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Risk Aversion Characteristics Among PCA Borrowers

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SUMMARY

Farmers using borrowed capital to finance the farm business have shown varying degrees of success and failure in the repayment of debts. A possible source of explanation relates to the attitudes and values of the individuals. This study was undertaken to identify PCA borrowers' characteristics which are significantly related to their attitudes and values concerning risk.

Loan and financial records of 186 randomly selected Missouri PCA borrowers provided the data for this study. The sample was drawn from PCA borrowers representing five major types of farming prevalent in Missouri and included beef cow, cattle feeding, hog, cash grain, and general purpose systems of operation.

The multiple linear regression model was used to identify factors significantly related to borrowers' attitudes and values concerning risk aversion as measured by a risk aversion scale.

The study suggested several borrower characteristics which were related significantly to attitudes and values concerning risk aversion. Education was the most significant of the selected variables and accounted for 16 percent of the variation in the risk aversion scores. Farmers with more education showed an increased tendency to assume risks in relation to the less educated individuals. Possible explanations for this finding are (1) education increases the receptiveness of an individual toward risk assumption; (2) attitudes and values may be altered as an individual progresses through high school, college, etc.; and (3) individuals with more formal education should be better acquainted with sources of information related to new technology and innovations.

Evidence indicated that larger net worths and willingness to borrow additional capital tended to be associated with individuals who were classified as risk takers. In the majority of cases, these were the younger, more educated borrowers.

The analysis further indicated that farmers who planned to expand their major farming enterprises within the next five years and used long-run plans to aid in managing their operations were more willing to assume risk. In addition, these individuals tended to be younger farmers who used off-farm income to supplement farm earnings.

Several suggestions were presented to increase the coefficient of multiple determination obtained in this, and possibly future, studies. These were:

1. Include more significant factors omitted from the analysis;
2. Improve the measurement of attitudes and values;
3. Refine the risk aversion scale;
4. Use a dynamic statistical model; and
5. Possibly substitute a curvilinear model.

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INTRODUCTION

Borrowing constitutes a prime source of capital for the farm business. Lending agencies mobilize funds from a multitude of individual sources throughout the country and channel or distribute the capital to individuals desiring credit.

Farmers have shown various degrees of success in repaying borrowed capital. Some borrowers have made sound investments which significantly increased their net farm profits. Others have made similar investments, but their net farm profits have decreased and they have had to borrow additional capital to repay existing debts.

Factors which may be associated with the successful use of credit are the farmers' attitudes toward risk and values related to security and conservatism. The relation of attitudes, values, and borrower characteristics to risk aversion, credit usage, and loan repayment has been the central theme of recent research studies by Reinsel and Brake,¹ and Wehrly and Atkinson.² An excellent study was conducted by Hesser and Janssen³ who found from the data of 110 farmers in central Indiana that net worth, reaction to uncertainty, knowledge of credit sources and of policies and practices of lenders, and the farmer's attitudes toward the use of credit were significantly related to the internal use of credit.

In an effort to identify the essential variables in farm and financial management that determine a farmer's success in the use of credit, the Federal Intermediate Credit Bank (FICB) of St. Louis initiated a cooperative research project with the Agricultural Economics Department of the University of Missouri-Columbia College of Agriculture. This study, which is a small segment of the overall FICB research project, was designed to identify factors which influence the attitudes of farm operators toward risk.

Borrowers who are willing to take risks may make investments in crops, livestock enterprises, buildings, and/or machinery which have uncertain earning potentials. Consequently, some of the borrowers in this group must renew their outstanding debts or borrow additional capital when earnings are not sufficient

¹Edward Reinsel and John Brake, *Borrower Characteristics Related to Farm Loan Repayment*, University Agricultural Experiment Station and Cooperative Extension Service, Research Report 59, Business (East Lansing, Michigan: Michigan State University, 1965) pp. 1-5.

