



**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

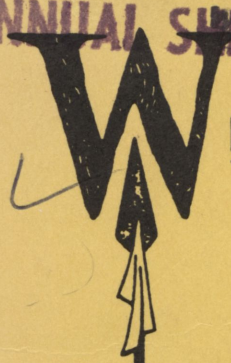
AgEcon Search

<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.*

ANNUAL MEETING WITHDRAWN



WESTERN AGRICULTURAL ECONOMICS ASSOCIATION

**PAPERS OF THE  
1989 ANNUAL MEETING**

**WESTERN AGRICULTURAL  
ECONOMICS ASSOCIATION**

GIANNINI FOUNDATION OF  
AGRICULTURAL ECONOMICS  
LIBRARY  
**WITHDRAWN**

APR 9 1991

**COEUR D'ALENE, IDAHO**

**JULY 9-12, 1989**





**Issues of Chapter 12 Bankruptcy Legislation:  
Analysis of Chapter 12 Bankruptcies in South Dakota**

Burton Pflueger, Mark Goodenow\* and Larry Janssen

Financial stress in the agricultural economy during the early and mid-1980s brought financial hardship for many agricultural producers. Debt service placed impossible demands on cash flows, forcing many farmers and ranchers to restructure their finances. Restructuring often involved renegotiating terms (interest rates and/or amortization schedules) or principal writedowns of outstanding debt. If voluntary negotiations failed, mediation or bankruptcy became necessary.

The incidence of farm bankruptcy filings in South Dakota steadily and dramatically increased throughout the 1980s from 37 filings in 1980-81, to a high of 622 filings in 1987. Most of these farm bankruptcies have been reorganization filings. Chapter 12 has replaced Chapter 11 as the preferred filing option since its adoption in November of 1986. Chapter 12 legislation was adopted to enable qualifying agricultural producers to reorganize their financially stressed operations to make them financially viable. The number of filing dropped during the first 11 months of 1987 to 149 because of improvements in farm financial conditions during 1986 and 1987. (Table 1).

It is apparent from the dramatic shift of farm bankruptcy filings to Chapter 12, that this law provides the best opportunity for farmers to reorganize their farm business. However, reorganization cannot, by itself, be viewed as a successful outcome of the bankruptcy process. Successful reorganization can only be accomplished by the restoration of long term financial viability to the farm business. It remains to be seen whether Chapter 12 actually enhances the prospects for successful reorganization.

An integral part of the reorganization petition is the plan for restructuring the operating environment for a particular farm. In some cases, this plan is simply a restructured financial situation with debt obligations altered so that they can be paid on time. In other cases, the plan for operating the farm under a Chapter 12 reorganization involves new and different enterprises as well as off-farm employment for the operator, the spouse, or both.

Regardless of the restructured operating plan's complexity, few agricultural producers complete their plans without some assistance from outside sources. The primary sources of assistance for these producers are their attorneys and the South Dakota State University Cooperative Extension Service. This section concentrates on the role of these outside agencies in providing assistance to agricultural producers filing Chapter 12 reorganization petitions.

South Dakota State University



## ANALYSIS OF CHAPTER 12 FARM BANKRUPTCIES IN SOUTH DAKOTA

To obtain a better understanding of how Chapter 12 is working in South Dakota, telephone interviews were conducted with South Dakota attorneys actively practicing bankruptcy law, and Extension farm management specialists actively assisting producers with financial management (1). These individuals are qualified to give insight as to how Chapter 12 is working, suggestions for changes and improvements, and some recommendations on how and when Chapter 12 should be used.

Opinions were solicited from four Extension specialists and 10 attorneys working with "creditor" clients (2). As expected, there were major areas of agreement and also differing viewpoints on the effectiveness of Chapter 12 bankruptcy between classes of attorneys, and between the attorneys and farm management staff. These agreements and differences are important in understanding the overall picture of Chapter 12 and will be highlighted.

### "Pre"-Chapter 12

The steps leading to filing for relief under Chapter 12 of the U.S. Bankruptcy code varies with each situation. The current economic condition of the industry, the debtor's particular economic condition, the attitude of the debtor, and the attitude of their creditor(s) all play a role in when, how, or even if a case proceeds toward filing. Those surveyed felt that a majority of potential Chapter 12 cases reach an out-of-court settlement prior to filing.

### Debtor's Position

Most debtor clients try to solve their own financial difficulties, and generally approach an attorney only when financial problems are evident and something more needs to be done. Most have not made any decision at this point to file Chapter 12. Conversely, approximately 50 percent of those producers contacting Extension staff are already in the bankruptcy process. Petitions have been filed and producers, at the encouragement of their attorneys, contact Extension staff for assistance in developing the reorganization plan. The remaining cases use Extension staff as their first contact for assistance with their financial situation.

Those assisting producers will first examine available financial records and seek to understand the difficulty. To properly do this, these professionals need to be provided with the client's accounting records; five years of income tax records, all security agreements; all promissory notes, mortgages and contracts; and an updated personal property inventory. However, this task can be difficult because debtor clients often have poor to nonexistent records.

Probably the area of closest agreement among those surveyed was in farm records. Survey respondents indicated that clients'

records were generally inadequate and may have been at least partially responsible for the financial difficulties experienced. However, some producers filing Chapter 12 had very detailed records. One respondent commented that farmers in bankruptcy had no better or no worse records than farmers in general.

