

TABLES AND CHARTS

Analysis of Variation in Interest Rates on Bank Loans to Farmers

Emanuel Melichar  
Senior Economist  
Division of Research and Statistics  
Board of Governors of the Federal Reserve System  
Washington, D.C. 20551

Presented at the meeting of the Econometric Society  
Chicago, Illinois  
August 30, 1978

Table 1. Average effective interest rates on farm loans made by banks (per cent)

Characteristic of bank or loan	Feb. 1977	May 1977	Aug. 1977	Nov. 1977	Feb. 1978	May 1978
All loans.....	8.8	8.7	8.7	9.1	9.2	9.3
Assets of bank (millions of dollars):						
Under 25.....	8.8	8.9	8.9	9.0	9.0	9.1
25 to 249.....	9.1	9.2	8.9	9.1	9.3	9.3
250 to 1,499.....	8.3	8.1	8.4	9.5	9.3	9.7
1,500 and over.....	8.4	7.8	8.5	9.1	9.3	9.5
Amount of loan (dollars):						
1,000 to 9,999.....	9.0	9.1	9.0	9.1	9.1	9.2
10,000 to 24,999.....	9.0	9.0	8.8	9.0	9.2	9.2
25,000 to 99,999.....	8.7	8.9	8.8	9.0	9.2	9.3
100,000 and over.....	8.7	8.1	8.5	9.3	9.2	9.4
Nature of interest rate over life of loan:						
Floating.....	8.3	7.6	8.2	9.6	9.4	9.8
Predetermined.....	8.9	8.9	8.9	9.0	9.1	9.2
Maturity of loans with predetermined interest rate (months):						
Under 2.....	9.2	9.0	9.1	9.2	9.4	9.4
2 to 4.....	9.0	9.1	9.1	9.1	9.3	9.3
5 to 7.....	8.8	8.9	8.8	9.0	9.0	9.1
8 to 10.....	8.9	8.8	8.8	8.9	9.0	9.1
11 to 13 months.....	8.8	8.7	8.6	8.9	9.0	9.0
14 months and over.....	9.4	9.8	8.6	9.6	9.6	10.1
Payable on demand.....	8.8	8.2	8.7	8.5	8.8	8.8
Addendum:						
"Prime rate".....	6.25	6.25	6.75	7.75	8.00	8.00

Table 2. Importance of surveyed characteristics in explaining variation in interest rates on farm loans made by banks, six quarters, 1977-78

Characteristic of bank or loan	Net relationship		Gross relationship		Number of variables used
	Partial R <sup>2</sup>	F	R <sup>2</sup>	F	
Method of repayment and method of interest charge, combined.....	.147	771.6	.164	887.5	4
Assets of bank, nature of rate over life of loan, maturity, amount of loan, and date of survey, combined..	.144	15.2	.160	17.3	197
Region (Federal Reserve District)...	.087	189.7	.061	131.5	9
Commitment status.....	.024	216.2	.013	122.3	2
Purpose of loan.....	.008	34.4	.022	102.4	4
Security status.....	.006	106.7	.018	334.1	1
Participation status.....	.002	16.9	.003	23.7	2
Federal insurance status.....	.000	1.4*	.000	3.3**	2

All relationships are significant at the .01 probability level except as indicated.

\* Not significant at the .10 probability level.

\*\* Significant at the .05 probability level.

Addendum: Data for equation containing all of the above characteristics are as follows:

$$R^2 = .365$$

$$\text{Adjusted } R^2 = .357$$

$$F = 46.4 \text{ (d.f. = 221, 17839)}$$

Table 3. Relationships among selected characteristics and interest rates on farm loans made by banks, six quarters, 1977-1978

