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# *Relations Between Loan Grades and Subsequent Loan Experience*

THIS ANALYSIS is focused upon the following question: Do groups of loans graded differently have significantly different disposition with respect to delinquency, repayment, or loss rates? As explained in the sections which follow, the grading system for Production Credit Associations differs from that for the Federal Land Banks. The outstanding Production Credit Association *loans* are graded annually after they are made. The Federal Land Bank *loan collateral* is graded prior to the closing of the loan. Accordingly, the analysis of these two types of loans is different.

### *Production Credit Association Loans*

#### *Production Credit Association Loan Data*

The specific data on Production Credit Association loans provided by the Farm Credit Administration consisted of annual loan data in all states for the period 1945-62.<sup>1</sup> Type of disposition and grade of loans were included.

The grading of loans in the Production Credit Association portfolio is conducted under the supervision of the Farm Credit Administration. Near the end of each calendar year, all outstanding loans are examined on the basis of credit quality and graded accordingly. About the same time, but in a different operation, reserves for losses are established and some loans are charged off. Under the loan

<sup>1</sup> Prior to 1945 a significantly different grading system was used. For this reason, only data since 1945 are used here.

grading system, loans are classified into several groups: (1) AB loans, which range from those of highest quality to those with no more than moderate credit weakness, (2) C loans, which have major credit weakness but are believed collectible in full, and (3) D loans, all or some portion of which are considered uncollectable.

It was not possible to develop complete life histories of loans from the data. Partial histories were developed, however, through determination of the origin and disposition of loans graded D for each year, and this group of loans is examined in detail.

#### *Analysis of the Experience of Loans in Different Grades*

The loan data are now examined to determine the effectiveness of the loan grading system in distinguishing among groups of loans with differing likelihood of being charged off.

*Loan Grade at Date of Closing.* At the time of loan closing, all Production Credit Association loans must meet the AB loan quality standards. Loans are graded C and D only because of events occurring subsequent to the dates the loans were closed. A specific C or D loan for a current inspection date may have been of AB, C, or D quality, or perhaps was not yet closed, on the previous inspection date. Therefore, the loan grade at the time of closing is of no value in predicting type of loan disposition or differentials among later loan-grade composition. The loan-grading system's potential value lies only in whether loan grades at the time of inspection can be used to predict the disposition of loans that are in the portfolio.

*Loan Grade at Date of Inspection.* Whether the loan grades at the time of inspection are effective in indicating type of loan disposition can be determined by an examination of the origin and disposition of D loans.

Only D loans are charged off; any AB or C loan in trouble will be reclassified on the inspection date prior to charge-off at the end of the year. Thus the question is whether D loans originate from the loan grade categories in varying proportions and whether it is possible to make useful estimates of the proportion of D loans ultimately charged off.

The data are presented in Tables 5 through 7. In addition, a summary is given in Table 8, which indicates D loan disposition at

TABLE 5

Percentages of Current AB and C Loans Classified in Following Year as D,  
All PCA Districts, 1945-61

Year	<i>AB Loans</i>		<i>C Loans</i>	
	<i>Number</i>	<i>Amount</i>	<i>Number</i>	<i>Amount</i>
1945	.61	.52	1.71	1.57
1946	.48	.36	1.97	1.53
1947	.26	.25	2.41	1.96
1948	.74	.80	3.11	3.05
1949	.41	.24	3.48	2.14
1950	.17	.14	2.09	1.99
1951	.11	.21	1.92	2.08
1952	.29	.65	3.66	7.41
1953	.18	.27	2.77	3.92
1954	.14	.19	2.49	3.17
1955	.12	.20	2.30	3.35
1956	.14	.26	1.91	3.31
1957	.12	.24	1.28	1.48
1958	.10	.19	1.39	1.99
1959	.12	.14	1.82	1.92
1960	.09	.13	1.36	1.47
1961	.08	.09	1.31	1.56

Source: Computed from data provided by the Farm Credit Administration. Computations of amounts exclude Springfield, St. Louis, and Wichita districts because data were not available. Numbers computations include all districts.

the end of the calendar year, but does not disclose the ratios of ultimate loan disposition.<sup>2</sup>

In general, the major source of current D loans is these loans carried over from the previous year. Apart from D loans carried over to the next year, more of these loans were charged off than paid in full (both loan numbers and amounts), as Tables 6 and 7 indicate.

