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Staff Paper P97-13

December 1997

STAFF PAPER SERIES

The Competitive Environment for Farm Real Estate Lending of Commercial Banks in the Upper Midwest

Glenn Pederson and Tamar Khitarishvili

**DEPARTMENT OF APPLIED ECONOMICS
COLLEGE OF AGRICULTURAL, FOOD, AND ENVIRONMENTAL SCIENCES
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The Competitive Environment for Farm Real Estate Lending of Commercial Banks in the Upper Midwest

Glenn Pederson and Tamar Khitarishvili

There have been significant changes in the U.S. farm real estate loan market during the past decade in terms of both loan volume and the roles of participating rural financial institutions. For example, the total volume of the farm real estate loans increased from \$89.7 billion to \$106.7 billion during 1980-84.¹ Loan volume declined to \$74.7 billion by 1990, as a result of farm sector financial problems and the ensuing debt consolidation. Since 1990, farm real estate loan volume has increased gradually, and is projected to reach about \$82 billion in 1997 (see Table 1).

Table 1. U.S. Farm Real Estate Debt (in \$ millions), 1980-96.

	Farm Credit System	Farm Service Agency	Life Insurance Companies	Commercial Banks	CCC Storage Facilities	Individuals and Others	Total
1980	33,225	7,435	11,998	7,765	1,456	27,813	89,692
1982	43,661	8,298	11,829	7,568	1,127	29,326	101,809
1984	46,596	9,523	11,891	9,626	623	28,438	106,697
1986	35,593	9,713	10,377	11,942	123	22,660	90,408
1988	28,445	8,980	9,039	14,434	21	16,914	77,833
1990	25,924	7,639	9,704	16,288	7	15,169	74,731
1992	25,408	6,394	8,765	18,757	2	16,095	75,421
1994	24,583	5,463	9,023	21,070	0	17,503	77,642
1996F	26,000	5,000	9,000	23,000	a/	18,000	82,000

Source: ERS/USDA, 1996.

a/ Amount is less than \$500,000.

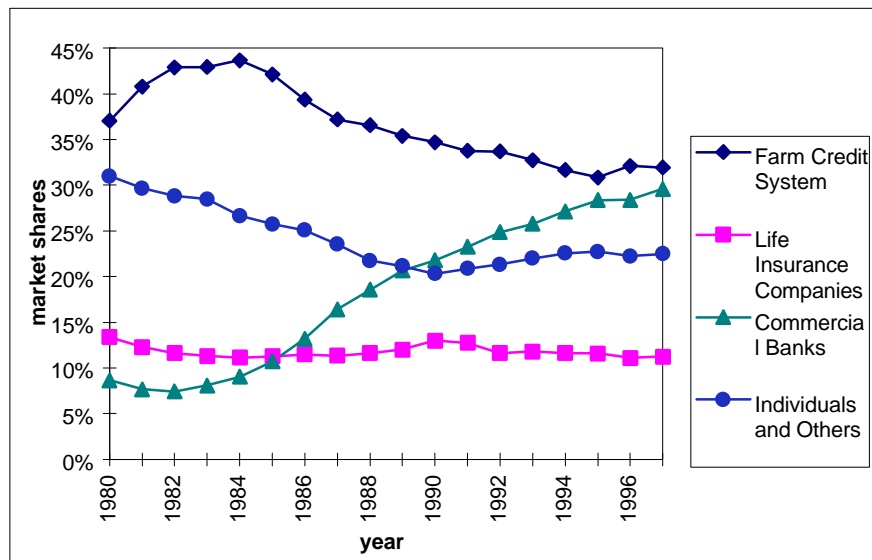
The observed increase in the size of the farm real estate loan market reflects numerous factors which are affecting the demand for debt financing. Generally improving financial and economic conditions in agriculture and rising expectations of farmers and other landowners in the sector have contributed to a gradual increase in the demand for loans. Nominal interest rates have remained relatively low and stable (due primarily to low inflation) and that has been an added incentive for farmers to borrow long-term funds or to refinance existing debt. Factors which may have dampened the demand for credit include uncertainty about future farm incomes due to: recent developments in international financial markets, the changing competitiveness of the U.S. in global commodity markets, and the ultimate impacts of the 1996 U. S. farm bill. These changes in the demand for debt financing have also altered the competitive environment of commercial banks. One indicator of this is the implied shift in farm real estate market shares.

¹ Farm real estate loans are defined generally as loans secured by farm land and other farm real estate.

Market Shares

The loan volume data in Table 1 reflects a shift in farm real estate loan market shares toward commercial banks. Gradually, the market share of the Cooperative Farm Credit System (FCS) declined as commercial banks have captured a larger share of the farm real estate market (see Figure 1). The proportion of the farm real estate debt held by the FCS declined from about 44% in 1984, to about 32% in 1997. Meanwhile, the market share of commercial banks increased from 9% to 30%. Other farm real estate lenders also lost market share to commercial banks. For example the Farm Service Agency experienced a decline from about 9% to 4.7% during 1984-97. Similarly, a smaller proportion of total farm real estate loans are now being financed by individuals and others. Life insurance companies have maintained their market share at about 11%. In 1996 and 1997 the market shares of these lenders appear to have stabilized. These are the indicators of changing market shares, yet they do not clarify if the competitiveness of commercial banks was an underlying determinant of the shift.

Figure 1. Market Shares of the Financial Institutions in the Farm Real Estate Loan Market.



Source: Adapted from ERS/USDA, 1996.

During the latter 1980s and early 1990s, commercial banks may have increased their farm real estate loan volume and market share by retaining existing borrowers and/or attracting new farm borrowers from competitors. A successful bank may have followed a dual strategy of increasing its competitiveness and attracting new borrowers plus maintaining the loyalty of its existing farm clients. Thus, the observed change in farm real estate market shares could have been the result of adaptive bank strategies. Alternatively, it may simply reflect the way in which farm real estate loans are defined. That is, the increase in farm real estate loans could be attributed to the use of farm real estate to secure nonreal estate loans and operating lines of credit (where banks have traditionally played a

significant role). In addition to these factors, a drastic decline in the competitiveness of Farm Credit System may have contributed to an increase in the share of commercial banks in the farm real estate loan market share.

