



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

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

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

Help ensure our sustainability.

Give to AgEcon Search

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

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

Credit Rationing of North Dakota Agribusiness

Cole R. Gustafson and Sara J. Anderson

Abstract: Results from a stratified, random, cross-sectional mail survey of 272 North Dakota agribusinesses found limited evidence of external credit rationing. Only 8 percent of the firms would be willing to pay a premium for additional financing. Consequently, credit rationing that did exist was internal. The study also provided information on the financial characteristics of agribusiness firms operating in the input, output and service sectors.

Key Words and Phrases: Capital, Credit rationing, Financing.

During the 1990 to 1992 recession of the U.S. economy, a "credit crunch" was perceived to exist (Bacon and Wessel; Bernanke and Lown; Greenspan).¹ Decreased availability of credit from commercial banks was thought to be due to disintermediation, overzealous regulators, banks' unwillingness to lend, and general lending conservatism. At the same time, agribusinesses may have decreased their demand for credit, given economic conditions in the farm sector. In general, the extent to which the credit crunch or credit rationing impacted agribusiness firms² is unknown, partly because few studies (Barry, Sonka and Lajili; Featherstone and Sherrick) have investigated the financial structure, sources of credit, and methods of financial management for agribusiness firms.

The objectives of this study were to quantify the financial structures of agribusiness firms in North Dakota, to measure the extent of credit rationing in these firms, and to gauge the relationship between a firm's financial position and whether it had been formally or informally denied credit since 1987. The majority of agribusiness firms in North Dakota are small, privately held firms. Little information exists on the types and terms of their financial arrangements. Information for the study was elicited through a stratified, random, cross-sectional mail survey of North Dakota agribusinesses. The following sections describe credit rationing as it applies to agribusiness, discuss administration of the survey, and present the results of the study.

Credit Rationing

The primary function of financial markets is to optimally allocate scarce capital among savers and borrowers. However, these markets do not always work efficiently because of market imperfections and transaction costs. Thus, some projects with positive net present values are rejected because of credit rationing (Stiglitz and Weiss).³

Forms of Credit Rationing. Credit rationing can be either internal or external. Internal credit rationing occurs when management, in order to limit debt financing, imposes criteria for either project acceptance or risk exposure. External credit rationing occurs when a market interest rate exists and lenders supply a smaller amount of funds than borrowers want at that rate. External capital rationing can involve either loan quantity rationing or loan size rationing (Aguilera). With loan quantity rationing, applicants receive fewer loans than applied for; with loan size rationing, applicants receive all of their loans but with fewer funds. Moreover, credit rationing can occur in other ways as well. Simply financing some borrowers and not financing others that are observationally indistinguishable is considered a form of credit rationing. In either case, borrowers have exhausted all sources of loanable funds, but still find the expected marginal value of credit exceeds its marginal cost. Thus, financial institutions are not willing to loan funds, even though borrowers are willing to pay premiums for debt capital.

Basis for Rationing. Credit rationing can prevail in a market economy because lenders do not think the risk premiums borrowers are willing to pay cover potential costs of default (Stiglitz and Weiss). Also, rationing may arise from information asymmetries since lenders do not have complete information about the investment prospects.

Credit rationing may be a chronic problem for North Dakota agribusiness firms (Springer). Torok and Schroeder reported that agribusiness firms in Montana and Wyoming are more concerned with 1) obtaining long-term loans and 2) financing new technology than are nonagribusiness firms. They infer that this concern reflects agribusiness firms' drive to expand and creditors' perceived loan risk.

Small businesses, in general, may experience credit rationing because of the gap that exists in the number and type of financing institutions that provide long-term debt to small businesses. Credit crunches affect small businesses most severely, particularly if they do not have established lines of credit with a financial institution (Fazzari, Hubbard and Petersen).

Reasons for Credit Rationing to Agribusiness. Rationing debt capital to agribusiness could occur for several reasons. First, most agribusiness

firms are located in rural areas. Mikesell hypothesized that rural banks serving this market tend to be conservative with loanable funds because of the high risks associated with lending in rural areas.⁴ He reported that rural banks generally do not make loans beyond the amount that deposits alone can support, unlike many urban banks that obtain additional funds from the federal funds market.

Second, agribusiness firms do not represent a diversification opportunity for banks. Adverse conditions in agriculture directly affect agribusiness firms. Lending to agribusiness would increase the financial risks of rural banks more than would their diversifying a portion of funds into an area that is not directly related to agriculture.

