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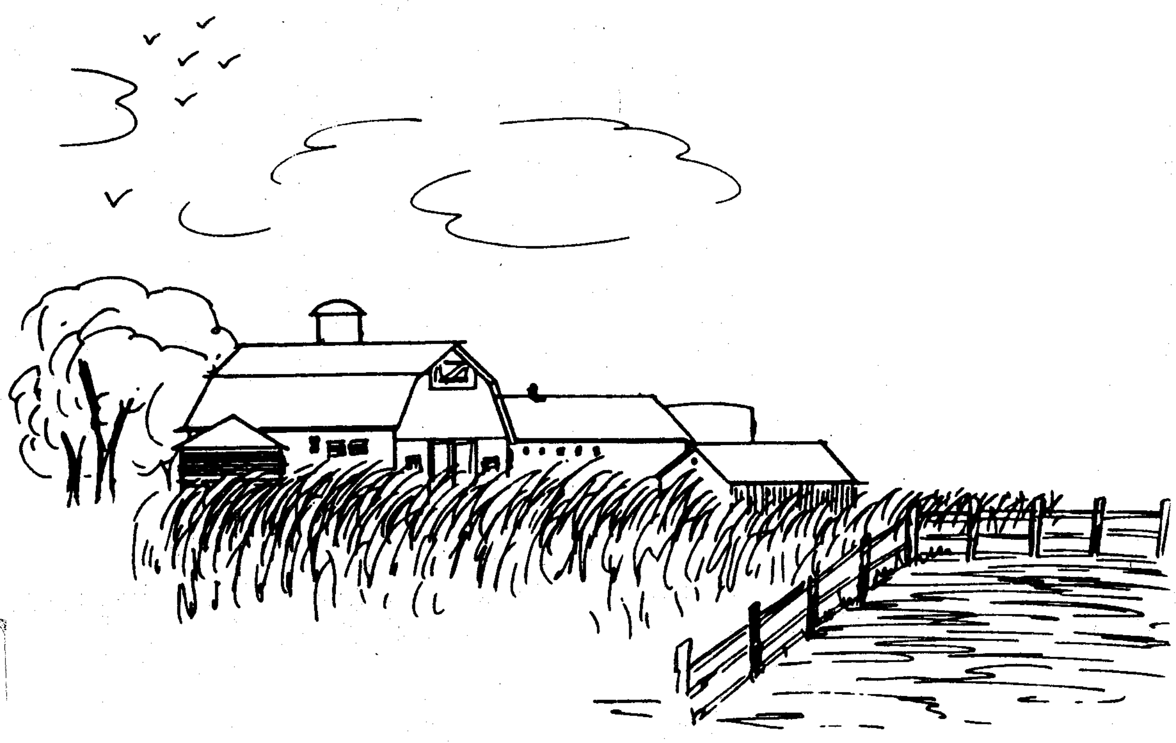

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AN EMPIRICAL INVESTIGATION OF RISK DIVERSIFICATION OPPORTUNITIES WITHIN THE FARM CREDIT SYSTEM

by

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Farm financial stress during the early 1980s put agricultural financial intermediaries into a precarious situation. Recently, farms and financial intermediaries have been able to reduce earlier problems. The 1988 drought, however, may push financially vulnerable farmers into a worse financial position increasing the level of financial stress for agricultural credit suppliers in the near future. Because the Farm Credit System is the largest farm real estate lender, it is usually the most severely affected financial intermediary during periods of farm stress.

The Farm Credit System's share of agricultural debt expanded rapidly during the 1970s compared with other lenders. The average pricing of interest rates during periods of increasing inflation and increasing real interest rates gave the Farm Credit System a price advantage when compared with commercial banks and other agricultural lenders. In addition, the Farm Credit System was able to make real estate loans other financial institutions were unwilling or unable to make. As a result, the Farm Credit System's share of lending, especially real estate lending, grew substantially.