After the records have been examined, the attorney can give the debtor a list of options and recommendations. Occasionally, Extension staff are asked for a similar list of options. While the Extension staff can explain options available to the producer, they cannot make recommendations. In either case, the client always makes the ultimate decision of what action(s) to take. The first option and recommendation is usually a continuation or opening of negotiations with their creditors. From this point, negotiations are done with the assistance of the debtor's attorney.

Although negotiation resolves most difficulties, the debtor is encouraged to see the situation as a broad one that encompasses the entire farm business, all the creditors, and the business's future financing needs. A reoccurring danger is reaching a settlement with one creditor only to find other obligations can not be met later. Other important considerations are the tax consequences of any settlement. Any forgiveness of debt outside of bankruptcy, is income to the debtor on which tax must be paid.

The attorney's recommendation is based on the overall position of the debtor, but a great deal of emphasis is placed on projected cash flow statements. This information should indicate the possibility of developing a realistic reorganization plan or the need for liquidation. This is the time when the Extension staff can be most helpful. They can combine farm level information with reorganization ideas to develop a workable operating plan. The Extension staff felt that too much emphasis is placed on short-term cash flow analysis. They would like to see longer term analysis conducted and combined cash flow with whole farm long-range farm budgeting.

### **Creditors Position**

Most creditors conduct their own negotiations with debtors having difficulty making payments. The creditor's attorney is usually not involved with the case until Chapter 12 is filed. While some creditors deliberately involve their attorney in earlier negotiations, most do not take an active role until negotiations fail, or the creditor feels there is no option other than foreclosure. However, negotiations do not usually come to an end when the debtor files for court protection.

As with the debtor's attorney, a complete understanding of the situation is important for the creditor's attorney. The creditor's attorney will collect information needed for continuing negotiations. Most of this information will come from the filing itself, which includes a cash flow statement in South

Dakota. Other information comes from: tax returns, bank records, security interest filings, title reports, and legal deposition of the debtor (3).

### **Asset Valuation**

Asset valuations are critically important in Chapter 12 negotiation, because the extent of repayment is based largely on asset value. All parties agree that the most important and most difficult issue to settle is asset valuation. While the Extension staff recognize the influence of asset valuation in the reorganization process, they do not get involved with valuing assets. Both sides agree that it is usually better to reach an agreement on valuation without going through a court hearing. In fact, most attorneys report a very high percentage of valuation agreements are reached out of court. Both sides seem to be reasonably satisfied with the outcome of these agreements. It was also pointed out by both sides that there is much more involved in a valuation agreement than the value of that asset. The "value" of any particular asset is directly connected to the terms of any agreement by the creditor to continue financing the asset's purchase. For example - if the debtor wants a lower interest rate on the loan, the secured creditor wants a higher asset valuation, which in turn means a larger loan amount in the repayment plan.

Both debtors and creditors agree that original asset valuations are often inaccurate, but disagree on the nature and extent of inaccurate valuation. Debtor's attorneys feel that both sides are involved in inflating and deflating asset values, but that it is not a critical problem because the valuation process is just part of any negotiations. Creditor's attorneys, on the other hand, feel inaccurate asset valuations are much more likely to be done by the debtor than by the creditor. Inaccuracy is something they feel they must watch for and guard against.

The main source of valuation information for the debtor's attorney is from the debtor. This is backed up with information of recent farmland sales in the locality and past experience of the attorney. At this point, a negotiated valuation settlement is attempted. If there is no settlement, a professional appraisal may be done. The creditor is much more likely to start with, or go to, a professional appraisal (4).

### **Length of Time in Chapter 12**

Another key procedural issue discussed was the time-line in Chapter 12 from filing to approval/rejection of the reorganization. Federal bankruptcy statutes specify a maximum 90 day period from time of filing to a proposed reorganization plan, and another 45 days to confirmation/rejection of the plan. This was a major change from other Chapters of the Bankruptcy code, which allow for a bankruptcy action to stay in the court for many months, even years, before a reorganization plan goes into effect or liquidation is carried out. This change was requested and

accomplished by the finance industry, but not without some reservation about whether it is an achievable standard.

Based on sample data from Chapter 11 and 12 filings, the average time from filing to an approved reorganization plan is five to six months, compared to an average of 15 to 17 months in a Chapter 11 farm bankruptcy.

Creditor's attorneys feel the time-line used in Chapter 12 is great for the creditor and that there has been no difficulty in meeting its requirements. One advantage is that debtors under Chapter 12 do not get as long of a time period during which no interest accrues and payments to some creditors may be suspended. From the creditors' view point there is no need to extend this time period.

Debtor's attorneys agree, if not as enthusiastically, that the time-line in Chapter 12 has worked and that there is no need to push for a change. They do feel, however, that there are situations where a little more time might have taken off some of the pressure of the negotiations, which would have resulted in a somewhat better reorganization plan.

Extension staff echo this thought and, as mentioned earlier, would like to see more time devoted to developing a reorganization plan. Too often, the reorganization plan is based on the next year's cash flow projection. Longer-term projections are needed, as are some mechanisms for follow-up on the reorganization plans. The reorganization plan must be adjusted as conditions in the operating environment change. Farmers' records should be monitored, analyzed at least yearly, and reasons provided when reorganization plans do not work.

#### **Outcomes of Chapter 12**

The debtor's attorneys and Extension staff strongly and enthusiastically state that Chapter 12 has worked well for their clients. A high percentage of these debtor clients have reorganizational plans which are realistic, workable programs allowing them to go forward in their business. Several respondents expressed that they felt it was part of their professional obligation to their client to keep working until a reorganization plan with a reasonable probability of success was developed, or to recommend options other than Chapter 12.