Third, rural lenders have limited experience evaluating agribusiness loans (Gustafson, Beyer and Saxowsky). When reviewing farm loan proposals, lenders have sufficient applications to compare borrowers and to determine credit risk. However, loan officers frequently do not have an equivalent database for evaluating agribusiness loan applications. To the extent agribusiness firms possess superior information relative to financial institutions, information asymmetries exist that precipitate problems of adverse selection. Moreover, agribusinesses involve more enterprises than most farm operations. Lenders who do not fully understand businesses may be hesitant to extend credit (loan commitments) to them.

A final problem relates to the value of the collateral pledged to secure agribusiness loans. Unlike farmers, who pledge assets that have minimal economic depreciation and relatively low transaction costs of liquidation, agribusiness collateral is generally highly specialized and illiquid.

Quantifying Credit Rationing. External credit rationing exists if a firm is willing to pay the market interest rate for credit, or even a premium, but is unable to obtain necessary funding. One could survey agribusinesses to determine the extent of external credit rationing. However, other techniques to determine the extent of credit rationing have been developed.

Morgan identified three indicators of credit rationing: 3) Lack of a loan commitment from a bank. 2) A positive correlation between investment spending and cash flow. 3) Low investment when prospects are available. Loan commitments offer protection during periods of low external credit availability and signal the credit worthiness of a firm to secondary creditors. The positive correlation between investment and cash flow implies both that outside financing is unavailable and a possible bias against outside debt. Therefore, any investments must be internally funded.

A final indicator comparing actual investment with available opportunities is difficult to measure empirically. Fazzari, Hubbard and Petersen have devised a measure of investment opportunity "q," which is defined as the

market value of a business as an ongoing entity divided by the current replacement value of the firm. When "q" exceeds zero, firms should invest because the marginal value of investment exceeds its cost. In essence, the "excess" market value of the firm should be utilized to expand the firm. Comparing "q" with actual investment behavior becomes another indicator of financial constraint.

Combs, Shaffer and Pulver created an index that defines a capital-stressed firm, based on whether 1) debt/equity capital to finance expansion could not be obtained within thirty miles of its present location; 2) the firm ranked its banks as fair, poor or very poor in meeting its credit needs; 3) the firm ranked all sources of capital as fair, poor or very poor in meeting its credit needs; and 4) the firm had been denied credit on at least one loan application. They found that financial markets were adequately allocating capital. However, they noted several improvements. In particular, perceptions held by firms that have been denied capital tended to be negative. They suggested the need for financial institutions to clearly communicate the basis for loan refusals.

Survey Procedures

A stratified, random, cross-sectional mail survey of 272 North Dakota agribusinesses was conducted to quantify the capital structures of agribusiness firms in the state; to measure the extent of credit rationing in these firms; and to gauge the relationship between credit rationing and the firm's financial position. Agribusiness firms included in the survey were divided into three sectors: input, output and service firms. Input firms, such as implement, crop and feed dealerships, supplied products/services to farmers. Output firms, such as grain elevators, auction markets and food processors, processed or distributed what farmers produced. Service firms, such as aerial sprayers, crop consultants and farm management/accounting firms, provided technical services to farmers. Individual firms within each group were randomly selected from North Dakota association and telephone directories.

The mail survey contained seven sections (see Appendix). The first section ascertained the firm's type of business, the proportion of the firm's business that was agriculturally related, the business organization of the firm, and the number of employees. The second section elicited the respondents' opinions regarding credit availability, their firm's ability to raise capital, and the performance of rural financial markets. The third section elicited their perceptions about their firm's financial health. These

perceptions were compared with actual financial information obtained later in the questionnaire.

The fourth section determined the firm's willingness to pay for additional capital and the amount of capital needed—in essence, a demand schedule for debt financing. If credit rationing existed, the respondent completed the fifth and sixth sections of the survey to determine whether the rationing was internal or external. The seventh section contained a summarization of the respondents' financial statements.

Two pretests of the questionnaire were conducted prior to the general mailing of the survey instrument. After the general survey was mailed, a follow-up mailing was sent to improve response rates. In addition, a telephone survey of nonrespondents was conducted to test for nonresponse bias and to increase the overall rates of response. After these contacts, an overall survey response rate of 27.9 percent was obtained (76 usable questionnaires returned). Sector response rates were comparable: input firms (29%), output firms (23%), and service firms (29%).