The objective of this paper is to explore commercial bank participation in the farm real estate loan market. We do that primarily through a review and analysis of recent bank survey and secondary data. In the next section we briefly consider some of the changes in economic conditions (e.g., farm income levels, interest rates and land values) which influence the demand for farm real estate loans. This leads to a consideration of some hypotheses about the importance of competitiveness and customer loyalty at commercial banks in shaping how banks compete. In the subsequent sections we discuss the bank survey results and our analysis of that data from the perspective of bank competitiveness and customer loyalty as explanations for the observed trend in farm real estate market shares.

Changes in Farm Income

Not surprisingly, increases in aggregate farm income are generally related to increases in aggregate farm real estate debt. Increases in farm income often lead to expansions of farm enterprises and, in turn, increases in the demand for funds. Yet, it is also possible that such an increase in income could lead to a decline in the level of farm real estate debt, as farmers decide to pay off their old debts, instead of expanding their operations. This was the case in the latter 1980's.

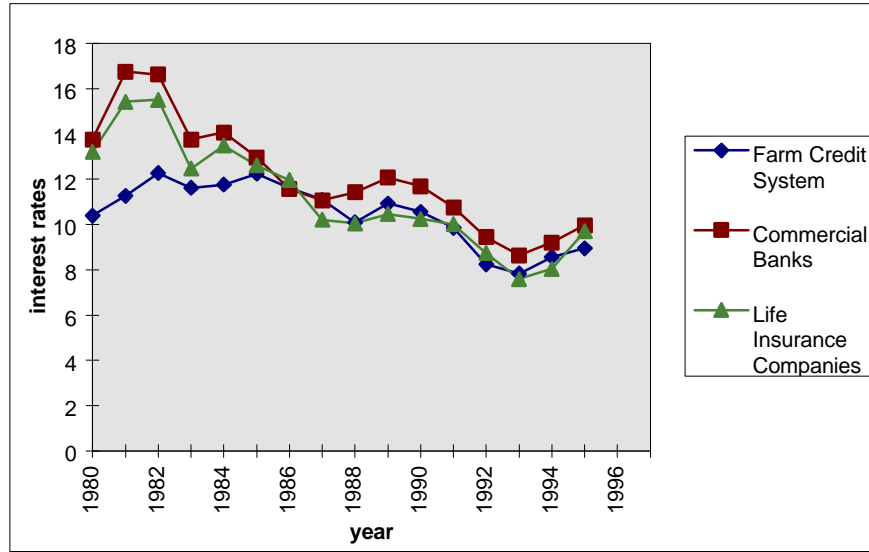
During 1984-94, gross income of U.S. farms declined by about 21% in real terms (most of which occurred prior to 1986). Yet, in the post-1986 period there has been relative stability in the level of gross income and input prices. This stability continued until 1995, when low livestock prices and high fertilizer costs contributed to a 28% drop in nominal net farm income. In 1997, farm incomes are predicted to decline again, due to lower grain prices and a projected decline in dairy receipts. Although it is important, farm income is just one factor which potentially affects the demand for loans secured by farm real estate. Interest rates are also important.

Changes in Interest Rate Levels

Changing interest rates affect both the supply of and demand for loans. A change in the level of interest rates changes the cost of funds to farm lenders and, in turn, the rates charged to borrowers. Moreover, as rates decline the spreads on loan rates become compressed and competitiveness issues become more intense. The recent history of commercial bank long-term interest rates indicates that average commercial bank rates have been consistently higher than the rates provided by other agricultural lenders during 1980-96 (see Figure 2). Interest rates available through the FCS and life insurance companies (LICs) have been close to each other, but the rates charged by commercial banks have been generally higher. Generally, these rate "spreads" have not been large, but they have been relatively consistent since 1988. This rate comparison raises a question

about how commercial banks could have been competitive with other intermediaries in the farm real estate loan market.

Figure 2. Average Interest Rates on Long-term Agricultural Loans, 1980-95.



Source: Adapted from ERS/USDA, 1996.

A comparison of long-term interest rates available from the 7th District (St. Paul) Farm Credit Bank (FCB) with the “most common” rates available through 9th Federal Reserve Bank (FRB) District (Minneapolis) commercial banks during 1984-91, suggests that the FCB was competitive on rates in several years, but not throughout the period. For example, the effective FCB rate was below the FRB rate until 1985:I, but rose above it during 1985:II - 1988:II. This was a period of significant decline in the Farm Credit System real estate market share and a corresponding increase in the commercial bank share. During 1990-1991, the rate-to rate comparison became more complex due to the introduction of variable and adjustable rate products, but the commercial bank variable and fixed rates appear to have been typically higher than the corresponding 7th District FCB effective rate by about 0.40%.² It is likely that the improved rate situation in the FCS during the mid-latter 1990s has contributed to a stabilization of the FCS market share. Life insurance companies have also been quite competitive on large farm loans.

These average rate comparisons suggest that interest rates alone may not have been the primary factor in attracting new customers and in maintaining the loyalty of existing bank customers. Yet, there is some complexity to the interest rate issue during the early 1990s, and simple averages of interest rates tend to overlook the true nature of competition between farm lenders. In part that complexity arises due to the various ways in which loan rates are now set and adjusted over time by lenders. Farmers can choose between fixed, variable and adjustable rate loans with various features such as “caps” on adjustable-rate

² The FCB effective rate reflects the adjustment for purchase of stock.

mortgages.³ The traditional fixed-rate mortgage has become only one of many pricing options open to farmers. In addition risk preferences may be playing an important role in determining how much, where, and under what terms farmers will borrow. That makes a simple rate-to-rate comparison between lenders harder to do in the 1990s.

