Staff Papers Series

AGRICULTURAL LOAN REVIEW AND RISK RATING
FOR COMMUNITY BANKS

by

Glenn D. Pederson

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Department of Agricultural and Applied Economics

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Real net cash income in agriculture is projected to increase in 1987 to a record $45-$49 billion, when expressed in 1986 dollars (USDA 1987). This boost in net income is due to an unprecedented level of government outlays which are providing liquidity to agriculture and offsetting the income effects of depressed open market prices. Lower production input expense is the other major component of the increase in net cash farm income. Current returns to farm assets and farm equity are increasing, and the decline in farm real estate prices has slowed. These developments are placing agriculture in a more stable financial position in 1987.

Farm sector debt has also declined to a significant extent from its peak of $205 billion (excluding CCC debt) at the end of 1983, to about $169 billion at the end of 1986 (Melichar 1987). Debt secured by farm real estate has fallen more slowly than nonreal estate debt during that period. Total farm debt excluding CCC loans is projected to fall to about $158 billion by the end of 1987 (USDA 1987).

Four factors are contributing to the decline in aggregate debt: 1) lender charge-offs of nonperforming/nonaccrual loans, 2) transfer of farm assets from heavily-indebted farmers to cash buyers, 3) repayment of debt by borrowers who have sufficient liquidity to do so, and 4) the continued reduction in demand for new loans reflecting lower cost of inputs, reduced crop acreage, and lower levels of capital investment. The exception to this trend has been the recent increase in farm real estate loan volume at commercial banks. This development reflects the combination of real estate debt transfers from other lenders (e.g., Federal Land Banks) to commercial banks, and the use of real estate to secure loans made by banks for operating and nonreal estate purposes.

Trends in farm earnings and farm financial position are reflected in the financial performance and condition of agricultural banks. Table 1 reflects the relative stability of average net interest margins at U.S. agricultural banks between 1975-86. The income before tax measure of profitability, however, exhibits serious deterioration as average agricultural bank performance declined during 1980-1986, due to higher provisions for loan losses. Decline in the average provision for loan losses in 1986 suggests that the peak in nonperforming and nonaccrual loan volume has been reached, although regional and individual bank differences exist.

While these selected indicators point to increased financial stability in agriculture, several sources of future risk remain for farm lenders. Those sources include: uncertain levels of future government farm price supports, potential weakening of livestock prices

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Table 1. Average Income, Expenses and Profit as Percentages of Total Assets at U.S. Agricultural Banks, 1975-86

Year	Gross Interest Income	Gross Interest Expense	Net Interest Margin	Non-Interest Income	Non-Interest Expense	Income Before Losses	Provision For Loan Losses	Income Before Taxes
			----------------------------		percent of total assets		--------------------------------	
1975	6.3	3.1	3.2	.3	2.2	1.4	.1	1.3
1976	6.6	3.3	3.3	.3	2.2	1.4	.1	1.3
1977	6.7	3.4	3.3	.3	2.2	1.4	.1	1.3
1978	7.0	3.6	3.5	.4	2.3	1.6	.2	1.4
1979	7.8	4.1	3.7	.4	2.3	1.8	.2	1.5
1980	9.3	5.3	4.0	.4	2.4	2.0	.2	1.7
1981	11.0	7.1	4.0	.5	2.5	1.9	.3	1.6
1982	11.4	7.5	3.9	.5	2.6	1.8	.4	1.4
1983	10.3	6.5	3.8	.5	2.6	1.7	.6	1.1
1984	10.6	6.9	3.7	.5	2.6	1.6	.8	.8
1985	10.0	6.2	3.8	.5	2.7	1.7	1.2	.6
1986	9.0	5.4	3.6	.7	2.7	1.6	1.1	.5

SOURCE: Melichar (1987).

and earnings, potentially higher inflation rates and tighter credit supply conditions (which jointly imply higher interest rates), and fluctuations in the volume of exported farm commodities.

In Minnesota, the farm financial picture which has emerged through the end of 1986 varies from that at the national level, but the trends are similar. Average farm profit (accrual) estimates for 1986, in both the Southeast and Southwest Farm Management Associations, indicated an improvement from 1985 levels (Olson et al., 1987). Significant factors contributing to this increased profitability were decreases in total cash farm expense and farm interest paid. Rates of return on average investment and average equity were also higher in 1986, due to the combination of higher farm profits and downward adjustments in the valuation of farm assets. The average net profit margin in both associations was higher in 1986, and average net cash farm earnings showed an increase during 1986.

A summary of the September 30, 1986 Call Report data from Minnesota's 515 state banks indicated a continued deterioration of the average financial position during 1986. The average capital/asset percentage slipped from 9.26 to 9.10 percent. Over this same period reserves for loan losses increased from an average 1.09 percent of total loans to 1.30 percent. Loans past due over 90 days plus nonaccrual loans increased from 3.94 percent in September 1985, to 4.12 percent in September 1986.

Coincident with release of the Call Report summary, meetings were held between Minnesota bankers and representatives of the Minnesota Department of Commerce, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency. All participants at these meetings attached a high priority to the early detection and management of "problem" and "potential problem" loans. Development and implementation of formal loan review and risk rating systems was recommended as a response to agricultural loan quality problems at community banks. Bank examiners are currently recommending that bankers implement a risk rating system for their commercial loan portfolio.

The objective of this paper is to improve agricultural credit risk management and compliance with examiner recommendations. The discussion considers 1) the objectives for developing and conducting a formal loan review and risk rating system, and 2) alternative designs and applications of risk rating schemes. This paper outlines a structure for an integrated loan risk management system. The system is a proposed structure, which needs to be modified to accommodate various bank management situations.

Previous studies (Dunn and Frey, 1976; Hardy and Weed, 1980; Lufburrow, Barry and Dixon, 1984) have explored the area of credit scoring applications to commercial lending decisions. Those formal statistical models have not been used in community bank settings for

several reasons. This paper suggests an alternate practical approach to risk rating, which requires financial data on the borrower's balance sheet position, and past and projected income and cash flow situations. This approach reduces the emphasis on statistically-derived credit scoring models and places additional emphasis on the development and refinement of risk rating practices which are supportable within the small bank management group, either manually or on a microcomputer. This approach does not minimize the importance of statistical work, which is useful in identifying appropriate measures of borrower performance and weights to consider in a risk rating system.

Objectives of Loan Review and Risk Rating

Historically, farm lenders have employed several criteria for differentiating between acceptable and unacceptable credits. During the 1980s, renewed interest in cash flow as the primary basis for lending has reversed the emphasis on asset and collateral value which occurred during the 1970s. It is clear that a balance is needed between 1) projected cash flow, 2) equity position, and 3) profitability of a farm borrower's business when making a determination of creditworthiness in today's economic climate. To achieve balance in credit analysis and make the process cost effective, it would appear that bank management should consider how to achieve the objective of increased bank profitability through improved managerial control of the loan portfolio.

Conceptually, the process works as indicated in the following diagram:
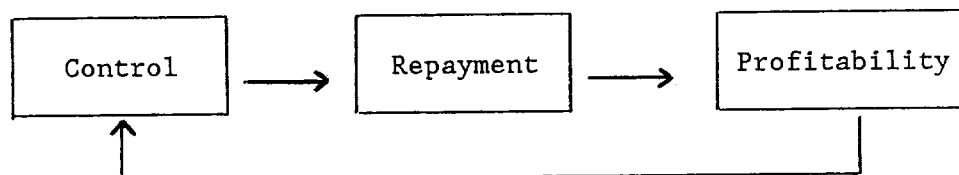
Managerial control represents an intermediate objective which contributes to the stability and enhancement of bank profitability through its effect on borrower repayment. A "feedback" occurs from profitability to the control procedures which are employed, as bank management learns more effective ways to improve repayment.

