

REGIONAL FARM LOAN DEMAND AND FUND AVAILABILITY

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Financial market conditions are far removed from a farmer's operating environment, yet changes in the cost and availability of loanable funds directly influence a farmer's credit and business management decisions. Moreover, the need for cash and credit involves most aspects of farm operation. In addition to the operating need for outside funding, farm expansion and sometimes survival depend on the continuing availability of farm credit and ability of farm credit institutions to respond to changes in the farm economy. However, demand for farm loans and the supply of those funds have been highly variable during the period 1969-1982. Farm loan demand and fund availability at agricultural banks have not moved together during that period, and interest rates charged by rural banks became highly variable. The repercussions of those changes in financial market conditions are still being felt at the farm level.

It is important that farmers follow and understand changes in the local, regional, and national financial markets on which they depend. Redirection of monetary policy, deregulation of financial institutions, and inflation are examples of the kinds of complex changes which can have a dramatic influence on the availability of farm credit and/or the level of interest rates. These changes influence the ways in which farmers manage their finances and ultimately affect farm financial performance at the individual and aggregate levels.

This report focuses on a segment of the financial market serving agriculture in the Ninth Federal Reserve District.¹ Specifically, it reviews the changes which have occurred in farm loan demand and availability of funds at agricultural banks within this region. Agricultural banks continue to be an important source of nonreal estate farm loans in North Dakota and the Ninth District.

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¹The Ninth Federal Reserve District includes the rural areas in Minnesota, Montana, North Dakota, South Dakota, northwestern Wisconsin and the Upper Peninsula of Michigan.

Measures of Regional Farm Credit Conditions

The *Agricultural Credit Conditions Survey*, published quarterly by the Ninth Federal Reserve Bank of Minneapolis, reports rural bankers' observations concerning several aspects of farm lending (Melichar, 1982). Responses focus on farm loan demand, repayments and debt position, bank liquidity and fund availability, and farm earnings and spending. Although the number of respondents to the survey is not large, the results are indicative of supply and demand adjustments within the region.

Rural bankers are asked if financial conditions during the current quarter are higher, lower, or the same as in the corresponding quarter one year earlier. This report computes indicators of credit market adjustments from the published responses by subtracting the percentage of bankers that responded "lower" from the percentage that responded "higher" and adding 100. The resulting scale of each index indicates above normal demand or supply conditions when an index exceeds 100 and below normal conditions when an index is less than 100. The deviation from 100 indicates the severity of the condition.

Farm Loan Demand

Farm loan demand can be separated into short-term, operating and intermediate-term, capital types of nonreal estate loans. Typically, farmers use operating loans to provide a ready source of liquidity in periods when cash is limited or cash deficits are anticipated. Capital loans provide funds for replacement of assets and/or expansion of the farm business.

Demands for operating and capital loans are sensitive to changing farm income expectations and interest rates. Farm income and farmer expectations about income are shifters of demand for loans. In periods of rising farm income the level of demand for new credit generally rises, placing greater pressure on farm credit markets. Refinancing the farm business in periods of declining farm income and increased financial stress may also require the use of additional operating and/or capital loans. Since interest rates are the prices paid for borrowed money, a rise in the level of interest rates is expected to result in a decrease in the quantity of loan funds demanded, other factors such as farm income

held constant. Observed changes in farm loan demand indices, as presented in this report, illustrate both shifts in demand due to farm income and other factors and changes in quantity demanded due to fluctuating interest rates.

Figure 1 charts quarterly adjustments in farm loan demands between 1969 and 1982. The index of demand for short-term operating loans increased between 1969 and 1979 to a 10-year high at the end of 1979, when the index reached 145. The overall upward trend of the index of short-term loan demand prior to 1979 primarily reflects a perceived shift in loan demand. Farm income expectations and inflation were factors influencing farm loan demand. Inflation was playing a dual role. Interest rates at agricultural banks were gradually rising as a reflection of rising inflationary expectations. Inflation was also acting as an upward shifter of the demand for farm loans.