Tests of nonresponse bias included a comparison of responses across mailings (Siegel), a geographical comparison of response rates, a comparison of respondent characteristics with published industry averages, and selected questions that gauge respondents' willingness to pay a premium for additional credit. In summary, respondents differed from the population in terms of geographic location, possessed a lower level of liabilities, had a lower net income, and were more financially constrained than nonrespondents. However, the firms were not any more likely to pay a premium for additional credit. Therefore, nonresponse bias was not expected to greatly affect the study's results.

Results

Ninety percent of the agribusiness respondents surveyed indicated that more than 75 percent of their business was directly related to agriculture. More than half of the respondents considered themselves retailers. Unincorporated firms represented 60 percent of the respondents.

Attitudinal Responses. Table 1 summarizes the respondents' attitudes toward financial markets and lenders.⁵ The majority of agribusinesses disagreed with the statement that lending criteria are the same for everyone. The input sector may be experiencing more stringent criteria because only four of the twenty-seven input firms agreed with the statement. The majority of respondents also indicated that agribusinesses have a limited number of lenders to deal with. Based on their divided response, service

Table 1.
North Dakota Agribusiness Attitudes Toward Financial Markets and Lenders

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
1. Lenders apply similar criteria to all agribusinesses	2.8	23.9	36.6	16.9	19.7
2. Agribusinesses have a limited number of lenders to deal with	20.0	44.3	22.9	2.9	2.9
3. Lenders are knowledgeable about agribusiness finance	5.7	47.1	24.3	14.3	8.6
4. Loan applications are too time consuming	7.1	28.6	40.0	10.0	14.3
5. Collateral requirements are excessive	11.8	35.3	26.5	8.8	17.6
6. Credit agreements are too short	7.4	20.6	35.3	10.3	26.5
7. Geographic distances to lenders are too great	1.4	8.6	51.4	14.3	24.3

-----percent-----

firms apparently have greater access to credit. In contrast, 80 percent of the input suppliers indicated the number of lenders was limited. More than half of the respondents said lenders were knowledgeable about agribusiness finance.

Lenders have the option of rationing credit through nonprice mechanisms by increasing paperwork burdens; increasing collateral requirements; or shortening credit agreements. Agribusiness firms surveyed did not indicate these impediments. Geographical distances between the firms and their lenders were not considered excessive.

Table 2 shows the firms' attitudes toward credit availability. Thirty seven percent of the respondents indicated agribusiness firms had greater difficulty obtaining credit than did other small businesses. Twice as many input suppliers agreed with this statement, indicating that they are at greater risk of not obtaining credit. Overall, the respondents received necessary funding for profitable investments. The service sector had the least difficulty obtaining funds, whereas the input sector had the most difficulty. Respondents indicated long-term capital was the most difficult type of credit to obtain.

Many of the respondents' credit difficulties may be internal. More than 91 percent of the respondents agreed that managers of agribusiness firms could benefit from improved financial management skills, the results of which are consistent with Gladwin, et al. One-fourth of all firms surveyed (36 percent of input firms) had difficulty meeting debt service obligations. More than half of the firms did not have accounts receivable up to date. More than a third of the firms did not have a financial plan for the coming year.

Financial Position. The financial characteristics of the agribusiness firms responding to the survey are summarized in Table 3.⁶ Although considerable variation existed across firms, most respondents were relatively profitable with an average return on assets of 6 percent and used only modest levels of financing (debt/asset ratio of 34 percent), which may be a rational response to the variability of the farm economy. Output firms operated with the highest level of assets and input firms with the least level of assets. Input firms also had the lowest level of financing (debt/asset ratio of 28 percent).

The current market value of the firms, based on the respondents' assessments of what outside investors would be willing to pay for the firms as ongoing entities, was substantially less than reported equity. The greatest disparity existed for output firms. In a related question, nearly half the respondents indicated that such an investor could not adequately appraise their firms.

Table 2.
North Dakota Agribusiness Attitudes Toward Credit Availability

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
	-----percent-----				
1. Agribusinesses have greater difficulty obtaining credit than other small businesses	9.9	26.8	35.2	24.0	28.2
2. Do you have equal access to capital relative to other agribusiness firms	16.9	60.6	15.5	1.9	5.6
3. All of your firms profitable investments have received necessary funds	20.3	47.8	17.4	11.6	2.9
4. Short-term capital is not available	2.9	12.9	52.9	20.0	11.4
5. Long-term capital is not available	5.8	20.3	42.0	17.4	14.5

Table 3.