<sup>2</sup> A count of D loans graded AB, C, and D on the next annual inspection date would involve multiple counting when the loans remain on the books for a number of years.

TABLE 6  
Origin and Disposition of D Loans, Number and Percentage of Total,  
All PCA Districts, 1945-62

Year	Origin of This Year's D Loans by Classification of Loan on Inspection Date of Preceding Year						Total Number <sup>a</sup>	Disposition of This Year's D Loans as Shown by Classification of Loan on Inspection Date of Following Year											
	AB		C		D			AB		C		D		Paid in Full		Charged Off		Other	
	No. (1)	% (2)	No. (3)	% (4)	No. (5)	% (6)		No. (7)	No. (8)	% (9)	No. (10)	% (11)	No. (12)	% (13)	No. (14)	% (15)	No. (16)	% (17)	No. (18)
1945	180	23.0	384	49.0	220	28.1	784	28	3.6	75	9.6	246	31.4	284	36.2	151	19.3	-	-
1946	862	67.0	174	13.5	250	19.4	1,286	69	5.4	151	11.7	415	32.3	366	28.5	284	22.1	1	1
1947	672	51.0	222	16.8	424	32.2	1,318	30	2.3	101	7.7	352	26.7	388	29.4	444	33.7	3	2
1948	381	36.8	295	28.5	358	34.6	1,034	9	.9	49	4.7	298	28.8	274	26.5	402	38.9	2	.2
1949	1,230	62.7	424	21.6	309	15.7	1,963	41	2.1	264	13.4	585	29.8	592	30.2	480	24.5	1	.1
1950	750	37.2	665	33.0	602	29.8	2,017	28	1.4	192	9.5	509	25.2	600	29.7	662	32.8	26	1.3
1951	309	24.8	417	33.5	520	41.7	1,246	8	.6	123	9.9	378	30.3	312	25.0	405	32.5	20	1.6
1952	215	23.8	302	33.5	385	42.7	902	14	1.6	93	10.3	347	38.5	175	19.4	248	27.5	25	2.8
1953	570	37.2	615	40.1	347	22.7	1,532	34	2.2	288	18.8	667	43.5	230	15.0	290	18.9	23	1.5
1954	337	21.2	582	36.7	667	42.1	1,586	16	1.0	212	13.4	786	49.6	252	15.9	302	19.0	18	1.1
1955	259	16.0	567	35.1	791	48.9	1,617	14	.9	149	9.2	856	52.9	218	13.5	335	20.7	45	2.8
1956	221	13.5	559	34.1	857	52.4	1,637	9	.5	216	13.2	884	54.0	209	12.8	295	18.0	24	1.5
1957	274	16.7	489	29.8	878	53.5	1,641	25	1.5	286	17.4	841	51.2	232	14.1	237	14.4	20	1.2
1958	264	18.1	357	24.4	841	57.5	1,462	23	1.6	211	14.4	703	48.1	217	14.8	285	19.5	23	1.6
1959	234	17.1	432	31.6	703	51.4	1,369	11	.8	144	10.5	704	51.4	204	14.9	284	20.7	22	1.6
1960	283	17.7	615	38.4	705	44.0	1,603	10	.6	215	13.4	799	49.8	248	15.5	307	19.2	24	1.5
1961	217	14.1	523	34.0	799	51.9	1,539	4	.3	197	12.8	762	49.5	261	17.0	291	18.9	24	1.6
1962	176	12.0	531	36.1	762	51.9	1,469	-	-	-	-	-	-	-	-	-	-	-	-

Source: Computed from data provided by the Farm Credit Administration.  
<sup>a</sup>The total number of loans involved, obtained by summing the number of loans originating in the three loan grades (cols. 1, 3, 5). This total is also the sum of the number of loans in the six current disposition categories (cols. 8, 10, 12, 14, 16, 18).