Increased Profitability

Total bank profits are the result of several banking activities: creation of loans, investments, and provision of fee-based customer services. Loans, as a profit center, must necessarily be managed in such a way as to generate sufficient bank profits to compensate the bank for the costs of loanable funds, loan administration expenses, and

the bearing of underlying credit, liquidity and loan loss risks.   More
specifically, the net income before taxes (NIBT) is computed as,

        NIBT = Gross interest income
                (minus) Gross interest expense
                (plus) Noninterest income
                (minus) Noninterest expense
                (minus) Provision for loan losses

     When stable short run profitability is the bank's objective, a
reduction in the current provision for loan losses is an important part
of the bank's management strategy. Short run bank profits on loans
reflect other sources of change as well. Loan profitability is also
sensitive to changes in loan quality and resulting changes in gross
interest income from loans, and fluctuations in interest expense.

     The longer run objective of loan review and risk rating is that
the provision for loan losses will be gradually reduced through
monitoring, early detection, and correction of problems in the bank's
loan portfolio. This is consistent with growth in net income before
tax as the long run profit objective of bank management.

Improved Control

     The process of 1) measuring performance, 2) comparing measured
performance with the standards established in the business plan, and 3)
making the required adjustments to achieve the desired results is
referred to as "control" (Boehlje and Eidman, 1984). The control
process is the essence of effective bank management, but it often goes
unnoticed during day-to-day activities - as long as operations are
working within the prescribed limits. When applied to the bank's loan
portfolio, control implies the following functions: 1) measuring loan
repayment performance (delinquency), 2) evaluating loan repayment
performance at the individual loan level and at the bank level, and 3)
correcting deviation of actual loan repayment from the planned
repayment schedule.

     The three components of most control processes are: 1) standards
of expected (desired) performance, 2) a scheme for measuring actual
performance, and 3) a plan for corrective action. In the context of
bank management the components are: the bank's loan policy statement
which establishes general standards for analysis, the risk rating
scheme which compares actual loan performance with desired outcomes,
and the bank's asset/liability committee or board of directors which
initiate appropriate policies and corrective actions.

     Standards of performance, as they relate to loan administration,
are contained in the bank's loan policy statement. That document
reflects the bank's business plan and should address the bank's
objectives concerning; trade area, types of loans which are desirable

and undesirable, lending authorities, credit function supervision, provision for possible loan losses, loan underwriting criteria, concentrations of credit risk, the relationship between the bank's loan portfolio and its capital structure, compliance with federal and state laws and regulations, and what constitute exceptions to the policy and how they will be handled. An integral part of this document is the establishment of a workable scheme for classifying loans according to level of risk.

A second source of information for individual loan performance standards is the initial loan agreement. The initial agreement identifies the plan for repayment and provides the basis for comparison of actual repayment with the repayment schedule, as well as identification of other significant variances from the plan.

Measures of loan performance should have three attributes to be useful in control; 1) timeliness, 2) correspondence, and 3) reliability. Timeliness stresses that whenever measures are used to monitor loan performance, that the information is available on a regular basis and in advance of the actual evaluation date (monthly, quarterly, or annually). Correspondence requires that the measure reflect what it is you want to monitor. For example, some financial measures are more appropriate than others when measuring the profitability of the borrower's business. Reliability will be achieved if the data used in measurement is both accurate and consistent. Accuracy may involve frequent updating of estimates such as the value and condition of assets which serve as collateral. Availability of accurate, current farm records also provides the basis for reliable estimates of farm earnings. Financial information which can be objectively determined and verified will be more reliable than information which is not verified and highly subjective. This is a major concern for lenders to farm businesses which seldom have audited financial statements.

It is important to recognize that all financial measures are a blend of subjective and objective elements. Consistency implies that the measures are comparable over time for a given borrower, and across borrowers at a given point in time. Adherence to well defined measures of income (cash or accrual basis) or value of assets (book or market value) are examples of areas where consistency is critical to the reliability of financial performance measures.

Corrective action can follow any of three general courses: 1) changing the standards of performance (the least desirable alternative), 2) adjusting how performance is measured and/or monitored, or 3) allowing for a trade-off between standards (e.g. strong earnings versus a weakened equity position which is due to downward market value adjustments on assets).

Design of the Risk Rating Scheme

This section discusses the problem of defining a workable scheme for risk rating loans. This requires that we jointly consider the alternative uses of risk rating in loan administration and alternative specifications of risk rating schemes.

Alternative Uses of Risk Rating

To be effective a risk rating scheme should be designed with its alternative uses in mind. Six identifiable uses are discussed here: 1) loan portfolio stratification, 2) asset/liability management, 3) loan pricing, 4) loan administration, 5) reporting and communication, and 6) strategic planning.

Loan portfolio stratification involves the segmenting of loans into distinct classes according to risk quality characteristics. By stratifying the loan portfolio, bank management is better able to monitor the impact of changing economic conditions on sensitive loans as well as the overall portfolio. The number of strata is of some practical importance with 4 to 7 such classifications being the largest number which can be worked with effectively. Manual systems with numerous criteria suggest 4 classifications, while computerized systems with several credit criteria can easily accommodate 7 useful gradations.

Stratification is useful at the "micro" (loan) level if it assists management in determining potential usage of individual loan commitments under various economic conditions. During high-rate, tight-credit conditions, the volume which must be funded will vary from that which would occur when rates are moderate and demand is weak. With utilization reduced bank management may elect to compete for new loans of higher credit quality to improve the strength of the overall portfolio. Established risk ratings would allow the bank to compare potential customers to the bank's existing risk composition and make a more informed credit decision. A related use of risk rating at the micro level is the establishment of lending authorities within the bank. Approvals of loan commitments can be effectively and consistently handled if the bank's loan policy clearly states the maximum loan commitment which can be approved by individual loan officers, executive officers, and by the bank's Board of Directors.

At the "macro" (bank) level, management can follow trends at the farm sector and national economic level, such as government farm program participation, farm exports and strength of the U.S. dollar in international markets, inflation and market interest rates, land prices, and farm income levels. These trends could signal fundamental changes in bank deposit conditions, demand for farm loans, changes in bank liquidity, and possible market opportunities. These changes could be reflected in the bank's loan quality performance objectives by risk class.

Asset and liability management uses of risk rating evolve from stratification. Since the usage of loan commitments is observed to vary inversely with credit quality during periods of financial stress, bank management may elect to make appropriate off-setting adjustments to its quantity and sourcing of loanable funds when it observes a deterioration in the risk rating of its loans. This has implications for the bank's plan of funds acquisition and paydown.

The single most beneficial use of risk rating information within the area of asset/liability management is in the determination of the adequacy of the provision for possible loan losses. Provisions for losses can be set according to loan risk class in recognition of the higher potential losses on lower quality loans. Initially, this procedure would be difficult to document, but after sufficient historical data becomes available the provision allowance would be calculated with increasing accuracy. While the actual determination of the provision for loan losses is the single most important use of risk rating information, it is also important to recognize that this information on potential losses is useful for strategic planning. Credit scoring summaries of the portfolio may signal an increase in credit concentration, increased risk exposure, and the need to diversify the loan portfolio.