Financial Characteristics of North Dakota Agribusiness Firms

Balance Sheet	All Firms	Input Firms	Output Firms	Service Firms
-----\$1,000-----				
Current Assets				
Cash	267.93	41.80	815.93	161.68
Accounts Receivable	248.66	76.16	680.87	134.42
Inventory	1,162.48	1,137.04	1,715.77	798.22
Intermediate Assets	512.14	135.75	1,781.33	202.30
Long-term Assets	498.69	167.38	1,221.25	391.62
Accounts Payable	313.14	500.43	218.00	131.12
Total Debt	384.82	344.00	632.37	273.31
Equity	1,991.94	713.70	5,364.86	1,283.81
Market Value of Firm	852.00	726.00	1,246.00	701.00
Current Asset/Current Liabilities (%)	2,272	2,078	3,588	1,278
Debt/Asset Ratio (%)	34	28	33	43
Income Statement				
Annual Sales	12,600.00	12,630.00	25,970.00	1,880.00
Depreciation	142.12	25.45	366.87	72.93
Interest Expense	28.71	26.09	18.67	41.43
Tax Expense	17.44	8.89	15.44	31.31
Net Income	111.34	43.24	329.60	64.31
Return on Assets (%)	6	12	3	9

Sources and terms of debt financing the responding agribusiness firms obtained are shown in Table 4. The most frequent sources of debt financing were local banks, the Bank for Co-op, and the Small Business

Table 4.
Sources and Terms of Debt Financing

Source	Average Debt Financing		
	Original Term	Interest Rate	Amount
	Years	%	\$
Stockholders	6.3	9.4	225,600
Local Bank	1.1	11.1	122,300
Individual	5.0	10.0	17,000
Parent Company	Ongoing	9.0	1,142,000
Bank for Co-ops	1.0	6.7	995,000
SBA	12.0	5.0	96,000
Family	7.2	8.5	75,100
Private	10.0	9.0	32,500
Personal Notes	Demand	8.7	115,000
Self	5.0	12.0	6,000
Regional Bank	5.0	7.5	1,000,000
Credit Union	1.0	10.5	23,500
Financing Company	1.0	12.0	10,000

Administration. Private sources of credit, including stockholders, individuals, family and other private sources, ranked next. The terms for most credit were fewer than ten years, with most on an annual basis. Average interest rates ranged from 5.0 percent on public sources of credit to 12 percent on loans from individual owners.

Most of the respondents had obtained secured credit from their financial institution (77%). Collateral provided as security included the firm's assets and equipment (49%), inventory (47%), real estate (37%), personal assets (31%), accounts receivable (27%), and other (4%). When applying for credit, the following information was required: balance sheet (89%), income statement (76%), personal financial records (73%), business plan (61%), and tax returns (60%). Input firms were required to submit more information than other sectors.

Table 5.
Indicators of Credit Rationing

Category	All Firms	Input Firms	Output Firms	Service Firms
	-----\$1,000-----			
Minimum debt level	95.70	93.80	75.40	111.20
Maximum debt level	733.70	353.30	1,1218.30	767.50
Desired debt level	60.40	58.00	111.40	25.50
Firms constrained in the amount of debt they can borrow (%)	41	59	43	24
Willing to pay a premium for additional debt (%)	8	8	6	8
Informally denied credit (%)	31	48	22	21
Formally denied loan application in past 5 years (%)	18	26	11	15
Average amount of rejected loan	432.30	701.00	211.00	131.67
Amount firm would borrow at -200 basis points of interest	148.06	165.20	233.20	54.25
Amount firm may borrow at +200 basis points of interest	13.80	6.20	35.30	5.00

More than 76 percent of the respondents had easy or moderate access to additional/outside sources of equity funds, including past earnings (37%), asset appreciation (19%), family (14%), friends (9%), venture capital (7%), and other (5%).

Credit Rationing. One indicator of credit rationing is how close firms are to the minimum amount of debt necessary to operate their businesses. Agribusiness firms in North Dakota report a range of minimum levels of financing necessary to operate their firms (Table 5). All but three firms were above their minimum debt level. Moreover, most respondents who were above their desired debt level indicated low profitability, unexpected losses and slow farm economy prevented them from reducing their debt while respondents below their desired debt level indicated high interest rates and poor cash flows prevented additional borrowing.

Overall, 41 percent of the respondents indicated a financial constraint on the amount of debt capital they could borrow (Table 5). Thirty one percent of the respondents had been informally denied credit, and 18 percent had formal applications for credit denied. Financial markets appear to be operating satisfactorily because only 8 percent of the respondents would be willing to pay a premium for additional debt. If firms willing to pay a premium could obtain additional credit, but had to pay an additional 200 basis points of interest, they would only borrow, on average, an additional \$13,800.

