



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

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

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

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

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

**ANALYSIS OF LOAN RESTRUCTURING FOR THE FARM CREDIT SYSTEM**

**Michael Boehlje, Bruce Bullock, Charles Dodson,  
David Lins, Glenn Pederson and David reinders**

**Proceedings of  
Regional Research Committee NC-161**

**FINANCING AGRICULTURE IN A CHANGING  
ENVIRONMENT: MACRO, MARKET,  
POLICY AND MANAGEMENT ISSUES**

**Denver, Colorado  
October 6-7  
1987**

Department of Agricultural and Applied Economics  
University of Minnesota  
St. Paul, MN 55108  
March 1988

*Copyright 1987 by author. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*

## ANALYSIS OF LOAN RESTRUCTURING FOR THE FARM CREDIT SYSTEM

Michael Boehlje, Bruce Bullock, Charles Dodson,  
David Lins, Glenn Pederson and David Reinders\*

### INTRODUCTION

Farm Credit Services of St. Paul, as well as the Farm Credit System nationwide, is facing severe financial stress as evidenced by substantial operating losses, shrinking capital and surplus, declining loan volume, and a rising volume of nonaccrual loans and acquired property. To position the bank for long-term survival and reverse this deteriorating condition, the St. Paul Farm Credit Services implemented an aggressive recovery plan (Phase I) in the first quarter of 1987. The plan focused specifically on restructuring nonaccrual loans and disposing of acquired property. The purpose of this analysis was to evaluate strategies that might have been implemented to reposition St. Paul Farm Credit Services for short-term survival and long-term viability. This discussion provides a brief summary of the results of the study; more detail on the methodology and numerical analysis procedures is contained in "Analysis of Loan Restructuring and Acquired Properties Disposition Strategies for Farm Credit Services, St. Paul," available from the authors.

The specific objectives of this analysis were (1) to assess the procedures and likely consequences of the loan restructuring component of the Phase I recovery plan, (2) to evaluate the effectiveness of the strategy used to dispose of acquired property, and (3) to compare alternative strategies for converting nonaccrual loans and acquired properties to interest-earning assets. Short-run and long-run financial performance of the St. Paul Farm Credit Services was measured by annual earnings, nonaccrual loan volume, inventory of acquired property, level of surplus/deficit, volume of earning assets, and other relevant financial performance criteria.

---

\*Respectively, Michael Boehlje is Professor and Head of Department, Department of Agricultural and Applied Economics, University of Minnesota; Bruce Bullock is Chairman, Department of Agricultural Economics, University of Missouri; Charles Dodson is Research Assistant, Department of Agricultural Economics, University of Missouri; David Lins is Professor, Department of Agricultural Economics, University of Illinois; Glenn Pederson is Associate Professor, Department of Agricultural and Applied Economics, University of Minnesota; and David Reinders is Senior Economist, Farm Credit Banks of St. Louis.

## THE METHODOLOGY

The methodology used in this study included a combination of literature and data review and simulation analysis using a financial projection model. The evaluation of individual loan restructuring arrangements was accomplished through a review of reports prepared by the internal auditing division of St. Paul Farm Credit Services, as well as the Capital Corporation of America, and personal interviews with field staff responsible for implementing the loan restructuring activity. Because of confidentiality of individual credit files, an independent evaluation of specific loan restructuring arrangements was not possible. The future financial implications of the loan restructuring and acquired property management arrangements were evaluated using a simulation model with data on the economic environment coming from various USDA and other reports and information on bank performance coming from financial documents of St. Paul Farm Credit Services.

The financial projection model simulates the balance sheet and annual operating statement of a Federal Land Bank over a five-year period under alternative bank management strategies for dealing with nonaccrual loans and acquired property. The results are simulated for optimistic, baseline, and pessimistic assumptions about the general economic environment. The December 31, 1986, balance sheet and bank planning projections of loan volume and other data provide the starting point for the simulations (see Diagram 1).