²J. S. Wehrly and J. H. Atkinson, *Debt Load Capacity of Farms*, Indiana Agricultural Experiment Station, Research Bulletin 780 (Lafayette, Indiana, Purdue University, June, 1964), pp. 1-19.

³Leon F. Hesser and Melvin R. Janssen, *Capital Rationing among Farmers*, Indiana Agricultural Experiment Station, Research Bulletin 703 (Lafayette, Indiana: Purdue University, 1960), pp. 1-16.

to meet debt repayments. At the other end of the extreme are the borrowers who are unwilling to assume risks and thus use only small amounts of borrowed capital during extreme emergencies. In most cases, this group could borrow larger amounts of capital to provide more efficient farming operations and resource utilization, but decline to borrow due to their attitudes and values concerning risks. The borrowed capital usually is invested only in assets which have proven productive from past experience.

Identification of factors influencing farmers' attitudes and values toward risk could give researchers, creditors, and farmers greater insight into the successful use of credit. Knowledge of key factors may permit the development of analytical tools and procedures which can be used by credit agencies to evaluate the soundness of loans and make wiser financial decisions.

The objectives for this study were (1) to measure the degree to which farmers are oriented toward conservatism and security, and (2) to identify economic and non-economic factors which are significantly related to selected Missouri Production Credit Association borrowers' attitudes concerning risk aversion.

PROCEDURES

The primary sources of data for this study were the loan and financial records of 186 PCA borrowers who were randomly selected from Production Credit Associations within Missouri. Data were taken from these records for the years 1961-65. Supplemental information was secured directly from the PCA borrowers by the trained interviewing staff of the Department of Rural Sociology, University of Missouri-Columbia, with the aid of a specially developed questionnaire. Interviewing was completed during the early spring of 1966.

The questionnaire was designed to obtain (1) factual data not available from loan records; (2) personal operator and family data; (3) data relating to the operator's farm experience and background; (4) operator's experience with the major farm enterprise or enterprises; (5) descriptive data of the present farm unit; (6) family goals; and (7) attitudes of the operator toward the use of credit, long-time planning, insurance, innovations in farming, and other factors. In addition, a risk aversion scale was used to measure the qualitative attributes of attitudes and reaction to uncertainty.

The sample was drawn from five major types of farming prevalent in Missouri and included beef cow, cattle feeding, hog, cash grain, and general purpose systems of operation. For a borrower to be classified as belonging to a particular type of farming, he had to receive one-third, or more, of his total cash farm receipts from the enterprise or enterprises composing the classification. In most cases, the farms selected for study were not highly specialized, but included combinations of livestock enterprises and a variety of crops.

The "population" for each type of farming included the names of all borrowers within the selected PCAs who met the qualifications for each classifica-

tion to be studied. The names of approximately 300 borrowers were sought for each type of farming. A table of random numbers was used to draw the sample.⁴

The multiple linear regression technique was used to determine the relationship between the borrowers' risk aversion scores and certain of the sample borrowers' characteristics. A "t" test was used to determine whether the selected characteristics were statistically significant.

RISK AVERSION SCALE

Numerous indices and scales have been developed to give quantitative values to various attributes that are generally qualitative in nature. For this study, a risk aversion scale was devised to measure the degree of conservatism and security related to the use of credit by selected PCA borrowers in Missouri. The scale consisted of five possible "risk aversion preferences" numbered one through five. Except for three statements in the scale, preferences at the lower end of the continuum implied attitudes of extreme risk aversion while preferences at the upper end implied attitudes of extreme risk preference.

The attitudes and values of the respondents were not measured directly from the risk scale, but rather were implied from the individuals' behavior. An underlying assumption was that the direction of an individual's response to a risk statement involving a value judgment would provide some insight into his attitudes concerning risk. The risk scale attitude measurement determined only the relative ranking of respondents in relation to the scale. Individual respondents may have values and attitudes concerning risk which they would rank higher than permitted on the risk scale. Therefore, individual responses were evaluated primarily in relation to other answers on the same scale for the same statements.