Detailed analyses were conducted involving numerous cross-tabulations, correlations, analyses and regressions that attempted to link the financial position of agribusiness firms with their demand for credit and their success of obtaining additional debt financing from lenders (loan rejection).⁷ In summary, agribusiness firms with the highest levels of liquidity, solvency and net income were most willing to pay a premium for credit and were most likely to have a loan request accepted. Firms that experienced loan application rejection consistently felt bank requirements were too time consuming and too restrictive, that credit agreements were too limited and of short duration, and that the rejecting bank was located too far away and was unfamiliar with the respondent's business. Interestingly, firms with rejected loan applications also expressed a need for greater financial management—further indication that credit shortages are due to internal managerial factors. Finally, firms in mature industries are hampered by credit limitations even though they individually may have promising investment projects. Correlations between an industry's growth status and credit availability show that if an industry's growth state is declining, lenders feel that existing credit premiums offered by agribusinesses for credit do not cover perceived risks of an industry slowdown.

Applying the credit rationing analysis of Fazzari, Hubbard and Petersen resulted in an average q of 67.3 percent, which indicated that lack of credit arises from limited internal investment prospects. On a relative basis though, agribusiness firms with a higher degree of financial constraint also had a higher q . Based on the index of Shaffer and Pulver, less than 3 percent of the firms were capital stressed. Therefore, North Dakota agribusiness firms did not seem to experience credit rationing during the last recession.

Policy Implications

The results presented above have several implications for agribusiness managers, equity holders, vendors/suppliers and public policymakers. In terms of credit policy, more comprehensive financial benchmark information is required to assess agribusiness financial performance over time and the sector's demand for debt and equity capital. In particular, the study has shown a need to recognize the unique financial characteristics of sectors comprising the agribusiness industry since firms are not equal in terms of size, financial structure, and credit demand. As agribusiness firms continue to concentrate, the ability to access proprietary financial information becomes uncertain. Without financial benchmark information, lenders will have difficulty making performance comparisons across agribusiness firms and with other industries for credit underwriting purposes. At present, more than one-fourth of agribusinesses are not required to provide selected financial statements that indicate either extensive relationship, short-term, or inventory lending practices.

Significant internal rationing of credit implies that agribusiness investment patterns are highly dependent on economic conditions prevailing in agriculture and other rural areas. Agribusiness education and training programs need to assist managers in recognizing and responding to these relationships. In particular, the ability to create and maintain internal financial reserves that facilitate stability and smoothing of inventory, production and employment levels in the midst of variable economic conditions appears warranted. Establishment of internal financial reserves skews reports of financial and accounting activity unless prevailing economic conditions are taken into account. Equity investors (especially among cooperatives) may not permit agribusiness firms to establish reserves of sufficient size to achieve optimum economic performance. Alternatively, agribusiness firms with low reserves and severe internal credit rationing may need to demand additional capital from equity holders.

Firms upstream and downstream of agribusinesses need to develop policies that respond to the internal credit rationing actions of agribusiness firms. Such policies may include deferred payments, barter, swaps, leases and incremental/phased transactions that enable agribusinesses to change/expand assets without increasing credit exposure.

Finally, public policymakers may achieve greater success in strengthening the economic performance of agribusiness firms if public efforts were directed more toward increasing general economic activity in agriculture and other rural areas as opposed to creating additional programs that increase credit availability specifically to agribusinesses, especially at

subsidized rates of interest. At present, North Dakota administers several programs through the Bank of North Dakota (the only state-owned bank in the United States), the Agriculture Department, and the Department of Economic Development and Finance, which purposely tries to increase the availability of credit to agribusiness firms in the state.

Summary

Results of a stratified, random, cross-sectional mail survey of seventy-six North Dakota agribusinesses show limited evidence of external credit rationing among the firms surveyed. Although nearly half of the agribusinesses were constrained in the amount of debt capital they could borrow, only 8 percent of them would be willing to pay a premium for additional financing. Of those willing to pay a premium, the amount of credit they would borrow at 200 basis points over their present interest rate averaged \$13,800. The firms involved possessed the highest levels of liquidity, solvency and net income and were most likely to have a loan request accepted. Consequently, any credit rationing that did exist was internal since agribusinesses either found increased usage of debt financing unprofitable or too risky. The survey provided significant information on the financial characteristics of nonfarm agribusiness firms operating in the input, output and service sectors. Finally, several policy implications of the analysis were developed. Overall, public effort needs to be directed more toward management skills and general economic activity in rural areas, rather than programs that increase the availability of credit. The majority of firms feel a need for improved financial management skills; have difficulty managing receivables; and do not have an adequate financial plan—which reduces their demand for external credit.