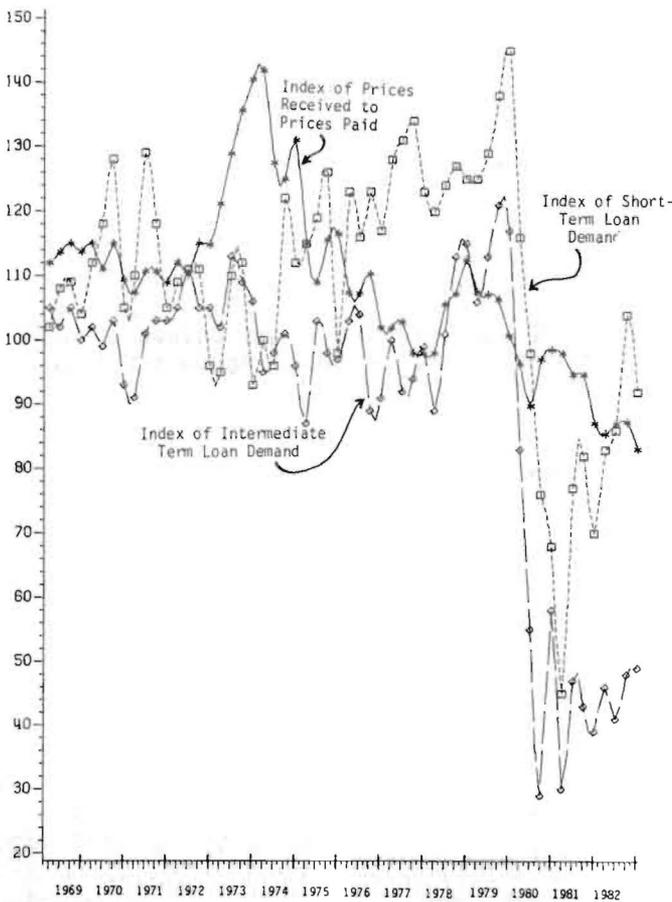


Figure 1. Farm Loan Demand and Prices Received-to-Prices Paid Indices, 1969-1982.

The relationship between short-term interest rates and farm loan demand during the period is shown in Figure 2. The index of short-term interest rates charged at agricultural banks is computed by dividing the published interest rate by the average interest rate over the

1969-1982 period, then multiplying by 100. The resulting index exceeds 100 when interest rates exceed the average level of rates commonly charged during the 14-year period. The interest rate index illustrates the volatility of short-term rates in the 1979-1982 period. The period between 1979 and the first quarter of 1981 exhibited a dramatic decline in the perceived quantity of short-term loan demand in response to the sharp rise in the level of interest rates. A temporary decline in demand for loans during 1972-1974 coincided with an above normal rate of loan repayment and was a period of improved overall farm profitability.