Bank management would expect to see the yield on weaker (but acceptable) credit accounts at higher levels than yields on the highest quality credits - due to the implied credit risk differential. For that reason, it would be possible to utilize risk ratings when developing consistent pricing guidelines. However, a policy of pricing loans in accordance with a risk rating scheme is a potential problem area. Credit and liquidity risk should be jointly considered when making a pricing decision, since they both affect profitability of the bank-customer relationship. Additionally, pricing decision should consider the risk rating of the customer only after the risk rating scheme has been sufficiently well-tested and adapted to provide reliable information. Once these tests have been passed, yield objectives and price premiums (or discounts) could be set by quality category instead of at the total portfolio level.

Loan administration is a fourth potential use of risk rating information. This "control" aspect has four dimensions. First, risk rating procedures can be efficiently incorporated into the loan review schedule. Since it is usually only necessary to risk rate a borrower on an annual basis (just prior to loan renewal), the risk classification could be included with other loan documentation to assist in the lending decision. Risk rating could be adapted to more frequent use to coincide with the availability of new financial information.

Secondly, the risk rating of loans could be utilized to compose a "watch list" of problem and potential problem credits which will require additional monitoring and supervision, or work-out plans. This

list should be prepared monthly for review by the Board of Directors or the asset/liability committee. Which loans to include on the "watch list" is an issue which will be discussed later. A third aspect of loan administration is preparation for bank examination. Development and use of risk rating scheme provides the bank with a means of complying with bank examiner requests for information on quality of the loan portfolio. The underlying loan risk classification scheme should be interpretable to examiner classifications.

A fourth loan administration use is to evaluate loan officer and management performance over time. If the loan portfolio is deteriorating over time, several reasons could be given. However, it could be the result of poor judgment or inadequate controls in the commercial loan management area. Results of a risk rating analysis could be instrumental in bringing about reforms in loan management which involve personnel reassignment (placing the strongest credit officers on the weakest credit accounts) or acquisition of credit officers with different skills.

Internal reporting and communication of loan quality information is synonymous with the use of a risk rating scheme. This communication aspect involves: 1) the bank's directors and senior management, and 2) the bank's customers. Directors of the bank need to have risk rating information at hand when making decisions on what policies to pursue on problem accounts. Moreover, that information must be provided in a timely fashion. On the bank customer side, communication of risk rating results (to include changes in the risk rating and why they occurred) can provide a valuable signal to the borrower concerning what aspects of the business need improvement in order to renew or expand a loan commitment. A well-designed risk rating scheme will highlight the areas of a customer's current business which are causing problems (for example, operating inefficiencies) and suggest some alternative courses of action. Problem identification and communication are two underlying themes of risk rating. It would be difficult to overemphasize how useful risk rating is in these two areas of loan management.

Finally, risk rating plays a useful role in strategic planning. Planning is an active and dynamic part of what bank management does. A well-conceived and maintained risk rating system is a "forward-looking" and "objective-driven" planning tool which management can refine and use in making strategic decisions about the size and composition of the bank's loan portfolio.

Alternative Specifications

Development of an effective risk rating system with all of the above uses in mind is a demanding task. For that reason an attempt should be made to formulate a system which exhibits some "generally accepted principles."

1. The system should be flexible and adaptable to changing economic conditions,
2. It should be relatively uncomplicated so that it can be communicated both internally and externally,
3. It should be bank examiner-related, and
4. It should provide clearly identifiable differences between loans along the quality continuum.

Since credit quality will vary directly with the financial solvency, liquidity and profitability (and efficiency) of the borrower's business, it is critical that the risk rating scheme incorporate measures of these dimensions of financial performance. As the borrower's financial position and ability to repay the loan change (due to changing economic conditions), these will be reflected in the individual measures and the composite credit score.

Typically, solvency measures are developed from the balance sheet. It is important to recognize, however, that the balance sheet lags behind the firm's earnings, since it is usually prepared at year end. Therefore, a risk rating scheme which emphasizes solvency, exclusively, will sacrifice timeliness and adaptability. Liquidity measures of the firm, as determined from periodic cash flow summaries (or the projected cash flow budget) and supplemented by balance sheet entries, potentially extend the usefulness of the risk rating scheme as part of an early warning system. Profitability projections and computations from the borrower's earnings summary indicate the primary sources of repayment. When profitability (and efficiency) estimates are included in the risk rating framework, and given appropriate weighting, the resulting system tracks the underlying concept of credit risk exposure of the bank in a more responsive and timely fashion.

An example of a risk rating system which places heavy emphasis on balance sheet measures is the scheme which was developed by MABSCO Agricultural Services, Inc. (MASI), as illustrated in Table 2. Although the weighted composite score is not the final criterion used by MASI in accepting or rejecting a loan application, it was used to initially screen loans for further consideration and possible funding. The ratios shown on the left side of Table 2 generally reflect: 1) the current financial position of the firm, 2) changes in the level of owners' equity over time (an average growth factor which would reflect a combination of internally-generated equity and windfall gains), and 3) the collateral position of the loan, if approved at the requested level. Direct measures of borrower profitability and cash flow performance from which repayment ability could be assessed are not included. The weighting scheme used to collapse the individual measures into a composite score indicates that a 60 percent weight is attached to the balance sheet position, 30 percent to past average rate of growth in owner's equity, and 10 percent to collateralization. There are potential problems with using this credit scoring scheme and not supplementing it with information on profitability and cash flow.

10

Table 2. The MASI Credit Scoring Scheme

RATIOS	SCORE						WEIGHT	WEIGHTED SCORE
	1	2	3	4	5	6		
Current assets / Current Liabilities	>2.0	1.5-2.0	1.25-1.5	1.1-1.25	0.9-1.1	<0.9	.25	
Current and Intermediate assets / Current and Intermediate liabilities	>3.0	2.5-3.0	2.0-2.5	1.5-2.0	1.25-1.5	<1.25	.10	
Total liabilities / Owners Equity (O.E.)	<.50	.50-.75	.75-1.0	1.0-1.5	1.5-2.0	>2.0	.25	
(Current-beginning O.E.) / No. of years / Prior year O.E.	>.20	.15-.20	.10-.15	.05-.10	.01-.05	<.01	.30	
Loan amount / Value of security	<.50	.50-.60	.60-.75	.75-.85	.85-.95	>.95	.10	

TOTALS 1.00

11

One modification would be to enter land assets and other sources of capital gains on an historical cost basis. Growth of owner's equity would then more closely reflect earned equity increases and, therefore, past profitability. Appendix Table A contains an example of how the MASI system is implemented using a microcomputer spreadsheet template.

An alternative specification for credit scoring is suggested by Kohl (1987). Five criteria are introduced as important factors to consider when evaluating creditworthiness (and, therefore, credit risk):

1. Repayment ability - past and projected
2. Financial position
3. Credit management history
4. Management ability and performance
5. Farm and individual resources

According to Kohl's approach, balance sheet measures receive a maximum 12 points out of 36 points possible, or a weight of 33 percent (see Table 3). The borrower's equity position receives one-half (6 points) of the total points which are allocated to the borrower's financial position. Repayment ability and cash flow performance receive 25 percent of the total points, with equal weighting given to the cash flow coverage ratio, the debt servicing ratio, and the cash expense/cash receipts ratio.