Characteristic of bank or loan	Estimated percentage of 1977 total--		Number of sample loans, six quarters	Interest rate difference from national six- quarter mean	
	Number of loans	Amount of loans		Gross	Net
Method of repayment and interest charge:					
Single payment--					
Discount.....	.8	.5	332	- .41	- .57
On outstanding balance.....	93.4	93.5	16,936	- .05	-.06
Instalments--					
Discount.....	.2	.2	13	3.48	3.84
Add-on.....	.8	.4	73	2.96	3.10
On outstanding balance.....	4.7	5.5	707	.45	.53
Region (Federal Reserve District):					
1-3 Boston, New York, Philadelphia.	1.8	2.1	514	.03	-.50
4 Cleveland.....	4.2	2.6	165	-.51	-.40
5 Richmond.....	1.6	1.8	858	.36	.30
6 Atlanta.....	5.4	4.0	394	.45	.48
7 Chicago.....	25.6	19.3	2,963	-.08	-.08
8 St. Louis.....	10.5	7.1	594	-.10	-.10
9 Minneapolis.....	6.2	4.2	529	.08	.10
10 Kansas City.....	27.1	35.9	4,306	.01	.05
11 Dallas.....	13.0	11.7	2,303	-.09	-.19
12 San Francisco.....	4.7	11.5	5,435	.45	.66
Commitment status:					
Made under a commitment--					
With a commitment fee.....	.4	1.9	128	.13	.21
No commitment fee.....	20.7	32.3	7,188	.18	.22
No commitment.....	78.9	65.7	10,745	-.05	-.06
Purpose of loan:					
Feeder livestock.....	12.8	22.2	2,728	-.15	-.05
Other livestock.....	11.7	11.2	1,272	.02	.07
Other current operating expenses....	47.4	36.8	9,221	-.06	-.05
Farm machinery and equipment.....	14.7	10.2	1,565	.24	.10
Other.....	13.5	19.7	3,275	.10	.05

Table 3. Relationships among selected characteristics and interest rates on farm loans made by banks, six quarters, 1977-1978 (continued)

Characteristic of bank or loan	Estimated percentage of 1977 total--		Number of sample loans, six quarters	Interest rate difference from national six- quarter mean	
	Number of loans	Amount of loans		Gross	Net
Security status:					
Secured by collateral of any kind...	71.3	80.9	13,319	.07	.04
Unsecured.....	28.7	19.1	4,742	-.17	-.09
Participation status:					
Participation originated by--					
Reporting bank.....	1.7	9.5	353	-.20	-.05
Others.....	2.1	6.7	1,030	-.23	-.21
Not a participation.....	96.2	83.7	16,678	.01	.00
Federal insurance status:					
Insured or guaranteed by--					
Farmers Home Administration.....	.5	.8	110	.24	.03
Other U.S. Government agencies....	.2	.4	212	-.01	.00
Not Federally insured or guaranteed.	99.3	98.8	17,739	.00	.00

Table 4. Relationships among selected characteristics and interest rates on farm loans made by banks, six quarters, 1977-1978

Characteristic of bank or loan	Estimated percentage of 1977 total--		Number of sample loans, six quarters	Net interest rate difference from national six-quarter mean					
	Number of loans	Amount of loans		Feb. 1977	May 1977	Aug. 1977	Nov. 1977	Feb. 1978	May 1978
Bank assets under \$250 million:									
Floating interest rate.....	1.1	.7	74	.28*	-.64	-.24	.71	-.27	.92
Predetermined interest rate--									
Payable on demand.....	4.5	5.2	387	-.60	-.70	-.34	-.47	-.33	-.33
Maturity of 1 to 4 months with amount--									
\$1,000 to 9,999.....	20.4	5.2	1,839	.11	.22	.23	.31	.30	.42
\$10,000 and over.....	5.4	11.9	611	.06	.15	.10	.13	.46	.34
Maturity of 5 to 7 months with amount--									
\$1,000 to 9,999.....	27.6	7.6	2,268	.00	.00	-.13	.09	.04	.22
\$10,000 and over.....	9.2	20.4	919	-.25	-.14	-.12	.01	.00	.19
Maturity of 8 to 13 months with amount--									
\$1,000 to 9,999.....	14.9	4.4	1,351	-.22	-.06	-.25	-.13	-.18	-.04
\$10,000 and over.....	5.5	12.7	617	-.42	-.22	-.38	-.24	-.14	-.05
Maturity of 14 months and over.....	5.3	4.2	443	-.45	.04	-.07	-.28	.02	-.14

\* Based on fewer than 25 sample loans.