Changes in Land Values

Farm land and real estate values have been rising generally since 1987. Since land is the largest single category of farm real estate assets, these trends in the farm land market can significantly influence the demand for farm real estate loans. In real terms, there has been about a 6.8% increase in farm land values between 1987-95, and farm land values have continued to rise during 1996-97. Thus, we observe that land values and the volume of farm mortgages are highly correlated. In addition farmers may borrow against the equity built up in real estate due to a latent demand for nonreal estate investments (capital improvements such as replacement of machinery and equipment, renovations to buildings and other fixed assets, etc.), which were postponed in previous years. Thus, the observed rise in farm real estate loan volume may be attributable to a significant increase in the use of land as collateral for nonreal estate loans.

Competition and Competitiveness

Following the agricultural financial crisis of the mid-1980's, commercial banks emerged as the strongest competitors to the FCS. The FCS had become the victim of adverse macroeconomic conditions and the inefficiencies which were inherent in its structure and functioning. Since it was highly specialized in agriculture, the FCS turned out to be quite vulnerable to the agricultural crisis and there was some exodus of farmers from the FCS to commercial banks. While commercial banks also suffered losses on their farm loans, many banks had the advantage of being more diversified in their loan portfolios and less exposed to long-term farm real estate loans and funding sources.

Under the Agricultural Credit Act of 1987, Federal Land Bank Associations and Federal Intermediate Credit Banks were consolidated, which resulted in farm real estate and nonreal estate loans being made by Farm Credit Banks. In addition the local associations of the FCS were encouraged to merge voluntarily. As a result, the number of associations (ACAs, FLCAs, PCAs, etc.) dropped sharply. That consolidation process has continued through 1997, although at a slower pace. These structural reforms have improved the competitive position of the FCS through the lending and related financial service activities of the associations. They have also altered the nature of competition in rural financial markets.

³ A "cap" is a condition in a loan contract which limits the maximum interest rate that a borrower will pay. Similarly, a "floor" limits the minimum rate one would pay.

Barry et al. recently evaluated the loyalty of farm borrowers and the nature of competition at commercial banks.⁴ They conclude that an inverse relationship exists between the level of market competition and borrower loyalty. Their empirical analysis suggests that bankers operating in more competitive markets tend to have less loyal customers, after adjusting for selected institutional and market characteristics. They also conclude that the adverse effects of competition on borrower loyalty might be offset by increasing efforts to provide services to farm borrowers and, thus, increasing the strength of the lender-borrower relationship. The empirical model incorporates an assumption that borrower loyalty is a function of the perceived level of competition between a commercial bank and either the Farm Credit System or other commercial banks. It leaves the nature of that competition undefined.

The analysis provided by Barry et al. raises two issues concerning how a bank perceives the demand for its services, and what a bank does to respond to changes in that demand (i.e., bank competitive strategy) in order to manage its loan volume and profitability. First, bank competitiveness and the level of borrower loyalty are likely to be co-determined. That is, the demand for loans from new farm borrowers may be a function of the rates and services a bank offers. Those same factors are also likely to influence the loyalty of existing customers, and the demand for loans from customers already within the bank.⁵ Since competitiveness is a multi-faceted concept (i.e., a function of “rate” and “nonrate” factors), a lender’s perception of its competitiveness could be jointly determined by either set of factors plus the bank’s view of customer loyalty. For example, if a banker is at a small loan rate disadvantage to its competitors and perceives that its borrower loyalty is high, the level of competition could be perceived as relatively weak. Thus, interest rates would be of lesser importance as a competitive factor in responding to changing loan demand. Thus, we suggest that borrower loyalty may be a determinant of the level of effective competition, where interest rates and/or spreads may be one important indicator of that competitiveness.

Second, if rate competition is relatively more important in the real estate market (than in the nonreal estate market), a “services strategy” may be relatively ineffective in overcoming the rate disadvantage that a given lender may face. The conventional wisdom is that loan servicing factors tend to be more important to nonreal estate customers, while interest rates take on more importance in real estate lending. The underlying logic of this is relatively straightforward. Since the size of interest payments is more sensitive to the level of interest rates on long-term loans than on short-term loans, customers may place more emphasis on rate comparisons when they are “shopping” for a farm mortgage than they would when financing their working capital requirements.

⁴ Barry et al. suggest that “relationship” suggests the existence of “close ties” between a lender and a borrower but “loyalty” implies a sense of allegiance of one party to another (p. 19). Thus, the concepts are closely related but not identical.

⁵ One could write the demand for loans function as: $D = D[r, s, l(r,s)]$ where r is a measure of loan rates, s is a measure of loan services, and $l(r,s)$ is a function which represents the loyalty of existing customers. Other factors such as farm income could be included in the function.

Based on these observations, we assume that the degree of farm real estate market competition perceived by a bank (or the importance it assigns to being competitive) is a function of the degree of loyalty it perceives among its customers and other institutional and market characteristics. That is, the model presented by Barry et al. could be turned around to evaluate the role which factors such as interest rates play in determining the competitive strategies of banks in the farm real estate market. This may indicate why banks were successful in attracting farm real estate loans and market share in the 1980s and early 1990s.

The Bank Survey

In order to obtain current data on the real estate lending activities of commercial banks, a mail survey was sent to commercial banks in the 9th Federal Reserve District during July 1997. The survey contained questions about bank loan portfolio characteristics, terms of farm real estate loans, loan competition and customer loyalty, and trends in the bank's market area.

Selecting the Bank Sample

The population of 971 commercial banks in the Minneapolis Federal Reserve District was sorted using the agricultural loans/total loans ratio. The population was divided into two groups using the mean agricultural loan/total loan ratio (0.225). Banks with agricultural loan percentages greater than 22.5% composed the *agricultural banks* category; the banks with agricultural loans of less than 22.5% composed the *nonagricultural banks* category. There were 422 agricultural banks (43.5%) and 549 nonagricultural banks (56.5%) in the population.

