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

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

**St. Louis Farm Credit Bank  
St. Louis, Missouri  
September 23-24  
1991**

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February 1992

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## **FARM MORTGAGE VOLUME: WHAT IS AVAILABLE FOR FARMER MAC**

**Steven R. Koenig and James T. Ryan**

Congress chartered Farmer Mac in 1987 with the expectation that it would expand the availability of long-term fixed-rate farm real estate credit to farmers and rural home owners and help ease existing farm financial stress. Initially, many expected the secondary market to develop quickly, absorbing a large share of the primary farm mortgage market and in turn influencing its structure and terms. But nearly 4 years later, Farmer Mac has yet to guarantee a loan pool and expectations for the market have withered.

One of the many explanations offered for Farmer Mac's troubled start is the belief held by potential poolers that insufficient primary farm mortgage market volume is available to support commercially viable pooling operations (GAO). This belief is fostered by a weak primary market, a relatively costly secondary market structure, and market standards that exclude a large percentage of potential volume from qualifying for the market. Past research of mortgage-backed securities suggests that at least \$2 billion in outstanding and \$500 million in annual originations will be required to support active market trading. Moreover, economies of scale in pooling mortgage assets are not exhausted until the \$100-\$300 million range is reached (Hiemstra).

A better understanding of the primary market volume available to the Farmer Mac market is critical to understanding its commercial viability, its structure (eg. the number of participating poolers), and its influence on the cost and availability of credit in the primary market. This paper examines the historical trends of farm mortgage lending and the characteristics of borrowers in the primary farm mortgage market to estimate the volume available to Farmer Mac. Annual farm mortgage activity for different classes of lenders are estimated through 1988, the latest year data permits. Outstanding farm mortgage debt is examined using the U.S. Department of Agriculture's Farm Costs and Returns Survey to determine the proportion of existing debt that qualifies for the market.

### **Current Primary Market Activity**

The secondary market will draw heavily from origination volume in its early stages because seasoned mortgages (outstanding debt) often lack the documentation required by Farmer Mac and may not be disturbed until maturity.<sup>1</sup> Origination volume results from either the transfer of farm ownership (new purchase) or the refinancing of existing debt. Factors influencing the rate of these two components, as well as the rate principal repayment (resulting from scheduled

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<sup>1</sup> The term farm mortgage is used here to represent any type of debt contract secured by farm real estate.

principal payments, advanced principal payments, or from principal loss), determine primary market volume.

Participation in the Farmer Mac market requires the purchase of certain classes of voting stock; the majority of voting stock was purchased by commercial banks, the Farm Credit System (FCS), and life insurance companies (Koenig and Rossi). These three lenders held two-thirds of all farm real estate debt at the end of 1988 (USDA). At least initially, these lenders will be the primary source of mortgages for the Farmer Mac market. Therefore, to meet the objectives of this paper we report 1960-88 origination and repayment volume for the FCS and life insurance companies, and estimate lending activity for banks. We also use survey data from the U.S. Department of Agriculture and the U.S. Census to examine the origination volume resulting from farm ownership transfers, a major determinate of mortgage activity.

### **Estimates Derived From Lender Reporting**

Unfortunately, farm mortgage flow data (mortgage origination and repayment activity) for the three major lenders has become increasingly difficult to obtain. Through 1984, Melichar extensively reported flow data for the Federal Land Banks (FLB) and life insurance companies in the Agricultural Finance Databook. Robison and Leatham reported origination and repayment activity for these lenders through 1977 and estimated commercial bank activity using linear regression techniques.

Currently, only life insurance companies disclose the flow of farm mortgages. We report annual gross farm mortgage acquisitions and dispositions recorded by the American Council of Life Insurance (ACLI). Acquisitions include mortgages for new property purchases, debt refinancing, agribusiness and timber purposes, and the refinancing of existing debt; dispositions include principal repayments (includes terminations) and loan sales.

Until 1985, the Farm Credit Administration (FCA) reported Federal Land Bank lending activity and the characteristics of borrowers and loans in great detail (FCAb). These data were maintained at the National Federal Land Bank Data Center. Through 1984, we report the gross volume of "loans and discounts made," which includes mortgages for rural housing, that while clearly not farm mortgages, are eligible for the Farmer Mac market.<sup>2</sup>

The restructuring of the FCS in the 1980's curtailed the reporting of FLB mortgage lending activity. The National Federal Land Bank Data Center was disbanded and the FCA's new regulatory role relieved it from many reporting responsibilities. In 1984, the FCA instituted its Uniform Financial Reports of Condition and Performance (Call Report). Mortgage activity can be obtained from Call Reports for 1986 and 1987, but not for subsequent years. This is because of the mid-1988 mergers of FLBs and Federal Intermediary Credit Banks into Farm Credit

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<sup>2</sup> Pre-1985 data identified farm and rural housing volume, but post-1985 data does not, and so we include housing volume in our series for consistency.

Banks folded reporting of mortgage activity in with nonreal estate loan activity. We report FLB mortgage origination volume for fiscal 1985 from the President's Federal Budget (OMB). FCA did report "new money loaned" (excludes volume to refinance existing mortgages) for 1988, which we adjusted upward by the same proportion of refinance volume to "new money loaned" volume as reported on the Call Reports for the first 2 quarters of 1988.

Commercial banks are not required by regulatory authorities to report farm mortgage lending activity, but are required to report outstanding farmland-secured loans.<sup>3</sup> We estimate bank origination volume by assuming that banks face the same principal repayment rates on their farm mortgages as do other major farm lenders.

We calculate bank origination volume ( $O_t$ ) by using the following equation:

$$O_t = L_t + (R_t * L_{t-1}) - L_{t-1}$$

where  $R_t$  is the rate of principal repayment in year  $t$ ;  $L_{t-1}$  is the volume of loans outstanding at the end of the previous year;  $L_t$  is the volume of loans outstanding at the end of year  $t$ .

Bank principal repayment rates are calculated by using a weighted average of repayment rates (including terminations) for life insurance companies and FLB mortgages (table 1). We recognize that this assumption might underestimate bank origination volume somewhat, especially as the popularity of 3- to 7- year balloon has increased in recent years. Yet, from 1986-1988, when life insurance companies and FLBs experienced rapid paydowns due to high default rates, uncompetitive interest rates, and waning customer confidence, it might over estimate bank volume. Therefore, for 1986-88, an historical repayment rate of 11.9 percent, recorded for the 1960-85 period, was used.

### Volume Estimates and Trends

Estimates of farm mortgage origination volume for banks, the FCS, and life insurance companies from 1960 to 1988 are presented in table 2. For 1988, the volume for these primary lenders totaled \$6.8 billion. This is half of the estimated peak volume of \$14 billion in 1981. The amount equals 1 percent of the total value of farm real estate and 12 percent of the total farm real estate debt held by these three lenders at the beginning of 1988. Forty percent of the total was originated by banks, 39 percent by the FCS, and 21 percent by life insurance companies. Estimated bank volume for 1988 rises from \$2.7 to \$3.1 billion if the actual repayment rate is used in the calculation instead of the historical rate. Either method yields a lower estimate than reported by the U.S. Department of Housing and Urban Development's Survey of Mortgage

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<sup>3</sup> Commercial banks file quarterly Report of Condition and Report of Income (Call Reports) with the Federal Deposit Insurance Corporation.

Lending Activity.<sup>4</sup> That survey estimated 1988 bank farm mortgage origination volume at \$4.6 billion.