TABLE 7  
Origin and Disposition of D Loans, Amounts and Percentage of Total, Nine PCA Districts, 1945-62  
(amounts in thousand dollars)

Year	Origin of This Year's D Loans by Classification of Loan on Inspection Date of Preceding Year				Disposition of This Year's D Loans as Shown by Classification of Loan on Inspection Date of Following Year																
	AB		C		D		Total Amount <sup>a</sup>			AB		C		D		Paid in Full		Charged Off		Other	
	Amt. (1)	% (2)	Amt. (3)	% (4)	Amt. (5)	% (6)	Amt. (7)	% (8)	Amt. (9)	% (10)	Amt. (11)	% (12)	Amt. (13)	% (14)	Amt. (15)	% (16)	Amt. (17)	% (18)	Amt. (19)	% (20)	
1945	190	19.1	458	45.9	348	34.9	996	23	2.3	180	18.1	387	38.9	249	24.9	158	15.9	—	—	—	
1946	786	56.2	272	19.5	340	24.3	1,398	119	8.5	386	27.6	406	29.1	344	24.6	142	10.2	—	—	—	
1947	587	45.5	331	25.7	371	28.8	1,289	40	3.1	245	19.0	343	26.6	382	29.6	257	19.9	22	1.7	—	
1948	484	35.1	508	36.9	385	28.0	1,377	14	1.0	258	18.7	574	41.7	218	15.8	310	22.5	3	.2	—	
1949	2,100	57.1	1,089	29.6	488	13.3	3,677	111	3.0	1,020	27.7	1,302	35.4	691	18.8	492	13.4	61	1.7	—	
1950	683	23.6	963	33.3	1,248	43.1	2,894	218	7.5	438	15.1	1,078	37.2	639	22.1	452	15.6	69	2.4	—	
1951	434	20.1	854	39.5	875	40.5	2,163	16	.7	254	11.7	1,088	50.3	413	19.1	338	15.6	54	2.5	—	
1952	835	33.2	911	35.5	805	31.3	2,569	12	.5	414	16.1	1,438	56.0	385	15.0	239	9.3	81	3.2	—	
1953	3,039	33.4	4,889	53.8	1,164	12.8	9,092	136	1.5	1,719	18.9	6,084	66.9	488	5.4	478	5.3	187	2.1	—	
1954	1,125	12.2	3,488	37.9	4,572	49.7	9,185	53	.6	1,630	17.7	5,885	64.1	851	9.3	617	6.7	149	1.6	—	
1955	759	8.9	2,793	32.8	4,974	58.3	8,526	68	.8	934	10.9	5,971	70.0	405	4.7	851	10.1	297	3.5	—	
1956	889	9.8	3,350	36.9	4,843	53.3	9,082	95	1.0	1,326	14.6	6,402	70.5	451	5.0	684	7.5	124	1.4	—	
1957	1,212	12.2	3,655	36.9	5,036	50.9	9,903	152	1.5	2,335	23.6	5,840	59.0	861	8.7	589	5.9	126	1.3	—	
1958	822	10.7	1,893	24.6	4,984	64.7	7,699	104	1.3	1,141	14.8	4,845	62.9	823	10.7	496	6.4	290	.7	—	
1959	1,255	14.5	3,128	36.0	4,296	49.5	8,679	56	.6	835	9.6	6,369	73.4	635	7.3	661	7.6	123	1.4	—	
1960	1,194	11.1	4,033	37.6	5,508	51.3	10,735	33	.3	1,423	13.3	6,943	64.7	939	8.7	927	8.6	470	4.4	—	
1961	1,214	11.5	3,924	37.2	5,412	51.3	10,550	15	.1	1,521	14.4	6,587	62.4	930	8.8	1,226	11.6	271	2.6	—	
1962	857	8.0	4,894	45.4	5,020	46.6	10,771	—	—	—	—	—	—	—	—	—	—	—	—	—	

Source: Computed from data provided by the Farm Credit Administration. Computations exclude Springfield, St. Louis, and Wichita districts because data were not available.