The remaining areas of credit scoring involve nonratio measures of performance, which in the case of management ability and business returns (and, to a lesser extent, credit management) are somewhat redundant to the repayment ability indicators. This may be a desireable feature, if the lender is attempting to place more emphasis on repayment ability and less weight on the value of assets and loan collateral potential. The final section on farm and individual resources appears to be the most difficult category to objectively evaluate, by itself. This category appears to be redundant with the other areas of evaluation.

Kohl incorporates a "coarser grid" for attributing credit quality points in his framework. For example, the MASI scale for the current ratio included 6 classes (over 2.0, 2.0-1.50, 1.50-1.25, 1.25-1.0, 1.0-.90, and under .90), where Kohl uses just 4 groups (over 1.5, 1.5-1.0, 1.0-.50, and under .50). Similarly, conversion of the MASI debt-to-equity ratio to the equivalent equity/value ratio generates the following grid (over .67, .67-.57, .57-.50, .50-.40, .40-.33, and under .33), where Kohl's groupings are (over .75, .75-.50, .49-.33, and under .33). Selection of the appropriate number of grid classes and setting the financial ratios along the grid at appropriate levels (the "calibration problem") are significant parts of developing, refining, and updating a flexible risk rating system.

Table 3. Kohl's Agricultural Credit Scoring Scheme

Agricultural Credit Scorecard

Section I.
Repayment ability and cash flow (9 points)

	Points
A. Cash flow coverage ratio	
Greater than 30 percent	③
10 - 30 percent	2
1 - 10 percent	1
Zero or negative	0
B. Debt service ratio	
Less than 15 percent	3
15 - 20 percent	②
20 - 25 percent	1
Greater than 25 percent	0
C. Earnings expense/earnings receipt ratio	
Excluding interest (past) (projected)	
Less than 65 percent	3
65 - 75 percent	②
75 - 80 percent	1
Greater than 80 percent	0
Total Points	**7**

Section II.
Financial condition (12 points)

	Points
A. Current ratio	
Greater than 1.5	③
1.0 - 1.5	2
.5 - 1	1
Less than .5	0
B. Percent equity	
Greater than 75 percent	6
50 - 75 percent	④
33 - 49 percent	2
Less than 33 percent	0
C. Borrowing capacity and reserve	
Reasonable amounts of reserve in all areas	③
Reasonable amounts of reserve in two areas	2
Reasonable amounts of reserve in one area	1
No reserve	0
Total Points	**10**

Section III.
Credit management (6 points)

	Points
A. Credit lines	
Consolidated credit	3
Some split lines of credit	②
Many split lines of credit	1
History many split lines of credit and unsatisfactory payment	0
B. Supplier and creditor accounts	
No unpaid bills	3
Unpaid bills less than 5 percent of revenue	②
Unpaid bills between 6-10 percent of revenue	1
Unpaid bills over 10 percent of revenue	0
Total Points	**4**

Section IV.
Production management and profitability (6 points)

	Points
A. High production & efficiency in top 20 percent of managers	3
Above average manager but not outstanding	②
Average to slightly below average manager	1
Below average manager	0
B. Returns greater than long run comparable investments	3
Returns positive but less than long run comparable investments	②
Returns positive in the 1 or 2 percent range	1
Returns negative	0
Total Points	**4**

Section V.
Individual and farm (3 points)

	Points
Goals, records, financial planning, strong farm family background	3
Some goals and records and financial planning, sound farm and family background	②
Very few goals and records, doesn't understand financial planning and some farm or personal adversity	1
Poor attitude, farm and/or personal adversity, doesn't keep or understand records	0
Total Points	**2**

Point Summary

Section	Maximum	Farm
Section I	9	7
Section II	12	10
Section III	6	4
Section IV	6	4
Section V	3	2
Total Points	36	27

Overall Evaluation

	Code
28 - 36 points	Green
22 - 27 points	Yellow
16 - 21 points	Orange
Under 16 points	Red

Code Explanation

Green: This loan is very serviceable and would most likely require minimal supervision.

Orange: This loan is questionable and if made, would require very close supervision.

Yellow: This loan is serviceable and would require regular supervision.

Red: Reject. If you have one, it may require work-out.

SOURCE: D. Kohl, pp. 18-19.

13

Kohl's credit scoring system identifies 4 loan classifications.

| Class	Description
Green	The loan is very serviceable and would most likely require minimal supervision. (Total scores of 28-36).
Yellow	The loan is serviceable and would require regular supervision. (Total scores of 22-27).
Orange	The loan is questionable and if made, would require very close supervision. (Total scores of 16-21).
Red	Reject the loan. If you have one, it may require work-out. (Total scores under 16).

The advantage of this classification is that there is direct correspondence between the composite credit score and the decision rule to accept or reject the loan. In this respect the scheme is easily communicated within bank management and to bank customers. The disadvantage is that the classification scheme does not correspond with bank examiner classifications. For that reason it is useful to consider a classification system which coincides with examiner descriptions.

An Integrated System

The benefits of adopting a risk rating system are realized to a greater extent when pursued as an integrated management system. The components of an integrated system extend beyond risk rating to include description of loan quality grades which correspond with bank examiner classifications, evaluation of auxiliary credit factors, composition of a "watch list", determination of the allowance for potential loan losses, and identification of an appropriate loan monitoring schedule. Figure 1 illustrates the components of an integrated system which starts with an accurate, well-documented and up-to-date credit file. It generates information which is useful to management, borrowers, and examiners. This section elaborates on the components of the system.

The risk rating scheme in Figure 1 places emphasis on measures of borrower solvency, profitability, and cash flow (liquidity) performance. This scheme places priority on measuring the risk that repayment will not occur. Since nonrepayment is the result of insufficient borrower profitability and lack of liquidity (or ultimately insolvency) of the business, it is important that all three business performance aspects be incorporated into a "balanced" approach to credit analysis.