Origination volume by these primary lenders now appears to be similar to the pace of the 1960's. Origination volume in the 1960's was relatively stable but increased sharply after 1970 as a debt financed expansion of U.S. agriculture began. Adjusted to 1988 dollars, total annual origination volume soared from \$5.6 billion in 1970 to \$21.3 billion in 1979 (Figure 1). Volume then fell over the next 6 years, bottoming at \$5.4 billion in 1985. Volume appears to have stabilized near the \$8.3 billion average for the 1960's.

The market share captured by life insurance companies and the FLBs was similar through the mid-1960s, but FLB lending grew quickly thereafter, especially in the 1970's. By 1981, FLBs share of origination volume reached nearly 90 percent. FLB's utilized greater lending powers granted in 1971, collateral lending practices, and average-cost loan pricing during a period of rising interest rates to capture market share. When interest rates reversed and the farm economy collapsed, many of its borrowers repaid their loans, defaulted, or sought financing from other lenders--such as banks. Life insurance company lending was also curtailed during the 1980's as farm loan losses mounted. Some companies responded by halting lending altogether. Of the 12 companies with significant outstanding volumes, only 7 are still actively seeking new mortgages. After 1985, commercial banks filled the void left by the FCS and life insurance companies, capturing the greatest market share.

Principal repayment rates on farm mortgages have ranged from 7 to 19 percent over the last three decades. Repayment rates are important to the secondary market because they influence the pricing of securities and origination volume. Repayment rates are affected by a host of economic conditions as well as mortgage terms. For example, many banks and life insurance companies are offering fixed-rate loans amortized over 15 to 20 years, but which have much shorter maturities with balloon payments. These balloon payments often occur in 3 to 7 years, with 5 years being common. Ellinger and Barry found over 60 percent of bank farm real estate loan volume have maturities of 5 years or less with a balloon payment. Use of balloon loans means a greater percentage of outstanding debt matures quicker, which hastens the redocumentation of existing loans.

#### Volume Available for Farmer Mac

Much of the \$6.8 billion volume would not have been available to poolers had the market been operational in 1988. This is because many mortgages will fail to meet Farmer Mac's qualification standards. The \$1.4 billion of origination volume reported by life insurance companies includes loans made for agribusiness and timber purposes, which may not qualify for

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<sup>4</sup> The survey questions 300 banks on their mortgage lending practices. This stratified random sample is benchmarked to commercial bank Call Reports and is expanded to represent the entire banking industry, including mutual savings banks.

the market.<sup>5</sup> While no data is kept on enterprises served by new lending, an ACLI survey indicates the share of outstanding loans devoted to these purposes increased to 28 percent in 1990 (ACLIB). Many timber and agribusiness loans will not qualify because they are not farm loans or because they exceed Farmer Mac's \$2.5 million cap. The cap does not apply if the mortgage is for less than 1,000 acres, but because timber loans often cover large tracts of land, many of these mortgages would still not qualify. Therefore, life insurance companies may have originated no more than \$1 billion in Farmer Mac eligible mortgages during 1988.

Much of the \$2.7 billion in commercial bank originations would not have qualified for the market because only 15 percent of banks purchased the stock necessary to qualify as an originator. At mid-1989, qualified originator banks held around 30 percent of the total bank held farmland secured debt (Koenig and Rossi). If this percentage is assumed to hold for origination volume, then about \$1 billion was originated by qualified banks. A well working market would encourage more lenders to purchase stock.

While all FCS lenders qualify, some mortgage volume is for rural housing. Although eligible for Farmer Mac, this volume is not agricultural. Rural housing lending has been shrinking--accounting for 5.9 and 4.2 percent of outstanding mortgages at yearend 1983 and 1988, respectively. Based on past trends, rural housing originations likely represented no more than 4 percent of FCS's \$2.7 total origination volume for 1988.

If the FCS declined to participate in 1988, then around \$2 billion in bank and life insurance originations would be available to poolers if all these loans meet Farmer Mac's loan pooling and underwriting standards. However, a substantial portion of volume would likely have failed to meet these standards and documentation requirements. Evidence from outstanding farm real estate debt suggests that more than half of the origination volume may not have qualified for sale. Moreover, for various economic reasons (eg. interest rate spreads or lender liquidity), many originating lender would not have elected to sell conforming mortgages into the market had it been operational. Even with firmly established secondary mortgage markets, a large percentage of housing mortgages remain in portfolio at any given time. Home mortgages held in portfolio by savings and loan's and commercial bank's accounted for 42 percent of outstanding housing debt at the end of 1989 (CBO). Fannie Mae and Freddie Mac holdings or guarantees of securities accounted for 24 percent of outstanding housing debt.

### **Farmland Transfer Volume**

The rate of farm ownership transfer is a primary determinate of farm mortgage origination volume and hence the volume available to secondary markets. Examination of transfer rates

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<sup>5</sup> Agribusiness loans are defined as those to entities that derive over 50 percent of their gross sales from production of a product that adds value to an agricultural commodity or forest product; a loan is defined as a timber loan if more than 50 percent of the security backing the loan is attributable to a commercial timber crop.

provides another method to estimate the potential volume available to Farmer Mac. We use U.S. Department of Agriculture data to estimate 1988 mortgage volume arising from agricultural land transfers and then compare this estimate to Census estimates. These two estimates generally confirm the values derived from lender data that were reported earlier.

Three USDA surveys are used to make the estimate: The Agricultural Land Values Survey (ALVS), the Farm Land Market Survey (FLMS), and the Rural Land Transfer Survey (RLTS). The RLTS, conducted for 1986-88, estimates farmland ownership transfer rates and the average market value of land recorded from land transfer records (Wunderlich). The ALVS surveys farm operators to estimate the market value of farmland and buildings as of February 1 (Barnard). And the FLMS surveys real estate professionals to provide characteristics of actual farm real estate transactions, including the value of transferred farmland.

The volume of acres transferred (from voluntary sales, foreclosure, bankruptcy, gifts, or inheritances) is estimated by multiplying the agricultural land transfer rate (2.8 percent) by the stock of land in farms on June 1, 1988 (994.5 million acres) to yield 27.8 million acres (Peterson, USDAC). Multiplying this amount by the three farmland value estimates (\$474, \$542, and \$647 per acre) yields a gross transaction volume of between \$13 and \$18 billion (table 3).

The FLMS indicates that only 66 percent of 1988 transactions were financed, and of those, debt was incurred on 73 percent of the value (USDAB). Assuming the percentage of volume financed is proportional to the percentage of parcels financed, when these percentages are imposed, the estimated range of mortgage origination volume falls to \$6.4-\$8.7 billion. Using FLMS data this volume can be allocated to different lender groups. In any given year, a large portion of volume is seller financed. In 1988, 24 percent of farmland financing was supplied by the seller, potentially reducing the volume available to the secondary market to \$4.8-\$6.6 billion. Our corresponding estimate of origination volume, which includes volume to refinance existing debts, is \$6.8 billion.

Another source of farm mortgage origination volume is the Agricultural Economics and Land Ownership Survey for 1988 (AELOS), which is a supplementary sample survey to the 1987 Census of Agriculture.<sup>6</sup> AELOS suggests a much smaller volume of farmland transfers and associated mortgage origination volume than our estimate. AELOS estimates just 15.2 million acres of farmland were acquired in 1988 (by purchase or inheritance or gift) carrying an estimated value (including value of buildings) of \$9.7 billion. Of this value, debt was incurred on just \$2.6 billion or 27 percent of the total transfer value. This is over \$2 billion less than the bottom of the estimate range using USDA data.

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<sup>6</sup> A total of 44,125 farm operators were sent a survey, with 32,296 cases actually processed. Identified by farm operator cases, 44,038 landlords were then sent surveys, with a final response rate of 78 percent.