The selected borrowers were shown 14 statements related to conservatism and risk aversion.⁵ Each borrower's total risk score was the summation of the numbered values corresponding to the risk preferences he selected for each statement.⁶ The distribution of risk scores, shown in Table 1, ranged from 28 to 54. Assuming that the statements reflect the attitudes of the borrowers toward security and conservatism versus risk taking, risk scores below 42 represented the more conservative individuals while scores above 42 corresponded to those more willing to assume risks. Nearly 50 percent of the borrowers possessed attitudes toward averting risks while 38.2 percent of the sample revealed a willingness to assume risks, according to the risk scale used in this study. Almost 12.4 percent of the borrowers showed indecisiveness or uncertainty toward the statements and risk aversion.

⁴See Appendix I for details of the sampling procedure.

⁵The statements were taken from the following: Daryl J. Hobbs, "Value and Attitude Prediction of Differential Farm Management Ability," unpublished Ph.D. dissertation (Ames, Iowa: Iowa State University, 1963).

⁶See Appendix II for the risk statements and attitude scale.

TABLE 1 - DISTRIBUTION OF RISK SCORES, 186 MISSOURI
PCA BORROWERS, 1965

Total Risk Score	Borrowers	
	Number	Percent
28 or less	1	.5
29-30	1	.5
31-32	7	3.8
33-34	16	8.6
35-36	20	10.8
37-38	25	13.4
39-40	22	11.8
41-42	23	12.4
43-44	23	12.4
45-46	16	8.6
47-48	18	9.7
49-50	9	4.8
51-52	3	1.6
53-54	2	1.1
55 or more	0	0.0
Total	<u>186</u>	<u>100.0</u>

49.4

38.2

EMPIRICAL ANALYSIS

Identification of Related Sample Characteristics

Data from the 186 sample PCA borrowers were used to identify economic and non-economic factors which are significantly related to the borrowers' attitudes concerning risk aversion. Multiple linear regression was used to analyze the data. The regression function was of the form:

$$Y = f(X_1, X_2, \dots, X_n)$$

where Y = Total risk aversion score;

X_1 = Average equity ratio, 1961-65 (percent);

X_2 = Year borrower started farming;

X_3 = Net worth, 1965;

X_4 = Age of borrower, 1965 (years);

X_5 = Size of borrower's family;

X_6 = Borrower's education (years);

X_7 = Net acres operated;

X_8 = Rented acres;

X_9 = Total cropland;

X_{10} = Total 1965 assets;

X_{11} = Total 1965 debts;

X_{12} = Percent of borrowers' 1965 total assets which they are willing to borrow up to \$40,000;

X_{13} = Plans to expand major enterprises during next 5 years (yes 1, no 0);

X_{14} = Receipt of government payments (yes 1, no 0);

X_{15} = Receipt of off-farm income (yes 1, no 0);

X_{16} = Use of consumer credit (yes 1, no 0);

X_{17} = Use of long-run plans (yes 1, no 0).

A "t" test conducted on the regression coefficients for each of the independent variables showed that X_1 , average equity ratio; X_2 , year started farming; X_4 , borrower's age; X_5 , family size; X_7 , net acres operated; X_8 , rented acres; X_9 , cropland acres; X_{10} , total assets; X_{11} , total debts; X_{14} , receipt of government payments; and X_{16} , use of consumer credit, were not statistically significant. Table 2 shows the mean, standard deviation, regression coefficients, and "t" values for the various borrower characteristics and economic scale indices.