There was, however, the recognition that many reorganization plans were going to be "close" and would require good management and economic conditions to make the plans work. Most felt that their clients would need to be better managers, especially in the areas of record keeping, planning and cash flow management to be successful. These comments were not given as a criticism of farmers. Most survey respondents recognized the emotional ties to the operation that farmers have, and know that it is a subconscious decision to state that management will improve after reorganization. Those professionals strongly indicated that many

of their clients are good farmers/business people that were "caught" in adverse economic conditions. These professionals were particularly optimistic about the ultimate success of this group's reorganization plans.

The creditor's attorneys have a different point of view when asked if their clients were helped or hurt by Chapter 12. First, bankruptcy, any bankruptcy, is never good for creditors. Having said that, if bankruptcy can not be avoided, Chapter 12 has not hurt secured creditors more than other bankruptcy alternatives. While it is still too early to determine, secured creditors seem to be recovering about the same on their claims as they would have under a Chapter 11 bankruptcy. Actually, Chapter 12 is better in some ways for secured creditors because it can be completed within a shorter time frame and is less expensive. Unsecured creditors do not have the same protection provided by Chapter 11 and are, therefore, disadvantaged by the debtor's use of Chapter 12.

The creditor's attorneys are also not as convinced that Chapter 12 is producing realistic, workable reorganization plans. By the very nature of Chapter 12, the farm/ranch must operate with a debt/asset ratio very close to 1.0. This leaves little or no room for error. A down turn in the economy, drought, or a poor business decision will leave the farm/ranch in difficulty again and with little financial strength left to withstand it. For this reason, the Extension staff indicated the some plan should be implemented where an annual review of the reorganization plan is conducted. This would aid the producers in pointing out where actual conditions differed from projected conditions. Also, the court would have a better understanding of why reorganizations plans may need to be modified.

Creditor's attorneys indicated that Chapter 12 may be delaying the inevitable for up to 50 percent of those with a reorganization plan. (5) Creditor's attorneys expressed the belief that too many debtors with reorganization plans do not necessarily change the way they conduct business. Some attorneys are hopeful that the debtor has learned something about their business from the bankruptcy experience which will help them to be successful. However, most feel it is likely that the debtors will continue to operate much as they have in the past. It was noted that many creditors are the ones who learned the most from the bankruptcy experience(s) and will conduct their business differently in the future.

### **Recommendation for Improvement of Chapter 12 Bankruptcy**

Respondents were asked what they would like to see added, subtracted or changed to improve Chapter 12. Most of them expressed strong feeling that Chapter 12 has worked well in South Dakota. They also believe that it has improved as the pressure on the system has decreased and debtors, creditors, and attorneys have become aware of how the law operates and how it affects



them. There were, however, several recommendations made for possible changes and improvements.

First, debtor's attorneys and Extension staff indicated that most farmers wait far too long before they contact outside help in the "pre-Chapter 12" negotiation stages. All respondents were in favor of modifying or eliminating the trustee requirement. Currently each Chapter 12 reorganization plan must include a trustee, to discover and stop fraud by the debtor, prevent abuses, and generally oversee the reorganization plan. Payments to creditors must to go through the trustee. The trustee collects a 10 percent fee on these funds to pay for the services provided by the trustee's office. This system was included in Chapter 12 at the request of the finance industry for the industry's protection. While this 10 percent fee is technically paid by the debtor, creditor attorneys agree that they have seen no real need for a trustee. More importantly, these funds could be spent to lower debt or increase income for the farm. This would improve the chance of a successful reorganization plan which is ultimately to the advantage of both the debtor and the creditor.

One attorney indicated that any abuses by the debtor that may be present tended to hurt unsecured creditors more than secured creditors. Unsecured creditors are entitled to payments from the debtor's "disposable" income. Disposable income is that income that is not needed to operate the farm, make payments to secured creditors, or provide a "basic" income to the farmer/rancher. Payments to unsecured creditors are limited to a five year recovery period, while a longer payback plan is allowed under a Chapter 11 bankruptcy. The outcome is to effectively limit most unsecured creditors' recovery under a Chapter 12 bankruptcy. This attorney's perception is clearly validated by sample data results, which indicates an average of less than 3 percent recovery of principal.

A plea was made for a better valuation system that would be fair to all parties involved and yet easier to use. Some safeguards to prevent non-reporting of assets which can occur in any bankruptcy proceeding could be included. Another issue closely related to valuation, is the reporting and accounting for the sell-out of assets by the debtor. Under Chapter 11, if the debtor elects to liquidate rather than follow the reorganization plan they must account for the actual value received to the creditor. (6) Chapter 12 does not require this.

A rather inconsistent provision of the code limits the debtor client to only 60 days to assume or reject all real estate leases and contracts they may hold. (7) This is not consistent with the 90-day period allowed for the debtor client to develop and submit a reorganization plan under Chapter 12. If the debtor wants to assume any of these contracts, they must notify the other party or the contracts are considered rejected. The decision to assume or reject contracts, especially real estate leases, are important and are made in the context of the overall

reorganization plan. The recommendation is that all contracts be assumed or rejected within the same 90 day period.

Farmers have, and will continue to have, some special protection under the U.S. Bankruptcy laws. A creditor can not force a farmer into bankruptcy or, once in bankruptcy, ask the court to involuntarily move a farmer into a Chapter 7 liquidation. It can happen that a few farmers abuse the system by going in and out of bankruptcy. One recommendation was that the definition of fraudulent filing be clarified making it more difficult to abuse the system.