Three sets of data are required by the model. Set I contains the bank planning assumptions regarding new loans, payoffs, additions to nonaccrual loan volume, interest rates, and other key assumptions regarding bank operations. Set II describes the bank strategy for reducing nonaccrual loan volume and assumptions regarding write-offs associated with alternative methods for dealing with nonaccrual loans. The key assumptions regard (1) the percentage of the beginning inventory of nonaccrual loan volume to be resolved during the years, and (2) the distribution of those resolutions between restructures, deedbacks, cash-outs, and litigations. The model allows for consideration of failure of restructured loans one and two years after a loan is placed in the restructure category. The analyst specifies the percent of loan volume restructured in year  $t$  assumed to fail in each of the next two years ( $t+1$  and  $t+2$ ). The analyst also specifies (a) the distribution of the failed restructured loans between, deedback, cash-out and litigation, and (b) the expected charge-offs associated with each of these actions.

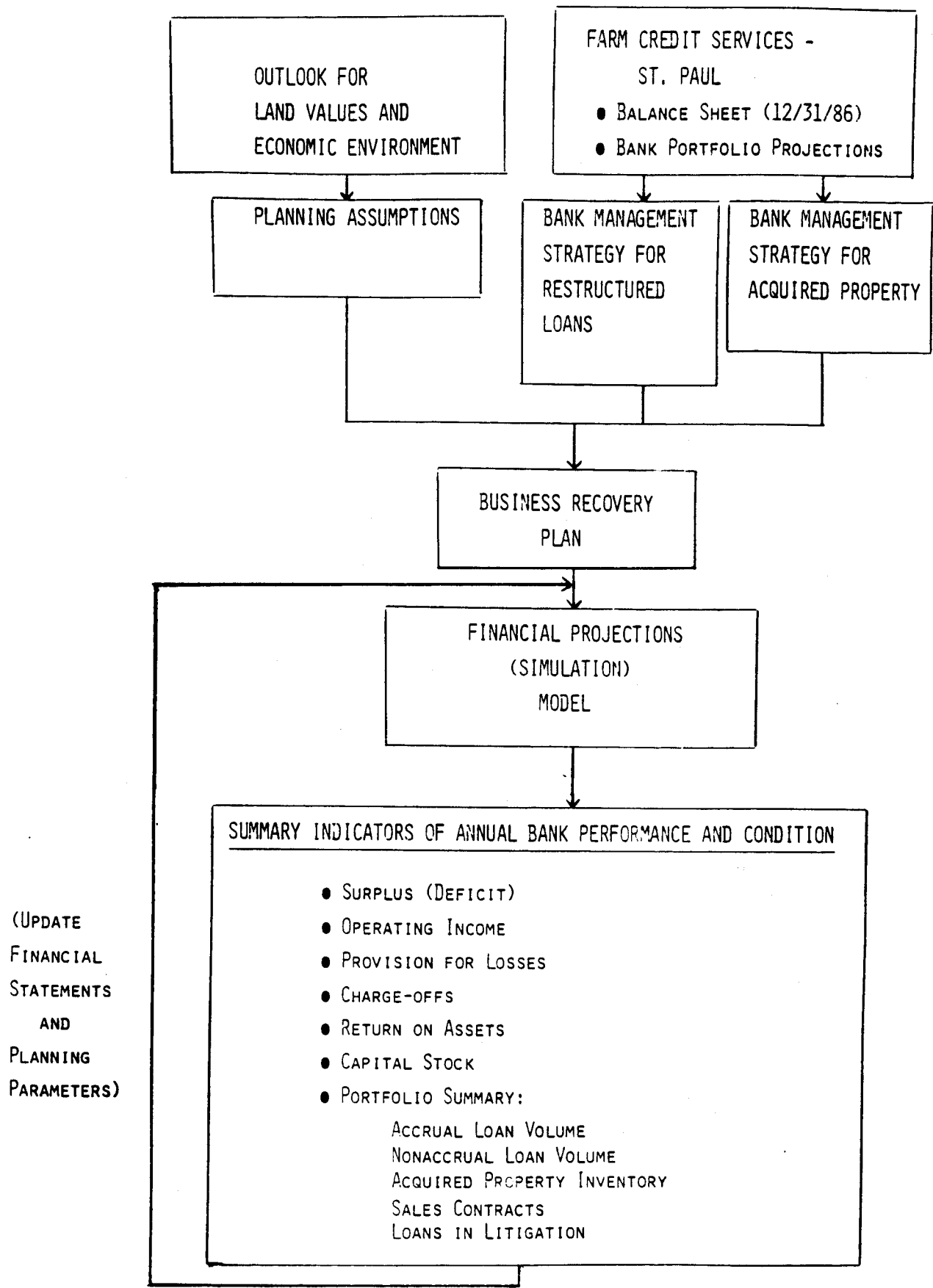


Diagram 1. SCHEMATIC REPRESENTATION OF THE FINANCIAL PROJECTIONS MODEL, UNDERLYING ASSUMPTIONS, AND OUTPUT

Set III describes the bank management strategy for disposing of acquired property. The key assumptions are (1) the percent of beginning acquired property inventory to be moved during the year, (2) the distribution of that disposal between cash sales and sales contracts, and (3) expected charge-off rates associated with each action. All analyses developed for this report, with the exception of the Pre-Phase I strategy, assume that the bank will move 100 percent of the beginning inventory of acquired property during the year. In the Pre-Phase I strategy, 50 percent of beginning inventory of acquired property is sold. Fifty percent of acquired property sales are for cash and 50 percent are sold on sales contracts for all strategies.

The model was used to compare the impacts of six alternative bank management strategies for dealing with nonaccrual loans. The impacts on bank earnings and financial condition are compared across the six strategies. Borrower stock is maintained at 5 percent of gross loan volume in all strategies evaluated.