14

Figure 1. Risk Rating and Loan Review as an Integrated Management
System
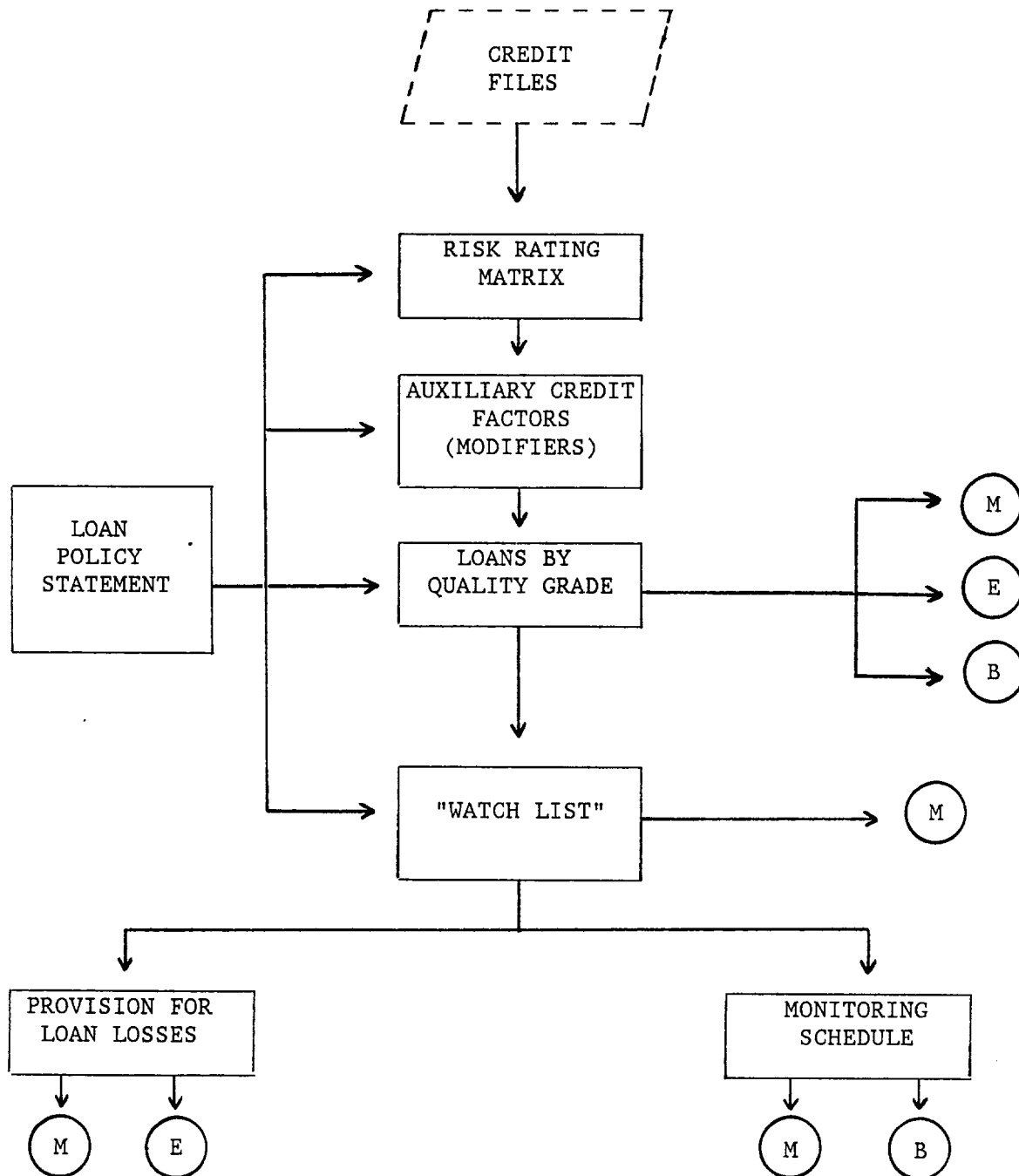
M indicates bank management
B indicates borrowers
E indicates bank examiners

15

Risk Rating Matrix

The risk rating matrix in Table 4 contains 7 measures which can be developed from financial information in the credit file supplemented with selected cash items. Balance sheet measures include: the borrower's current ratio (current assets/current liabilities), and the debt/equity ratio. Profitability measures include: the asset turnover ratio (value of farm production/total farm assets) and a measure of cash expense control (total cash expenses/total cash receipts). Three cash flow measures are incorporated: the debt service ratio (scheduled principal and interest payments/value of farm production), the interest/value of farm production ratio, and a "repayment cushion" measure which is an estimate of cash available after payment of business expenses (but before family living expense and income taxes) divided by the sum of principal and interest.

Several features of the risk rating matrix in Table 4 differentiate it from the approach suggested by Kohl. First, it does not include nonfarm income when computing the denominator for the debt service ratios (items 5 and 6), where Kohl does include nonfarm income in his debt payment ratio. Secondly, there are no direct assessments of management ability in this scheme. Kohl includes indicators of credit and production management. It is not clear what subjective assessments of production management provide as additional information to credit scoring when financial measures of profitability and efficiency are adequately incorporated. Credit management factors (split lines of credit and evidence of unpaid accounts) do provide useful additional information. However, those factors can be incorporated into the description of loan quality grades and need not be forced into the risk rating matrix. Third, the risk rating grid is expanded to 7 classes in Table 4 to allow for greater differentiation between borrowers in the problem loan area. In this grid, categories 5-7 represent loans which carry above-average-to-excessive risk. This feature is useful in establishing loan grades, determining the provision for loan losses, and in establishing a loan review schedule.

Alternative weighting schemes could be proposed for use in the risk rating matrix. Ideally, the weights are derived through an analysis of the relative importance of various financial measures as predictors of the likelihood of debt repayment. Various credit scoring models have been proposed for this purpose. However, those models have not usually been well specified, and generally lack projections of financial performance in the analytical model. At this time there is no "best" weighting scheme for use with the measures included in Table 4. One approach to development of a weighting scheme would be to give initially equal weight to the financial measures shown, then reallocate the weights based on expectations about future economic and financial conditions.

16

Table 4. The Risk Rating Matrix Component

ITEM	RISK CLASS							WEIGHT	WEIGHTED SCORE
	1	2	3	4	5	6	7		
1. Current Assets / Current Liabilities	over 2.5	2.0-2.5	1.5-2.0	1.0-1.5	.70-1.0	.40-.70	under .40		
2. Total Liabilities / Owner's Equity	under .70	.70-.75	.75-1.0	1.0-1.5	1.5-2.0	2.0-2.5	over 2.5		
3. Value of Farm Production a/ / Total Assets	over .30	.25-.30	.20-.25	.15-.20	.10-.15	.05-.10	under .05		
4. Total Cash Expenses b/ / Total Cash Receipts	under .50	.50-.60	.60-.70	.70-.80	.80-.90	.90-1.0	over 1.0		
5. Principal and Interest c/ / Value of Farm Production	under .10	.10-.15	.15-.20	.20-.25	.25-.30	.30-.35	over .35		
6. Interest / Value of Farm Production	under .05	.05-.09	.10-.15	.15-.20	.20-.25	.25-.30	over .30		
7. Excess Cash (after Cash Expenses) / Principal and Interest	over .40	.30-.40	.20-.30	.10-.20	.0-.10	negative	negative		

TOTAL   1.0

a/ Includes all earnings from sales (including government payments) adjusted for changes in inventories.

b/ Excludes interest paid and depreciation.

c/ Scheduled principal and interest payments.

17

Auxiliary Credit Factors

In addition to the financial measures contained in the risk rating matrix, supplemental credit factors such as availability of nonfarm income and collateral may be considered as "modifiers" to the composite risk rating. The justification for not including them in the risk rating matrix can be made. Nonfarm income is a legitimate source of funds for repayment, but it does not represent an earning component of the farm business. Therefore, it should be handled separately from financial measures of the business. Secondly, nonfarm income is not a significant source of funds in all borrowing situations and its incorporation into the risk rating matrix would create mixed assessments of credit quality. Nonfarm income frequently serves as a substitute for farm earnings in meeting liquidity needs such as family living and taxes and/or principal and interest payments. Therefore, a scheme could be established for nonfarm income where the ratio of family living and taxes/nonfarm income is computed.

An example of how the family living expenses and taxes/nonfarm income ratio could be used is based on household income and expense summaries from the Southeast and Southwest Minnesota Farm Management Associations (Olson et al. 1987). The average (median) ratio was 4.0, and the range was 1.8 - 7.7 during 1970-1985. This result suggests the following schedule based on quartiles, as one possible scheme.