### **Predicting the Future**

The debtor's attorneys and Extension staff feel that Chapter 12 has worked well and, while this crisis may be coming to an end, there will always be a need for it. Without changes, Chapter 11 just does not fit the needs of most farm debtors. Creditor's attorneys, with some reservations, supported the continuation of Chapter 12 in the bankruptcy codes because they felt there would be both a continuing and reoccurring need because of the inherent economic instability within the agricultural sector. However, Chapter 12 was considered a reaction to, and not a fundamental cure of, farm economic problems.

Whether Chapter 12 will be extended beyond December 1993 or not, few respondents were willing to predict. Some indicated that we may have seen the last big farm bail-out from the federal government and by 1993 farmers may be on their own. Only time will tell.

## ENDNOTES

- (1) Twenty attorneys interviewed were selected from a list of attorneys associated with 101 Chapter 12 cases randomly selected for statistical analysis. Those selected were involved in most of the cases examined. Letters of explanation and a list of interview questions were sent to each attorney one week prior to a telephone interview. Interviews were conducted between November 1 and December 10, 1988.
- (2) A nearly equal number of debtor and creditor attorneys were selected. A possible bias was evident in reviewing the collected information. Most creditor attorneys represented secured creditors. Only one attorney interviewed regularly represented unsecured creditors.
- (3) Most creditor attorneys rarely use a legal deposition. It is, however, available if the attorney feels they are not getting all the information they need.
- (4) Most creditor attorneys say a formal appraisal is an automatic step in their valuation process. Both debtor and creditor attorneys agree that formal appraisals are expensive and should be avoided as much as possible.
- (5) Why are creditors not more upset with reorganizations plans? Secured creditor's attorneys say that if the reorganization plan works, the secured creditors will usually receive a better payback than if there was immediate liquidation. If the reorganization plan doesn't work, the secured asset will still be available, particularly if it is land. Thus, the secured creditors are not much worse off than if there had been a liquidation in the first place. Also, farmland and machinery sale prices have started increasing again. The benefits of a successful reorganization plan are worth a little additional risk.
- (6) 11 USCA 1111(b)
- (7) 11 USCA 365



## APPENDIX 1

### RECOMMENDATIONS

Several respondents made recommendations as to when they would like to first see the farmer/rancher to be of the most use to them. While there is some duplication in their recommendations, several are paraphrased here to reinforce their content.

- 1) A) Prior to borrowing for the next crop year and definitely before planting the new crop. Once planted, the crop and proceeds become secured property. This gives you more room to negotiate.  
B) Prior to any judgment against them. If the debtor receives a notice of court action, see an attorney.
- 2) The best time is usually fall. If you have payments due and are having a difficult time making payments, go to your attorney now. If you are thinking about it, go before calving season. You have a little more room to negotiate. "The day before the sale is a little late."
- 3) As soon as there are signs of trouble - difficulty making payments. Most farmers wait too long.
- 4) Before turning your annual income over to your major lender.
- 5) Go to see your attorney when you have your first serious problems with a major creditor. Don't make the mistake of starting to liquidate to "get by". See your attorney first.
- 6) Don't wait until you are in default on your loans. Many come to me too late.
- 7) See your attorney as early as possible!!
- 8) Seeing your attorney is a business decision you are making. Be aware of the effect the situation's stress may have on your judgment.

### Negotiations

- 9) When negotiating on your own be sure you are looking at your total economic situation. How are you going to handle all of your creditors? Can you do a realist/reasonable projected cash flow statement which will meet all the demands on your business.
- 10) Be aware of the tax consequences of having part of a loan forgiven. If you are no longer required to repay money which you had a legal obligation to repay, you will be considered to have income on which federal income tax is due.

AGRICULTURAL BANK PERFORMANCE UNDER ALTERNATIVE RISK AVERSION AND DEPOSIT  
FEEDBACK SCENARIOS: A SIMULATION

Douglas G. Duncan\*

Changes in financial market structure due to deregulation and financial innovation have combined to ensure that the agricultural bank operating environment will be substantially different in the future than in the past. Proliferation of both financial products and competitors along with removal of traditional geographic restrictions on banking markets will place a premium on management skill to maintain or improve performance. Further, increased interest rate volatility as well as variation in performance of individual economic sectors has added to the current difficulty in maintaining or increasing profitability.

The general objective of this paper is to evaluate the potential impacts on agricultural bank performance of changes in the bank's operating environment. Specifically, the impacts of (1) different management attitudes toward risk and (2) different levels of loan-to-deposit feedback and noninterest operating costs will be evaluated with respect to selected bank performance measures.

The method used to achieve these objectives will consist of employing a deterministic commercial bank simulation model and generating a series of financial statements over a limited time horizon. Measures of financial performance will be calculated representing bank outcomes under alternative scenarios.

The remainder of the paper will consist of a brief description of the agricultural bank simulation model employed, as well as the alternative scenarios to be simulated, presentation of results and discussion of conclusions and implications.

#### Modeling Commercial Bank Operations

The model chosen for achieving the stated objectives is a deterministic, annual, recursive simulation model (Duncan)<sup>1</sup>. The model was developed specifically for policy or management strategy analysis. Previous simulation models were generally either management training games (e.g. Haley and Prater) or classroom instruction devices (e.g. Parker) and not specifically designed to evaluate impacts of changes in policy constraints.

The model employed has a general structure such that the characteristics of any nationally chartered independent unit bank (\$500 million total assets or less) can be represented. The simulation is annual over a horizon limited only by the number of periods of exogenous data supplied. It produces balance sheets and income statements conforming to Generally Accepted Accounting Principles (GAAP) as well as an annual table of analytical ratios. At the horizon a summary statement of simulation results is presented.