The results of this survey are limited to one time period and geographic area of the country. Similar studies should be replicated in other regions to increase the understanding of the financial characteristics and management practices of agribusiness firms.

Notes

Cole R. Gustafson is Associate Professor and Sara J. Anderson is former Graduate Research Assistant, Department of Agricultural Economics, North Dakota State University, Fargo. The authors received useful comments from Frank Dooley, Marvin Duncan and Charlene Lucken on earlier drafts of this manuscript.

1. See Kaufman for a discussion of the origin of this term. For a discussion of previous credit crunches, see Wojnilower.
2. In this study, agribusinesses are narrowly defined to exclude firms directly involved in production agriculture. The definition is intended to include firms that supply inputs to, or process and distribute the outputs of, farm units.
3. A more general study of capital rationing that includes equity capital is not considered in this study.
4. Loan-to-deposit ratios of agricultural and other rural financial institutions typically average considerably less than 1. However, this statistic does not imply credit rationing because of the lending risks and associated costs involved.
5. Selected desegregated results pertaining to input, output and service firms are discussed in this section. Due to space limitations, the desegregated results are not included in the tables. However, Anderson reported them.
6. One reviewer was surprised that firms were willing to disclose this amount of data. In general, agricultural firms in the state are very cooperative with respect to land grant survey requests. However, careful administration of the survey instructions and strict measures of confidentiality probably enhanced data collection efforts. Of those surveys returned, virtually all were completed in their entirety. However, the accuracy of the data is somewhat suspect given the variety of accounting methods employed. Moreover, nonresponse bias is still of concern.
7. These additional results are reported by Anderson.

References

- Aguilera, N. A. "Credit Rationing and Loan Default in Formal Rural Credit Markets." Unpublished Ph.D. dissertation, The Ohio State University, Columbus, 1990.
- Anderson, S. J. "Capital Rationing of Agribusinesses in North Dakota." Unpublished paper, Department of Agricultural Economics, North Dakota State University, Fargo, 1993.
- Bacon, K., and D. Wessel. "Wary Lenders." *Wall Street Journal*, Sept. 30, 1991, p. 1.
- Barry, P. J., S. T. Sonka, and K. Lajili. "Vertical Coordination, Financial Structure, and the Changing Theory of the Firm." *Am. J. Agr. Econ.* 5(1992):1219-1225.
- Bernanke, B. S., and C. S. Lown. "The Credit Crunch." *Brookings Papers on Economic Activity* 2(1991):205-247.
- Combs, R. P., Shaffer, R., and G. Pulver. *Financing New Small Business Starts in Wisconsin*. University of Wisconsin Dept. of Agr. Econ., Madison, Publication R-3918, 1983.
- Fazzari, S. M., R. G. Hubbard, and B. C. Petersen. "Financing Constraints and Corporate Investment." *Brookings Papers on Economic Activity* 1(1988):141-195.
- Featherstone, A. M., and B. J. Sherrick. "Financing Vertically Coordinated Agricultural Firms." *Am. J. Agr. Econ.* 5(1992):1232-1237.
- Gladwin, C. H., B. F. Long, E. M. Babb, B. A. Moseley, D. Mulkey, and D. J. Zimet. "Rural Entrepreneurship: One Key to Rural Revitalization." *Am. J. Agr. Econ.* 71(1989):1305-1314.
- Greenspan, A. "Statements to Congress." *Fed. Res. Bull.*, May, 1991, pp. 300-310.
- Gustafson, C. R., R. J. Beyer, and D. M. Saxowsky. "Credit Evaluation: Investigating the Decision Processes of Agricultural Loan Officers." *Agr. Fin. Rev.* 51(1991):55-63.
- Kaufman, H. "Credit Crunches: The Deregulators Were Wrong." *Wall Street Journal*, Oct. 9, 1991, p. 1.
- Mikesell, J. J. "Rural Banks Reflect the Local Economy." *Rural Development Perspectives*, Oct. 1985, pp. 11-17.
- Morgan, D. P. "New Evidence Firms Are Financially Constrained." *Econ. Rev.*, Sept./Oct. 1991, pp. 37-45.
- Siegel, S. *Nonparametric Statistics for the Behavioral Sciences*. New York, NY: McGraw-Hill Book Co., 1956.
- Springer, P. "Minnesota Company Won't Move to Fargo." *The Forum*. Fargo, ND, Apr. 15, 1992, p. 1.