Family living expense and taxes/nonfarm income ratio	Risk Class
under 2.5	1-3
2.5-4.0	4
4.0-5.5	5
over 5.5	6-7

Any such scheme is best developed within the context of the individual bank's current and projected portfolio of borrowers, and based on borrower projections of nonfarm earnings, family living expenses and taxes.

Availability of collateral is best handled as a credit quality modifier, since it does not provide additional information on financial strength of the borrower's business or of ongoing repayment ability. A scheme for collateral could be established for secured credit as follows:

18

Secured Credit Position	Risk Class

Blanket security agreement with perfected
primary position, or perfected security
interest on specified items with loan/market
value (LTMV);

under .50	1
.50 - .60	2
.60 - .75	3-5
.75 - .85	6
over .85	7

Once the credit quality modifiers have been developed within the
7-risk class framework, these factors need to be integrated with the
risk rating results into an overall loan quality grade. This step in
the process is based on judgment and should be consistent with the
bank's loan policy statement concerning the importance of modifiers in
a balanced evaluation of credit quality. The next section discusses
the establishment of grade descriptions which can be used to stratify
the loan portfolio.

Identification of Loan Classifications

In an effort to develop an integrated (yet flexible) system,
Kehlbeck's (1980) generic loan grades (shown in Table 5) were
supplemented by descriptions which apply specifically to agricultural
loans (Table 6). Kehlbeck's loan descriptions for classes C) through E
incorporate bank examiner classes: Other Assets Especially Mentioned
(OAEM), Substandard, and Doubtful/Loss. In addition the descriptions
are sufficiently general that bank management can apply these standards
to commercial-agricultural or commercial-nonagricultural loan
categories.

The supplementary classification in Table 6 matches loan grades B
through E with composite risk ratings 3 through 7. What emerges in
Table 6 is a set of agricultural loan class descriptions which are
consistent with bank examiner classifications and which can be made
comparable with nonagricultural loans.

Implementation Issues

The risk rating scheme and associated loan grades suggest the
following issues: 1) the development of a "watch list" for loan
monitoring and review, 2) the establishment of an appropriate review
schedule, and 3) the determination of allowance for potential loan
losses based on loan risk classes. This section discusses these use
issues.

Table 5. Kehlbeck's Generic Loan Grading System

Class A: Prime loans based on liquid collateral with adequate margin or supported by strong financial statement of recent date. Character and ability of individuals or company principals are excellent and unquestioned. Position of company in its industry and in its community is excellent. High liquidity, minimum risk, good ratios, low handling cost.

Class B: Desirable loans of somewhat less stature than Class A but with strong financial statements or secured by other marketable securities (where there is no significant concentration or impairment to liquidation). Probability of serious financial deterioration is unlikely. Possessing a sound repayment source (and backup) that definitely will allow repayment in a reasonable (to purpose) period of time. Individual loans backed by sound assets and personal integrity. (Some potential Class A borrowers who don't provide a valuable relationship for your bank might fall here.)

Class C: Satisfactory loans of average or mediocre strength have some deficiency of vulnerability to changing economic or industry conditions but currently collectible. Secured loans lacking in margin or liquidity. Loans to individuals perhaps supported in dollars to net worth but with supporting assets that are illiquid. Sometimes a temporary classification for untested borrowers or where information is not entirely complete or acceptable.

Class C-: First classification that has relevance to a bank examiner class--i.e., Other Assets Especially Mentioned (OAEM). A warning classification that portrays one or more deficiencies that cannot be tolerated even in the short run. Pertinent ratios have deteriorated that deserve immediate attention and correction. Sometimes represents an interim or temporary classification of credits, new or on probation, moving to C or D.

Class D: Substandard because of steadiness on your books or other deficient nature (also related to bank examiner grade). Company or individual loans with no evident future, which are unfavorably affecting the loan-to-deposit ratio or cost of funds. Heavy leverage accounts, with no immediate relief in sight or compensating features. Accounts requiring excessive attention of the loan officer because of lack of borrower cooperation. Credits unable to adjust to unfavorable industry or general economic conditions. Individual loans where character or ability has become suspect. Credits going to the brink of potential charge-off for whatever reason, particularly loss operations.

Class E: Loans relating to bank examiner Doubtful and Loss classifications where an element of probable loss exists; at least a portion would be charged off if liquidated at present. Critical credits requiring immediate and drastic action. Secured loans with insufficient collateral or other sources to see the bank fully paid. Nonperforming assets where day-to-day circumstances leave the loans in question. Loans believed not to be tolerated as live assets by the examiners at their next visit or review.

Class O: Bank examiner OAEM class.

Class S: Bank examiner Substandard class.

Class Q: Bank examiner Doubtful class.

Table 6: Agricultural Loan Class Descriptions

Loan Grade[a]	Risk Rating	
B	3	Annual operating loans have been fully paid within a maximum 15 month operating cycle through the conversion of cash crops and market livestock. Input supplier debt is current. Projected annual cash flow covers: current and projected bank operating debt, suppliers, and current maturities of intermediate) and long-term debt. Ratio of projected operating loans-to-market value of grain and livestock is less than .75. Machinery debt does not exceed 75% of depreciated cost. Ratio of real estate debt-to-real estate value is .41 - .60. Debt-to-equity ratio is less than 1.00. No short term debt carry-over.
C	4	Annual operating loans have been fully paid within a maximum 15 month operating cycle through the conversion of cash crops and market livestock. Machinery debt does not exceed 75% of depreciated cost. Projected annual cash flow covers current and projected bank debt, suppliers, and current maturities of intermediate- and long-term debt. However, the cash projection may contain some potential volatility due to uncertain economic conditions and weather. Borrower is slow in repayment of trade credit. Management ability may not yet be proven or tested. Debt-to-equity ratio is 1.00-1.50.
C-	5	Annual operating loans and all other current obligations have generally been fully paid within a maximum 15 month operating cycle through conversion of cash crops and market livestock. However, some small (less than 10%) carry-over of debt has occurred during the past year. Projected annual cash flow for covering current and projected operating bank debt, suppliers, and current maturities of intermediate- and long-term debt contains a small shortfall (less than 10%). Ratio of projected operating loans-to-market value of grain and livestock is .75-.90. Ratio of real estate debt-to-real estate value is .60-.75. Debt-to-equity ratio is 1.50-2.00.
D	6	Annual operating loans and all other current obligations have not been paid within a maximum 15 month operating cycle from cash crops and market livestock, and 10-25% of the line is carried over into next season. Operating commitment and loans are reliant on machinery and equipment collateral. Ratio of real estate debt-to-real estate value is .75-.85. Debt-to-equity ratio is 2.00-2.50.
E	7	Annual operating loans and all other current obligations have not been fully paid within a maximum 15 month operating cycle from sales of cash crops and market livestock. More than 25% of the operating line carry-over exists from the prior year's operating loan. Projected annual cash flow for covering current and projected bank operating debt, suppliers, and current maturities of intermediate and long term debt contains a 25% or larger carry-over into next season. Ratio of real estate debt-to-real estate value exceeds .85. Debt-to-equity ratio exceeds 2.50.

a/ Loan grade designations correspond with those described in Table 5.

Watch List

A "watch list" of problem and/or potential problem credits should be prepared monthly. It should include:

1) all assets classified as "special mention" at the last regulatory examination,
2) all loans 90 days or more past due,
3) all loans which are classified as nonaccrual (and not included in the loans 90 days or more past due), and
4) all other loans determined by management to represent excessive risk.