In October 1979, the Federal Reserve Board embarked on a program to reduce the rampant rate of inflation experienced during the late 1970s. In reducing the rate of inflation, the Federal Reserve Board's policies caused upward pressure on the real interest rate. The net result of the increased real

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interest rate was a high dollar, lower export levels, decreased farm prices and lower returns to agricultural assets (Tweeten, Barclay and Tweeten). The lower returns caused a downward adjustment in future expectations of earnings which lead to a decline in agricultural asset values and increased stress for farmers and financial intermediaries.

Because the Farm Credit System lends only to agriculture, it's losses were greater than the other financial intermediaries who lend to farmers. These losses prompted policymakers to enact legislation to aid the ailing intermediary. The legislation contained several provisions addressing a multitude of issues within the Farm Credit System. Two important issues addressed by the legislation include the potential merger of Farm Credit System districts and the establishment of secondary markets for agricultural real estate loans.

One argument for both mergers of Farm Credit districts and secondary markets is that additional diversification would lessen the risk of farm lending without significantly reducing the return to the system as a whole. This hypothesis is supported by the fact that some districts such as Springfield are doing rather well. Diversification through loan participation could allow ailing districts to better their position without the necessity of merging. The critical question, therefore, is whether risk gains from diversification exist. In other words, is a pure profit possible from trading loans between Farm Credit System Districts?

The profitability of additional diversification between Farm Credit System districts has implications for the secondary market for agricultural real estate debt. One possible function of the secondary market would be an equalizing of risk-adjusted interest rates across geographic regions. If current risk-adjusted interest rates are not equal across districts, investors could gain by purchasing loans from different geographical regions. If the Farm Credit System could gain from additional internal diversification, the secondary market would also be able to exploit the diversification opportunity and likely have a larger probability of success.

The purpose of this study is to empirically investigate diversification opportunities within the Farm Credit System. Specifically, an Arbitrage Pricing Theory (APT) is used to test whether risk-free profits could be obtained by trading loans between the districts of the Farm Credit System. A mean variance model is formulated to examine the consistency of the mean variance and APT results.

Diversification and the Farm Credit System

There are two major diversification aspects in the current organization of the Farm Credit System. The most important is the joint liability on Farm Credit System bonds. The Farm Credit System sells bonds to raise capital used in making agricultural loans. Once issued, the Farm Credit System as a whole are liable for the repayment of the bonds. As a result, if the Omaha district could not meet its bond obligations, then the remaining banks would be liable for the debt. Thus, the liabilities of a single bank are ultimately backed by the resources of the system as a whole.

Unfortunately, the joint liability on Farm Credit System bonds represents diversification as a last resort. After a given bank has suffered all the losses possible, the rest of the banks make up the difference. This diversification does not help individual banks keep out of trouble, it simply provides for full repayment of investors after the worst has happened. Put another way, joint liabilities represents diversification in liquidation not operation.

Another mechanism for diversification in the current organization of the Farm Credit System involves the composition of the various districts. When the districts were created, some states with the same major commodities were placed in different districts. For example, Illinois, Iowa, and Indiana which are extremely dependent on corn and soybeans were placed in three separate districts. If a single bank had included all three states, it would be very susceptible to large loan losses when corn and soybean incomes are depressed.

The Farm Credit Districts are not completely diversified. Agriculture in Nebraska is less dependent on corn and soybean prices than Iowa, however, corn and soybeans are still important crops in Nebraska. Furthermore, other crops in Nebraska may be highly correlated with corn and soybeans. Even if a district consisted of crops whose prices are uncorrelated, the effects of weather and other natural phenomenon may cause farm income in a given district to be highly correlated.

Although the Farm Credit System is restricted by law from lending outside the farm sector, additional diversification may be available through diversification across districts. U.S. agriculture as a whole is fairly diverse. In Florida farmers produce tropical fruits while in Oklahoma cattle, wheat, and cotton are important. Diversification between commodity groups and across climates in the United States may provide the Farm Credit System additional opportunities to reduce the risk of lending. Such diversification could result in lower interest rates for borrowers and lessen the likelihood of a future crisis in the Farm Credit System.

Arbitrage Pricing Theory

Arbitrage Pricing Theory (APT) is gaining acceptance as an alternative to the Capital Asset Pricing Model (CAPM). Using the APT, market efficiency can be tested without the risk-free asset or market portfolio assumptions required by CAPM. In addition, APT requires less stringent assumptions about utility. In this section, APT is discussed and empirical results for diversification between FCS districts are presented.