The December 31, 1986, balance sheet provided the starting values for the modeling activities for each management strategy. Bank planning assumptions were provided by St. Paul Farm Credit bank officials and were used for each of the management strategies.

The six strategies for resolving nonaccrual loan problems are described in the following fashion.

#### **St. Paul Phase I Strategy**

Assumptions underlying the St. Paul Phase I strategy include:

- a) 70 percent of the initial nonaccrual loan volume is resolved each year.
- b) The resolution of these loans will be:
  1. 60 percent restructure
  2. 18 percent cash-out
  3. 18 percent deedback
  4. 4 percent litigation
- c) Failure rates of restructured loans after one year are assumed to be 20 percent in 1987, 15 percent in 1988, and 5 percent thereafter. This reflects an assumed improvement in the loan officer's ability to effectively restructure loans.

- d) Failure rates of restructured loans two years after restructuring are assumed to be 10 percent for loans restructured in 1987, 7 percent in 1988, and 5 percent thereafter.

#### **St. Paul Phase I with Increased Delinquency Strategy**

Because of the willingness of the St. Paul Federal Land Bank to write down principal and interest as part of restructuring, it is assumed that an increase in nonaccrual loan volume occurs relative to St. Paul planning assumptions as some borrowers try to take advantage of the Bank's loan restructuring program. The specifications of this strategy are the same as the St. Paul Phase I strategy except: the amount of additions to nonaccrual loan volume used in simulating the Phase I strategy is increased by 10 percent in 1987, 20 percent in 1988, 10 percent in 1989, and 5 percent thereafter.

#### **St. Paul Pre-Phase I Strategy**

Assumptions underlying the St. Paul Pre-Phase I strategy include:

- a) 30 percent of the initial nonaccruing loan volume is resolved each year.
- b) The resolution of these loans will be:
  - 1. 10 percent restructured
  - 2. 25 percent cash-out
  - 3. 30 percent deedback
  - 4. 35 percent litigation
- c) The failure rates on restructured loans are 5 percent the first year and 5 percent the second year for all time periods. In this strategy, the only loans restructured are those with a high probability of success.

#### **Training and Documentation Strategy**

Assumptions underlying the Training and Documentation strategy include:

- a) 30 percent of beginning nonaccruing loan volume is resolved in 1987, 50 percent in 1988, and 70 percent each year thereafter.