In implementing the risk rating scheme, for example, loans receiving a score of "5 or greater" would be included on the "watch list" due to excessive risk. A "5" rating indicates a deteriorating cash flow position with no repayment cushion and some shortfall in meeting current maturities in an "average" year. A "5" credit could be upgraded to a "4" if the borrower were to improve operating efficiency and/or the bank rescheduled (or charged-off) sufficient debt to improve the cash flow situation. A "6" rating is considered to be a major reorganization situation. The borrower cannot "earn-out" of the situation. The bank may not show a loss on paper but the asset is so weak financially that a rate reduction is required to continue with the borrower or the bank will continue to sacrifice earnings. A "6" credit is borderline to a loss situation. A "7" credit is a loss loan due to the serious lack of repayment capacity and the fact that it implies a liquidation loss for the bank.

Review Schedule

Formation of a "watch list" suggests a schedule for monitoring and formal reviewing of acceptable and problem loans. The issue of how frequently to monitor loans is conditional on two factors the loan risk class and the size of the loan relative to bank capital. The choice of review frequency is presented as a matrix below. Loans rated "6" or "7" of significant size are obviously to be monitored and reviewed on as frequent a schedule as is administratively feasible until the loans are up-rated or fully liquidated. All loans regardless of size or risk class should be reviewed on an annual basis at a minimum.

	Loan Risk Class			
Loan Size Tier	1 - 3	4	5	6 - 7
Tier I (Over 2-1/2% of bank capital):	Quarterly	Quarterly	Monthly	Monthly
Tier II (1/2 - 2-1/2% of bank capital):	Annually	Quarterly	Monthly	Monthly
Tier III (under 1/2% of bank capital):	Annually	Quarterly	Quarterly	Monthly

Information on receipts and expenses (business and family living) can be available on a more frequent basis than annually. If it is monitored on a quarterly or monthly cycle, the bank obtains an early indication of deterioration in borrower debt repayment ability before a debt payment is past due.

Provision for Loan Losses

Implementation of a risk rating system will generate benefits for the bank, if it provides the basis for establishing provisions for potential loan losses which more closely reflect inherent risk. Provision percentages are usually set based on the bank's past experience and updated based on projected conditions. For instance, a bank may use the following scheme;

Provision for Loss (% of outstanding balance)	Loan Quality Description
0.0%	Highest quality
0.25	Good quality, minimal risk
1.00	Acceptable, average risk
2.00	Above average risk
4.00	High degree of risk
10.00	Lowest quality

Another bank (and possibly bank regulators) may determine that these provisions are too low, and will increase the provision for high risk loans based on past experience and projected farm economic conditions.

An example of how the risk rating information can be incorporated into determination of the provision for loan losses is provided for an hypothetical bank. Information contained in Exhibit A indicates that the bank is a small agricultural bank with $22,094,000 in gross loan volume. As of 3/31/87, the allowance for possible loan losses contains $220,000. Several additional assumptions are made, as noted in Exhibit A.

The contents of Exhibit B indicate how the volume of agricultural and nonagricultural loans is classified by risk rating. It is assumed that all commercial nonagricultural loans carry current balances under $50,000 for ease of illustration. The computation summary in Exhibit B follows the policy that all loans under $50,000 require a standard provision for loan loss. Loan with balances exceeding $50,000 require that provisions be individually determined, as the larger of the estimated loss or the minimum provision for the risk class.

The required provisions are brought forward to the summary sheet for determining the bank's provision for loan losses (Exhibit C). Provisions for loans under $50,000 are reported separately from those

on larger loans. Based on provisions taken year-to-date ($150,000) and the projection of required provision ($438,451), the bank anticipates the need to make an additional provision of $288,451 during the remaining part of the year, if condition of the portfolio does not change.

Conclusions and Research Implications

Financial conditions in agriculture are improving in 1987 due to several economic factors: stable revenues, lower production expenses, lower interest payments on a declining debt level, and stabilization of land values. Commercial banks have also positioned their loan portfolios for improved financial performance through previous charge-offs and debt restructuring. However, future sources of risk continue to be important and debt repayment problems will likely continue for farmers carrying excessive debt. Nonrepayment is not a new problem in agriculture, nor is it unique to agriculture. However, it can be controlled, and its consequences reduced, through implementation of appropriate credit controls, such as risk rating and formal loan review. Benefits will likely exceed the costs of development and maintenance of this management information system, if it is used for improving loan administration, improving communication with bank examiners and bank borrowers, and in early detection of problem loans.

A couple of research and development issues can be identified from the discussion in this paper. First, there is a need to improve and reorient formal statistically-derived credit scoring models. The improvements could be to 1) identify factors which are good predictors of debt repayment ability as well as firm survival, and to 2) provide the empirical basis for weighting the essential risk factors. Second, some attention needs to be focused on development of computerized risk rating systems, which develop and utilize financial budgeting and proforma financial statement information. The FINPACK computer programs provide the basis for development of that form of decision aid in the area of agricultural credit risk analysis. A useful feature of the envisioned system would be to develop probabilistic information as part of proforma analysis.

24

Exhibit A. Hypothetical Bank Information

Subzero State Bank[a]
Snobank, Minnesota

Statement of Condition
($000's)
3/31/87

Cash, Investment and Receivables:	17,300	Deposits:	
Loans:			
Commercial - agric.	6,628	Demand	9,610
- nonagric.	5,524	Savings and Time	21,250
Residential Real Estate	4,419	Other Liabilities	4,914
Consumer	5,523	Capital:	
Gross Loans	22,094	Stock	530
Allowance for		Surplus, Undiv. Profits,	
Potential Losses	220	and Reserves	2,870
Net Loans	21,874		
		Total Liabilities	
Total Assets	39,174	and Capital	39,174

Additional Information:

Loan portfolio composition:	Commercial (nonag.)	25%
	Commercial (ag.)	30%
	Residential Real Estate	20%
	Consumer	25%

Commercial loans risk rated 1-4	89%
Commercial loans risk rated 5-7 (watch list)	11%
Allowance for Possible Loan Losses (APLL)	$220,000
Percentage of gross loans	1%
Loan-to-Deposit percentage	72%
Capital-to-Asset percentage	8.7%

[a] The following assumptions apply to this hypothetical example:

1. The risk rating scheme for commercial loans for commercial loans has been tested over time and been found to be reliable. All agric. risk assets are included in the computation. All commercial-nonagric. loans (not shown here) carry balances under $50,000 each.
2. Management anticipates 1% growth in total loan volume during 1987, and allocates 0.5% provision for that growth ($22,094,000 x 1% x 0.5% = $1,105).
3. Charge-offs are taken as they occur, but a provision is taken in anticipation of future losses.
4. Management projects that a $600,000 Reserve for Loan Losses will be needed by 12/31/87 ($50,000/month).