At its basic level APT simply states that if capital markets are in equilibrium then no pure profits can be made by arbitrage. From an agricultural economist's perspective, this result is analogous to a spatially separated arbitrage model. If markets are in equilibrium, the price between markets must be no greater than the cost of transporting goods between markets. If a difference above transportation costs exists, arbitragers would quickly exploit the arbitrage opportunity to make a profit and the price differential would be returned to the cost of transportation.

In capital markets, the price difference between assets is due to differences in risk. A more risky asset demands a higher return assuming the investor is risk averse. Arbitrage profits in a capital market would mean that two or more assets could be bought or sold in a manner such that; (1) investment remains unchanged, (2) a profit could be made, and (3) there is no change in the riskiness of the portfolio. In other words, an equal dollar amount of securities or assets could be bought or sold so that the investor's wealth is unchanged while a profit is realized. For example, an investor sells an asset with a lower return and uses the proceeds to buy a higher yielding asset without accepting additional risk. If such a trade is possible, then the capital markets are not arbitrage efficient.

Mathematically, the APT assumes that asset returns in society are functions of k common factors δ_i for i = 1, ... k (Ross, Huberman). For a particular asset j, the return can be described as:

$$(1) \qquad r_j = E_j + \beta_{1j}\,\delta_1 + \beta_{2j}\,\delta_2 + \ldots \beta_{kj}\,\delta K + \xi_j$$

$$\text{for all } j = 1, \ldots n;$$

where r_j is the return to asset j, δ_i is the ith common factor scaled with a mean of zero, E_j is the mean return to asset j, β_{ij} is the response of the return in asset j to the common factor i, and ξ_j is the random noise term. The noise term (ξ_j) is the unsystematic or idiosyneratic risk component of asset r_j. The expected value of ξ_j is zero and it is unrelated to the noise terms of other assets and the systematic factors. In matrix form, equation 1 is expressed as (omitting the error term):

(2) $$r = E + \beta\,\delta + \xi.$$

By eliminating the error term, equation 2 states that each asset's return is a linear combination of the return on a riskless asset and the returns from the k factors.

Consider an alteration of the current portfolio by changing the amounts invested in different assets without changing total investment. In this study the alteration (arbitrage) portfolio represents the sale and purchase of loans with other districts. Let the arbitrage portfolio be a vector X such that

(3) $$\Sigma_i x_i = 0.$$

An individual will consider all available arbitrage portfolio's before altering the current portfolio. The effect of arbitrage on returns is

(4) $$X'r = X'E + X'\beta\,\delta.$$

The arbitrage portfolio, X is chosen so that it adds no systematic risk. Levy and Sarnat refer to this as a zero-beta portfolio. This implies that

(5) $$X'\beta = 0, \quad \text{or}$$

therefore, $$X'\beta\,\delta = 0.$$

(6) $$X'r = X'E.$$

If markets are efficient then a zero-beta portfolio, X, must imply zero expected profits, or

(7) $$X'E = 0.$$

In equilibrium, all portfolios which satisfy the conditions of using no wealth and having no risk, must return no return on average (Roll and Ross).

Connor shows that the above conditions for arbitrage efficiency can be rewritten by use of matrix theory. Basically, equation 5 states that X is orthogonal to the β matrix. A portfolio so selected must be orthogonal to a vector of constants. Thus,

$$\begin{bmatrix} 1 & 1 & 1 & \cdots & 1 \\ \beta_{11} & \beta_{12} & \beta_{13} & \cdots & \beta_{1k} \\ \beta_{21} & \beta_{22} & \beta_{23} & \cdots & \beta_{2k} \\ \vdots & \vdots & \vdots & & \vdots \\ \beta_{n1} & \beta_{n2} & \beta_{n3} & \cdots & \beta_{n} \end{bmatrix}$$

must be an orthonal basis of δ space, or for some constants λ_0, λ_1, ... λ_k

(8) $$E[r_j] = \lambda_0 + \lambda_1 \beta_{1j} + \ldots \lambda_k \beta_{kj}$$

for all $j = 1, \ldots n$.

