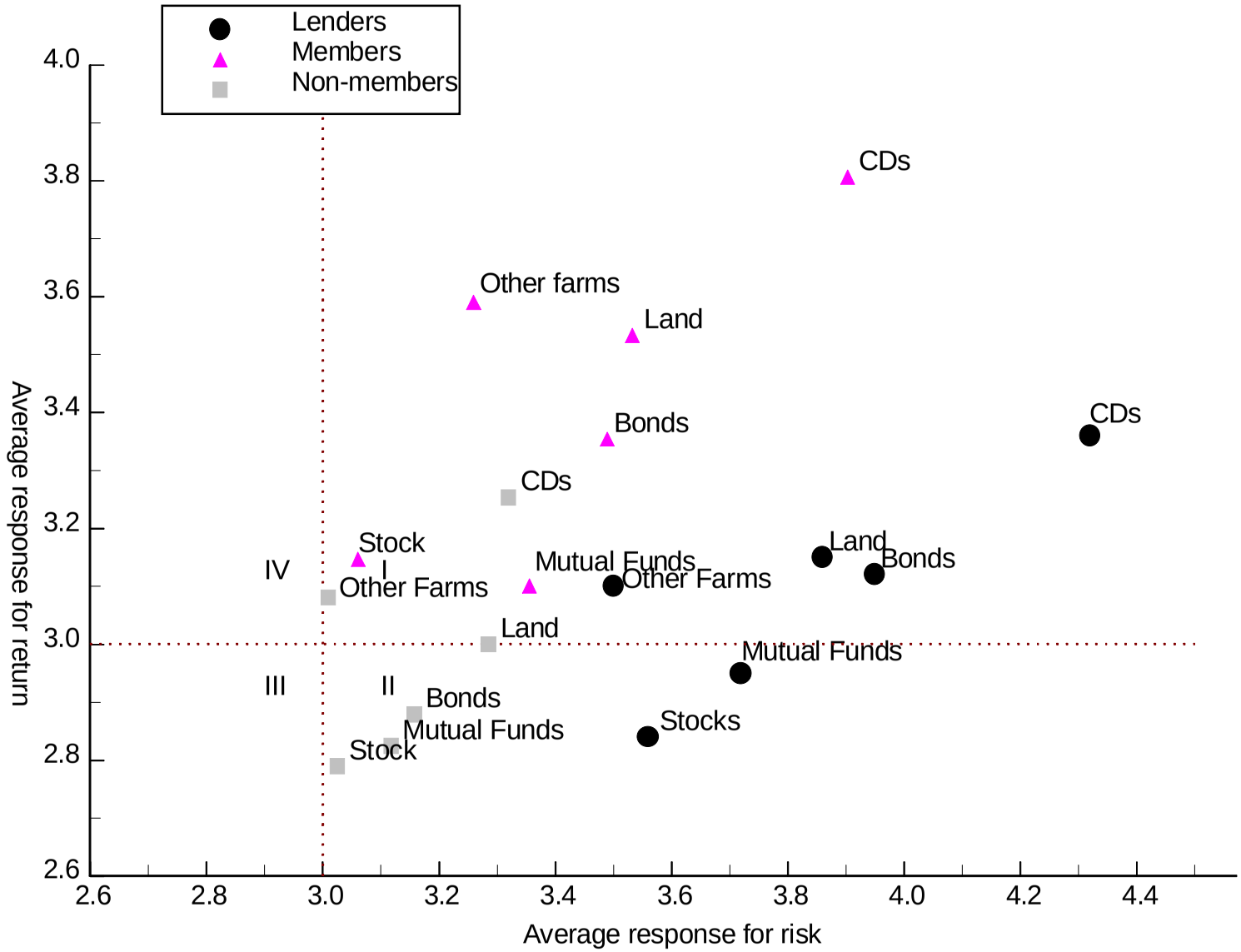

Figure 7. Average estimate of risk and return of co-op investments copared to alternative investments by agricultural loan officers, members and non-members, North Dakota, 1996. Source: Wilson, Goreham, and Kibbe. Based on 5-pt Likert scale: 5=Much Higher and 1=Much Lower.