When examined closely, the small AELOS volume is somewhat surprising. For example, AELOS reports that life insurance companies financed \$111 million in farmland transfers or just 8 percent of their \$1.4 billion reported gross origination volume. Estimates using USDA and life insurance industry data both suggest a volume closer to \$500 million.<sup>7</sup> There are some factors that may explain the lower AELOS estimates. First, the survey did not include operators of horticulture specialty farms. Second, new operators beginning in 1988 were missed by the survey. Third, Census acknowledges difficulty getting landlords and farmers to respond accurately to the voluntary survey.

### **The Seasoned Mortgage Market**

Total farm real estate debt, including debt on farm operator dwellings, was approximately \$80 billion at the end of 1989 (USDA). Of this, nearly \$9 billion was owed to the Farmers Home Administration and \$17 billion was owed to individuals (predominately sellers) and others. Approximately \$54 billion of current seasoned farm real estate debt is held by Farmer Mac qualifying institutional lenders (Farm Credit System, life insurance companies, and commercial banks), and, theoretically, could be immediately available for pooling for the secondary market. Nonreal estate debt accounted for another \$65 billion in farm sector debt at the end of 1989 (USDA). Farmer Mac guidelines do not preclude the refinancing of nonreal estate debt under a qualifying real estate mortgage, as long as these additional amounts could be supported by the value of the real estate offered as security for the loan.

Farmer Mac has developed a precise set of credit underwriting and loan repayment standards for mortgages that will be acceptable for pooling (FAMC). Even though the full amount of real estate and nonreal estate debt could conceivably be restructured to meet Farmer Mac eligibility requirements, much of this volume will not meet Farmer Mac qualifying standards. In this section, we use USDA's 1989 Farm Costs and Returns Survey (FCRS) to determine the percentage of borrowers and the volume of outstanding farm operator real estate and nonreal estate debt that could potentially qualify for Farmer Mac. After a brief discussion of the 1989 FCRS dataset, each Farmer Mac underwriting standard will be presented, accompanied by a discussion of the extent to which the FCRS provides relevant data for applying that standard. Results of the analysis are presented last.

#### **Farm Costs and Returns Survey, 1989**

The FCRS is a multiframe, probability-based personal enumeration survey conducted by USDA to collect production and financial data from a representative sample of farm operators. Several

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<sup>7</sup> ACLI's Gross Mortgage Flow survey separates life insurance company acquisitions into that used for new property purchases and for existing property. For 1989, the second year of the survey, about 35 percent of originations were for new property purposes. The \$500 million estimate results when this percentage is applied to 1988 gross acquisition volume.

versions of the FCRS are utilized each year. General income and expense data are collected for all farms, while separate versions of the questionnaire collect detailed income and expense data, farm operator household data, or cost of production data for specific crop and livestock enterprises. While no national survey of producers provides complete data for all financial variables of interest to economists, the FCRS now provides comprehensive coverage for most financial activities. The survey does not cover nonoperator farmers or landlords.

The 1989 FCRS resulted in 11,794 farm operators reporting various financial data. Since the FCRS is a probability survey, each respondent represents a number of other farms of similar size and type. These sampled operators represented an expanded 1,729,454 farm operator base. (USDA reports a total of 2,171,000 farms in 1989. The bulk of the underrepresented farms are in the smaller size classes, which would probably be ineligible for Farmer Mac farm loans).

FCRS respondents report farm debt for farm business use. Generally, debt secured by farm assets, but used for nonfarm purposes, is not reported. In 1989, these operators reported an estimated \$42.6 billion in farm business real estate debt (53 percent of total farm sector real estate debt) and \$40.3 billion in farm business nonreal estate debt (61 percent of total farm sector nonreal estate debt). In total, the 1989 FCRS covers 57 percent of all farm sector debt. This is the proportion of outstanding farm debt that is reported by operators as having been incurred for farm business purposes.

### **Farmer Mac Qualifying Standards**

The Farmer Mac guidelines require that all loans included in a pool meet creditworthiness criteria and seven underwriting standards. Originators are responsible for determining and fully documenting that each loan meets these criteria and standards. Farmer Mac's lending philosophy is embodied in the Farmer Mac Securities Guide (FAMC).

"Farmer Mac expects that the use of the Underwriting Standards would result in the extension of loans that will not require intensive servicing...The Originator is responsible not only for determining that each Qualified Loan meets the Underwriting Standards, but also for assuring that the documents in each loan file conclusively support that determination...All loans in a Pool shall be made to creditworthy, financially responsible Borrowers of proven integrity and sound financial background and condition. Loans shall be adequately secured so that the occurrence of adverse operating or economic conditions will still permit recovery of principal and interest." (FAMC, Section 4.1, p. 401).

#### **Standard 1--Creditworthiness of the Borrower**

In addition to confirming the character, capital, capacity, condition and collateral involved in each loan, loan originators must obtain complete and current credit reports for each borrower. The credit report must include a current Uniform Commercial Code lien search, historical experience, reporting of all debts, and all pertinent information. While the FCRS attempts to

obtain full disclosure of all debts, the voluntary nature of the survey precludes addressing such critical creditworthiness variables as a slow payment history, undisclosed debts, judgments, garnishments and liens, and bankruptcies.

### Standard 2--Income Statements and Balance Sheets

The loan applicant must provide income statements and fair market value balance sheets for the last three years. The current statements should be adjusted to reflect the value of production by recognizing non-cash expenses and changes in inventory, accounts payable, accounts receivable and prepaid expenditures. Standard forms for computing these measures are included in the Securities Guide and must be submitted with each loan.

The FCRS is designed to collect data for the construction of income statements, balance sheets, and statements of cash flow. The survey is nonlongitudinal, so three year financial statements are not obtainable. Historical analysis is limited to annual comparisons among regions and farm sizes and types. In this study, one year financial statements are derived using the 1989 FCRS.

In the FCRS, income data are reported on a cash accounting basis, with additional information provided on depreciation, value of non-cash benefits provided to hired labor, value of home consumption of farm production, and values of beginning and ending inventories of machinery, crops, livestock, and purchased feed and other inputs. Since the FCRS is not a longitudinal survey, changes in accounts receivable, changes in interest payable, and gains and losses from the sale of capital assets are not directly obtained. As a result, information to precisely estimate accrual net income is not available. (A representative FCRS income statement is presented in Appendix table 1).

The FCRS does not collect data for a number of current asset and liability accounts. While properly constructed farm balance sheets are not directly obtainable, yearend balances for these accounts can generally be estimated from annual expense data reported in the survey. For this analysis, estimates were incorporated into the data reported in FCRS for purposes of December 31, 1989 balance sheet construction. (A representative FCRS balance sheet is presented in Appendix table 2).

FCRS respondents report short-term farm financial assets, and crop, livestock and purchased input inventories. Estimated current assets included these items plus prepaid insurance (estimated at 25 percent of 1989 insurance expense).

Current liabilities include reported short-term loans outstanding plus the following accruals and payables:

- o accrued interest--3 percent of ending loan balances, based on Farm Credit System yearend ratio of accrued interest to gross loans outstanding;

- o property taxes payable--100 percent of 1989 real property taxes plus 25 percent of 1989 personal property taxes;
- o income tax payable--1989 income tax expense is estimated to be 20 percent of the sum of net farm income and off-farm income; because farm operators typically make quarterly estimated tax payments, the payable portion of the 1989 income taxes is estimated to be 35 percent of total tax due on net farm income; there is no payable assumed on off-farm income; if estimated net farm income is negative, the income tax payable is zero;
- o accrued rent or lease payments--25 percent of 1989 payments;
- o the current portion of intermediate- and long-term debt--24.55 percent of yearend intermediate debt plus 6.7 percent of yearend long term debt. The current portion of outstanding debt was derived from one version of the FCRS, which obtained data on scheduled and unscheduled principal payments.