Otherwise an arbitrage opportunity exists and the market is not arbitrage efficient. Put differently, if the vector of expected returns are not linear in the factor betas, then the market is not arbitrage efficient.

Given that the expected return is a linear function of the constants λ_0, λ_1, ... λ_k, more information can be obtained from the results. λ_0 is the risk-free rate of return within the asset bundle. In other studies, it is assumed that $\lambda_0 < 0$ is not possible, however, in this study $\lambda < 0$ is admissable because of inflation. Roll and Ross point out that the remaining constants λ_1, λ_2, ... λ_k, are risk premia for the appropriate factor.

Factor Analysis

This section presents the empirical model used to test for arbitrage efficiency by Roll and Ross. Roll and Ross's procedure first estimates the common factors which determine the asset returns. Next, the factors are used to estimate a time series model and test for arbitrage efficiency.

As discussed previously, the focal point of APT is that a set of asset returns are manifestations of common factors in society. Alternatively, each interest rate can be explained by its reaction to factors that also determine other interest rates in society. Some theoretical justifications of these factors are societies impatience to consume and the real return to capital in society. All returns to investment depend on these factors, however, the amount of reaction may vary between investments. The reaction of each investment to these common factors in the

APT is akin to the reaction of investment returns to the market portfolio in the CAPM.

Thus, if the common factors were known a simple regression could be used to explain variations in asset returns and to test whether the returns where in arbitrage equilibrium. Unfortunately, the common factors are not directly observable. Therefore, Roll and Ross use factor analysis to estimate the common factors which determine return on assets. Factor analysis decomposes the variance matrix into a matrix of factor loadings, a diagonal variance matrix for the common factors, and a diagonal matrix of nonsystematic risk. The factor loadings represent the effect of a common factor on asset returns. For example, suppose that the variance matrix for asset returns is Σ. Factor analysis can be used to decompose Σ into a smaller number of common factors such that

$$(9) \qquad \Sigma = \beta \, \Omega \, \beta' + \theta$$

where β is a matrix of factor loadings, Ω is the diagonal variance matrix of common factors, and θ is diagonal matrix of unexplained variation or nonsystematic risk.

To estimate the factor loadings, the maximum likelihood technique described in Lawley and Maxwell is often used. The objective as described in Goldberg is to choose β to

$$(10) \qquad \max_{\delta} \quad L = -\tfrac{1}{2} T[\log |\Sigma| + \mathrm{tr}\,(\Sigma^{-1} r' r)]$$

$$r = E + \beta \, \delta + \xi$$

$$\Sigma = \beta \, \Omega \, \beta' + \theta_0$$

where T is the number of observations.

After the common factors which determine the return on assets are estimated, the return generating model for the group of investments can be estimated (equation 8). Each asset in society is a function of the risk-free rate of return, c_0, and its response to the common factors, c,

$$(11) \qquad r = c_0 + c \, \beta + v$$

where v is an error term, and δ are the factor loadings. The constant c_0 and vector c can be estimated using generalized least squares and the results from the factor analysis. Specifically, Σ and β from equation 9 can be used in the generalized least squares estimator

$$(12) \qquad \hat{c} = (\hat{\beta}' \, \hat{\Sigma}^{-1} \, \hat{\beta})^{-1} \, \hat{\beta} \, \hat{\Sigma}^{-1} \, r,$$

by augmenting the factor matrix with a vector of ones the constant component can be simultaneously estimated.

Testing the Arbitrage Pricing Model

The final step is to test the results for consistency with the APT. Roll and Ross state that the returns are arbitrage efficient if the hypothesis that $\lambda_1 = \lambda_2 = \ldots \lambda_k = 0$ is rejected in equation 11. Intuitively, if $\lambda_1 = \lambda_2 = \ldots \lambda_k = 0$, then $E[r_j] = \lambda_0$ for all j. If $E[r_j] = \lambda_0$ and one or more factors exist, then a vector orthogonal to the factor betas is not necessarily orthogonal to a vector of ones or it is possible to construct a zero beta portfolio with a positive return. Another explanation involves the fact that the λ_j's are risk premia. The change in betas between assets indicates a change in the riskiness of the asset. If a particular λ_i is positive and $\beta_{ij} > \beta_{ik}$, then $E[r_j] > E[r_k]$, or the increase in risk must be paid by an increase in expected return. If all the λ_i's are zero, but the β_{ij}'s are not identical, then the change in riskness is not compensated by a change in expected returns.