Another regression was run with the non-significant variables omitted. The equation obtained was:

$$Y = 30.622387 + .000028X_3 + .630260X_6 + .012074X_{12} + 1.756623X_{13} + 1.049432X_{15} + 1.494621X_{17}.$$

TABLE 2 - MEAN, STANDARD DEVIATION, REGRESSION COEFFICIENTS, AND "t" VALUES FOR VARIOUS ECONOMIC SCALE AND BORROWER CHARACTERISTICS

	\bar{x}	Standard deviation s	Regression coefficient b	"t" value
Y Risk aversion score	40.83	5.28	--	--
X ₁ Average equity ratio, 1961-65	72.63 percent	17.13	-.037	-.390
X ₂ Year borrower started farming	41.96	11.11	-.007	-.062
X ₃ Net worth, 1965	\$44,695.23	\$40,839.31	+.185	+1.523*
X ₄ Age of borrower	47.79 years	10.46	-.112	-.995
X ₅ Family size	3.81	1.67	+.008	+.104
X ₆ Education	10.66 years	2.52	+.259	+3.511***
X ₇ Net acres operated	538.33 acres	453.63	-.063	-.522
X ₈ Rented acres	240.34 acres	346.62	+.160	+1.213
X ₉ Total cropland	259.79 acres	211.85	-.045	-.402
X ₁₀ Total assets	\$81,422.66	\$77,985.33	+.107	+.682
X ₁₁ Total debts	\$21,342.59	\$21,810.22	+.019	+.142
X ₁₂ Percent of borrowers' total assets they would borrow	32.08	61.23	+.111	+1.500*
X ₁₃ Enterprise expansion	.58	.49	+.126	+1.680**
X ₁₄ Receipt of government payments	.76	.43	+.028	+.409
X ₁₅ Receipt of off-farm income	.45	.50	+.099	+1.348*
X ₁₆ Consumer credit	.43	.50	-.070	-1.029
X ₁₇ Long-run plans	.24	.43	+.109	+1.541*

* Significant at the .20 level of probability.

** Significant at the .10 level of probability.

*** Significant at the .01 level of probability.

R² .2896

R .5328



Variables X_3 and X_6 were statistically significant at the .01 level of probability; X_{12} and X_{13} were significant at the .05 level; X_{15} was significant at the .10 level; and X_{17} was significant at the .20 level of probability. The coefficient of multiple determination, $R_{y.3,6,12,13,15,17}^2 = .264205$, was statistically different from zero at the .01 level of probability. Thus, the six independent variables explained 26 percent of the variation in the risk scores of the sample borrowers. The education variable, X_6 , was the most significant of the selected variables and accounted for 16 percent of the variation in the dependent variable.

Explanation of Results

In this study, as the farmers' education increased, they were willing to take more risk, assuming other variables were held constant. Several explanations may be hypothesized for these results.

First, individuals with higher educations may be more receptive to the use of borrowed capital in their business operations. These individuals should be more familiar with the advantages of using credit for sound investments.

Second, many of the farmers' attitudes and values may change as they progress through high school and college and become associated with various groups of people. The changes in attitudes and values may affect individuals' outlooks toward risk and uncertainty. What is uncertainty to less educated persons may be risk to persons with more education. Thus, these individuals may associate a probability of success or failure with events which less educated individuals would disregard entirely.

Finally, individuals with higher educations should be better informed about the information available from universities, government agencies, and other sources pertaining to new technology and innovations, thus reducing risk and uncertainty.

The regression equation further suggests that farmers classified as risk takers had larger net worths than those rated as risk averters. Table 3 shows a significant positive intercorrelation between total debts and net worths. Therefore, borrowers with the largest total debts and associated net worths would be expected to possess attitudes of willingness to assume risks as indicated by the sample data.

Farmers willing to borrow the largest amounts of capital (\$40,000 maximum and expressed as a percent of total assets) tended to be the most willing to assume risks. This willingness to use large amounts of borrowed capital in relation to total assets may be partially due to the age of these individuals. Table 3 shows a significant negative intercorrelation between age and the percent of total assets which the sample members are willing to borrow. Young farmers, who tend to be more educated, should be expected to assume more risks than the older farmers.