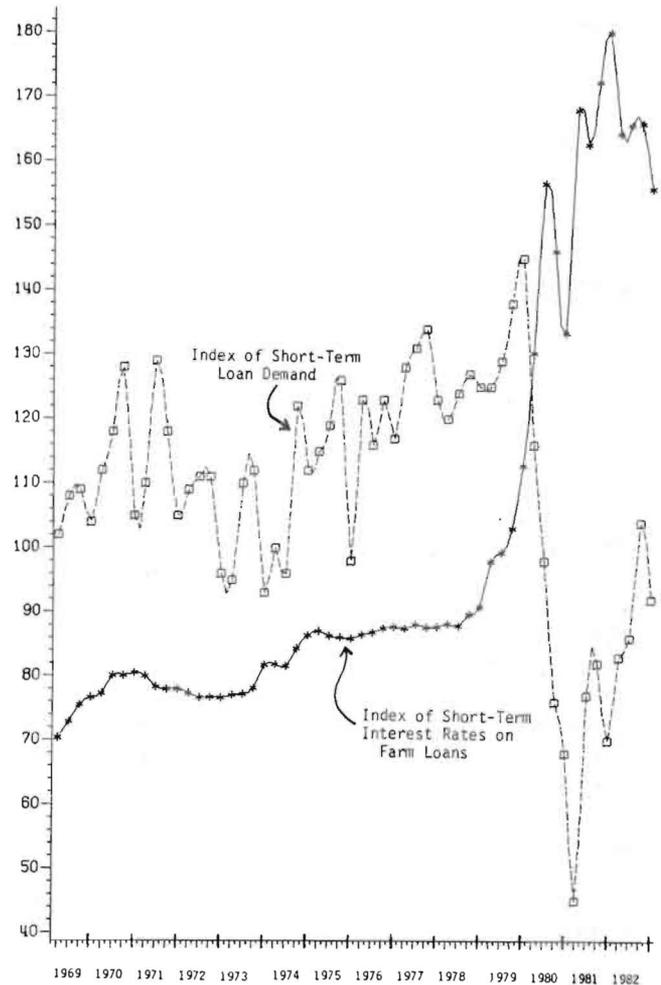


Figure 2. Short-Term Loan Demand and Short-Term Interest Rate Indices, 1969-1982.

Demand for intermediate-term, capital loans exhibited a relatively constant pattern in most periods between 1969 and 1979 (Figure 1). Demand for capital loans expanded to above-normal levels in two periods, 1972-1973 and the middle of 1978-1979. A precipitous decline occurred during 1980-1981, and demand has expanded only gradually since that time.

The dramatic reduction in reported farm loan demand which occurred in the post-1979 period reflects

the impact of several important economic factors. Market interest rates were allowed to fluctuate freely in response to changes in the money supply and demand for short-term credit. In late 1979, the Federal Reserve System invoked a new monetary policy for controlling the growth of the money supply. That policy employs a strategy of controlling the supply of bank reserves instead of attempting to maintain the cost of bank reserves, and thus market interest rates, within a narrow range. The cost of those bank reserves (the Federal Funds rate) is determined even in the short run by the interaction of supply and demand factors (such as inflation rates and expectations) in the market for bank reserves. The change in policy is an attempt by the Federal Reserve to gain better control of the rate of growth of money supply, bring the general rate of inflation down, and indirectly affect the course of market interest rates. Farm loan demand fell sharply in response to higher interest rates charged by agricultural banks, as shown in Figure 2.

Farm loan demand also responds to changes in farm liquidity position.² Profits from farm operations are one potential source of liquidity. To the extent that greater farm financial liquidity is a by-product of improved farm profitability, the demand for short-term credit for liquidity purposes will remain stable even though the demand for capital funds expands. However, this was not generally the case between 1969 and 1979, as shown in Figure 1. Farm profitability was highly favorable only during 1972-1974, as illustrated by the ratio of the index of prices received by farmers to the index of prices paid by farmers for production items. Farm profitability generally declined during the 1975-1982 period as represented by the falling price index in Figure 1. Farm liquidity was becoming a greater problem over time and the increase in short-term loan demand at agricultural banks indirectly reflected that development. Erosion of farm liquidity coincides with the observed rise in the proportion of farmers in the region reported to be at their loan limit (i.e., farmers with greatly diminished credit reserves). The proportion of farm borrowers at their loan limit with agricultural banks was significantly above normal from 1975-1982 and exhibited an upward trend. Over this same period debt repayment slowed, reflecting reduced farm profitability.

Availability of Loanable Funds

Loan fund availability at agricultural banks in the region also exhibited volatility during the 1969-1982 period. The fund availability index is charted along with an index of preferred bank liquidity position in Figure 3. Fund availability, as an index, is derived by subtracting the percentage of banks reporting expected problems in meeting normal farm loan requests in the current quarter from 100, dividing by the average of all

²Liquidity generally refers to the ease with which a farmer can generate cash proceeds from the sale of farm assets to meet cash needs of the business without loss in value. Cash and credit reserves both provide liquidity.