Standard 3--Debt-to-Asset Ratio

The entity being financed should have a pro forma debt-to-asset ratio of 50 percent or less, after closing any new loan. Using FCRS data, the ratio is estimated to include only currently existing farm business assets and liabilities. This ratio was calculated directly from the FCRS balance sheet data described previously.

Standard 4--Debt Service and Liquidity Ratios

The entity being financed should be able to generate sufficient earnings and liquidity to meet all obligations as they come due and, in addition, provide a reasonable margin for capital replacement and contingencies. This standard is achieved by having:

- a) a total debt service coverage ratio in a financing of no less than 1.25 to 1, including income from farm and non-farm sources; and
- b) a current ratio of no less than 1 to 1.

The Securities Guide (FAMC) further defines the calculations for these ratios:

- a) Total debt coverage ratio:

- Net farm income
- + Depreciation
- + Interest on capital debt
- + Capital lease payments
- + Net off-farm income
- Living expenses

- Income taxes  
= Numerator

Principal and interest on capital debt  
+ Capital lease payments  
= Denominator

The additions and subtractions to net farm income are intended to standardize the calculation of the numerator for use in this ratio.

The determination of net farm income using FCRS was described in Standard 2. Farm operators directly report depreciation and net off-farm income. Other components of the above ratio must be estimated from FCRS data:

- o interest on capital debt--total 1989 real estate interest paid plus that portion of the nonreal estate interest attributable to intermediate-term debt;
- o capital lease payments--75 percent of reported payments for rent or lease of tractors, vehicles, equipment or storage structures;
- o living expenses--the results obtained for various farm operation sales classes were applied to all farms. The living expense estimates used in this study were \$21,262 if farm sales exceeded \$250,000, \$18,831 if sales were \$100,000 to \$250,000, \$13,967 if sales were \$40,000 to \$100,000, and \$12,686 if sales were less than \$40,000;
- o income tax expense--20 percent of the sum of 1989 net farm income plus off-farm income; if the sum was negative, then income tax expense was zero;
- o principal and interest on capital debt--principal repayments were considered to be the current portion of the intermediate- and long-term debt, as reported in the balance sheet description. To allow for loans taken during the year, interest on capital debt was calculated to be the greater of 1989 interest on capital debt or estimated 1990 interest payments. 1990 capital interest payments were estimated to be farm sector average interest rates times yearend debt reported. (10.95 percent times total intermediate-term debt, 9.36 percent times total long-term debt).

b) Current ratio = current assets / current liabilities.

This ratio was calculated directly from the FCRS balance sheet data described previously.

Standard 5--Loan-to-appraised value (LTV) and cash flow debt service coverage ratios.

The LTV in financing any individual property should not exceed 75 percent. A minimum 1 to 1 debt service cash flow ratio from the subject property is also required, except for loans in

which the borrower's principal residence is on the property securing the loan. The cash flow debt service coverage ratio is to be computed using the net property income determined by the appraiser.

Using FCRS data, the reported value of all land and buildings was considered to be the appraised value, while the relevant loan amount was calculated under two assumptions: 1) the loan amount was limited to currently reported long-term debt (real estate debt-to-real estate asset ratio); and 2) the loan amount was limited to currently reported total debt (total debt-to-real estate asset ratio). The cash flow debt service coverage ratio was computed in similar fashion to the total debt service coverage ratio of Standard 4. However, net off-farm income, living expenses, and income taxes were excluded from the numerator, while the denominator was unchanged.

#### Standard 6--Minimum acreage and annual receipts requirements.

Farmer Mac also established initial minimum acreage or minimum annual receipts requirements for qualifying farm properties. Agricultural real estate must consist of at least five acres of land, or be used to produce annual receipts of \$5,000 in order to be eligible to secure a qualified loan.

FCRS operators reporting fewer than five acres owned at yearend, or gross cash farm income of less than \$5,000 were excluded from the analysis.

#### Standard 7--Loan conditions.

The loan must be level-payment or level-principal payment, and either:

- a) fully amortize principal over a term not to exceed 30 years; or
- b) amortize principal according to a schedule not to exceed 30 years, and mature no earlier than the time at which the remaining principal balance of the loan equals 50 percent of the original appraised value of the property securing the loan.

FCRS respondents do not indicate whether their existing loans have balloon payments. This restriction will disqualify many commercial bank loans carrying 5 year balloon payments described earlier. A loan made at a maximum Farmer Mac LTV of 75 percent would be reduced to a 50 percent LTV loan when one-third of the principal had been repaid. For loans written at interest rates in the 8-12 percent range, this amount of principal would not normally be retired until years 18-22 of the 30 year amortization schedule.

#### Standards Summary--Farmer Mac Qualifying Worksheet

Loan originators are required to include with each qualified loan package submitted to a pooler a standardized loan application, completed and signed by the borrower. Standardized income statements, balance sheets, and ratio computation forms are to be included with the package. The underwriting standards relevant for each loan application are summarized in the Farmer Mac Qualifying Worksheet (FAMC, p. U-1). A qualifying worksheet for farm operators has been

prepared for use with FCRS data. (An FCRS Farmer Mac Qualifying Worksheet is presented in Appendix Table 3; data is for farms meeting Farmer Mac minimum size requirements and reporting outstanding debt at yearend 1989).

### Farmer Mac Eligibility of Current Farm Operators

Analysis of the 1989 FCRS is designed to estimate the amount seasoned farm business debt that could be restructured to meet Farmer Mac standards.<sup>8</sup> The FCRS is not designed to address issues raised under Standard 1 or Standard 7. To apply the other Farmer Mac eligibility criteria to FCRS farm operators, income statements, balance sheets, and Farmer Mac qualifying worksheets were prepared for all farm operators. Initially, two eliminations were made from the FCRS dataset: all farm operations that did not meet Standard 6 size criteria and all farms that did not report any loans outstanding at yearend. Loans outstanding includes only reported debt, and not the accruals and payables estimated as described earlier. The minimum size criteria eliminated less than 5 percent of FCRS respondent farms; however, over 47 percent of all FCRS respondents meeting this qualifying size criteria reported no loans outstanding at yearend 1989.

Comparable sets of financial statements were prepared for farm operators meeting these size and debt criteria. To this subset of FCRS respondents, each of the remaining underwriting standards was individually applied, and a complete set of financial statements was generated for those qualifying operators under that standard. The sample for the remainder of the study was limited to farmers meeting size and debt restrictions so that the average ratios computed would not be distorted by including debt-free farm operators in the computations.

From the set of financial statements, Table 4 summarizes the number of qualifying operators, the total amount of qualifying farm debt held by each of the various farm lenders, and the total amounts of real estate and nonreal estate debts held by farm operators meeting each underwriting standard. Applying the individual Farmer Mac standards indicate that, despite the declining land values of the 1980's, farm asset values (at least as estimated by the operator) are not a major limiting factor to qualifying. Over 65 percent of all farm debt could be restructured to meet Farmer Mac's debt-to-asset ratio standard (maximum of 50 percent), and over 86 percent of the current real estate debt could be refinanced meet the real estate debt-to-asset ratio standard (maximum of 75 percent). Life insurance company borrowers were best able to meet the debt-to-asset criteria, with over 72 percent of all debt qualifying for Farmer Mac under this standard. Farm Credit System borrowers fared nearly as well, with 70 percent of FCS debt qualifying. Only 66 percent of commercial banks debt met this criteria.