The nonagricultural banks category was then sorted by the farm real estate loans/total real estate loans ratio (FRE/TRE). Banks with FRE/TRE percentages below 10% (348 banks) were deleted, since they were not considered to be actively involved in the farm real estate market, even though they may have held significant real estate portfolios.⁶ The remaining agricultural banks were included in the sample. As a result, the adjusted list contained 623 banks which were actively making agricultural and real estate loans. The remaining 623 banks were ranked according to increasing size of total assets and alternate banks were selected for inclusion in the mail survey. A total of 311 banks were sent the survey. Forty eight banks (15.4%) responded.

Representativeness of Respondents

The average size (total assets) of the respondent banks is smaller than that of the sample banks. However, the difference in bank size is quite small and it is statistically insignificant. As a result, we find that the respondent banks tend to be representative of the size distribution of the sampled banks. Second, the average total real estate loan volume and average farm real estate loan volume of the respondent banks are close to the

⁶ Most of those banks reported no farm real estate loans.

sample bank means. Third, the average agricultural loans/total loans ratio and the average farm real estate loans/total real estate loans ratio of the respondent banks both are statistically close to the averages of the sample banks. Finally, the difference in average profitability (rate of return on assets) of the sample banks and the respondent banks is not statistically significant. Thus, despite the low response rate, it can be said that the respondent banks are representative of the sample banks in the Ninth Federal Reserve District.

Survey Results

The summary of bank survey results is presented in four parts: general characteristics of the responding banks, real estate portfolio characteristics, collateral requirements, characteristics of bank competition.

General Characteristics

Thirty six banks report being either a part of a single-bank bank holding company (BHC) or that they are not affiliated with a BHC (see Table 2). The remaining banks are parts of multi-BHCs. We find that multi-BHC banks have higher average rates of return on average assets (ROAA) and they tend to be larger in size (assets, loans and deposits). They tend to be less involved in agricultural real estate lending (as suggested by the lower average proportion of agricultural loans in the total loan portfolio and by the lower average proportion of farm real estate loans in the total real estate loan portfolio).

Table 2. General Characteristics of Respondent Banks by Bank Holding Company (BHC) Status.

Item	Units	NonBHC and Single BHC Banks	Multiple BHC Banks
Responding Banks		36	12
Total Assets	\$000	35,945	62,778
Total Liabilities	\$000	20,357	41,507
Total Deposits	\$000	31,130	54,235
Return on Average Assets (ROAA)	%	0.98	1.43
Agric. Loans/Total Loans	%	37.4	28.3
Farm Real Estate/Total Real Estate Loans (FRE/TRE)	%	42.0	36.0

Only three of the responding banks indicate that they compete in a regional lending market. All other banks serve a local agricultural financial market with an average radius of about 24 miles.

Real Estate Portfolio Characteristics

The real estate loan portfolios of the respondent banks are dominated by farm real estate loans (43% of loan volume) with lower percentages in residential real estate loans (37%), commercial real estate loans (18%), and other loans (2%). Other real estate loans includes those for construction and lots, home equity, real estate multi-family, unimproved land, and building sites. The high proportion of residential real estate loans reflects the traditionally important role of commercial banks in providing home loans in rural communities.

We observe that the percentage of FRE loans in the portfolios of the banks increases: as size of bank decreases and as ROAA falls. Also, non- and single-BHC affiliated banks have a higher proportion of FRE loans than multi-BHC banks (Table 3). Larger banks tend to have more diversified real estate loan portfolios. In addition, we observe that the multi-BHC banks are more diversified. However, there is no clear indication that diversified banks are more profitable. Both groups of banks (according to the ROAA) tend to have about the same proportions of commercial, farm, residential and other real estate loans. There is an indication, however, that less profitable banks hold a higher proportion of FRE loans. Banks whose ROAA is less than mean hold on the average about 46% of FRE loans in their portfolios, while this number is about 40% for the banks with higher than mean ROAA.

Table 3. Percentage of Real Estate Loan Portfolios According to Total Assets, Multi-BHC Bank Status, and ROAA of Responding Banks.

Real Estate Loan Type	Total Assets		BHC Bank Status		Profitability a/	
	< \$50 mill.	>\$50 mill.	Non- and Single BHC	Multi-BHC	ROAA <Mean	ROAA >Mean
Commercial	14.58	27.92	16.31	23.45	15.67	20.40
Farm	45.46	35.22	44.77	36.55	46.18	39.37
Residential	37.29	36.11	36.38	39	36.18	37.85
Other	2.66	0.75	2.53	1	1.98	2.38
Total	100%	100%	100%	100%	100%	100%

a/ Mean ROAA of the responding banks is 1.19.

The development of the residential real estate market is reflected in part by the proportion of farm real estate loans used for the purposes other than the improvement or purchases of farm real estate. Farm real estate loans are defined as loans secured by farm real estate. However, they can be used for purposes other than farm real estate.

About 74% of the farm real estate loan volume held by responding banks is actually used for real estate purposes (see Table 4). About 43% of total farm real estate loans is used for purchases of and improvements to land and the other 31% of total farm real estate loans is used for other purposes, such as purchase and improvements to buildings and refinance of long-term loans (not necessarily farm real estate purposes). About 26% of the farm real estate loan volume at responding banks is used for nonreal estate purposes.

These uses include: financing and refinancing of agricultural production loans and other purposes (e.g., to secure loans for farm machinery, equipment, etc.).