The simulation model's development involved disaggregation of the bank balance sheet and income statements into major activity centers related through the yield curve. All interest rates in the model, both historical (to establish rates on outstanding loan and deposit balances) and current, are calculated as spreads off of, or points on, the U.S. Treasury yield curve. The yield curve is an approximation based on weekly average rates of three secondary market Treasury securities for the first week of January of the year under consideration. The approximation of the yield curve was derived from a formula based upon the Karl Pearson "Type III" frequency, which is a generalization of a Chi-square distribution.<sup>2</sup> The functional form of the curve fitting equation is:

---

<sup>1</sup>The following is a brief description of the major properties of the model. A detailed discussion is available in Duncan.

<sup>2</sup>Discussion of this model can be found in Bradley and Crane while a mathematical treatment is available in Cramer. The model lacks econometric properties as it is estimated with only three points.

$$YTM_t = a \cdot t^b \cdot e^{c \cdot t}$$

where YTM is the yield to maturity for a particular maturity, t is years until maturity, e is the base of the natural log system and a, b and c are parameters which fit the yield curve.

Loan allocation takes place through a risk/return preference function where loan risk is captured by the coefficient of variation (Penson and Lins) of the loan type and the bank's aversion to risk by the slope of the linear function. Relationship between the bank's required rate and the market rate determines whether the bank makes more or less than the targeted amount of each loan type. Increase (decrease) in loans made causes a decrease (increase) in securities held in meeting the asset target.

Deposit levels for funding assets are composed of core deposits and purchased deposits. It is assumed that desired level of assets can be funded by purchase of deposits at an interest rate premium. Deposits consist of interest earning and noninterest demand deposits, saving deposits, government deposits, and time deposits. Feedback of deposits from loans can be allocated to demand, saving or time deposits.

The bank modeled in this paper is an agricultural bank with approximately \$140 million of assets of which \$70 million are loans and \$21 million of these are agricultural. The bank is in the class which would be located in a regional agricultural center and have exhausted economies of scale (Kolari and Zardkooki).

Data for the bank were selected from balance sheet and income statement reports required by the Federal Financial Institutions Examination Council (FFIEC) and publicly available on tape. Further data were selected from the Federal Reserve System's voluntary Functional Cost Analysis (FCA). As the latest data available on costs through FCA were 1985, the model bank characterizes year-end 1985 balance sheet and income statement positions.

The bank offers seven types of loans; agricultural, residential and commercial real estate, commercial and industrial, consumer installment, agricultural production, and other. It holds U.S. Treasury bills, notes and bonds, U.S. Agency securities and municipal tax-exempt securities. Loans represent 50 percent of assets while securities represent 33 percent of assets.

Deposits represent 88 percent of liabilities. Thirteen percent of deposits are noninterest demand deposits, 10 percent are interest bearing demand deposits, 18.5 percent are saving deposits and the remaining 46.5 percent are time deposits. Total liabilities are 90.6 percent of assets leaving a capital ratio of 9.4 percent.

The year-end 1985 financial position of this bank was used as the beginning position for simulation of bank performance over 1986-1988. These simulation results were compared to data from FFIEC tapes regarding a similarly identified bank for purposes of model validation<sup>3</sup>.

The simulation was performed assuming risk neutrality and thus the model bank held more loans and less securities than the actual values observed since loans are riskier and thus carry higher returns than securities. This was an expected result and, in itself, assisted in validating the results of the model. Return on assets was 0.73 and 0.44 percent for the FFIEC representative bank and the model banks respectively while return on equity for the same banks was 7.75 percent and 4.69 percent. The majority of this difference was explained by the ratio of noninterest operating expense to average assets which was higher for the model than the representative bank. Whereas the model bank was using noninterest operating cost figures based upon 1985 FCA data; clearly banks upon which the FFIEC bank was based had undertaken actions to reduce costs. Given these conditions it appears the model performed well. The purpose of the model is to

---

<sup>3</sup>This was in accordance with the third step in model validation suggested by Naylor and Finger.



simulate the operations of a representative, not a particular, bank and therefore must be accurate enough to give a correct indication of the nature of reaction the representative bank will make to a change in its operating environment. The model meets these criterion.

#### Simulation Scenarios

The three scenarios chosen for evaluation in this paper were: (1) the impact of a change in bank management's risk preferences on the composition of the bank's portfolio and it's performance, (2) the effect of an alteration in the rate of loan-to-deposit feedback on the bank's performance, and (3) the implications of a decrease in noninterest costs for the bank's profitability.

There were several reasons for selecting these scenarios. The risk/return preference function should, in part, help to illustrate why banks hold the asset combinations which they do. Other factors, such as regulatory restrictions and market access, certainly explain part of the portfolio composition. But banker attitudes toward risk are important. Regulators are also interested in bank risk/return preferences from the perspective of safety and soundness. Current discussion of deposit insurance pricing policy revolves around bank risk-taking activities. Finally, an understanding of the relationship between bank risk/return preferences and riskiness of loans by type should help evaluate the impact of policy initiatives such as the development of secondary markets, loan moratoria and interest rate restrictions.

Loan-to-deposit feedback from lending activities obviously affects bank funds costs and hence bank profitability. The rate and nature of this feedback relationship are clearly important to bank management for that reason. If a bank were able to identify individual loan-to-deposit feedback rates, it would be able to alter pricing strategy to encourage lending in markets with desirable feedback characteristics. Deregulation and innovation in financial markets have directly affected bank costs and competition. It is likely that they have indirectly affected costs through changes in feedback relationships as well.