<sup>a</sup> The total amount for loans involved, obtained by summing the amounts for loans originating in the three loan grades (cols. 1, 3, 5). This total is also the sum of the amounts for loans in the six current disposition categories (cols. 8, 10, 12, 14, 16, 18).

TABLE 8

Current-Year D Loans Classified by Type of Disposition on Inspection Date of Following Year, Totals for Entire Period, All PCA Districts, 1945-61

	<i>Number</i>	<i>Percentage of Number</i>	<i>Amount (\$ thousand)</i>	<i>Percentage of Amount</i>
AB	373	1.5	1,265	1.3
C	2,966	12.1	16,059	16.1
D	10,132	41.3	61,542	61.7
Paid in full	5,062	20.6	9,703	9.7
Charged off	5,702	23.2	8,917	8.9
Other	301	1.2	2,328	2.3
Total	24,536	100.0	99,814	100.0

Source: Computed from Tables 6 and 7. Computations of amounts exclude Springfield, St. Louis, and Wichita districts because data were not available. Numbers computations include all districts.

The most important relationships observed from Tables 5 through 8 are:

1. About 0.25 per cent of AB loans in the current year were graded D in the following year, but a smaller (although unknown) proportion would then be charged off at the end of that year.
2. About 2.2 per cent of current year C loans were graded D in the following year, but a smaller (although unknown) proportion would then be charged off at the end of that year.
3. About 20 to 25 per cent of D loans in each inspection date are charged off at the end of the year.
4. About 40 per cent of all D loans are ultimately charged off.<sup>3</sup>

<sup>3</sup> The ultimate disposition of D loans between charge-off and payment in full can be estimated by assuming past relationships will hold in the future. During the 1945-62 period, about 41 per cent of all D loans were continued in grade D and 23 per cent were charged off. Under the assumption that the 41 per cent of D loans continued in that category to the next year will have the same charge-off rate as all D loans have had in the past, 23 per cent of these loans (i.e.,  $23 \times 41$  per cent or 9.4 per cent) will be charged off in year number two, while 41 per cent will be continued in grade D (i.e.,  $41 \times 41$  per cent, or 16.8 per cent). In year three, 23 per cent of the 16.8 per cent will be charged off, etc. Thus, about 40 per cent of all D loans will ultimately be charged off. When the 1961 data are examined, the percentage of D loans continued as D loans is 49.5 per cent and the percentage

Since 20 per cent of D loans are charged off in the current year, and about 40 per cent are carried over to the next year, it seems reasonable to assume that the proportion of former C and AB loans which are actually charged off on the next annual inspection date is smaller than the proportion which had become D loans. However, the ultimate charge-off rates on C and AB loans may well be larger than the percentage that become D the following year.

One further point about D loans should be made. The charge-off rate for *old* D loans, those carried in the grade for one year or more, appears to be about the same as or slightly higher than the rate for *new* D loans, those which were AB, C, or not-yet-closed in the preceding year.<sup>4</sup> The indication is that D loans are more likely to be charged off than other loans, and thus that the grades assigned under the grading system are useful in assessing loan quality.

*Summary.* The conclusion that the grading system used by the Production Credit Associations is useful is based on the following observations: (1) D loans generate much higher charge-off rates than

charged off is 18.9 per cent. This combination also gives an estimate of nearly 40 per cent ultimate charge-off for D loans.

The general formula for the ultimate charge-off rate (*a*) under these assumptions is

$$a = b \left( 1 + \frac{c}{1 - c} \right),$$

where *b* is the initial year charge-off rate and *c* is the percentage continued in grade D, all percentages expressed as decimal fractions.