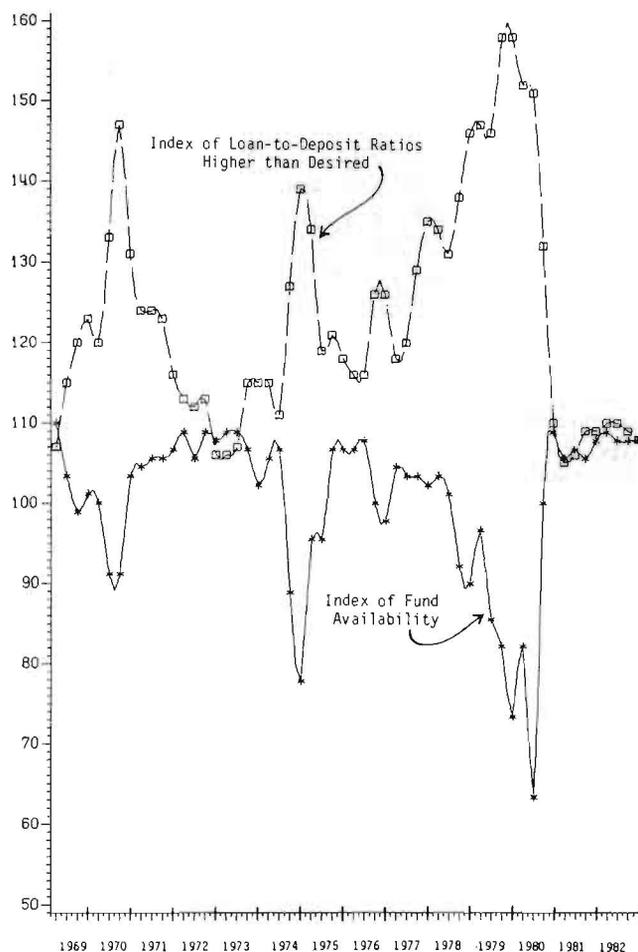


Figure 3. Fund Availability and Desired Loan-to-Deposit Ratio Indices for Rural Agricultural Banks, 1969-1982.

such responses during the 1969-1982 period, then multiplying by 100. The resulting index is greater than 100 in periods of above normal farm loan fund availability and less than 100 in periods of restricted availability. A review of the availability index reveals that funds were restricted below normal levels in 1975 and again in 1979-1980. Fund availability reached a low for the decade in the second quarter of 1980 when the index fell to 63.

Fund availability is one response of farm lenders to financial market conditions and in the case of agricultural banks is related to bank liquidity. The index of banks with loan-to-deposit ratios above the desired level is a reverse indicator of bank liquidity conditions. Rising loan-to-deposit ratios coincides with a greater proportion of bank assets concentrated in loans, reducing cash and other liquid forms of bank funds. Typically, when the loan-to-deposit ratio exceeds the bank's desired level, lenders restrict loan fund availability to reduce the loan-to-deposit ratio to an acceptable level. The average loan-to-deposit ratio among surveyed agricultural banks in the region rose gradually from 52 in 1969 to 79 in 1979, and then declined to 63 in 1982.

Figure 3 illustrates the inverse relationship between fund availability at agricultural banks and the desired bank liquidity position.

Rural banks rely heavily on local sources of funds, so their ability to attract deposits directly affects bank liquidity. In periods of rising market interest rates, rural banks experienced some disintermediation as non-interest bearing deposit balances were withdrawn by depositors for investment in highly-liquid, interest-bearing investments. Market interest rates respond to investor inflationary expectations. The upward movement of the loan-to-deposit ratio at rural banks is a reflection of inflationary pressure in financial markets in conjunction with adjustments in the level of loan demand.