The hypothesis presented by the APT are slightly different than the standard regression. Specifically, the arbitrage pricing theorem has as its null hypothesis that the market is not arbitrage efficient,

$$H_A: \lambda_1 = \lambda_2 = \ldots \lambda_k = 0.$$

This set of hypothesis allows us to reject arbitrage efficiency. If the null hypothesis was that $\lambda_1 = \lambda_2 = \ldots \lambda_k = 0$, then it would be impossible to reject arbitrage efficiency.

The divergence from the standard has caused alternative approaches to testing for arbitrage efficiency. Roll and Ross generated numerous samples and tested the number of times that significant risk premia were observed. However, Gultekin and Gultekin recently applied a methodology developed in Dhrymes et al. to directly test arbitrage efficiency. Specifically, they estimate T vectors of risk premia where T is the number of observations

$$(13) \qquad \bar{C}_t = (\hat{\beta}' \hat{\Sigma}^{-1} \hat{\beta})^{-1} \hat{\beta}' \hat{\Sigma}^{-1} r_t \qquad t=1, \ldots T.$$

where $\bar{C}_t$ is the estimated vector of risk premia in year t, $\hat{\beta}$ is the estimated matrix of factor loadings, $\hat{\Sigma}$ is the estimated sample variance, and r_t is the observed vector of returns in year t. The $\bar{C}_t$ vectors give the risk premia or price associated with each factor in year t. The average risk premia are then computed,

$$(14) \qquad \bar{C} = \frac{1}{T} \sum_{t=1}^{T} \bar{C}_t .$$

The statistical significance of the risk premia can then be computed as

$$(15) \qquad T\bar{C}' \; W^{-1} \bar{C} \overset{A}{\sim} \chi_k^2$$

$$W = \left(\frac{1}{T}\right) \sum_{t=1}^{T} (\bar{C}_t - \bar{C}) \; (\bar{C}_t - \bar{C})' .$$

Rejecting the hypothesis means that the risk premia as a group are not zero, or that the market is arbitrage efficient.

Data

The data used in this study were derived from the annual reports of the FCS from 1972 to 1986. The nominal rate of return to Federal Land Bank (FLB) lending was computed for each district by dividing the nominal income from loans adjusted for bad debt expense by the total dollars in loans outstanding at the beginning of each period. The bad debt expense adjustment for each district was computed by computing the change in accruals for bad debt and adding the adjustment for bad debt expense in the current period. The real rate of return for each district was computed by subtracting the rate of inflation computed using the PCE component of the implicit GNP deflator.

The mean real return to FLB lending in each district is given in table 1 along with the standard deviation for lending in each district. The largest mean return was 2.48% in the Baltimore district while the smallest mean return was 1.67% in the Sacramento district. The correlation matrix for returns is given in table 2. The reported standard deviations and correlations have been adjusted for first order autocorrelation.

Results

The maximum likelihood results indicate that the variance matrix for returns to lending in the twelve FLBs can be represented by two common factors. The hypothesis that no common factor exists is rejected at the .01 level of confidence, and the hypothesis that two factors are sufficient to represent the variance matrix is not rejected at the .01 level of confidence. Three factors are unable to be estimated because of singularity problems. The standardized factor scores are given in table 3.

The annual estimates of the risk premia and the average risk premia across years are given in Table 4. On average the risk-free rate of return in the across districts is slightly negative, and two positive risk premia exist. The positive risk premia are consistent with expectations, but their relative magnitude calls into question their statistical significance. Testing the significance of the risk premia using the methodology of Dhrymes et al. in equations 14 and 15 yield a $\chi_c^2 = 23.31$ which is statistically significant at 3 degrees of freedom. Thus, we accept the hypothesis that arbitrage profits cannot be made by trading loans within the Farm Credit System.