43

crosstabulations results indicate that there is no statistically significant difference between loan officers that made the loans and those that did not (Table 22).

Demographics

Demographic characteristics may influence the loan decision. Variables in the fifth cluster measure these characteristics. The first five variables measure loan officers' gender, age, highest educational degrees, if they grew up on farms or in rural communities, and if they had friends or family who had purchased cooperative stock. In addition to these variables, the final variable measures loan officers' perception of their parents' attitudes regarding cooperatives (Table 25).

Only two demographic variables were statistically related to lending. Loan officers with friends and family that had purchased stock were more likely to have made stock loans, and the relationship is statistically significant at the 1% level. Seventy-seven percent of 145 loan officers making loans had friends or family who had purchased stock, compared to 38% of 85 loan officers who did not (Table 26).

Men were more likely to make cooperative stock loans than women, and the relationship is significant at the 5% level. However, only 18 women responded to the survey. The small number of responses made additional testing controlling for factors such as the years of experience as an agricultural loan officer, unreliable.

Age, educational level, parents' attitudes toward cooperatives, and farm background were not statistically related to lending

V. CONCLUSIONS

The FCS made a disproportionately large share of cooperative stock loans. Excluding the FCS, large institutions which aggressively managed assets and marketed cooperative stock loans were more likely to have made the loans. They are aggressively managed, with lower levels of capital, relatively low non-current loans, and higher returns on equity. They aggressively market the loans by offering lower interest rates or deferred principal payments. Research indicates that the larger institutions have the advantage of more diversified loan portfolios and economies of size.

North Dakota loan officers appear to be conservative, relying on current operations to repay loans, and not the profitability or cash flow of the investment. This practice gives financially strong borrowers the freedom to invest in projects as they choose, without loan officers second guessing their decisions. It limits financially weaker borrowers from investing in projects which indicate strong earnings potential.

Table 25. Demographic variables, North Dakota, 1995.

Variables	N	%
Sex		
Male	170	90
Female	18	10
Total	188	100
Age		
< 35	52	22
35 to 50	153	64
> 50	33	14
Total	238	100
Highest degree		
High School	21	9
College	197	83
Graduate	19	8
Total	237	100
Grew up on farm		
Yes	193	81
No	46	19
Total	239	100
Parents' attitude towards co-ops		
Very positive	33	14
Positive	104	45
Neutral	77	33
Negative	18	8
Very negative	0	0
Total	232	100
Friends and/or family have invested in new co-ops		
Family	11	5
Friends	93	40
Family and friends	41	18
None	85	37
Total	230	100

Source: Ag loan officers survey, questions 22, 23, 24, 25 and 26.

Table 26. Crosstabulation tests for demographic variables, North Dakota, 1995.

	made loans					
	Yes		No			
Variable/Response	N	%	N	%	χ^2*	p
Sex						
Male	107	63	63	37		
Female	6	33	12	67		
Total	113	60	75	40	5.82	0.02
Age						
< 35	26	50	26	50		
35 to 50	99	65	54	35		
> 50	19	58	14	42		
Total	144	60	94	39	3.61	0.16
Highest degree						
High School	13	62	8	38		
College	119	60	78	40		
Graduate degree	12	63	7	37		
Total	144	61	93	39	0.07	0.97
Grew up on farm						
Yes	120	62	73	38		
No	24	52	22	48		
Total	144	60	95	40	1.53	0.22
Parents' attitude toward co-ops						
Positive	90	66	47	34		
Neutral	42	55	35	45		
Negative	10	56	8	44		
Total	142	61	90	39	2.83	0.24
Friends and/or family have invested in new co-ops						
Yes	112	77	33	23		
No	30	35	55	65		
Total	142	62	88	38	40.14	0.00

The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Sources: Ag loan officers survey, questions 22, 23, 24 and 25.

The success of farmers in acquiring debt to fund their cooperatives may be due to the nature of the cooperative ownership. At the time of organization, cooperative ownership is more diffuse and the risk to any single investor more limited than other agribusiness concerns of similar size. This advantage mitigates concern expressed in the *North Dakota Vision 2000 Report* that conservative lending practices would limit access to initial seed capital. By lending to farmers and not directly to the cooperative, loan officer maintained conservative lending standards and still funded the new cooperatives. Repayment was based on farmers' profitability and asset base and not that of the new cooperative. The risk of a large loan loss was small because loans were made to many investors rather than directly to the new venture or a small number of investors.