Farm Credit Market Conditions

Credit market conditions are understood with greater comprehension when supply of and demand for loanable funds are viewed together. Figure 4 charts the index of operating loan demand and the index of fund availability and makes it possible to monitor adjustments in the regional financial market. One

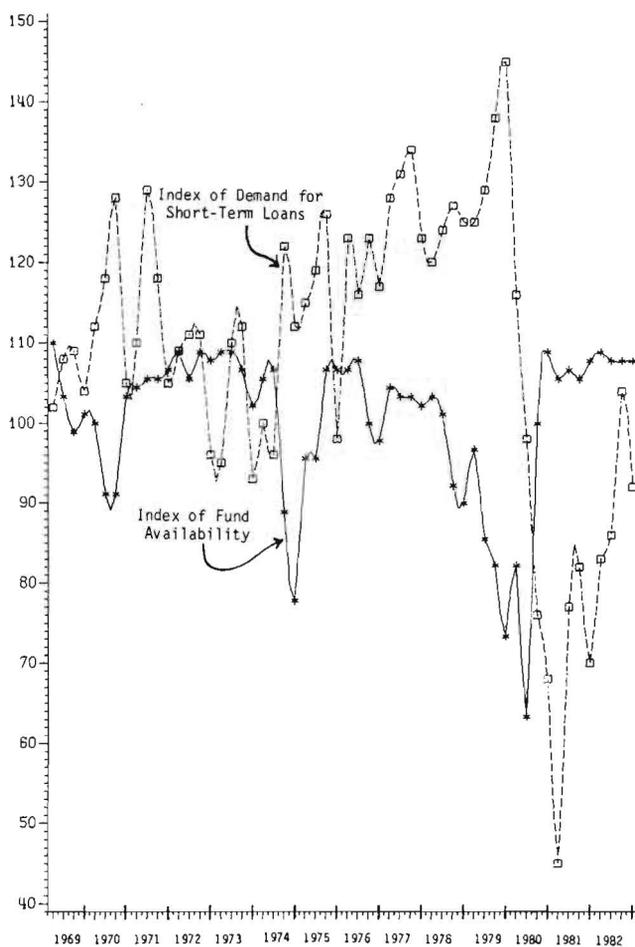


Figure 4. Farm Loan Demand and Fund Availability Indices, 1969-1982.

significant observation which can be made is that demand for farm loans and availability of those funds do not move together. On the contrary, farm loan demand is typically highest in periods when the supply of funds is below the normal level. The period 1976-1979 dramatically illustrates that the supply of credit among rural banks and the demand for farm credit are inversely related. The "funding gap" during that period is illustrated by the vertical distance between the index of loan demand and the index of availability. That period generated financial stress in local financial markets which led some farm borrowers to bypass their local agricultural bank and seek funding from other lenders. Rural agricultural bankers responded in part by referring an increasing percentage of farm loan requests to correspondent banks and nonbank agencies (e.g., Farm Credit system lenders). During that period commercial banks' share of the nonreal estate loan volume outstanding in North Dakota, for instance, shifted from 63 percent in 1976 down to 50 percent by 1979 and 43 percent by the end of 1981. A slight increase was shown in the volume of Farm Credit System nonreal estate loans outstanding and a dramatic increase was registered by the Farmers' Home Administration. The 1980-82 period has shown a reversal of the "funding gap" as loan demand fell sharply and bank liquidity recovered, leaving rural agricultural banks in a highly liquid position at the end of 1982.