Exhibit B. Commercial Loan Summary and Computation of Provision for
Agricultural Loan Losses

Commercial Loan Summary

Risk Class 1-4	$5,302,000 (ag);	$4,972,000 (nonag)
Risk Class 5	332,000 (ag);	138,000 (nonag)
Risk Class 6	664,000 (ag);	276,000 (nonag)
Risk Class 7	330,000 (ag);	138,000 (nonag)
Subtotal		$12,152,000

(Less) Excludable	132,560
Net Total	$12,019,440

Computation Summary - Agric. Loans

Risk Class	Outstanding Loan Balances ($000)	Estim. Loss ($000)	Minimum Provision ($000)	Required Provision ($000)
Class 5 (minimum provision is 2%):				
Under $50,000	132	--	2.64	2.64
Individual:				
Dave Dairyman	78	2	1.56	2
Calvin Corngrower	64	0	1.28	1.28
Otto Repay	58	0	1.16	1.16
Total	332	2	6.64	7.08
Class 6 (minimum provision is 10%):				
Under $50,000	360	--	36	36
Individual:				
Frank Farmhand	125	31.25	12.5	31.25
Ray Show	109	24	10.9	24
Herbie Side	70	21.67	7	21.67
Total	664	52.56	66.4	112.92
Class 7 (minimum provision is 30%):				
Under $50,000	90	--	27	27
Individual:				
Barney Beanhill	165	50	49.5	50
Kenny Repay	75	23	22.5	23
Total	330	73	99	100

Exhibit C. Summary Determination of Provision for Loan Losses
As of ___3/31/87___

I. **Allowance for Possible Loan and Lease Loss:**

Loan Type/Risk Class	Estimated Balance (End of Period)	Provision Percentage	Required Allowance
1) Commercial and Agricultural			
Class 1-4	10,141,440	.5%	50,707
Class 5 (under $ 50,000)	270,000	2%	5,400
Class 6 (under $ 50,000)	636,000	10%	63,600
Class 7 (under $ 50,000)	228,000	30%	68,400
Class 5 (individual)	200,000	by loan	4,440
Class 6 (individual)	304,000	by loan	76,920
Class 7 (individual)	204,000	by loan	73,000
2) Consumer Installment	5,523,000	2%	110,460
3) Residential Real Estate	4,419,000	.1%	4,419
4) Excluded[a/]	132,560		
Total loans	22,094,000		
5) Additional Allowance Required[b/]			1,105
6) Required Provision for Loan Losses (APLL)			458,451

II. **Provision for Losses Calculation**

7) Required APLL (from line 6)			458,451
8) (plus) Charge-offs (net of recoveries), YTD		+	50,000
9) (minus) APLL balance from prior year[c/]		-	70,000
10) (minus) APLL acquired in current year		-	N/A
11) (equals) Required Provision for Loan Losses, YTD		=	438,451

III. **Current Month**

Required Provision for Loan Losses, YTD (from line 11)		438,451
(minus) Provision made YTD at prior month end	-	150,000
(equals) Current month Provision for Loan Losses[d/]	=	288,451

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a/ Includes loans guaranteed or insured by a U.S. government agency (e.g. student, FHA, VA, FmHA, and SBA loans), loans secured by cash or cash equivalent collateral in the bank's possession, and bankers' acceptances.

b/ The additional allowance required is for projected growth in loan volume.

c/ The APLL balance would be zero for banks not on the "reserve method" of accounting, since the provision for loan losses would be identical to net charge-offs.

d/ This line indicates the shortfall (surplus) of the bank's current actual reserve for loan losses. The amount shown is allocated at the discretion of bank management.

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Appendix Table A. Example of an Application of the MASI Credit Scoring Scheme

Financial Statement for: __SAMPLE FARM__   Date: __DECEMBER 11, 1986__

Current Assets:	Current Market Values	Tax Basis Values
Cash & Savings	1,500	
Accts Rec.....	11,500	
Crop Inv......	118,344	
Feeder Lvstk..	23,375	
Supplies......	11,000	
Total Current ->	165,719	165,719

Intermediate Assets:		
Breeding Lvstk	0	
Auto & Truck..	11,000	6,000
Mach.& Equip..	78,000	45,000
Life Insurance (Cash Value)	0	
Securities....	0	
H.H. & Pers...	5,000	
Total Interm. ->	94,000	56,000

Long Term Assets:		
Bldgs & Tile..	0	0
Farm Real Est.	176,000	176,000
Total Fixed ->	176,000	176,000
Total Assets ->	435,719	397,719

Current Liabilities: (Due Within 12 mths.)	Current Market Values	Tax Basis Values
Accounts	0	
Personal	0	
Notes	28,428	
Chattel/CCC ...	119,914	
Real Estate ...	17,555	
Total Current ->	165,898	165,898

Intermediate Liabilities: (Due Within 7 Yrs.)		
Notes	67,409	
Chattel/CCC ...	1,454	
Accounts	0	
Personal	0	
Total Interm. ->	68,863	68,863

Long Term Liabilities:		
Real Estate Debt	124,205	
Total Fixed Liab.->	124,205	124,205
Total Liabilities->	358,966	358,966
Net Worth ->	76,754	38,754
Ttl Liab.& N.W. ->	435,719	397,719
Interest Liability->	24,822	

1. Number of Dependents $ ____
2. Insurance on Crops $ ____
3. Buildings $ ____
4. Mach, Equip,& Lvstk. $ ____

5. Age ____
6. Physical Condition ____
7. Have you been involved in bankruptcy? Yes __ No __
8. Are any suits pending against you? Yes __ No __

The foregoing statement is submitted for the purpose of obtaining credit. It is true and correct in every detail and fairly shows the financial condition of the applicant(s) at the time indicated. The applicant(s) will promptly notify the bank of any subsequent substantial change in such financial condition. The Bank is authorized to retain this financial statement, whether or not the credit requested is approved, and to check the credit of the applicant(s) or any other information contained herein.
"Any willful misrepresentation of this statement could result in a fine and/or imprisonment under provisions of the U.S. Criminal Code." (Sec. 18 U.S.C. 1014).

Date _____   Applicant Signature _____

Date _____   Co-Applicant's Signature _____
            (where applicable)

Credit Matrix Score Sheet

	Mkt.Val.	Depr.Val.
Current Year > 1986	x x x	
Beginning Year > 1975	x x x	
Beginning Net Worth >	11,000	11,000
Prior Net Worth >	88,000	48,000
Loan Amount >	85,000	x x x
Value of Security >	123,905	x x x

	Current Market Values	Tax Basis Values
Current Assets/Current Liabilities	1.00	1.00
Current + Intermediate Ratio	1.11	0.94
Total Liabilities:Net Worth	4.68	9.26
Current N. W. - Beg. N. W. /Years/ Prior Year N. W.	0.07	0.03
Loan Amount/Value of Security	0.69	
Loan Score (1-6)	4.85	4.85

	Weighting	Scoring	Wghtd Score
CA/CL	0.25	5	
IA/IL	0.10	6	
TL/NW	0.25	6	
CNW/PNW	0.30	4	
LA/SA	0.10	3	
			4.85

Credit Matrix

CA/CL Ratios	Score	IA/IL Ratios	TL/NW Ratios	CNW/PNW Ratios	LA/SA Ratios	Score
0.000		0.000	0.000	0.000	0.000	1
0.900		1.250	0.500	0.010	0.500	2
0.901		1.251	0.501	0.011	0.501	2
1.100		1.500	0.750	0.050	0.600	3
1.101		1.501	0.751	0.051	0.601	3
1.250		2.000	1.000	0.100	0.750	4
1.251		2.001	1.001	0.101	0.751	4
1.500		2.500	1.500	0.150	0.851	5
1.501		2.501	1.501	0.151	0.851	5
2.000		3.000	2.000	0.200	0.950	6
2.001		3.001	2.001	0.201	0.951	6
22.001		23.001	22.001	20.201	20.951	

29