The use of conservative lending standards may contribute to the commonly held, though not majority belief among loan officers that cooperatives benefit only the wealthy. If loan officers

believe that cooperatives will increase the income of members, and they only make loans to the financially strong than many are likely to believe that cooperatives benefit only the wealthy. This belief, if prevalent among farmers, could be socially and politically divisive since the state government has initiated several programs which encourage the formation of new cooperatives.

Experienced loan officers made most of the cooperative stock loans. The experience is multidimensional. Loan officers who made the loans are more likely to have more than ten years of experience as an agricultural lender, and spend more the 60% of their work day in agricultural lending. They are more likely to have friends or family who have purchased cooperative stock. Finally, they are more likely to have evaluated a new cooperative's business plan or attended its information meetings.

Cooperative ventures may engender more trust by the loan officers than other agribusiness ventures of similar size. The trust is based on the motives of early organizers to provide accurate information to both investors and loan officers. Early organizers cannot enhance their profit by withholding information from other farmers investing in cooperatives and loan officers receive the same information as other investors. The importance of information is seen in the lending response of loan officers who reviewed a business plan or attended cooperative information meetings, which were designed to give loan officers the same information provided potential members. Those who attended an organizational meeting or examined a business plan were about twice as likely to have made stock loans.

Loan officers either displayed a high degree of professional ethics, or were subject to strong review after stock loans were granted, or both. They did not avoid making cooperative stock loans because these loans were more difficult or time consuming.

Loan officers generally had positive attitudes about new cooperatives, but these attitudes had little influence on lending. Most believed that new cooperatives were able to compete effectively in the food processing industry. They also believed that new cooperatives could achieve a number of objectives for the farmer, such as gaining access to value-added markets, allowing them to network with other farmers, and increasing their knowledge base.

A limited number of attitudes were associated with lending. Loan officers who felt that farmers understood the impact of the cooperative investment on their farms were more likely to have made loans. To a loan officer, a proper understanding may include a modest appraisal of the risk reducing advantages of the new cooperatives. They were more likely to have made loans to farmers who believed that new cooperatives "seldom" or "occasionally" reduced marketing risk.

Despite loan officers' generally positive attitudes, there was a negative current. Their concerns that the delivery contracts are too strict and that the required investments are too high may indicate that they do not understand that these characteristics differentiate new cooperatives from traditional cooperatives. It may also indicate an assessment of their own risks. High investment cost for the initial stock purchase implies larger loans. Strict delivery contracts force farmers to continue deliveries to the cooperative even if they can market products more profitably elsewhere.

Loan officers view cooperative stock investment as an inferior stand alone investment to stocks and mutual funds for farmers. Most loan officers believe that farmers can reduce marketing risk through cooperative stock investment. If these cooperatives significantly reduce risk then their members may form the nucleus of surviving farmers after the next farm crisis. If they fail to reduce risk significantly or fail to earn a normal return on investment, then members, who are tied to the cooperatives through long-term delivery contracts, may be the first to exit the industry. Additional testing should be conducted to determine if cooperative stock investment increases return or reduces risk sufficiently to justify investment by farmers seeking portfolio diversification.

VI. REFERENCES

Annual Report. 1994. Farm Credit Services of Fargo, ACA, AgriBank, FCB and the Seventh District Associations

Annual Report. 1994. Farm Credit Services of Grand Forks, FLCA, Farm Credit Services of Grand Forks, PCA, AgriBank, FCB and the Seventh District Associations.

Annual Report. 1994. Farm Credit Services of Mandan, FLCA, Farm Credit Services of Grand Forks, PCA, AgriBank, FCB and the Seventh District Associations.

Annual Report. 1994. Farm Credit Services of Northwest North Dakota, ACA, AgriBank, FCB and the Seventh District Associations.