Stiglitz, J., and A. Weiss. "Credit Rationing With Imperfect Information." *Am. Econ. Rev.* 71(1981):393-410.

Torok, S. J., and A. Schroeder. "Analysis of the Unique and Different Business Problems and Technical Assistance Needs of Agribusinesses: An Empirical Investigation of Small Agribusiness Manufacturers and Retailers." Paper presented at regional meeting WRCC-72, Las Vegas, NV, June 11, 1991.

Wojnilower, A. M. "The Role of Credit Crunches in Recent Financial History." *Brookings Papers on Economic Activity* 2(1980):277-339.

Appendix

Survey Instrument

INSTRUCTIONS: Please try to complete all parts of the questionnaire. If you are not sure of a response, answer the best you can. Check the appropriate box and fill in the blanks. Please note the following terms:

Agribusiness excludes farm and ranch businesses in this survey. Short-term debt financing is defined as less than one year. Intermediate-term debt financing is from one year to six years. Long-term debt financing is greater than six years.

1. What percent of your total sales involves the agricultural sector?

<input type="checkbox"/> Less than 25%	<input type="checkbox"/> 51% to 75%
<input type="checkbox"/> 25% to 50%	<input type="checkbox"/> 76% to 100%

2. Your business can be best described as:

<input type="checkbox"/> Manufacturer	<input type="checkbox"/> Retailer
<input type="checkbox"/> Processor	<input type="checkbox"/> Elevator
<input type="checkbox"/> Wholesaler	<input type="checkbox"/> Service (Specify) _____
<input type="checkbox"/> Other (Specify) _____	

3. How many people do you employ? (Number of People)

Full-time	_____
Permanent Part-time	_____
Temporary	_____

4. We would like your opinion on the following statements. Please circle the appropriate number.

	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
Agribusiness firms have greater difficulty obtaining credit than other small businesses.	1	2	3	4	5
Relative to other agribusiness firms, do you feel your firm has equal access to capital.	1	2	3	4	5
Lenders apply the same lending criteria to all agribusiness.	1	2	3	4	5
All of your firm's profitable investment proposals have received necessary funds.	1	2	3	4	5
Agribusinesses have a limited number of lenders to deal with.	1	2	3	4	5
Agribusinesses lack access to a diverse group of lenders.	1	2	3	4	5
Lenders are knowledgeable about agribusiness finance.	1	2	3	4	5
Managers of agribusinesses could benefit from increased financial management skills.	1	2	3	4	5

5. What organization type would best describe your business?

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Sole Proprietorship | <input type="checkbox"/> Corporation |
| <input type="checkbox"/> Partnership | <input type="checkbox"/> Cooperative |

6. What are your 1991 estimated annual sales? \$ _____,000.

7. Over the past five years what was your average annual investment on property, plant and machinery (exclude inventory)? \$ _____,000.

8. What are the maximum and minimum levels of debt that your firm can tolerate?

\$ _____,000. Maximum Debt \$ _____,000. Minimum Debt

9. What would you ideally want your debt level to be? \$ _____

10. Why are you not at your ideal position? _____

11. Is your firm constrained in the amount of debt it can borrow?
- Yes No (Go to question 13)
12. How would you use additional debt financing? (Check all that would apply)
- Pay current operating expenses
- Pay accounts receivable
- Restructure short-, intermediate-, and/or long-term debt
- Purchase equipment
- Increase production of products or services currently produced
- Begin producing an additional product or service line
- Expand your physical plant size
- Establish branches at other locations
- Other _____

13. Rate how the following statements apply to your business.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Short-term capital is not available.	1	2	3	4	5
Intermediate-term capital is not available.	1	2	3	4	5
Long-term capital is not available.	1	2	3	4	5
Loan application requirements are too time consuming.	1	2	3	4	5
Collateral requirements are excessive.	1	2	3	4	5
Amount of credit available is too low.	1	2	3	4	5
Length of credit agreements is too short.	1	2	3	4	5
Distance between the firm and the financial institution is too great.	1	2	3	4	5

14. Rate the following by the ease or difficulty of obtaining.

	Easy	Moderate	Difficult
Equity financing	1	2	3
Short-term debt financing	1	2	3
Intermediate-term debt financing	1	2	3
Long-term debt financing	1	2	3

15. Where would you first go for more equity capital? (Check one)

- Friends (Customers) Past earnings
- Family Appreciation of business assets
- Venture capital firms Other _____