TABLE 3 - INTERCORRELATION COEFFICIENTS BETWEEN VARIOUS ECONOMIC SCALE AND BORROWER CHARACTERISTICS

		X ₁	Y	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄	X ₁₅	X ₁₆	X ₁₇
X ₁	Average equity ratio, 1961-65	--	-.18	-.23	.11	.31	-.13	-.11	-.24	-.26	-.23	.05	-.46	-.28	-.22	-.03	-.15	-.14	-.17
Y	Risk aversion score	--	.22	.18	-.24	.12	.40	.17	.13	.17	.21	.24	.18	.25	.02	.16	-.03	.18	
X ₂	Year borrower started farming		--	-.17	-.76	.42	.29	.02	.09	.02	-.09	.05	.19	.31	-.16	.25	.15	.10	
X ₃	Net worth, 1965			--	.26	-.13	.12	.27	-.14	.29	.82	.51	-.19	-.16	.16	-.10	-.10	-.07	
X ₄	Age of borrower				--	-.50	-.29	-.06	-.15	-.06	.22	-.03	-.25	-.40	.19	-.19	-.13	-.11	
X ₅	Family size					--	.12	.09	.09	.04	-.09	.04	.12	.25	-.16	.01	.04	.10	
X ₆	Education						--	.07	.04	.06	.19	.14	.12	.16	-.10	.18	-.02	.13	
X ₇	Net acres operated							--	.72	.66	.31	.44	.10	.05	.09	-.05	.05	.13	
X ₈	Rented acres								--	.64	-.11	.17	.24	.14	.06	-.08	.12	.11	
X ₉	Total cropland									--	.35	.51	.08	.09	.20	-.22	-.03	.10	
X ₁₀	Total assets										--	.69	-.18	-.14	.12	-.05	-.07	.01	
X ₁₁	Total debts											--	-.04	.04	.11	.01	.03	.11	
X ₁₂	Percent of borrowers total assets they would borrow												--	.19	.10	.19	.20	-.01	
X ₁₃	Enterprise expansion													--	-.02	.07	.04	.28	
X ₁₄	Receipt of government payments														--	-.09	-.04	-.00	
X ₁₅	Receipt of off-farm income															--	.07	-.08	
X ₁₆	Consumer credit																--	.01	
X ₁₇	Long-run plans																	--	

Individuals who planned to expand major enterprises within the next five years were more willing to assume risks than those who had no such plans. Again, these individuals tended to be the younger, more educated farmers.

The analysis showed that an individual receiving off-farm income was more likely to assume risks than an individual limited strictly to income from the farm business. In most cases, the borrowers receiving off-farm income were younger farmers who probably were just getting started in farming and used non-farm income to supplement farm earnings.

Finally, farmers with more favorable attitudes toward assuming risks tended to use long-run plans to aid in the management of their farming operations.

The Explained Variability

The six variables used in the statistical model for this study explained only 26 percent of the variation in the risk scores of the sample borrowers. A significant proportion of the remaining variation could probably be explained by several factors not included in this analysis.

Another reason for the relatively low coefficient of multiple determination relates to the measurements of attitudes and values. Although this study assumed that the risk statements reflected the attitudes of the borrowers toward security and conservatism, the possibility exists that the statements give an inadequate measurement of the intended attributes.

In addition, the risk scale used in this study might have been improved by increasing the number of possible discrete answer selections from five to 11 or to an even larger number approaching a continuous scale. This study indicated a reluctance on the part of some individuals to identify themselves either with the extreme ends or the central (indifferent) point on the scale. This may have accounted for the relatively large number of selections in the remaining two choices on the scale. A scale with 11 or more possible discrete choices for each risk statement should provide a wider distribution of answers about the central score. Also, better data could be obtained concerning the answer distribution near the extreme ends of the scale.

The static nature of the statistical model further limits the explained variability. The regression model used in this study dealt with variables measured at a specific point in time. However, the attitudes and values of an individual at a point in time generally have been influenced by his personal and social characteristics, situations in which he has acted, the environment in which he has associated, and other things which occur in a dynamic setting. To represent dynamic variables with a static model leaves a margin for error.