Reduction of noninterest costs has an obvious and direct impact on bank profitability. Evidence of this is shown each time a bank is purchased by another bank, and shortly thereafter announces that cost reduction measures are being enacted. Comparison of costs with banks of a similar nature can help management identify ways to improve efficiency through cost control. The favorable impact of cost reduction on profitability can serve as a stimulus to adopting efficiency-improving innovations as well.

#### Simulation Results

A total of six simulations were carried out in order to meet the objectives of this paper. Three simulations were performed holding the rate of deposit feedback and its allocation to alternative deposit categories constant while varying the slope of the risk/return preference curve. These simulations represented risk neutrality (slope = 0.0), risk aversion (slope = 0.05) and a higher level of risk aversion (slope = 0.10) and the object of interest was the impact of risk attitude upon portfolio composition.

The fourth simulation was performed with slope = 0.05 implying risk-averse behavior and with loan-to-deposit feedback occurring but with an alternative allocation of feedback to deposits. This simulation's purpose was evaluation of potential impacts of deposit deregulation.

The final two simulations used risk neutrality with no feedback to demonstrate the impact of a 10 percent reduction in noninterest operating costs. This was viewed as important in light of Rose's suggestion that cost containment will be the issue of the 1990's for commercial banks.

Results of the simulations are displayed in tables 1 and 2 in the form of ratios. Ratio analysis was chosen so as to facilitate trend analysis over the three year simulation time period. Were this an actual bank, management would use these same ratios for comparative analysis with it's industry peers.

The ratios presented are a small subset of those available from model results and were chosen to highlight three aspects of bank performance; profitability; liquidity and efficiency. Profitability is a measure of the relationship between returns and costs. Return on assets (ROA) is a measure of how well the bank is employing it's assets in an interest earning capacity. Return on equity (ROE) is a measure of earnings to the firm's investors. Adjusted net interest margin (ANIM) is a measure of the difference between tax equivalent interest income and interest expense adjusted by loan losses so as not to penalize banks which make lower risk and lower return loans.

Liquidity measures the bank's ability to pay current liabilities with current assets thus not interrupting the longer term prospects of the bank. Unfortunately from the perspective of the bank, liquidity maintenance can come at the expense of longer term more profitable use of resources. The liquidity ratio (LQD) measures the proportion of assets held in categories which are either cash or instruments with very broad and deep markets.

Efficiency is defined here in the context of minimizing inputs to produce a given level of output. Interest expense-to-interest earning assets (INTAST) measures bank ability to minimize funds costs for support of earning assets. Operating expense-to operating income (TOETOI) measures the relationship of total expenses to total income. Interest cost-to-operating expense (TICTOE) describes the distribution of costs within the bank.

The fact that this model is an annual model with fixed interest rate pricing of both assets and liabilities impacts all results. The Treasury yield curve used as the basis for pricing within the model experienced a significant shift downward from 1986 to 1987 and then upward from 1987 to 1988. The model is "asset sensitive" during the simulation period meaning that average rates shift more quickly on the asset side than on the liability side. Therefore, in periods of declining rates, net interest income will be under relatively greater stress. While in periods of rising rates net interest income will increase relatively more quickly.

Evidence in Table 1 is that profitability declines as risk aversion increases. Both ROA and ROE decrease as slope increases. The deterministic specification of the model implies the same likelihood of loss for each slope scenario. The increasing aversion to risk moves the portfolio distribution away from loans toward securities. The risk neutral banker thus makes more of the higher return loans and is more profitable under the economic environment existing during the three year simulation period.

As risk aversion increases, LTARAT declines and LQD improves. This is to be expected as loans are in general less liquid than the types of securities hold by banks.

Evaluation of efficiency reveals that TOETOI is lower in the case of a slope of 0.05 and higher with a slope of 0.10. This result occurs because a larger drop in cost than income occurs in the case of slope equal to 0.05. When slope increases to 0.10, however, the accelerated shift away from loans results in a reduction in operating expenses and a much larger reduction in income.

Referring to Table 2, the columns entitled Functional Cost, Allocation 1 and Allocation 2 illustrate the impact of feedback upon a bank with a constant level of risk aversion. The elimination of feedback has a rather striking impact on profitability. All measures of profitability are lower for the "No Feedback" scenario than the two allocation scenarios, with the exception of the third year's ANIM. The first allocation scheme is also more profitable than the second in all measures and all years. This was expected as the second allocation scheme is a more costly allocation of funds.

Table 1. Impact of Alternative Risk Aversion Levels Upon Bank Performance With Constant Deposit Feedback Rate and Allocation

RATIO <sup>2</sup>	SLOPE <sup>1</sup> = 0.0			SLOPE = 0.05			SLOPE = 0.10		
	1	Year		1	Year		1	Year	
		2	3		2	3		2	3
Return on Asset	0.29	0.20	0.67	0.28	0.15	0.64	0.22	0.02	0.47
Return on Equity	3.10	2.16	7.08	3.04	1.64	6.76	2.34	0.25	5.02
Adjusted Net Interest Margin	3.39	3.03	3.75	3.39	3.00	3.72	3.30	2.87	3.34
Liquidity	0.33	0.30	0.24	0.33	0.31	0.27	0.35	0.37	0.36
Loan-to-Deposit	61.47	66.00	70.95	61.23	64.50	68.58	59.16	56.41	56.99
Loan-to-Asset	54.17	58.17	62.56	53.95	56.84	60.47	52.13	49.75	50.15
Interest Expense to Earning Asset	5.78	5.15	5.53	5.78	5.16	5.54	5.79	5.20	5.58
Operating Expense to Operating Income	95.00	96.00	91.00	96.00	97.00	91.00	96.00	99.00	94.00
Interest Expense to Operating Expense	57.00	55.00	57.00	57.00	55.00	58.00	57.00	57.00	60.00

<sup>1</sup>Slope is the slope of the risk-return preference function or the additional return required per unit of risk.