- b) Distribution of nonaccrual loan volume by type of resolution.

	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
	(percent of nonaccrual loan volume)				
Restructure	10	40	60	60	60
Cash-out	25	21	18	18	18
Deedback	30	22	18	18	18
Litigation	35	17	4	4	4

- c) Failure rates on restructured loans after Year 1 and Year 2 are 5 percent in all periods, reflecting loans restructured with a high probability of success.

### High Litigation Strategy

Assumptions underlying the High Litigation strategy include:

- a) 70 percent of the initial nonaccruing loan volume is resolved each year.
- b) The resolution of these loans is:
1. 10 percent restructured
  2. 25 percent cash-out
  3. 30 percent deedback
  4. 35 percent litigated
- c) Failure rates after Year 1 and Year 2 are 5 percent in all periods.

### Slow Resolution Strategy

Assumptions underlying the Slow Resolution strategy include:

- a) In 1987, 10 percent of initial nonaccrual loan volume is resolved, 30 percent is resolved in 1988, and 50 percent is resolved in 1989, and each year thereafter.
- b) Disposal of nonaccruing loans:

	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
	(percent of nonaccrual loan volume)				
Restructure	10	40	60	60	60
Cash-out	25	21	18	18	18
Deedback	30	22	18	18	18
Litigation	35	17	4	4	4



- c) Failure rates on restructured loans after Year 1 and Year 2 are 5 percent in all years.

## RESULTS

### Loan Restructuring Arrangements

A review of individual loan restructuring arrangements revealed the following key points:

1. The current legal environment in Minnesota and North Dakota is not conducive to deficiency judgments. This creates an incentive for loan restructuring strategies which do not require litigation.
2. Reviews by internal audit suggest serious deficiencies in loan documentation and credit administration. We found no evidence to the contrary.
3. The justification offered for the special credit project was the perceived need to do something fast to ensure short-run bank survival. Our analysis of bank income does not support this justification. However, we did not address the issue of collateral position on loans impacting survivability.
4. Credit standards have been affected by the special credit project and have resulted in an estimated 10 percent increase in nonaccrual loans resulting from intentional delinquencies. If these intentional delinquencies decline in the future, the financial consequences of this increase are not seriously detrimental to the bank in the long run.
5. Estimates of the percent of restructured loans which will become nonviable varied widely between individuals in special credit and internal audit. The financial consequences of a higher percent of failure on restructured loans is not dramatic. For example, simulation of a 28 percent failure rate over two years results in operating income which is about \$20 million per year higher than a 52 percent failure rate.
6. Loans which were restructured, but which eventually do not perform, should not necessarily be viewed as a sign of failure of the special credit effort. In cases where positive equity exists before restructuring, the delay created by restructuring may allow the lender to "drain" equity capital from the operation, thereby minimizing losses to the bank.

7. Establishment of bottom line positions on individual loans was undertaken without adequate analysis of the relative positions of the bank and the debtor. The result was either a larger charge-off by the bank or considerable room for improvement in the bank's position.
8. Concessions of debt by other lenders was infrequent. Obtaining these concessions would have slowed the settlement process, and the time frame within which the special credit project operated did not allow adequate time for such negotiations. Additionally, the short-term lender was often adequately secured and had no incentive to reduce debt.
9. We found mixed evidence on the adequacy of concessions (cash and/or additional security) by debtors. Since farm unit viability was not adequately analyzed on restructured loans, it is probable that additional debtor concessions could have been pursued where relatively stronger equity positions existed. Here again, the short time frame allowed for restructuring was an important limitation.
10. The morale of loan officers appears to be improved overall compared to what existed prior to Phase I. However, the initial dramatic improvement in morale from loan restructuring is being partially dissipated by criticisms concerning lack of documentation.
11. The image of FCS-St. Paul, as reflected by media coverage and borrower feedback, has generally been enhanced. Comments of a critical nature have been received primarily from borrowers who did not receive concessions.