Table 4. Purposes of Farm Real Estate Loans at Responding Banks

Purpose	Percent
Purchase and improvements to land	43
Purchase and improvements to buildings	18
Refinance of long-term loans	13
<i>Subtotal Real Estate Purpose</i>	<i>74</i>
Finance and refinance of agricultural production	17
Other	9
<i>Subtotal Nonreal Estate Purpose</i>	<i>26</i>

When the real estate loan purposes of borrowers are viewed according to bank size and MBHC status an interesting picture emerges (see Table 5). Larger banks and those which are part of multi-bank holding companies tend to have a higher proportion of farm real estate loans that are used for farm real estate purposes. The average percentage of loans used for real estate purposes is 88.7% for banks with total assets over \$50 million, as compared with 68.5% for smaller banks.

Table 5. Percentage of Farm Real Estate Loans by Purpose According to Total Bank Assets and Multi-Bank Holding Company Status.

Purpose	Total Assets		MBHC Status	
	< \$50 mill.	>\$50 mill.	Non- and Single BHC	Multi-BHC
Purchase and improvements to land	38.6	54.7	42.64	43.46
Purchase and improvements to buildings	15.3	22.8	17.23	17.36
Refinance of long-term loans	14.6	11.2	12.02	18.45
<i>Real Estate Purpose</i>	<i>68.5%</i>	<i>88.7%</i>	<i>71.9%</i>	<i>79.3%</i>
Finance and refinance of agricultural production	20.1	8.5	18.02	14.46
Other	11.4	2.8	10.12	6.28
<i>Nonreal Estate Purpose</i>	<i>31.5%</i>	<i>11.3%</i>	<i>28.1%</i>	<i>20.7%</i>

When comparing banks using the Total Loans to Total Deposits (TL/TD) ratio, it appears that banks with higher TL/TD on the average have a higher proportion of farm real estate loans targeted for real estate purposes (see Table 6). However, the differences in the proportions between the two groups are not significant.

Banks with higher ROAAs tend to have a higher proportion of farm real estate loans used for real estate purposes (in particular, purchases and improvements to land and buildings) and lower proportions of real estate loans used for nonreal estate purposes (see Table 6). It is not clear that there is a single factor which best explains this result.

Table 6. Percentage of Farm Real Estate Loans by Purpose According to Total Loans/ Total Deposits and Return on Assets of the Bank.

Purpose	Liquidity		Profitability	
	TL/TD ratio < Mean a/	TL/TD ratio > Mean a/	ROAA < Mean b/	ROAA > Mean b/
Purchase and improvements to land	45.91	39.5	39.95	45.76
Purchase and improvements to buildings	13.82	21.05	14.14	20.38
Refinance of long-term loans	11.64	15.98	14.85	12.55
<i>Real Estate Purpose</i>	<i>71.3%</i>	<i>76.5%</i>	<i>69.0%</i>	<i>78.7%</i>
Finance and refinance of agricultural production	19.78	14.13	20.15	14.02
Other	8.9	9.35	10.95	7.29
<i>Nonreal Estate Purpose</i>	<i>28.7%</i>	<i>23.5%</i>	<i>31.%</i>	<i>21.3%</i>

a/ Mean Total Loans/ Total Deposits ratio of the responding banks is 0.68.

b/ Mean ROAA of the responding banks is 1.19.

In banks that specialize in financing crop farmers, a higher percentage of loans are used for farm real estate purposes. This might be expected, since farmers operating dairy, cattle, and poultry operations might be using farm real estate loans for the purpose of financing and refinancing agricultural production loans and other nonland capital improvements (see Table 7).

Banks with higher FRE/TRE ratios tend to have more farm real estate loans used for real estate purposes (see Table 7). However, banks reporting higher than average FRE/TRE ratios tend to also have a larger proportion of farm real estate loans used for purchases and improvements to land.

Table 7. Percentage of Farm Real Estate Loans by Purpose According to Dominance of Farm Real Estate Lending and Farm Borrower Type.

Purpose	Farm Real Estate		Dominant Farm Type	
	FRE/TRE ratio < Mean a/	FRE/TRE ratio > Mean a/	Crop farms	Noncrop farms
Purchase and improvements to land	35.7	49.37	54.29	27.61
Purchase and improvements to buildings	25.1	10.14	12.83	23.17
Refinance of long-term loans	16.9	10.8	12.15	15.78
<i>Real Estate Purpose</i>	<i>77.7%</i>	<i>70.3%</i>	<i>79.2%</i>	<i>66.6%</i>
Finance and refinance of agricultural production	16.3	17.79	13.19	22.28
Other	6	11.94	7.57	11.17
<i>Nonreal Estate Purpose</i>	<i>22.3%</i>	<i>29.7%</i>	<i>20.8%</i>	<i>33.4%</i>

a/ Farm Real Estate/ Total Real Estate mean ratio of responding banks is 0.393.

The survey data also reveal that the majority of farm real estate loan volume at the responding commercial banks flow to crop farms. When asked about the percentage of farm real estate loan volume extended to crop, hog, dairy, cattle and poultry operators, the banks indicate that about 54% on average went to crop farmers. The mean percentages of other farm real estate loan volumes are: dairy (19%), cattle (16%), hog (10%), and poultry (1%). The dominance of crop farmers can partly be explained by the fact that on the average they own more land and borrow larger amounts. Since most banks operate within relatively smaller market areas, the individual bank percentages of volume to each farm type category depend to a large degree on the location of the bank.

It can be seen in each of the preceding tables that the proportion of farm real estate loans used for nonreal estate nonfarm purposes is significant. This suggests that the farm real estate loans are an attractive way for farmers to finance projects through commercial banks, although those loans are not directly related to the development of farm real estate. The implication is that nonreal estate investments were an important motivation for the observed growth in farm real estate loan volume at commercial banks during the latter 1980s and early 1990s.