The more restrictive criteria relate to loan repayment capacity. Only 44 percent of debt would

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<sup>8</sup> While estimating the total debt carrying capacity of currently debt-free FCRS farm operators could contribute to an understanding of the potential for Farmer Mac, it is beyond the scope of this paper.

qualify for Farmer Mac under the current ratio standard (minimum of 1 to 1), while less than 41 percent of operator debt meets the total debt service coverage ratio (minimum of 1.25 to 1). The cash flow debt service coverage ratio (minimum of 1 to 1) could be met by only 44 percent of all farm operators. However, since this standard does not apply if the operator's principal residence is located on the operation, almost 88 percent of all debt meets this criteria. Exempting owner occupied farm units from this standard effectively eliminated it as a restriction to Farmer Mac qualification.

Farmer Mac eligibility requires that all standards be met. Only 18 percent of all debt reported in the 1989 FCRS is owed by operators that meet all qualifying standards (table 5). That is, of the \$82.4 billion of outstanding farm operator debt for farm business purposes, only \$14.7 billion meet all Farmer Mac qualifying standards. Qualifying real estate debt amounts to \$8.6 billion and shrinks to \$5 billion if ineligible lender held debt is excluded. In terms of borrower numbers, only 27 percent of farm operators with debt meet all standards.

If Farmer Mac qualifying standards are viewed as credit scoring criteria, sellers financing real estate transactions would have the highest loan portfolio quality of all lenders, as over 23 percent of all seller held debt would qualify for Farmer Mac. However, because these loans have been written by unqualified lenders and may not meet the mandated documentation, they would not easily be made marketable under Farmer Mac. Among institutional lenders, the FCS had the highest percentage of farm business debt qualifying for Farmer Mac, with almost 22 percent of FCS debt eligible for Farmer Mac. Less than 17 percent of commercial bank debt owed by farm operations would meet all qualifying standards.

Among individual standards, the total debt service coverage ratio criteria appears to be the most difficult to meet. This ratio was calculated with estimated values for living expenses and income taxes. To evaluate the restrictiveness of this measure as calculated, the number of borrowers (and amount of debt they owed) meeting all standards except the total debt service coverage ratio was also estimated. Excluding this standard increased the proportion of debt qualifying from \$14.7 to \$24.4 billion.

Finally, this analysis suggests that Farmer Mac will not serve to expand the credit alternatives of currently highly-indebted farm operators. Even as farm financial conditions have improved, 70 to 80 percent of farm operator debt at the end of 1989 would not qualify under Farmer Mac standards. Therefore, Farmer Mac standards appear to target farmers with better than average creditworthiness.

### Concluding Comments

Results suggest that the volume of farm mortgages available to Farmer Mac poolers could be small relative to either annual origination or outstanding farm mortgage volume. However, sufficient volume should be available to make the market operational (assuming the market needs at least \$500 million in annual volume and \$2 billion in outstanding volume to be commercially viable). Gross farm mortgage origination volume by life insurance companies, the Farm Credit System, and commercial banks has declined sharply since 1981 and was estimated to have



totaled less than \$7 billion in 1988. Had Farmer Mac been operational in 1988, the volume available for pooling would have been substantially less because a portion of these mortgages would have failed to meet Farmer Mac qualifying standards or would not have been offered for sale. Similar conclusions can be drawn about the volume available to the market from outstanding farm real estate debt (seasoned farm mortgages). Analysis suggests that as few as 27 percent of farm operators reporting debt at the end of 1989 meet all Farmer Mac qualifying standards. These qualifying operators owe just \$14.7 billion in farm debt (18 percent of the total farm operator debt) and \$8.6 billion in farm real estate debt (20 percent of the total farm operator real estate debt). If these same percentages are applied to total farm debt and total farm real estate debt (including non-operators), then the values increase to \$24 and \$16 billion, respectively.

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Table 1--Farm Mortgage Principal Repayment Rates,<sup>1/</sup> 1960-90

	Life Insurance Companies	Federal Land Banks	Total <sup>2/</sup>
		Percent	
1960	11.0	12.7	11.8
1961	12.3	14.4	13.3
1962	12.3	14.9	13.5
1963	14.1	15.9	14.9
1964	14.3	17.8	15.9
1965	14.8	18.1	16.3
1966	12.1	15.4	13.7
1967	9.8	12.4	11.1
1968	9.9	10.4	10.2
1969	9.9	9.4	9.7
1970	7.6	8.1	7.9
1971	9.8	11.5	10.7
1972	11.2	13.4	12.5
1973	12.1	14.5	13.6
1974	11.3	13.0	12.4
1975	10.3	12.3	11.7
1976	12.4	12.9	12.8
1977	12.9	14.2	13.9
1978	12.3	12.9	12.8
1979	10.6	13.5	12.7
1980	7.3	11.5	9.9
1981	7.4	10.2	9.5
1982	7.3	9.9	9.3
1983	9.3	8.1	8.3
1984	10.0	9.2	9.3
1985	13.4	10.9	11.4
1986	17.9	18.8	18.7
1987	19.6	17.6	18.0
1988	17.6	14.1	14.9
1989	14.4	NA	NA
1990	12.9	NA	NA
Average:	11.8	12.4	
StD:	3.0	3.1	2.7

NA = Not Available.

<sup>1/</sup> Ratio of principal repayments to beginning year outstanding balance.

<sup>2/</sup> Weighted average of life insurance companies and Federal Land Banks.

Source: American Council of Life Insurance, Farm Credit Administration.

Table 2--Annual Farm Mortgage Origination Volume, 1960-90

	Life Insurance Companies <sup>1/</sup>		Federal Land Banks <sup>2/</sup>		Commercial Banks <sup>3/</sup>		Total <sup>3/</sup>
	Volume	Share	Volume	Share	Volume	Share	
-----Million dollars-----							
		<u>Percent</u>		<u>Percent</u>		<u>Percent</u>	
1960	\$464	38.2	\$504	41.4	\$248	20.4	\$1,216
1961	552	38.2	633	43.8	260	18.0	1,445
1962	619	36.1	645	37.6	451	26.3	1,715
1963	866	40.2	747	34.5	547	25.4	2,155
1964	1,047	39.3	998	37.4	621	23.3	2,666
1965	1,149	38.7	1,235	41.6	585	19.7	2,969
1966	994	34.9	1,337	46.9	519	18.2	2,850
1967	837	31.0	1,268	46.9	598	22.1	2,702
1968	772	31.4	1,101	44.8	583	23.7	2,456
1969	540	24.1	1,166	52.1	533	23.8	2,239
1970	314	17.1	1,017	55.4	506	27.5	1,837
1971	503	17.3	1,555	53.4	852	29.3	2,910
1972	700	17.3	2,251	55.6	1,101	27.2	4,052
1973	1,005	17.9	3,285	58.6	1,317	23.5	5,607
1974	1,005	15.6	4,235	65.9	1,189	18.5	6,428
1975	1,075	16.5	4,411	67.7	1,027	15.8	6,513
1976	1,510	20.1	4,701	62.7	1,288	17.2	7,499
1977	2,373	23.6	5,730	57.1	1,937	19.3	10,040
1978	2,748	25.3	6,355	58.5	1,767	16.3	10,871
1979	2,806	21.5	9,119	69.7	1,149	8.8	13,074
1980	1,654	13.0	10,282	80.7	807	6.3	12,744
1981	1,108	8.0	12,203	87.8	591	4.3	13,902
1982	695	6.9	8,512	84.9	822	8.2	10,028
1983	1,109	14.7	4,785	63.6	1,625	21.6	7,520
1984	1,003	14.3	4,280	61.0	1,738	24.8	7,021
1985	1,070	21.9	1,445	29.6	2,362	48.4	4,877
1986	1,219	22.7	1,482	27.5	2,681	49.8	5,382
1987	1,097	17.3	1,976	31.2	3,257	51.5	6,330
1988	1,424	21.0	2,670	39.4	2,682	39.6	6,776
1989	1,399	NA	NA	NA	NA	NA	NA
1990	1,833	NA	NA	NA	NA	NA	NA

NA = Not Available.