Therefore, there is no evidence that riskless arbitrage gains are available within the FCS. The APT results indicate that a portfolio shift between FLB districts that add no systematic risk, imply no change in wealth, and increase expected returns is not possible. An alternative method to test this result is to see whether any of the assets are first degree stochastically dominated (Jarrow).

Comparison with Mean Variance Results

The remainder of this study examines the diversification opportuni-ties using the classical mean variance framework. Arbitrage pricing theory is based on market interaction. Mean variance analysis is based on an individuals analysis of the returns. Mean variance and APT analysis should result in roughly the same conclusions. Specifically, under mean variance analysis, the certainty equivalent value of the FLB current portfolio is compared with the certainty equivalent for an optimal portfolio. A significant change between certainty equivalents would indicate that arbitrage profit may be present.

Using arguments from Meyer, it can be shown that the mean variance criteria is consistent with a wide variety of utility and distribution functions. Exact equivalence between the mean variance objective function and the certainty equivalent value of a portfolio is guaranteed by Freund's assumptions of negative exponential preferences and normally distributed returns (Robison and Barry). The certainty equivalent for a risky investment becomes

$$z = X'c - \frac{\rho}{2} X'\Omega X \quad (15)$$

where x is a vector of activities, c is a vector of expected returns, ρ is the Pratt-Arrow relative risk aversion coefficient,[1] and Ω is the covariance matrix for asset returns. The mean returns and the covariance matrix is construct using tables 1 and 2.

The benefit of arbitrage within the FCS for risk aversion coefficients between .001 and 1.000 is found in table 5. The gain from additional diversification appears to be marginal. For example, the certainty equivalent for the current portfolio is 2.07% with a risk aversion coefficient of .001. Under the optimal portfolio with the same risk aversion coefficient the certainty equivalent is 2.42% for a change of .35%.

The shadow value of including a nonoptimal activity in the optimal portfolio in certainty equivalents is found in table 6. At a risk aversion coefficient of .001, the shadow value is -.15% if Columbia is added to the optimal portfolio. Thus the mean return for Columbia would need to increase by .15% for it to be included into the optimal portfolio at some level. However, the standard error on the estimate of the mean of Columbia is .47%. Thus, the increase needed to include Columbia in the optimal solution is only one third of the estimate of the standard error of the mean. Only New Orleans and Sacramento need an increase in the mean larger than the standard error to be included in the optimal portfolio at levels of risk aversion of .2 or less. Only marginal gains are possible through additional diversification in the FCS. Thus, in this case the mean-variance and the APT results appear to be entirely consistent.

Conclusions

The results from the Arbitrage Pricing Model indicate that gains from additional diversification with the Farm Credit System are not likely. Thus, trading loans between districts will not result in a risk-free profit. Any gain in return will be offset by higher risk. The results from the mean variance model are consistent with the APT results.

These results imply that the Farm Credit system will probably not geographically diversify through the secondary market for agricultural real estate loans. The results also imply that future policies of merging districts of the FCS are not justified based on diversification gains.

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[1]If the mean-variance model is formulated in rate of return then the risk aversion coefficient in the mean variance model is the relative risk aversion coefficient (Pulley).

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Table 1. Mean and Standard Deviation Real Rate of Return on the Federal Land Bank Loan Portfolio 1972-1986.

Bank	Mean	Std Deviacion
Springfield	2.46%	2.04%
Baltimore	2.48	2.28
Columbia	2.29	1.81
Louisville	2.35	2.17
New Orleans	1.81	2.39
St. Louis	2.25	2.17
St. Paul	1.95	2.28
Omaha	2.03	2.48
Wichita	2.17	2.25
Houston	1.92	2.01
Sacramento	1.67	2.90
Spokane	2.44	2.02

Table 2. Correlation Between the Real Rates of Return on the Federal Land Bank Portfolio 1972-1986.