The relationship between farm loan demand and fund availability can be quantified with the use of statistical measures. Table 1 presents estimates of the mean, standard deviation, coefficient of variation, and correlation between the variables which have been discussed above.³ The higher coefficient of variation of intermediate-term loan demand (.270) when compared with short-term loan demand (.176) indicates the demand for capital loans has been relatively more variable in this period. That result is logical since farm demand for investment capital is more discretionary for the farmer than are operating funds. Both loan demand indices are negatively correlated with the fund availability index, indicating that when loan demand increases, the supply of loanable funds at rural agricultural banks tend to decline. However, demand for short-term farm loans tends to move in the opposite direction more consistently than does the demand for capital loans. A comparison of the coefficients of variation for fund availability and loan demand indicates that loan demand has been relatively more variable in the past. One possible implication of this instability of loan demand is that a stabilization of the aggregate flow and availability of funds through agricultural banks will not, by itself, be effective in making the availability of loanable funds at agricultural banks more predictable. It must be accompanied by greater stability in farm loan demand and its determinants.

³The coefficient of variation is a measure of relative variability and is computed by dividing the standard deviation by the mean. The higher the coefficient of variation the higher the relative variability of that index.

Table 1. Measures of Credit Market Conditions Among Agricultural Banks in the Ninth Federal REserve District, 1969-1982.

Index	Mean	Standard deviation	Coefficients of variation	Correlation of the Index of Fund Availability with
Demand for short-term loans	108.99	19.24	.176	-.39
Demand for intermediate term loans	90.23	24.44	.270	-.17
Fund availability	90.39	8.93	.099	
Loan/deposit ratio above desired level	123.37	14.47	.117	-.84
Average loan/deposit ratio	63.44	5.07	.079	-.62

The loan-to-deposit ratio indices are both negatively correlated with the index of fund availability because of diminished bank liquidity during the 1969-1982 period. The actual bank loan-to-deposit ratio shows a significant, negative relationship with the fund availability index. Fund availability tends to be low when the actual bank loan-to-deposit ratio is high. The correlation estimates do indicate that the index of loan-to-deposit ratios higher than desired is a better indicator of fund availability than the actual bank ratio.

Implications for Farm Borrowers and Rural Agricultural Banks

Credit conditions within the region have been highly variable in the period 1969-1982. Variability in the supply and demand for loanable funds has implications for credit management decisions of farmers and rural banks. First, high variability in fund availability implies high variability of farmers' credit reserves and farm liquidity positions within the region. Farm liquidity is provided either by farm earnings or credit. Reduced farm profitability (assuming a continuation of depressed farm prices and/or rising farm costs) is expected to continue to reduce farm liquidity and place additional pressure on the future supply of short-term funds at rural banks. Potentially offsetting the effect of reduced farm liquidity is the high participation of farmers in the

region in the 1982 government payment-in-kind and reduced acreage programs. The exact impact of a reduction of acreage under production on the aggregate need for borrowed capital is not known. However, growth in farm loan demand will likely be slowed as a result.

Second, the current situation of improved fund availability and lower short-term interest rates will greatly reduce the impact of reduced farm liquidity on farm financial performance. Agricultural banks are currently in a highly liquid position, but this is not usual. Unusually high bank liquidity is the result of sharply lower farm loan demand in response to the upward surge of market interest rates and a depressed farm economy.

Third, interest rate variability is a result of deregulation of our financial institutions and changes in monetary policy. One result of the new Federal Reserve policy emphasis on managing the supply of bank reserves instead of their price (federal funds rate) is that variability of interest rates is likely to be the standard rather than the exception in the future.

The implied risk of highly variable supplies of funds and high and variable costs of borrowing greatly increases the complexity of the farm manager's liquidity management problem. Liquidity can come at a high cost to the farm business, especially when short-term borrowing at high interest rates is the only alternative. The farmer, as financial manager of the farm business, can exercise management control over his need for liquidity by restraining farm growth early when a period of rising interest rates and reduced availability of loanable funds is anticipated. Changes in financial market conditions can be anticipated if the farm manager monitors and understands financial market developments. It is important that farmers understand that monetary policy and the deregulation of financial institutions and markets can be as influential as farm policy in determining farm financial performance.

REFERENCES

1. Melichar, Emanuel and Paul T. Balides. **Agricultural Finance Databook**. Division of Research and Statistics, Board of Governors of the Federal Reserve System, Washington, D.C., December 1982.