<sup>1/</sup> Gross farm mortgage acquisitions, which includes mortgages for timber and agribusiness purposes and those purchased from others.

<sup>2/</sup> "Loans made" or "closed," 1960-84 and "direct new loans" and "principal refinancing," 1986-88. 1985 is fiscal year data. Includes housing mortgages.

<sup>3/</sup> Estimated values.

Source: American Council of Life Insurance, Farm Credit Administration, Office of Management and Budget.

Table 3--Origination Volume Resulting from Agricultural Land Transfers, USDA and Census Data, 1988

Attribute	ALVS <sup>1/</sup>	FLMS <sup>2/</sup>	RLTS <sup>3/</sup>	AELOS <sup>4/</sup>
			<u>Dollars</u>	
Average per acre value <sup>5/</sup>	\$647	\$542	\$474	\$642
			<u>Million dollars</u>	
Gross transfer volume <sup>6/</sup>	\$18,003	\$15,093	\$13,200	\$9,734
Gross transfer volume financed	11,882	9,962	8,712	NA
Debt incurred on volume financed	8,674	7,272	6,360	2,580
Volume of transfer debt not financed by seller	6,592	5,527	4,833	NA
Volume of debt financed by:				
Federal land banks	2,515	2,109	1,844	478
Commercial banks	2,949	2,472	2,162	951
Seller financed	2,082	1,745	1,526	NA
Life insurance co.	607	509	445	111
Farmers Home Admin.	NA	NA	NA	43
Other lenders	520	436	382	997

NA = Not Applicable.

<sup>1/</sup> Agricultural Land Value Survey.

<sup>2/</sup> Farm Land Market Survey.

<sup>3/</sup> Rural Land Transfer Survey.

<sup>4/</sup> Census of Agriculture, Agricultural Economics and Land Ownership Survey. Excludes operators and owners of horticultural specialty enterprises and new operators in 1988.

<sup>5/</sup> ALVS is an average of February 1, 1988 and 1989 values.

<sup>6/</sup> Includes farmland and ranchland acquired by purchase or inheritance or gift.

Table 4--All farms, farms with debt, and lender debt held by farms meeting Farmer Mac underwriting standards, 1989

Item	Operators meeting individual Farmer Mac standards							
	All farms	Farms of minimum size 1/	Farms of minimum size with debt	Debt/asset ratio 2/	Total debt coverage 3/	Current ratio 4/	Real estate d/a ratio 5/	CF debt service 6/
<u>Number</u>								
Number of farms	1,729,454	1,651,070	874,413	725,484	450,501	473,282	823,885	775,347
Total farm debt by lender:				<u>Million dollars</u>				
Federal land banks	14,944	14,936	14,936	10,503	6,414	6,791	13,172	13,444
Prod'n Credit Assns	5,221	5,220	5,220	3,964	2,262	2,740	4,704	4,583
Commercial banks	35,045	34,536	34,536	22,832	14,815	14,694	30,987	29,540
Life insurance cos	1,988	1,983	1,983	1,431	690	936	1,826	1,578
Farmers Home Admin	11,819	11,800	11,800	5,101	3,174	4,442	8,073	10,701
Individuals	10,659	10,628	10,628	7,631	4,684	5,590	9,505	9,601
All others	3,329	3,294	3,294	2,230	1,392	1,463	2,988	2,720
Total farm debt	83,004	82,397	82,397	53,693	33,431	36,655	71,255	72,167
Real estate	42,647	42,144	42,144	26,066	18,891	19,950	33,066	38,494
Nonreal estate	40,357	40,254	40,254	27,627	14,541	16,704	38,188	33,673
<u>Percent</u>								
Percent of all farms	100.00	95.47	50.56	41.95	26.05	27.37	47.64	44.83
Percent of farms with debt			100.00	82.97	51.52	54.13	94.22	88.67
Total farm debt by lender:								
Federal land banks	100.00	99.95	100.00	70.32	42.94	45.47	88.19	90.01
Prod'n Credit Assns	100.00	99.98	100.00	75.94	43.33	52.49	90.11	87.80
Commercial banks	100.00	98.55	100.00	66.11	42.90	42.55	89.72	85.53
Life insurance cos	100.00	99.75	100.00	72.16	34.80	47.20	92.08	79.58
Farmers Home Admin	100.00	99.84	100.00	43.23	26.90	37.64	68.42	90.69
Individuals	100.00	99.71	100.00	71.80	44.07	52.60	89.43	90.34
All others	100.00	98.95	100.00	67.70	42.26	44.41	90.71	82.57
Total farm debt	100.00	99.27	100.00	65.16	40.57	44.49	86.48	87.58
Real estate debt	100.00	98.82	100.00	61.85	44.82	47.34	78.46	91.34
Nonreal estate debt	100.00	99.74	100.00	68.63	36.12	41.50	94.87	83.65

- 1/ Farms with at least 5 acres or \$5,00 in gross cash farm income.
- 2/ Borrowers pro forma total debt-to-asset ratio cannot exceed 50 percent.
- 3/ Ratio must be no less than 1.25:1, including net income from farm and nonfarm sources.
- 4/ Ratio of current assets to current liabilities must be no less than 1:1.
- 5/ Ratio of the debt on property financed to its appraised value must not exceed 75 percent.
- 6/ If borrower's principal residence is not on property securing the loan, the cash income to cash expenses and debt service ratio must be no less than 1:1.

Source: Farm Costs and Returns Survey, 1989

Table 5--All farms, farms with debt, and lender debt owed by farms meeting Farmer Mac underwriting standards, 1989

Item	All farms	Farms of minimum size <sup>1/</sup>	Farms of minimum size with debt	Farms qualifying for Farmer Mac	All <sup>2/</sup> Except TDSC <sup>3/</sup>
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	<u>Number</u>				
Number of farms	1,729,454	1,651,070	874,413	235,628	381,825

Total farm debt by lender:	<u>Million dollars</u>				
Federal land banks	14,944	14,936	14,936	3,283	4,916
Prod'n Credit Assns	5,221	5,220	5,220	916	1,840
Commercial banks	35,045	34,536	34,536	5,786	9,645
Life insurance cos	1,988	1,983	1,983	382	763
Farmers Home Admin	11,819	11,800	11,800	1,220	2,197
Individuals	10,659	10,628	10,628	2,450	3,995
All others	3,329	3,294	3,294	628	1,012
Total farm debt	83,004	82,397	82,397	14,664	24,368
Real estate	42,647	42,144	42,144	8,575	13,414
Nonreal estate	40,357	40,254	40,254	6,090	10,954

	<u>Percent</u>				
Percent of all farms	100.00	95.47	50.56	13.62	22.08
Percent of farms with debt			100.00	26.95	43.67
Total farm debt by lender:					
Federal land banks	100.00	99.95	100.00	21.98	32.91
Prod'n Credit Assns	100.00	99.98	100.00	17.55	35.25
Commercial banks	100.00	98.55	100.00	16.75	27.93
Life insurance cos	100.00	99.75	100.00	19.26	38.48
Farmers Home Admin	100.00	99.84	100.00	10.34	18.62
Individuals	100.00	99.71	100.00	23.05	37.59
All others	100.00	98.95	100.00	19.06	30.72
Total farm debt	100.00	99.27	100.00	17.80	29.57
Real estate debt	100.00	98.82	100.00	20.35	31.83
Nonreal estate debt	100.00	99.74	100.00	15.13	27.21