Table 4. Relationships among selected characteristics and interest rates on farm loans made by banks, six quarters, 1977-1978 (continued)

Characteristic of bank or loan	Estimated percentage of 1977 total--		Number of sample loans, six quarters	Net interest rate difference from national six-quarter mean					
	Number of loans	Amount of loans		Feb. 1977	May 1977	Aug. 1977	Nov. 1977	Feb. 1978	May 1978
Bank assets of \$250 to 1,499 million:									
Floating interest rate with amount--									
\$1,000 to 9,999.....	.2	.1	356	-.46	-.47	-.13	.56	.74	.69
\$10,000 to 24,999.....	.2	.2	230	-.50	-.88	-.44	.32	.77	.80
\$25,000 to 99,999.....	.2	.7	275	-.78	-.77	-.70	.41	.55	.65
\$100,000 and over.....	.2	7.7	279	-1.52	-1.32	-.89	.39	.73	.86
Predetermined interest rate--									
Payable on demand.....	.2	.8	243	-.68*	-.44	-.42	-.33	.24	.27
Maturity of 1 to 4 months with amount--									
\$1,000 to 9,999.....	.5	.2	688	.35	.43	.48	.75	.54	.81
\$10,000 and over.....	.6	4.5	808	-.25	-.23	.04	.16	.26	.44
Maturity of 5 to 7 months with amount--									
\$1,000 to 9,999.....	.3	.1	395	-.01	.14	.20	.12	.43	.51
\$10,000 and over.....	.4	1.6	497	-.47	-.30	-.06	.08	.12	.17
Maturity of 8 to 13 months with amount--									
\$1,000 to 9,999.....	.2	.1	350	.07	.35	-.08*	.48	.59	.45
\$10,000 and over.....	.3	1.1	371	-.27	-.37	-.53	.12*	.44	.11
Maturity of 14 months and over.....	.1	.3	115	.23*	.26	.00	.15	.62	-.02

\* Based on fewer than 25 sample loans.

Table 4. Relationships among selected characteristics and interest rates on farm loans made by banks, six quarters, 1977-1978 (continued)

Characteristic of bank or loan	Estimated percentage of 1977 total--		Number of sample loans, six quarters	Net interest rate difference from national six-quarter mean					
	Number of loans	Amount of loans		Feb. 1977	May 1977	Aug. 1977	Nov. 1977	Feb. 1978	May 1978
Bank assets of \$1,500 million and over:									
Floating interest rate with amount--									
\$1,000 to 9,999.....	.4	.1	670	-1.57	-1.61	-1.21	-.28	-.02	.26
\$10,000 to 24,999.....	.3	.3	480	-1.69	-1.66	-1.38	-.47	-.13	.29
\$25,000 to 99,999.....	.3	1.2	512	-1.79	-1.85	-1.50	-.49	-.02	.05
\$100,000 and over.....	.2	6.4	296	-1.85	-1.99	-1.45	-.70	-.43	.05
Predetermined interest rate--									
Payable on demand.....	.1	.3	111	-1.07*	-.23	-.37	-.25	-.48	-.38
Maturity of 1 to 4 months with amount--									
\$1,000 to 9,999.....	.5	.1	758	-.15	.02	-.17	-.08	.30	.37
\$10,000 and over.....	.3	1.1	434	-.68	-.95	-.73	-.20	.20	.40
Maturity of 5 to 7 months with amount--									
\$1,000 to 9,999.....	.2	.1	484	-.53	-.39	-.55	-.18	.15	.10
\$10,000 and over.....	.1	.3	233	-.54*	-.93	-.84	-.32	-.15	-.08
Maturity of 8 to 13 months with amount--									
\$1,000 to 9,999.....	.3	.1	564	-.56	-.81	-.57	-.21	-.19	-.14
\$10,000 and over.....	.1	.4	290	-.85	-1.06	-.49*	-.66	-.34	-.21
Maturity of 14 months and over.....	.1	.1	113	-.68*	.17	-.15	.93	.46	1.15

\* Based on fewer than 25 sample loans.