#### Acquired Property Management and Land Values

1. During the first three months of 1987, the Federal Land Bank of St. Paul used various merchandizing strategies, including favorable interest rates and shared appreciation mortgages, to dispose of 338,042 acres of acquired property with a total value of \$168.5 million.
2. The yield (before interest cost, but net of other expenses) on the non-cash sales of property increased from 2.5 percent to 8.5 percent.
3. Acquired property was sold at an average price of 104 percent of appraised value. This suggests that acquired property sales did not depress market values of land.

4. Three potential land value scenarios were developed:

The baseline scenario is consistent with the St. Paul Federal Land Bank's financial plan which was in effect during late 1986. This forecast embodies a 12 percent decline in land values for 1987 and 1988 combined, before they bottom out in 1989. In 1990 and 1991, land values increase at 1 percent per year.

The pessimistic scenario embodies a 12 percent decline in land values in 1987 and 8 percent decline in 1988, followed by another 4 percent decline in 1989 and no change in 1990 and 1991.

The optimistic scenario assumes land values decline 4 percent in 1987 and bottom out in 1988, followed by increases of 1 to 2 percent from 1989 to 1991.

5. Developments in three key areas -- interest rates, direct government payments and weather patterns -- will determine which of these three land value scenarios most closely matches reality.
6. Each land value scenario produces a different set of financial assumptions for the Bank for the years 1987 to 1991. The major financial assumptions, provided by Farm Credit Services of St. Paul, are:

Gross new loans closed increase from \$70 million to \$160 million per year under the optimistic scenario, and decline from \$30 million to \$15 million per year under the pessimistic scenario. Under the baseline scenario, new loans (closed) drop from \$35 million in Year 1 to \$20 million in Year 2 before increasing to \$80 million in Year 5.

Loan payoffs are the same under the optimistic and baseline scenarios at 6.6 percent of accruing loan volume. Under the pessimistic scenario, the loan payoff rate falls to 5.0 percent.

Gross additions to nonaccruing loan volume decline from \$450 million in Year 1 to \$25 million in Year 5 under the optimistic forecast; from \$700 million in Year 1 to \$30 million in Year 5 under the baseline; and from \$775 million in Year 1 to \$35 million in Year 5 under the pessimistic scenario.

Provisions for loan losses are a negative \$100 million in aggregate under the optimistic scenario during 1987 to 1991. They are \$130 million in 1987 and \$10 million in 1988 under the baseline scenario. Provisions for loan losses decline from \$230 million in 1987 to \$25 million in 1991 under the pessimistic scenario.

Provisions for losses on acquired property are determined directly by the trend in land values. The smallest provisions occur under the optimistic scenario and the largest occur under the pessimistic scenario.

### Financial Impacts

Three environmental assumptions as a function of baseline or expected pessimistic and optimistic land prices were included in the simulations. The six strategies indentified earlier were applied to the initial conditions of the St. Paul Farm Credit Services as of December 31, 1986. These intial conditions can be described by \$880 million of nonaccrual loans, \$288 million of acquired property, \$5.6 billion of earning assets, -\$90 million of surplus, and total capital of \$257 million.

The conclusions from the financial simulation model (under the baseline assumptions) are:

1. The 1987 operating loss differences indicate that the Phase I strategies have slightly lower losses (\$159 to \$179 million) than the pre-Phase I strategy (\$183 million). The training and documentation strategy results in a 1987 loss of \$177 million, and the very slow resolution strategy has a loss of \$155 million. The heavy litigation strategy has the highest operating loss in the short run (\$218 million).
2. The 1987 nonaccrual loans are more than doubled for the slow resolution strategy (\$1.286 billion) compared to the Phase I and high litigation strategies (approximately \$548 to \$576 million). Nonaccrual loans are also higher for the pre-Phase I (\$1.040 billion) and the training and documentation strategy (\$1.040 billion) compared to the Phase I strategy.
3. Acquired property is lower in the short run for the slow resolution strategies and higher for the Phase I strategies. The highest amount of acquired property in the short run occurs with the high litigation and pre-Phase I strategies.
4. The surplus (assuming stock is redeemed at par) is negative in all cases in 1987, and ranges from approximately -\$312 million for the Phase I strategy to a high of -\$406 for the

high litigation strategy.