<sup>2</sup>All ratios except Liquidity are in percentages.



Table 2. Impact of Change in Feedback Rate and Allocation of Deposit Feedback With Constant Risk Aversion

RATIO <sup>6</sup> \ Year	No Feedback						Feedback <sup>1</sup>					
	Functional Cost <sup>2</sup>			Reduced Cost <sup>3</sup>			Allocation 1 <sup>4</sup>			Allocation 2 <sup>5</sup>		
	1	2	3	1	2	3	1	2	3	1	2	3
Return on Asset	0.18	0.04	0.54	0.43	0.36	0.69	0.28	0.15	0.64	0.25	0.12	0.61
Return on Equity	1.93	0.46	5.77	4.55	3.75	7.17	3.04	1.64	6.76	2.67	1.26	6.49
Adjusted Net Interest Margin	3.23	2.84	3.84	3.34	3.81	3.44	3.39	3.00	3.72	3.34	2.95	3.63
Liquidity	0.33	0.31	0.28	0.31	0.32	0.26	0.33	0.31	0.27	0.33	0.31	0.28
Loan-to-Deposit	61.23	64.42	68.52	61.23	64.48	68.64	61.23	64.50	68.58	61.23	64.47	68.56
Loan-to-Asset	53.95	56.84	60.16	53.95	57.15	60.65	53.95	56.84	60.47	53.95	56.84	60.37
Interest Expense to Earnings Asset	5.94	5.32	5.70	5.94	5.36	5.80	5.78	5.16	5.54	5.83	5.21	5.59
Operating Expense to Operating Income	97.00	99.00	93.00	94.00	94.00	91.00	96.00	97.00	91.00	96.00	98.00	92.00
Interest Expense to Operating Expense	58.00	56.00	59.00	59.00	58.00	61.00	57.00	55.00	58.00	57.00	55.00	58.00

1. Feedback is generated each year of the loans life up to ten years at the following annual rates:

0.06684, 0.03337, 0.01997, 0.01398, 0.01118, 0.01006, 0.00906, 0.00889, 0.00852, 0.00852.

2. Noninterest costs as specified in Functional Cost Analysis program.

3. 90% of Functional Cost Analysis figures.

4. 75% of feedback to noninterestbearing demand deposits, 25% to interestbearing demand deposits.

5. 50% of feedback to noninterestbearing demand deposits, 25% to interestbearing demand deposits, 25% to time deposits of less than one year.

6. All ratios except Liquidity are in percentages.

Liquidity change was approximately equal for all scenarios. This was because feedback deals primarily with loan activities and the level of risk aversion was the same for all three scenarios leading to roughly similar loan portfolios.

The first allocation scheme led to the most efficient result as well. This illustrates the potential impact of feedback on reducing funds costs and thus improving bank profitability. The impact of the shift in the yield curve on an asset sensitive bank can be seen very clearly in the case of the bank with no feedback. The drop in the yield curve all but eliminated profits and nearly equated operating expenses and income. This occurred in spite of the fact that TICTOE fell.

The two columns under the "No Feedback" heading in Table 2 represent noninterest costs as specified by the Functional Cost Analysis data, and at 90 percent of that level. Both simulations were run with a slope of 0.05 and no loan-to-deposit feedback. The intent was to demonstrate the impact of cost control on bank performance.

The "reduced cost" bank was far more profitable as expected. That did not, however, prevent it from being affected by the drop in the yield curve in year two. This bank was however in a much better position to deal with this decline than the "Functional Cost" bank, which barely generated a positive net income. Liquidity declined slightly more in the "Reduced Cost" bank as its higher profitability allowed an increase in its lending activity. This was mirrored in the efficiency measures as interest costs increased due to the acquisition of additional deposits to fund the growth in lending.

#### Conclusions

Confirmation of the effect of risk averse behavior on bank portfolios is useful for several reasons. First, it helps explain why we observe the portfolio combinations we do. Regulators are particularly interested in the risk attitudes of banks given their role in ensuring the safety and soundness of the nation's financial system. Their objective is to encourage risk-averse behavior, which reduces the risk to the financial system, or to ensure that the full costs of risky actions are accounted for. To the extent that factors affecting the riskiness of loan types can be identified and reduced, the safety of the financial system will increase. The development of secondary markets for loans is one encouraging improvement in this area.

Results of the model simulations illustrate that less aversion towards risk generates greater returns; the risk neutral bank was the most profitable. However, this occurred in an environment of declining loan losses and was accomplished at the expense of liquidity. The measure of liquidity employed did not consider liability management possibilities explicitly. To the extent that smaller banks seem to be moving toward that management technique, the decline in the model's measurement of liquidity causes less consternation.

Model simulations focusing on loan-to-deposit feedback should kindle interest in its potential for increasing bank performance in an era of deregulation. Clearly, consumer loyalty regarding a complete financial relationship is an economically attractive commodity to the bank. This became clear with the development of customer profitability analysis in the last decade. In the era of deregulation, customer loyalty is even more important as there are more alternatives available. This is certainly part of the explanation for the push to allow banks to become "financial service centers or department stores."