Finally, the multiple linear model implies a linear relationship between the dependent and each of the independent variables. If in fact the relationship is not linear, a curvilinear model could possibly increase the explained variability.

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APPENDIX A

DETAILS OF THE SAMPLING PROCEDURE

To expedite the collection of data, this study was confined to pre-selected Production Credit Associations within Missouri. Selection of the associations was made by the St. Louis Federal Intermediate Credit Bank personnel. Criteria for the selection of the associations included predominance of the types of farming operations chosen for study, interests of the association manager and his directors, staff and facilities available in the association, availability of cooperators in the Mail-In Farm Record Program of the Missouri College of Agriculture, and the convenience in location of the study area in relation to the College of Agriculture.

The FICB of St. Louis limited the sample to selected counties within each association for greater efficiency in data collection. Criteria for choosing the counties included the predominance of the type of farming operation sought; the ability, interest, and tenure of the branch manager (field representative); staff and facilities available in the branch office; and the expected cooperation of selected borrowers in providing further information through personal interviews.

This study was further limited to five major types of farming prevalent in Missouri. The population for each type of farming was prepared by the PCA staff in each county selected for a particular type of farming. Branch managers, with the help of their staff members, prepared a list of the names of all borrowers who met the qualifications for each type of farming to be studied in their area. The names of approximately 300 borrowers were sought for each type of farming. Names of borrowers included in the analysis were determined through random selection as shown in the following summary:

Type of Farm	Approximate Population	Sample
Hog	300	50
Beef cow	300	50
Cattle feeding	300	50
General purpose	300	50
	1200	200

Other general requirements for farmers to be included in the population for each type of farming were (1) they must have been PCA borrowers for three to five years and, preferably, current PCA members; (2) they had to be full-time commercial or part-time farm operators by census definition; (3) their average business volume had to exceed \$5,000 gross sales (economic classes I, II, III, IV,

and VII) by census definition; and (4) their average annual borrowings had to be in excess of \$2,500 per year.

The counties from which borrowers were selected (see Figure 1), the types of farming, and the directing association for each were as follows:

Type of Farm	Association	Counties
Hog	Brookfield	Chariton
	Jefferson City	Pettis Saline
	St. Joseph	Atchison Clinton Holt Nodaway
	Unionville	Mercer
Beef cow	Farmers	Dent Phelps Texas
	Jefferson City	Pettis Saline
	Unionville	Mercer Putnam Sullivan
Cattle feeding	Jefferson City	Pettis Saline
	St. Joseph	Atchison Clinton Holt Nodaway
Cash grain	Jefferson City	Pettis Saline
	Unionville	Mercer Sullivan
General purpose	Brookfield	Chariton Macon
	Jefferson City	Pettis Saline
	St. Joseph	Holt
	Unionville	Mercer Putnam Sullivan

The sample beef cow type farms were categorized in two groups. Group A consisted of beef cow farms in north Missouri belonging to the Unionville or Jefferson City Association. Group B consisted of beef cow farms in the Ozark area belonging to the Farmers Association.

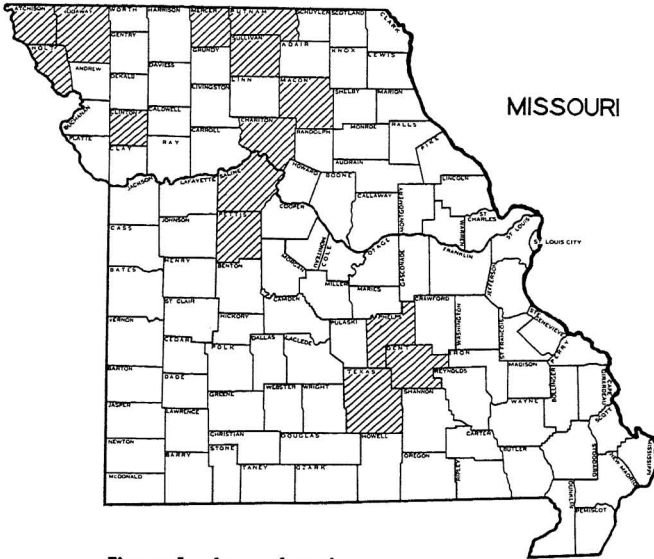


Figure 1. Area of study.