5. Operating income in 1990 is the highest using the Phase I strategies (\$16 to \$36 million per year) and is lowest for the pre-Phase I strategy (-\$88 million per year).
6. In 1990 the volume of nonaccrual loans is lowest with the Phase I and high litigation strategies (\$73 to \$80 million) and highest with the pre-Phase I strategy (\$577 million).
7. In 1990 acquired property is lowest for the Phase I strategies (\$66 to \$73 million) and highest for the pre-Phase I strategy (\$358 million).
8. By 1990 the deficit is smallest for the Phase I strategies (\$100 to \$226 million) and highest for the pre-Phase I and high litigation strategies (\$557 to \$580 million). The capital position is improving for all strategies except pre-Phase I and high litigation.
9. The percentage of volume that moves into nonaccrual status from intentional delinquencies using a Phase I strategy does have a major impact on operating income and financial performance of the St. Paul Farm Credit Services in the long run.
10. Increasing the failure rate on restructured loans (i.e., the percentage which must be restructured a second time) from 28 percent to 52 percent reduces operating income by approximately \$20 million per year and increases the deficit in 1990 by approximately 60 percent. However, the Phase I strategy is still preferred to the training and documentation strategy even with this higher failure rate.
11. In 1990 earning assets with the Phase I strategies total approximately \$5.1 billion compared to approximately \$4.6 billion of earning assets with the pre-Phase I strategy.
12. The recovery rate on restructured debts must be reduced from 109 percent to 95 percent for the pre-Phase I and high litigation strategies to exhibit similar performance as the Phase I strategies.
13. The maximum need for outside financial assistance ranges from approximately \$328 to \$418 million for the Phase I strategies, to \$429 to \$449 million using the slow resolution and training and documentation strategies, to \$558 to \$580 million using the pre-Phase I and high litigation strategies.

Conclusions from the financial projections model under the optimistic and pessimistic land value scenarios are:

1. The ranking of the different strategies based on the specific performance variables (operating income, surplus, nonaccrual loan volume, acquired property and interest-earning assets) are the same under the optimistic and pessimistic assumptions as they are under the baseline. That is, the Phase I strategies perform better than the pre-Phase I, slow resolution and high litigation strategies, with the training and documentation strategy in-between.
2. Compared to the baseline assumption, operating income and surplus in 1987 are substantially higher under the optimistic forecast for the various strategies, and significantly lower under the pessimistic forecast.
3. By 1990 the differences in operating income caused by the optimistic or pessimistic land value scenarios become smaller.
4. By 1988 operating income is positive under the optimistic scenario for all except the pre-Phase I and high litigation strategies.
5. By 1989 surplus is positive for all strategies under the optimistic scenario; the surplus is higher for the Phase I strategies compared to the alternatives by as much as approximately \$200 million in 1989.
6. The pessimistic land value scenario increases substantially the maximum need for outside financial assistance. Under the optimistic scenario, the maximum drain on other districts is reduced significantly when compared to the baseline scenario.

#### CONCLUSIONS

The analysis, based upon bank planning and management assumptions provided by Farm Credit Services of St. Paul, suggests that the rapid resolution process implemented in Phase I is preferred to alternative strategies that might have been implemented, including aggressive litigation and relatively slow debt restructuring supported by loan officer training and credit file documentation. In essence, a strategy that places nonaccrual loans on an accrual basis (even if a significant write-off occurs) moves acquired property back into individual ownership, and rapidly converts the assets from low-yielding to high-yielding loans (or contracts) is the most positive strategy

for long-term viability. Furthermore, this strategy does little to damage the short-term survival capacity of the bank. Even if a significant portion of the restructured loans are not serviceable after a year or so, this strategy is preferred to those of slow resolution or high litigation approaches. Finally, the financial drain on other districts is minimized with the Phase I strategy.