Simulation results make very clear the importance of cost control for banks. Improvement in understanding bank costs and introducing cost reducing technologies are critical to smaller banks which have more aggregative departments. The deregulation of interest rates and deposit markets has increased the urgency of this issue, and recent rates of bank failure are in part a testimony to this issue.

## References

- Board of Governors of the Federal Reserve System. Agricultural Finance Databook. Various Issues.
- \_\_\_\_\_. Federal Reserve Bulletin. Various Issues.
- \_\_\_\_\_. Functional Cost Analysis. 1985.
- Bradley, S. and D. Crane. Management of Bank Portfolios. New York, New York: Wiley Interscience, 1975.
- Cramer, H. Mathematical Methods of Statistics. Princeton, New Jersey: Princeton University Press, 1946.
- Duncan, D. G. "Simulating Commercial Bank Performance Under Differing Loan-Deposit Relationships." Unpublished Ph.d Dissertation. Department of Agricultural Economics, Texas A&M University, 1989.
- Haley, C. W. and G. I. Prater. BANKEEXEC. Washington, D.C.: American Bankers Association, 1986.
- Kolari, J. and A. Zardkoohi. Bank Cost, Structure and Performance. Lexington, Massachusetts: Lexington Books, 1987.
- Parker, G. C. The Stanford Bank Game. Palo Alto, California: The Scientific Press, 1986.
- Naylor, T. H. and J. M. Finger. "Verification of Computer Simulation Models." Management Science. 14 (1967):92-101.
- Penson, J. B. Jr. and D. A. Lins. Agricultural Finance: An Intro to Micro and Macro Concepts. Englewood Cliffs: Prentice-Hall, Inc., 1980.
- Rose, P. "Banking's Next Key Objective." Canadian Banker. 96, No. 1 (1989): 54-66

THE INFLUENCE OF SELECTED PRODUCT AND DEMOGRAPHIC CHARACTERISTICS ON BEEF PURCHASING PATTERNS

Robert L. Pingetzer, Dale J. Menkhous, Glen D. Whipple, and Ray A. Field  
Recent changes in U.S. consumption patterns for beef have been the source of concern by many in the beef industry. Beef consumption reached an all time high of 94.4 pounds retail weight per capita in 1976 and has since trended downward to 76.7 pounds in 1987. Poultry's share of the total meat market was greater than beef's share for the first time in 1987 (Figure 1).

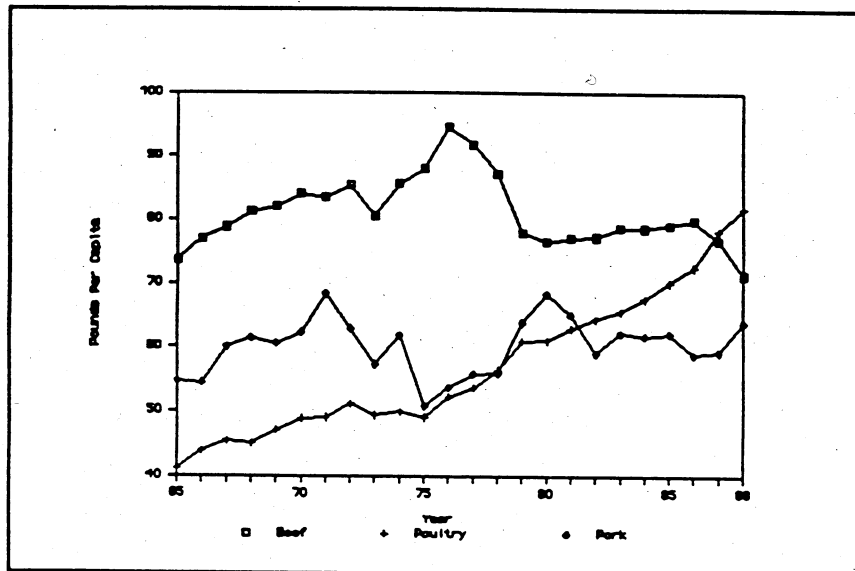


Figure 1. Pounds of Retail per Capita Consumption for Beef, Poultry and Pork, 1965-1988.

Sources: USDA Selected Literature and Statistics Reports.

Relative price differences between beef, pork, and poultry have been reported to be a major factor in the changing market shares of the three meats (Chavas, Moschini and Meilke, and Wohlgenant). The competitive position within the red meats and poultry industries, with respect to price, has been altered by numerous technological developments which have occurred in these industries over the past 40 years.

Chicken production has changed the most, evolving from small-scale operations to a huge capital intensive industry. Totally confined broiler production is now considered the industry standard, while confinement farrow to finish hog operations are increasingly common. Beef production methods have changed the least, with most technological innovations affecting the intensive finishing phase of beef production. As a result, beef has had difficulty competing with other sources of animal protein.

Other factors that have influenced meat demand include product availability, the form in which meat is processed and marketed, population growth and changes in consumer preferences including changing lifestyles and dietary habits. As an example, the poultry industry implemented new products and merchandizing practices through the 1970's and early 1980's. This industry moved away from whole chickens to processed chicken parts. New poultry products, such as chicken franks and turkey hams, are gaining widespread consumer acceptance.

On the other hand, with the exception of closer trimming of fat and bone; the processing, fabrication, storage, transportation and merchandizing of beef has changed little in the last decade. The last major change was the introduction of boxed beef in the 1960's. New technologies such as electrical stimulation, vacuum packaging, mechanical tenderization and alternative aging, storage and transportation methods have improved operation efficiencies in the beef industry, but have not yet been exploited widely enough to expand the