Collateral Requirements

Responding banks indicate that residential real estate loans tend to have the highest loan-to-collateral value (LTV) ratios (see Table 8). The average LTV ratio of residential property loans (expressed as a percentage) is about 72%. Slightly lower average collateral positions are required on farm real estate loans and commercial real estate loans (68% and 66%, respectively). Larger banks tend to require lower LTV percentages on farm real estate loans. More profitable banks (those with ROAA above the mean) tend to require slightly higher LTV positions of their customers. Also, banks with lower FRE/TRE ratios (those with portfolios less dominated by farm real estate loans) require higher LTV positions. Banks with the majority of farm real estate loans to noncrop farmers tend to require higher LTV positions on all types of loans.

Table 8. Mean Percentage Levels of Collateral Required on Real Estate Loans According to Category of Loan and Responding Bank Characteristics

Loan Category	Total Assets		Profitability a/		Dominant Farm Type		Farm Real Estate Loans b/	
	< \$50mill.	> \$50mill.	ROAA <Mean	ROAA >Mean	Crop	Noncrop	FRE/TRE < Mean	FRE/TRE > Mean
Commercial	67.2	63.6	64.2	68.3	64.3	68.6	68.3	63.4
Farm	69.5	63.7	67.0	69.0	65.1	71.8	70.2	65.2
Residential	72.4	70.5	71.0	72.7	67.5	77.3	77.2	64.5

a/ Mean ROAA of the responding banks is 1.19.

b/ Mean Farm Real Estate Loans/Total Real Estate Loans ratio of responding banks is 0.393.

Related to the issue of collateral on real estate loans, banks were asked if they use real estate to secure operating lines of credit. Twenty nine banks (about 60%) indicate that

they do secure operating lines with farm real estate. We interpret this practice to be generally consistent with the earlier observation on the purpose of farm real estate loans. Commercial banks appear to be more frequently involved in “farm real estate lending” in support of their short-term and nonreal estate lending activities, and not strictly as a direct increase in their efforts to finance farm real estate *per se*.

Characteristics of Bank Competition

From the survey responses we generally observe an increase in the level of competition for farm real estate loans. Thirty-eight banks (79%) respond that during the past 3-5 years the farm real estate market has become more competitive in their banking area. The majority of banks indicate that the main source of competition is from existing lenders (other commercial banks and Farm Credit Services). Nine banks indicate that the increase in competition is coming from new competitors such as leasing companies and other new entrants. Factors that have induced that higher level of competition are cited by bankers as: increasing land values, hobby farming, and improved output prices. Most banks indicate that heightened competition has occurred due to both rate and nonrate factors.

Banks report that about 50% of the farm real estate loans are priced on a variable rate basis. Larger banks report making a higher average proportion of variable rate loans in their loan portfolios (68% compared with 43% among smaller banks). Also, banks which are more heavily involved in farm real estate lending report a higher mean proportion of variable rate loans. Interestingly, multi-bank holding company banks report a lower average proportion of variable rate loans than other banks responding to the survey.

Table 9. Interest Rates on Fixed- and Variable-Rate Farm Real Estate Loans.

Loan Category	Minimum Rate	Average Rate	Maximum Rate
Variable rate loans	8.14%	9.29%	10.34%
Fixed rate loans	8.74%	9.36%	10.33%

Small differences occur between average fixed rates and variable rates on farm real estate loans at the responding banks. The mean interest rate on variable rate farm real estate loans is about 9.29% in mid-1997, compared to about 9.36% on fixed rate loans (see Table 9). It is interesting to note that the spread between fixed rates and variable rates appears to be greater at the low end of the rate distribution, as reflected by a comparison of the minimum rates. We offer no specific explanation for this larger spread, since it could be due to several factors.

It is expected that minimum rates (fixed and/or variable rates) reflect the point at which rate competition between banks becomes most keen, as banks vie for the most credit-worthy customers. Since rate differences may be small, a potential trade-off exists for a bank in terms of how it competes for customers at these rate levels. One strategy could be to offer an attractive rate and terms (but not necessarily the lowest rate), and focus on retaining borrowers through improvements in the customer relationship with the bank.

More significant differences appear among the reported maturities of variable-rate and fixed-rate farm real estate loans (see Table 10). The average stated maturity on a variable-rate farm real estate loan is about 9.17 years, while the stated maturity on a fixed rate loan is 6.06 years. However, stated maturities do not reflect the “effective maturities” of these loans and a comparison of these reported terms may be misleading. Banks have frequently structured these loans with relatively short pay-offs. That is, a fixed- or variable-rate farm real estate loan may be structured as a longer term loan, but with a balloon payment in 3-4 years. This type of repayment schedule is consistent with using farm real estate to secure the financing of a farm nonreal estate investments. We note that banks with higher than the average profitability report longer maturities for both fixed-rate and variable-rate loans.

Table 10. Mean Maturities on Fixed and Variable Rate Farm Real Estate Loans (in years).

Loan Category	Minimum Maturity	Average Maturity	Maximum Maturity
Variable rate	4.01	9.17	13.15
Fixed rate	3.56	6.06	8.70

Twenty-three banks indicate that the average maturity of farm real estate loans exceeds the average maturity of their underlying source of funds for those loans. When asked about these maturity differentials, 18 banks responded that they have no significant maturity mismatch. Most banks report that their interest rate risk exposure due to the associated maturity mismatch is relatively low. The low estimate of interest rate risk exposure suggests that bankers are taking generally conservative asset/liability management positions in their farm real estate loan portfolios. It also indicates their confidence in the state of economy, in particular, in the stability of interest rates.

Some of the strategies used by commercial banks are revealed by how banks ranked alternative factors which they perceive as important to remaining competitive. The survey data suggest that the top five rankings of factors at larger banks and smaller banks are identical (see Table 11). In descending order of importance they are: the level of interest rates, the customer relationship with the loan officer, availability of loan pricing options, the bank staff’s knowledge of agriculture, and stability of the bank’s staff.