	Springfield	Baltimore	Columbia	Louisville	New Orleans	St. Louis	St. Paul	Omaha	Wichita	Houston	Sacramento	Spokane
Springfield	1.000	.967	.952	.962	.921	.909	.859	.981	.918	.969	.771	.957
Baltimore		1.000	.856	.970	.953	.920	.826	.888	.928	.944	.801	.983
Columbia			1.000	.879	.814	.865	.848	.812	.804	.944	.690	.850
Louisville				1.000	.949	.947	.900	.877	.774	.924	.837	.959
New Orleans					1.000	.864	.893	.953	.908	.918	.768	.901
St. Louis						1.000	.812	.760	.778	.905	.817	.935
St. Paul							1.000	.853	.729	.868	.763	.782
Omaha								1.000	.938	.872	.620	.816
Wichita									1.000	.860	.676	.886
Houston										1.000	.738	.929
Sacramento											1.000	.808
Spokane												1.000

Table 3. Standardized Factor Scores for a Two Factor Representation of Federal Land Bank Returns by District.

Bank	Factor 1	Factor 2
Springfield	0.07650	-0.44420
Baltimore	0.03490	-0.11333
Columbia	0.13056	-0.72886
Louisville	0.16604	-0.22888
New Orleans	0.02840	0.36305
St. Louis	0.08597	0.09896
St. Paul	0.09227	1.10229
Omaha	0.09545	1.40733
Wichita	0.06924	0.75514
Houston	0.06740	-0.26110
Sacramento	0.00176	-0.00544
Spokane	0.15884	-1.92075

Table 4. Annual and Average Estimates of Risk Premia.

Year	Constant	Factor 1	Factor 2
1971	-.02247	.02040	.00188
1972	-.04151	.02470	-.00042
1973	.02019	.01888	.00140
1974	.02135	-.01324	-.00054
1975	.01171	-.00437	.00128
1976	-.00657	.01044	.00057
1977	-.00763	.02409	.00017
1978	-.03026	.00572	.00021
1979	-.00087	-.00969	.00140
1980	.00883	-.00536	.00125
1981	-.00312	.01650	.00011
1982	.01312	.01486	.00022
1983	.01389	.00011	.00084
1984	-.00622	.00545	.00124
1985	-.00753	.01542	.00011
Average	-.00247	.00826	.00065

Table 5. The Certainty Equivalent Between the Optimal Federal Land Bank Portfolio and the Current Federal Land Bank Portfolio.

θ	Optimal Portfolio	Current Portfolio	Difference
.005	2.45	2.09	.36
.001	2.42	2.07	.35
.020	2.38	2.02	.36
.030	2.33	1.98	.35
.040	2.29	1.94	.35
.050	2.25	1.89	.36
.100	2.05	1.68	.37
.200	1.69	1.24	.45
1.000	-.93	-2.23	1.30

Table 6. Shadow Value of Bringing Various Federal Land Banks into the Optimal Portfolio.

θ	Spring-field	Balti-more	Colum-bia	Louis-ville	New Orleans	St. Louis	St. Paul	Omaha	Wich-ita	Houston	Sacra-mento	Spokane
.005	-.01	---	-.16	-.12	-.66	-.22	-.51	-.44	-.30	-.54	-.80	-.02
.001	---	---	-.15	-.12	-.66	-.21	-.50	-.43	-.29	-.54	-.81	-.01
.020	---	-.00	-.14	-.11	-.66	-.21	-.50	-.44	-.29	-.53	-.81	-.01
.030	---	-.01	-.13	-.12	-.67	-.21	-.50	-.44	-.29	-.53	-.81	-.00
.040	---	-.02	-.11	-.12	-.68	-.20	-.49	-.45	-.29	-.52	-.83	---
.050	---	-.03	-.10	-.12	-.68	-.21	-.49	-.45	-.29	-.52	-.84	---
.100	---	-.07	-.02	-.14	-.72	-.21	-.46	-.47	-.30	-.50	-.90	---
.200	-.04	-.15	---	-.19	-.78	-.27	-.48	-.42	-.30	-.53	-1.01	---
1.0	-.57	-.82	---	-.69	-1.41	-.68	-.90	-1.25	-.50	-.89	-1.85	---