Calomiris, Charles W., R. Glenn Hubbard, and James H. Stock. 1986. "Growing in Debt: The 'Farm Crisis' and Public Policy," National Bureau of Economic Research Working Paper No. 2085, National Bureau of Economic Research, Cambridge, MA, Nov.

Fedgazette. 1995. Bank Directory, July, S9-S10.

Gustafson, Cole R., Ronald J. Beyer, and David M. Saxowsky. 1991. "Credit Evaluation: Investigating the Decision Processes of Agricultural Loan Officers." Agricultural Finance Review, 51, 55-63.

Leistritz, Larry F. 1995. Potential Local Socioeconomic Impacts of the Proposed ProGold Processing Plant. Agricultural Economics Report No. 328, North Dakota State University, Fargo.

Rural Development Program Report: 1990-1995. North Dakota Associations of Rural Electric & Telephone Cooperatives, Mandan, North Dakota.

Stiglitz, Joseph E. and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." The American Economic Review, 71, 3, 393-410.

Vision 2000: An 8-Point Action Agenda for Building a New North Dakota. 1990. Discussion Report, North Dakota 2000 Committee, Fargo, North Dakota.

Wilson, Brooks M., Gary A Goreham, and Theron Kibbe. 1996. "The Formation of New Cooperatives and the Attitudes of Members, Non-members and Agricultural Loan Officers." Working paper

APPENDIX TABLES

Table A1. Crosstabulation tests for financial condition variables, including the Farm Credit Services, that made agricultural loans, North Dakota, 1995.

	Made loans					
	Yes		No			
Variable/Response	N	%	N	%	χ^2	p
Total assets in $ millions						
< $25	13	32	28	68		
$25 to $100	36	67	18	33		
> $100	11	85	2	15		
Total	60	56	48	44	17.26	0.00
Capital as a % of assets						
< 7%	5	71	2	29		
7% to 10%	36	61	23	39		
> 10%	19	45	23	55		
Total	60	56	48	44	3.26	0.20
Ag loans as a % of total loans						
< 25%	10	50	10	50		
25% to 65%	31	55	25	45		
> 65%	19	59	13	41		
Total	60	56	48	44	0.43	0.80
Return on equity						
< 8.0%	9	47	10	53		
8.0% to 12.0%	17	57	13	43		
> 12.0%	34	58	25	42		
Total	60	56	48	44	0.63	0.73
Loan-to-deposit ratio						
Less 65%	34	51	33	49		
65% to 80%	15	68	7	32		
> 80%	11	58	8	42		
Total	60	56	48	44	2.13	0.34
Non-current loans to total loans ratio						
< 1%	33	49	35	51		
1% to 4%	25	71	10	29		
> 4%	2	40	3	60		
Total	60	56	48	44	5.57	0.06

* The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Sources: Fedgazette, Annual Statements of the Farm Credit Services, North Dakota State

Table A2. Crosstabulation tests for capital as a percentage of total assets of the institutions, excluding the farm credit services, after controlling for return on equity and non-current loans, North Dakota, 1995.

	Made loans					
	Yes		No			
Variable/Response	N	%	N	%	χ^2	p
Capital as a % of assets (ROE<8.0%)						
< 7%	0	0	1	100		
7% to 10%	4	50	4	50		
> 10%	4	44	5	56		
Total	8	56	10	44	1.27	0.52
Capital as a % of assets (8.0%<ROE<12.0%)						
< 7%	1	100	0	0		
7% to 10%	5	50	5	50		
> 10%	8	50	8	50		
Total	14	52	13	48	1.35	0.51
Capital as a % of assets (ROE>12.0%)						
< 7%	4	80	1	20		
7% to 10%	27	66	14	34		
> 10%	3	23	10	77		
Total	34	58	25	42	8.72	0.1
Capital as a % of assets (non-current<1%)						
< 7%	5	83	1	17		
7% to 10%	21	53	19	47		
> 10%	7	32	15	68		
Total	33	49	35	44	5.93	0.05
Capital as a % of assets (1%<non-current<4%)						
< 7%	0	0	1	100		
7% to 10%	14	82	3	18		
> 10%	7	54	6	46		
Total	21	56	9	44	5.20	0.07
Capital as a % of assets (non-current>4%)						
7% to 10%	1	50	1	50		
> 10%	1	33	2	67		
Total	2	40	3	60	0.13	0.71

* The degrees of freedom for an item are calculated as follows: df=(R-1)(C-1), where R is the number of rows and C, the number of columns. Sources: Fedgazette, Annual Statements of the Farm Credit Services, North Dakota State

Table A3. Market share comparison of banks, the farm credit services, and credit unions based on financial information, North Dakota 1994.