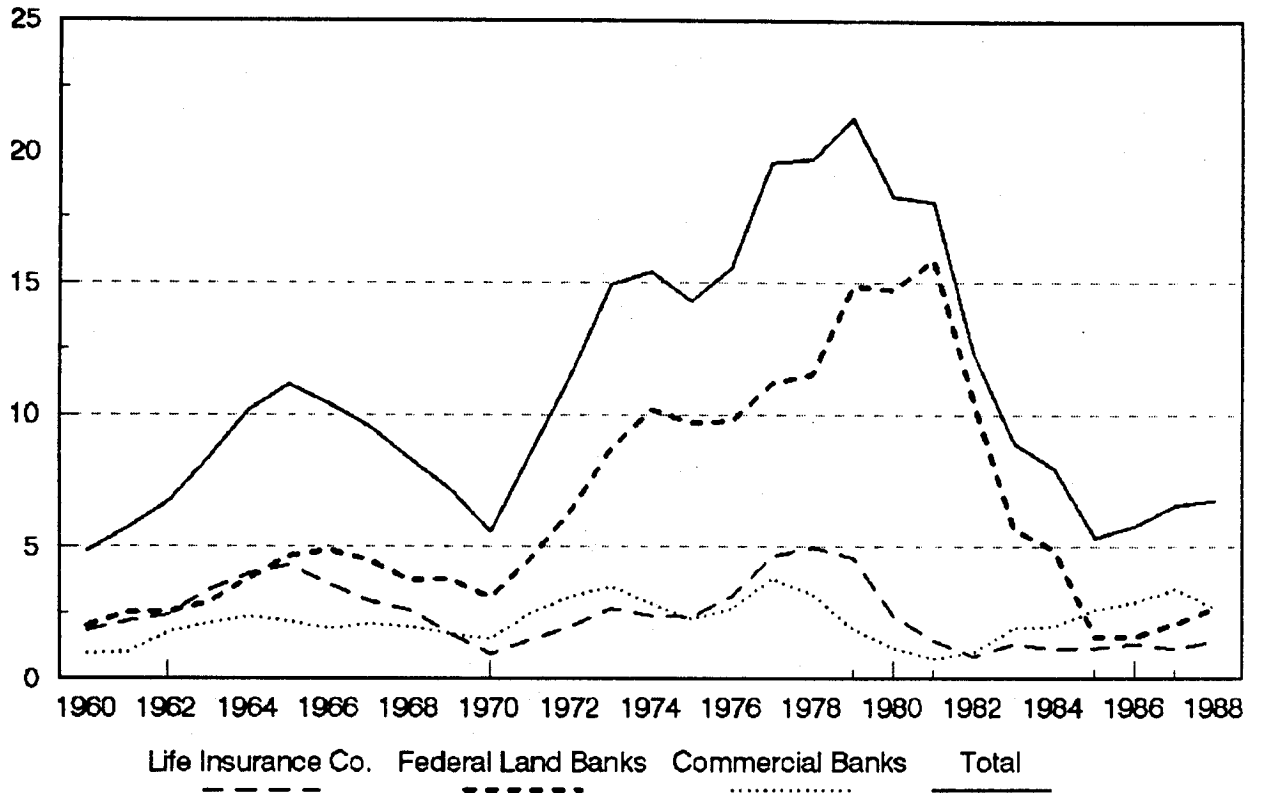
<sup>1/</sup> Farms with at least 5 acres or \$5,00 in gross cash farm income.  
<sup>2/</sup> All Farmer Mac standards must be met to qualify.  
<sup>3/</sup> Farms meeting all standards except the total debt service coverage ratio standard.

Source: Farm Costs and Returns Survey, 1989



**Figure 1**  
**Farm Mortgage Origination Volume by Major Lenders in Constant Dollars, 1960-88**

1988 Dollars (bil.)



Appendix Table 1-Farm operation income statement, farms of minimum size reporting farm debt,  
by sales class, December 31, 1989

	Value of sales				
	\$250,000 or more	\$100,000- \$249,999	\$40,000- \$99,999	Less than \$40,000	All farms
Number of farms	84,321	152,421	156,806	480,865	874,413
Percent of farms	9.64	17.43	17.93	54.99	100.00
<b>Gross cash income:</b>	<b>573,693</b>	<b>152,106</b>	<b>66,407</b>	<b>11,813</b>	<b>100,241</b>
Livestock sales	267,482	68,101	31,873	5,122	46,197
Crop sales	253,086	62,300	21,980	3,487	41,124
Government payments	22,938	12,850	6,000	1,131	6,150
Farm-related income	30,187	8,855	6,554	2,073	6,770
<b>Less: Cash expenses</b>	<b>439,922</b>	<b>118,076</b>	<b>55,030</b>	<b>16,653</b>	<b>82,031</b>
<b>Variable</b>	<b>366,558</b>	<b>88,024</b>	<b>40,639</b>	<b>10,775</b>	<b>63,904</b>
Livestock purchases	77,199	9,485	4,647	1,485	10,748
Feed	73,474	15,862	7,574	1,658	12,120
Veterinary expenses	6,122	2,141	1,135	252	1,306
Other livestock expenses	3,454	598	551	96	589
Seed and plants	14,877	5,765	2,357	516	3,146
Fertilizer and chemicals	46,743	16,711	6,235	1,324	9,267
Labor	62,802	9,026	3,191	736	8,606
Fuels and oils	15,024	6,547	3,336	962	3,717
Repairs and maintenance	25,254	10,261	5,241	1,754	6,129
Machine-hire/custom work	7,391	2,136	1,281	354	1,509
Utilities	12,679	3,560	2,146	645	2,583
Other variable expenses	21,539	5,932	2,942	993	4,185
<b>Fixed</b>	<b>73,364</b>	<b>30,052</b>	<b>14,392</b>	<b>5,878</b>	<b>18,126</b>
Real estate/property taxes	6,546	2,943	1,805	1,019	2,028
Interest	35,112	14,171	7,490	3,428	9,084
Insurance premiums	8,690	3,941	1,967	714	2,270
Rent and lease payments	23,016	8,996	3,130	717	4,743
<b>Equals: Net cash farm income</b>	<b>133,771</b>	<b>34,029</b>	<b>11,376</b>	<b>-4,840</b>	<b>18,210</b>
<b>Less:</b>					
Depreciation	37,895	16,004	8,901	2,394	9,357
Labor, non-cash benefits	2,307	462	255	37	369
<b>Plus:</b>					
Value of inventory change	17,423	13,786	6,686	2,658	6,744
Nonmoney income	503	400	292	217	290
<b>Equals: Net farm income</b>	<b>111,495</b>	<b>31,749</b>	<b>9,198</b>	<b>-4,396</b>	<b>15,518</b>
<b>Memoranda:</b>					
<b>Modifications for debt service coverage</b>					
Net farm income	111,495	31,749	9,198	-4,396	15,518
+ Depreciation	37,895	16,004	8,901	2,394	9,357
+ Real estate interest	21,262	8,987	5,223	2,874	6,134
+ Nonreal estate interest	7,795	3,379	1,316	334	1,760
+ Capital lease payments	2,051	522	152	35	335
+ Net off-farm income	20,354	13,439	17,094	35,784	27,049
- Family living expenses	21,169	18,731	13,953	12,686	14,785
- Income tax	31,883	10,546	6,335	6,542	9,646
<b>= Income for debt coverage</b>	<b>147,799</b>	<b>44,802</b>	<b>21,597</b>	<b>17,797</b>	<b>35,722</b>
<b>Greater of:</b>					
Reported interest payments	29,057	12,366	6,540	3,207	7,894
Estimated interest payments	27,453	12,363	7,402	4,078	8,372
+ Capital principal payments	41,637	17,225	10,551	5,412	11,886
+ Capital lease payments	2,051	522	152	35	335
<b>= Debt to be covered</b>	<b>77,952</b>	<b>32,771</b>	<b>19,451</b>	<b>10,110</b>	<b>22,277</b>
Debt coverage ratio	1.90	1.37	1.11	1.76	1.60