Analysis of the financial data and loan records of the individual borrowers revealed several farmers received more than one-third of their total cash receipts from cash grain sales. Consequently, 12 borrowers were classified as operators of cash grain type farms.

The financial and loan records of the sample borrowers were examined for completeness of information. Samples with incomplete data were omitted from further analysis. The final sample for this study consisted of 186 borrowers. The total sample size for each type of farming is shown in Appendix Table I.

APPENDIX TABLE I
ACTUAL SAMPLE SIZE FOR SELECTED TYPES
OF FARMING IN MISSOURI, 1965

Type of Farm	Actual Sample Size
Beef cow (north Missouri)	26
Beef cow (Ozark)	30
Cattle feeding	34
Hog	54
General purpose	30
Cash grain	12
Total	186

APPENDIX B

COMPOSITION OF THE RISK AVERSION SCALE

The risk aversion scale used in this study was developed by Dr. Daryl J. Hobbs, see footnote 5, as a measure of the degree to which farm operators are oriented toward security and conservatism and thus tend to be reluctant to make decisions they perceive as involving risk and uncertainty. The measurement is in no way absolute. Rather it only determines the relative ranking of respondents measured in relation to a particular dimension. The following shows the risk scale and instructions presented to the sample borrowers:

A certain amount of risk and uncertainty is involved in all business operations. Opinions differ about the severity of different kinds of risks and what one should do to avoid or minimize them. We should like you to take a few minutes now and read over the statements about risks on this sheet (hand to interviewee). To the right of the statements are the possible answers from which we would like you to choose one that best expresses your opinion of each individual statement.

<u>Strongly agree</u>	<u>Agree</u>	<u>?</u>	<u>Dis- agree</u>	<u>Strongly disagree</u>
1	2	3	4	5

The selection of statements to cover the gamut of possibilities is somewhat arbitrary. Statements used in this study were selected by Dr. Hobbs from a relatively large number of attitudinal statements which had been screened to eliminate ambiguous or irrelevant items. The selected statements were considered to be ones which might be made, either in a positive or negative sense, by the individual respondents holding a particular value. Following are the 14 statements presented to the sample members:

1. *It is better to make a smaller profit each year than to attempt something where there is a chance of losing.*
2. *Farm families would do well to wait until they have accumulated their own money rather than borrow for farm production purposes.*
3. *A farmer should try to reduce the risks or uncertainty in farming by remaining diversified even though it may mean the loss of some future income.*
4. *The major goal of young farm families should be to stay out of debt.*
5. *In farming, a bird in the hand is worth two in the bush.*
6. *I regard myself as the kind of person who is willing to take a few more risks than the average farmer.*
7. *The best advice for a young farmer is to be cautious.*
8. *Young people today are too willing to take chances because they have forgotten how tough times can be.*
9. *Farmers who are willing to take chances usually do better financially.*
10. *One of the most undesirable things about farming is the number and kind of decisions that have to be made.*
11. *A farmer needs to remain diversified to protect himself against a bad year.*
12. *I would rather take a chance on making a big profit than to be content with a smaller but more sure profit.*
13. *In making decisions, it is better to think in terms of minimizing losses rather than maximizing profits.*
14. *I would rather invest money in a savings account in a bank than in speculative stock.*

Individual statements 6, 9, and 12 required a reversing of the numbered scale when computing the total risk score for the sample members. Persons who strongly disagreed with these statements were the risk averters and those individuals who strongly agreed were risk takers.