	Institution		Market share	
	Avg.	N	$	%
Total assets ($ 000)				
Banks	57,710	136	7,848,500	83
Farm credit services	284,072	4	1,136,288	12
Credit unions	21,041	23	483,953	5
Agricultural loans ($ 000)				
Banks	15,784	136	2,146,606	70
Farm credit services	203,227	4	812,908	26
Credit unions	5,005	23	115,125	4
Cooperative stock loans				
Banks	57,478	136	7,816,957	34
Farm credit services	3,718,761	4	14,875,043	64
Credit unions	22,284	23	512,534	2

Sources: Fedgazette, annual statements of the farm credit services, the North Dakota State Department of Banking, and the Ag Supervisors survey (Question 7).

Table A4. Market share comparison of large, medium, and small banks and credit unions based on financial information, North Dakota 1994.

	Institution		Market share	
	Avg.	N	$	%
Total assets ($ 000)				
Large	284,306	14	3,980,287	48
Medium	43,516	79	3,437,747	41
Small	13,252	69	914,418	11
Agricultural loans ($ 000)				
Large	28,926	14	433,889	29
Medium	10,584	79	836,137	55
Small	3,427	69	239,904	16
Cooperative stock loans				
Large	242,360	14	3,635,399	47
Medium	30,300	79	2,393,772	31
Small	24,593	69	1,696,950	22

Sources: Fedgazette, the North Dakota State Department of Banking, and the Ag Supervisors survey (Question 7).

Table A5. Market share comparison based on the percentage of equity based on financial information, North Dakota 1994.

	Institution		Market share	
	Avg.	N	$	%
Total assets ($ 000)				
High	31,329	67	2,099,050	25
Medium	52,921	85	4,498,249	54
Low	192,388	9	1,731,494	21
Agricultural loans ($ 000)				
High	12,393	67	480,016	25
Medium	30,931	85	1,143,154	60
Low	114,483	9	277,508	15
Cooperative stock loans				
High	16,043	67	1,074,896	16
Medium	43,927	85	3,733,763	55
Low	219,373	9	1,974,356	29

Sources: Fedgazette, the North Dakota State Department of Banking, and the Ag Supervisors survey (Question 7).

Table A6. Financial institutions' loan activity with farmers seeking to fund investments in new agricultural cooperatives, North Dakota, 1995.

Selected variables	N	%
Did the institution make these loans?		
Yes	61	53
No	54	47
Total	115	100
Number of applications received		
1 to 5	28	45
6 to 10	15	24
> 10	19	31
Total	62	100
Number of loans granted		
1 to 5	80	72
6 to 10	14	13
> 10	17	15
Total	101	100
Highest loan amount		
< $22,000	29	50
$22,000 to $50,000	14	24
> $50,000	15	26
Total	58	100
Lowest loan amount		
< $5,000	23	40
$5,000 to $7,000	14	24
> $7,000	21	36
Total	68	100
Average loan amount		
< $10,000	29	53
$10,000 to $14,000	7	13
> $14,000	19	34
Total	55	100

Sources: Ag supervisor survey, questions 7.

Table A7. Loan officer's loan activity with farmers seeking to fund investments in new agricultural cooperatives, North Dakota, 1995.

Selected variables	N	%
Did ag loan officer make these loans?		
Yes	148	57
No	112	43
Total	260	100
Number of farmers who talked about investment loan		
1 to 5	125	48
6 to 10	57	22
>10	78	30
Total	260	100
Number of applications received.		
1 to 5	177	68
6 to 10	51	20
>10	32	12
Total	260	100
Number of loans granted		
1 to 5	185	71
6 to 10	43	17
>10	32	12
Total	260	100

Source: Ag lenders survey, questions 4.