The rankings of large and small banks concerning what factors are most important in maintaining customer loyalty are more dissimilar. Both large and small banks rank the customer relationship with the loan officer highest. Small banks rank (in descending order) the level of interest rates, loan pricing options, stability of the bank’s staff, and the bank’s knowledge of agriculture as of lower importance. Large banks tend to rank (in descending order of importance) the stability of bank staff, bank knowledge of agriculture, loan pricing options and the level of interest rates of lower importance. Thus, smaller banks see loan rates and loan pricing options as relatively more important to maintaining customer loyalty than larger banks do.

Table 11. Average Importance and Rank of Factors in Remaining Competitive and Maintaining Customer Loyalty.

Factor	Smaller Banks a/		Larger Banks	
	Remain Competitive	Maintain Customer Loyalty	Remain Competitive	Maintain Customer Loyalty
Level of interest rates	2.80 (1) b/	3.60 (2)	3.08 (1)	4.58 (5)
Loan pricing options (rate, maturity, etc.)	3.49 (3)	4.29 (3)	4.00 (3)	4.50 (4)
Stability of the bank	5.54 (6)	5.29 (6)	5.25 (6)	5.33 (6)
Stability of the bank staff	5.34 (5)	4.34 (4)	4.67 (5)	3.17 (2)
Customer relationship with loan officer	3.05 (2)	2.51 (1)	3.75 (2)	2.83 (1)
Bank staff's knowledge of agriculture	4.69 (4)	4.46 (5)	4.08 (4)	3.67 (3)
Geographic location of the bank	6.83 (10)	6.71 (9)	7.17 (9)	7.00 (8)
Variety of services offered	6.09 (8)	5.86 (7)	6.25 (7)	6.00 (7)
Full service loans	5.74 (7)	6.11 (8)	6.67 (8)	7.25 (9)
Other factors	6.38 (9)	8.25 (10)	9.00 (10)	9.33 (10)

a/ Smaller banks are those with total assets under \$50 million.

b/ The first number in each cell is the mean rank based on the bank responses (1 is of the highest importance) . The number in parenthesis is our ranking (1 is highest) based on the calculated mean importance given by the banks.

In a separate question banks were asked to rank the importance of products and services that are offered to farm real estate customers for the bank's ability to compete in the future. The most important factors according to the highest mean ranking are interest rate adjustments for loan size and term, and for credit risk (see Table 12).

Table 12. Importance of Products and Services to Banks for Remaining Competitive in Farm Real Estate Lending in the Future. a/

Service or Product	Mean Rank of Importance
Pre-set lines of credit	4.2
Risk management and products	5.7
Investment products	6.8
Farm, tax and estate planning services	6.9
New sources, loan alliances and participations	4.3
Interest rate adjustments for:	
Credit risk	3.3
Loan size and term	3.0
Fixed versus variable rate	4.2
Prepayment risk	6.4
Other (e.g., leasing)	8.7

a/ Banks ranked the importance of each factor from 1 (highest) to 10 (lowest).

We expect that the demand for loans which are used for the purpose of long-term financing of farm real estate will be based more on competitiveness of the bank (i.e., on factors such as interest rates) than on the range and quality of services provided. By

extending that logic, we anticipate that the degree of loyalty among farm real estate clients is somewhat lower than among nonreal estate clients.⁷ However, the survey results suggest there is only a slight difference in the average level of customer loyalty between these clientele groups (see Table 13). On average 52% of farm nonreal estate customers are considered by the banks to fall into the category of high loyalty. The comparable percentage of high loyalty farm real estate customers is about 50%. Yet, these mean percentages obscure the underlying variability of customer loyalty perceived by the banks. The percentages of high loyalty farm real estate and farm nonreal estate customers varies from 10% to 95%. Larger banks tend to report a higher percentage of high loyalty customers in both the farm real estate and the farm nonreal estate loan categories.

Table 13. Mean Percentage of Farm Real Estate and Farm Nonreal Estate Borrowers According to Their Perceived Loyalty.

Type of Customer	High Loyalty	Medium Loyalty	Low Loyalty	Total
Farm real estate	50	35	15	100%
Farm nonreal estate	52	32	16	100%

The overall similarity of the mean loyalty levels suggests either of two possible interpretations. There may in fact be no significant difference between the factors that cause farm real estate or farm nonreal estate customers to be more loyal to a bank. Alternatively, since banks may be making farm real estate loans for nonreal estate financing/refinancing purposes, and the distinction between real estate and nonreal estate borrowers is blurred.

Maintaining customer loyalty is an important and legitimate concern of the banks in the survey. This can be seen by the fact that the banks report about 67% of their farm real estate loan volume in the past 3-5 years came from existing customers. Similarly, about 70% of farm nonreal estate loan volume is extended to existing customers. The remaining percentage of loans coming from new customers is significant and it suggests that a competitive strategy would need to maintain existing customers and attract new ones.

Bank Competitiveness

Although no specific objective function is proposed for this analysis, we suggest that the competitive strategies banks use to manage competitiveness and loyalty may be a function of several of the factors which were identified in the survey. We define competitiveness generally in terms of the rankings given by the banks to each of the factors identified previously in Table 11.⁸ Secondly, customer loyalty is measured by the bank's perception of customer loyalty, as summarized in Table 13.

⁷ Barry, Ellinger and Moss find such a lower mean loyalty rating of farm real estate loan customers by the banks in their survey.

⁸ The assumption is that if a bank places a high level of importance on a factor, it is also using that factor to compete with other banks.

If banks perceive that an inverse relationship exists between the level of competition and customer loyalty, we might expect to find an inverse relationship between factors such as importance assigned to the level of interest rates on loans and the percentage of high loyalty customers in the bank. We do find that such an inverse relation exists in the survey responses of the banks and it is relatively strong (the correlation coefficient is about -0.29 and it is statistically significant).