16. What information does your lender require in order to obtain financing?
(Check all that apply)
- | | |
|---|---|
| <input type="checkbox"/> Balance sheet | <input type="checkbox"/> Income tax returns |
| <input type="checkbox"/> Business plan | <input type="checkbox"/> Cash flow statement |
| <input type="checkbox"/> Income statement | <input type="checkbox"/> Personal financial records |
17. What is the state of growth in your industry?
- | | | |
|------------------------------------|-----------------------------------|------------------------------------|
| <input type="checkbox"/> Expanding | <input type="checkbox"/> Stagnant | <input type="checkbox"/> Declining |
|------------------------------------|-----------------------------------|------------------------------------|
18. What would be the maximum price an outside investor would offer for your business as an ongoing entity? \$ _____,000.
19. Do you think an outside investor could adequately appraise your company?
- | | | |
|------------------------------|-----------------------------|----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | If no, what is their bias? |
| | | _____ % High |
| | | _____ % Low |
20. Do you have difficulty meeting debt service obligations?
- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|
21. Are your accounts receivable current?
- | | | |
|------------------------------|-----------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | If no, what percent are not current: _____ % |
|------------------------------|-----------------------------|--|
22. Does your firm have a financial plan for the coming year?
- | | | | |
|------------------------------|--------------------------------|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | If yes, is it in written form? | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| <input type="checkbox"/> No | | | |
23. What type of credit do you obtain from financial institutions?
- | |
|------------------------------------|
| <input type="checkbox"/> Unsecured |
| <input type="checkbox"/> Secured |
- If secured, what was used as collateral? (Check all that apply)
- | |
|---|
| <input type="checkbox"/> Personal assets/guarantee |
| <input type="checkbox"/> Company assets (specify below) |
| <input type="checkbox"/> Accounts receivable |
| <input type="checkbox"/> Inventory |
| <input type="checkbox"/> Equipment |
| <input type="checkbox"/> Real estate |
| <input type="checkbox"/> Other _____ |
24. If you could borrow at an interest rate that is 2 percentage points less than your present rate, how much additional money would you borrow (assuming it was available)? \$ _____

25. If the interest rate was 2 percentage points greater than your present rate, how much additional money would you borrow (assuming it is available)?
\$ _____
26. What rate of return do new investments for your company have to yield?
\$ _____
27. Would your firm be willing to pay a premium (higher interest rate) if additional debt could be obtained?
 Yes If yes, how much? _____ %
 No
28. Has your firm been denied a loan application formally within the past five years (1985-1990)?
 Yes No (go to question #34)
29. What was the term of the loan that was rejected? (Check all that apply)
 Short-term (one year or less)
 Intermediate-term (more than one year but less than six years)
 Long-term (six years or more)
30. What was the amount of the loan(s)? \$ _____,000.
31. If one financial institution denied your application, did you reapply at another financial institution for the same loan?
 Yes No (go to question #33)
32. When you reapplied at another financial institution, was your application accepted or rejected?
 Accepted Rejected
33. For what reasons did the first financial institution deny your loan application? (Check all that apply)
 Lack of financial records
 Debt to equity ratio too high
 Anticipated cash flows inadequate
 Bank was not dealing with your type of business
 Lacked an adequate business plan
 Insufficient collateral
 Proposal too risky
 Other _____

34. Has a financial institution ever given you the feeling that it would be a waste of your time to submit a loan application because you would most likely be rejected?
- Yes No
35. How many financial institutions did you do business with in 1990?
- 0-1 4-5
 2-3 More than 5
36. Do you have a line of credit established with a financial institution?
- Yes No

Please complete the following information from your most recent financial statement. Also, please complete the liabilities matrix below regarding each of the loans that you currently have.

37. Current Assets:
- Cash \$.000.
- Accounts Receivable \$.000.
- Inventory \$.000.
38. Intermediate Assets \$.000.
(i.e., machinery & equipment)
39. Long-term Assets \$.000.
(i.e., building & real estate)
40. Accounts Payable \$.000.
41. Net Income \$.000.
42. Tax Expense \$.000.
43. Amount of Interest Paid \$.000.
44. Depreciation \$.000.

Debt

	Original Term	Present Interest Rate	Source	Amount
Example A	1 yr.	10%	SBA	\$10,000
Example B	10 yr.	10.5%	Local Bank	\$85,000

Loan 1
Loan 2
Loan 3
Loan 4
Loan 5
Loan 6