Source: Farm Costs and Returns Survey, 1989

Appendix Table 2--Farm operation balance sheet, farms of minimum size reporting farm debt,  
by sales class, December 31, 1989

	Value of Sales				
	\$250,000 or more	\$100,000- \$249,999	\$40,000- \$99,999	Less than \$40,000	All farms
Number of farms (expanded)	84,321	152,421	156,806	480,865	874,413
Number of farms (sample)	2,058	1,851	1,259	2,086	7,254
Percent of farms	9.64	17.43	17.93	54.99	100.00
<b>Current assets</b>					
Livestock inventory	75,767	22,563	13,107	4,180	15,888
Crop inventory	89,360	33,957	13,338	2,311	18,199
Purchased inputs	13,361	3,344	1,183	248	2,220
Prepaid insurance	2,172	985	492	178	568
Other assets	60,390	23,275	14,744	15,828	21,229
Total current assets	243,223	85,110	43,356	22,924	58,671
<b>Intermediate assets</b>					
Breeding animals	83,872	37,367	27,453	7,958	23,901
Farm equipment	198,742	99,154	57,132	20,817	58,142
Investment in coops	9,127	2,932	1,122	482	1,858
Total intermediate assets	291,741	139,454	85,707	29,256	83,900
<b>Fixed assets</b>					
Operators dwelling	51,664	37,963	37,646	46,938	44,163
Land and buildings	859,336	323,267	238,088	114,376	244,810
Total fixed assets	911,000	361,230	275,735	161,314	288,973
Total assets	1,455,091	588,725	405,919	213,976	433,402
<b>Current liabilities</b>					
Accrued interest	10,340	4,467	2,615	1,376	3,002
Property tax payable	5,641	2,670	1,648	916	1,809
Income tax payable	10,002	2,915	1,263	176	1,796
Rent and leases payable	5,754	2,249	783	179	1,186
Total accruals and payables	31,737	12,301	6,309	2,648	7,792
<b>Current portion of debt on:</b>					
Loans less than 1 year	52,611	16,217	8,519	2,446	10,773
Intermediate debt	32,297	12,303	7,715	3,663	8,657
Long term debt	9,340	4,922	2,835	1,750	3,229
Total current liabilities	125,984	45,743	25,378	10,507	30,451
<b>Non-current liabilities:</b>					
Non-real estate	99,259	37,810	23,712	11,257	26,605
Real estate	130,059	68,540	39,481	24,363	44,967
Total non-current liabilities	229,317	106,350	63,193	35,621	71,573
Total liabilities	355,301	152,093	88,572	46,127	102,024
Net worth	1,099,790	436,632	317,348	167,849	331,378
<b>Memoranda:</b>					
<b>Average farm debt by lender:</b>					
Federal land banks	73,216	26,349	11,390	6,155	17,081
Production Credit Associations	31,422	9,607	3,449	1,176	5,970
Commercial banks	133,594	47,422	33,545	22,425	39,497
Life insurance companies	11,342	3,727	629	749	2,268
Farmers Home Administration	26,376	25,564	18,398	5,812	13,495
Individuals and others	34,538	20,722	11,072	5,866	12,154
All others	13,078	6,401	3,780	1,296	3,767
CCC Crop loans	11,414	3,895	1,481	44	2,070
Current ratio	1.93	1.86	1.71	2.18	1.93
Debt/asset ratio	0.24	0.26	0.22	0.22	0.24
Real estate d/a ratio	0.15	0.20	0.15	0.16	0.17
All debt/RE assets ratio	0.39	0.42	0.32	0.29	0.35

Source: Farm Costs and Returns Survey, 1989

Appendix Table 3--Farmer Mac Qualifying Worksheet, farms of minimum size reporting farm debt,  
by sales class, December 31, 1989

	Value of sales				
	\$250,000 or more	\$100,000- \$249,999	\$40,000- \$99,999	Less than \$40,000	All farms
Number of farms (expanded)	84,321	152,421	156,806	480,865	874,413
Number of farms (sample)	2,058	1,851	1,259	2,086	7,254
<b>A. Pro forma current ratio</b>					
Current assets	243,223	85,110	43,356	22,924	58,671
Current liabilities	125,984	45,743	25,378	10,507	30,451
Current ratio	1.93	1.86	1.71	2.18	1.93
<b>B. Pro forma debt to asset ratio</b>					
Total liabilities	355,301	152,093	88,572	46,127	102,024
Total assets	1,455,091	588,725	405,919	213,976	433,402
Debt/asset ratio	0.24	0.26	0.22	0.22	0.24
<b>C. Pro forma total debt service coverage</b>					
Net farm income	111,495	31,749	9,198	-4,396	15,518
+ Depreciation	37,895	16,004	8,901	2,394	9,357
+ Interest on capital debt	29,057	12,366	6,540	3,207	7,894
+ Capital lease payments	2,051	522	152	35	335
+ Net off-farm income	20,354	13,439	17,094	35,784	27,049
- Family living expenses	21,169	18,731	13,953	12,686	14,785
- Income tax	31,883	10,546	6,335	6,542	9,646
= Numerator	147,799	44,802	21,597	17,797	35,722
P & I on capital debt	75,900	32,249	19,299	10,075	21,942
+ Annual capital lease payments	2,051	522	152	35	335
= Denominator	77,952	32,771	19,451	10,110	22,277
Debt coverage ratio	1.90	1.37	1.11	1.76	1.60
<b>D. Loan-to-value (LTV) ratio</b>					
Qualified loan amount (RE debt)					
Real estate debt	139,398	73,462	42,316	26,113	48,196
Real estate d/a ratio	0.15	0.20	0.15	0.16	0.17
Qualified loan amount (All debt)					
All debt	355,301	152,093	88,572	46,127	102,024
All debt/RE assets ratio	0.39	0.42	0.32	0.29	0.35
<b>E. Cash flow debt service coverage ratio</b>					
Net farm income	111,495	31,749	9,198	-4,396	15,518
+ Depreciation	37,895	16,004	8,901	2,394	9,357
+ Interest on capital debt	29,057	12,366	6,540	3,207	7,894
+ Capital lease payments	2,051	522	152	35	335
= Numerator	180,498	60,641	24,791	1,241	33,104
P & I on capital debt	75,900	32,249	19,299	10,075	21,942
+ Annual capital lease payments	2,051	522	152	35	335
= Denominator	77,952	32,771	19,451	10,110	22,277
Cash flow debt coverage ratio	2.32	1.85	1.27	0.12	1.49
<b>Total farm debt by lender:</b>					
Federal land banks	6,174	4,016	1,786	2,960	14,936
Production Credit Associations	2,650	1,464	541	566	5,220
Commercial banks	11,265	7,228	5,260	10,783	34,536
Life insurance companies	956	568	99	360	1,983
Farmers Home Administration	2,224	3,896	2,885	2,795	11,800
Individuals and others	2,912	3,158	1,736	2,821	10,628
All others	1,103	976	593	623	3,294
Total farm debt	27,283	21,307	12,899	20,908	82,397
Real estate debt	11,754	11,197	6,635	12,557	42,144
Nonreal estate debt	15,529	10,110	6,264	8,351	40,254

Source: Farm Costs and Returns Survey, 1989