However, when we look at how banks rank factors such as the level of interest rates and the customer-loan officer relationship (for remaining competitive and for maintaining customer loyalty), there is no inverse relationship. That is, the rankings given to interest rate level (for competitiveness and for loyalty) tend to increase together. The correlation is 0.68. A similar analysis of the rankings given to the customer-loan officer relationship (for remaining competitive versus for maintaining loyalty), indicates that the rankings given by the banks tend to increase together (the correlation is 0.75). These results suggest that, while interest rates are important to formulating a competitive strategy, the role of interest rates in maintaining customer loyalty may be relatively weak. It also confirms the supposition of Barry et al. that relationship and loyalty, though related, are not identical concepts.

Modeling Competitiveness

To investigate the importance which banks assign to interest rates for the purpose of either being competitive or maintaining customer loyalty, we develop alternative regression models. The first model attempts to identify which factors best predict the ranking which the banks give to the importance of interest rates in remaining competitive. Variables are selected to reflect: the general characteristics of the banks (e.g., total assets, bank holding company status, profitability, the percentage of farm real estate loans, etc.), the rankings of the banks concerning various factors which affect competitiveness and loyalty (as reflected in Tables 11 and 12), their use of real estate to secure operating lines, their perception of the percentage of high loyalty real estate customers, etc.

Although several models were evaluated, two models are reported in Table 14. The best model (Model II) includes just two variables; the perceived percentage of high loyalty real estate customers in the bank (HIGHL) and the importance of interest rate adjustments for fixed versus variable rate loans (FIXVAR). The sign on the HIGHL variable in Model II is positive, but it implies that an inverse relationship is perceived by banks between the percentage of their high loyalty customers and the importance given to interest rate levels in remaining competitive.⁹ This result coincides with that found in the study by Barry et al. The sign on FIXVAR indicates bank's generally perceive that they must continue to make rate spreads between fixed and variable rate loans attractive to their farm borrowers in order to be competitive.

⁹ This occurs since the survey ranking of "importance" of a factor was a 1 for high importance and a 10 for low importance.

Table 14. Regression Results for Predicting Mean Rank of the Importance of Interest Rate Level in Remaining Competitive.

Variable	Model I	Model II
Constant	0.189	0.198
FIXVAR	0.286*	0.328**
OPLINE	1.027	
HIGHL	2.346*	2.592**
BHCST	-0.757	
FRETLN	4.358	
R-square	0.240	0.166
F-statistic	2.58**	4.381**

** Indicates significance at the 5% level or better.

* Indicates significance at the 10% level or better.

Model I includes five variables. The additional variables are: the use of real estate to secure operating lines (OPLINE), bank holding company status (BHCST), and the proportion of farm real estate loans in the total loan portfolio of the bank (FRETLN). Although these variables are not significant predictors of the importance of interest rates, they all have the expected signs. The positive coefficient on OPLINE indicates that banks attach relatively more importance to interest rates and spreads in their competitive strategies if they frequently use farm real estate to secure operating lines. The negative coefficient on BHCST indicates that multi-bank holding company banks tend to place less importance on rates in their competitive strategies when compared to either unit banks or single-bank holding companies. Yet the coefficients are not significantly different from zero, which implies that relationship to interest rates does not appear to be a significant factor in determining the competitive strategy of the bank.

Modeling Loyalty

An alternative approach is to analyze how banks view strategies which help them to increase loan volume and market share by maintaining customer loyalty. The percentage of high loyalty customers (as reported in Table 13) is regressed on the set of variables which the banks ranked according to importance (as reported in Table 11). As reported in Table 15, the best model (Model II) for predicting the percentage of high loyalty bank customers included just two variables: the availability of full service loans (FSLNS) and the stability of the bank's staff (STAB). The importance of interest rates in remaining competitive is not found to be a significant factor. The ratio of farm real estate loans to the total agricultural loans of the bank (FREAGL) was not a significant predictor of customer loyalty, but it does have the expected negative sign in Model I.

Table 15. Regression Results for Predicting High Loyalty Customers.

Variable	Model I	Model II
Constant	0.315	0.083
FSLNS	0.032*	0.044**
STAB	0.008	0.032*
FREAGL	-0.068	
R-square	0.09	0.16
F-statistic	1.34	4.19**

** Indicates significance at the 5% level or better.

* Indicates significance at the 10% level or better.

Both of the significant variables in Model II carry positive signs as expected. The result on full service loans (FSLNS) suggests that banks perceive that one strategy for retaining customers is to maintain lending services which respond to a wide variety of client needs. The ability of the bank to provide long-term service from the same set of loan officers (STAB) is similarly perceived to be valuable in maintaining customers.

Conclusions

Recent data indicate that commercial banks have gained a larger share of the U.S. farm real estate loan market. Survey data from banks in the Upper Midwest suggest that a significant part of the increase in farm real estate loan volume can be associated with the use of farm real estate to secure nonreal estate loans and operating lines of credit. Thus, growth in bank market share is likely to be attributable in part to relatively faster growth in nonreal estate lending by banks which is secured by real estate.

Increased competitiveness of banks may have also played a significant role in the observed shift in farm real estate market shares toward commercial banks. Although average commercial bank interest rates have been above those of their competitors during 1988-97, surveyed banks generally rank the level of interest rates quite high in their assessment of factors which determine competitiveness. Yet, it appears that commercial banks have used a combination of rate and nonrate factors to retain existing customers and attract new customers. There is evidence that banks which are more highly involved in farm real estate lending are also more sensitive to the importance of rates and rate spreads in remaining competitive. However, other nonrate (loan servicing) strategies are also being used to retain existing customers and attract others.

Small banks tend to view the loyalty of customers as dependent on interest rates and loan pricing flexibility along with the stability of the customer-loan officer relationship. Larger banks tend to see interest rates as less important in their strategy to maintain customer loyalty. They perceive that the customer-loan officer relationship, the stability of bank staff, and the bank's knowledge of agriculture are relatively more important.

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