<sup>4</sup> The relations between current-year old D loans and all current-year D loans charged off, paid in full, or classified as AB or C on the following inspection date are the basis for this comparison. The correlation between old D loans and all D loans charged off aids in determining whether the charge-off rates for new and for old D loans differ. New D loans as a percentage of all D loans equal old D loans subtracted from 100 per cent. Therefore, correlation of new D loans with charge-offs would be the inverse of the correlation of old D loans and charge-offs. A zero correlation would suggest that the charge-off rates for new and old D loans were the same. This conclusion follows since zero correlation means that a change in the ratio of new to old D loans had no effect on the percentage of all D loans charged off. A high positive correlation would suggest that the charge-off rate for old D loans was higher than for new D loans, while a negative correlation would suggest that the charge-off rate for new D loans was higher.

The correlation between the percentages of old D loans and all loans charged off was slightly positive; in nine years the changes from the preceding year were in the same direction and in seven years they were in the opposite direction. When the amounts data (which were not available from three districts) are checked, a positive correlation was also found, but in a twelve-to-four ratio. Similar checks between old D loans and each of the other dispositions (paid in full, retained in D grade, or reclassified as AB or C) in each case resulted in slight positive correlations.



AB or C loans; (2) C loans generate higher charge-off rates than AB loans because C loans generate more D loans than do AB loans; (3) losses, as a result of the proportions charged off, are generated at the highest rates by D loans, next by C loans, and at the lowest rate by AB loans. This conclusion is not as firmly established as it might be had it been possible to associate the ultimate disposition of each loan with its grade one year before, two years before, etc. The uncertainty arises from the fact that the high proportion of D loans charged off may merely reflect the practice of assigning this grade to all loans that are about to be charged off, whereas none of the AB or C loans are charged off without prior classification as D loans. Even the higher proportion of C than of AB loans that become D in the following year might reflect a process of grading weak loans down by stages from AB to C to D. Nevertheless, the conclusion is reasonable, consistent with the evidence, and supported by the analysis in the next section.

*Relations Between Loan Grades in the Portfolio*

Attention is now turned toward an examination of the relations between the changes through time in the loan-grade composition of the Production Credit Associations' portfolio, subsequent loan-grade composition, and final loan disposition.

Several regressions were computed to obtain more exact measure-

TABLE 9

Regression of Number of Loans Charged Off Upon Number of D Loans Under Three Alternative Lags, All PCA Districts, 1945-61

	<i>No Lag</i>	<i>One-Year Lag</i>	<i>Two-Year Lag</i>
Regression coefficient	.23	.22	.18
Regression coeff. ÷ stand. error (t)	22.75	18.42	11.30
Elasticity <sup>a</sup>	.99	.92	.72
Coefficient of determination (R <sup>2</sup> ) <sup>b</sup>	.75	.68	.47
Number of observations	204	192	180

Note: Calculated from pooled data.

<sup>a</sup> Computed at the arithmetic means of the two variables.

<sup>b</sup> Includes contribution from year dummy variables.

TABLE 10

Regression of Dollar Losses on Loans Upon Amounts of D Loans Under  
Three Alternative Lags, All PCA Districts, 1945-62

	No Lag	One-Year Lag	Two-Year Lag
Regression coefficient	.13	.09	.07
Regression coeff. ÷ stand. error (t)	14.08	7.26	4.92
Elasticity <sup>a</sup>	1.11	.69	.49
Coefficient of determination (R <sup>2</sup> ) <sup>b</sup>	.57	.32	.22
Number of observations	216	204	192

Note: Calculated from pooled data.

<sup>a</sup> Computed at the arithmetic means of the two variables.

<sup>b</sup> Includes contribution from year dummy variables.

ment of these relations. The results were consistent with the conclusions indicated in the previous section, and in addition provided additional insight into the lagged relations which are not easily observed from the data directly.

From the eighteen years of data for the twelve Farm Credit Districts "pooled regressions" were computed, with the loan totals for each year in each district used as individual observations. To remove trend effects (between years) in a pooled-regression approach, each year except the first is assigned a variable with a value of one for that year and zero for all observations of other years. For eighteen years, there were seventeen dummy variables of this type. The regression coefficients for these variables indicate the shift effect of a single year relative to the base, after taking account of the net effect of any other independent variables. The regression coefficient for other independent variables is thus net of "year effects" and is common for all years in the pooled regression.<sup>5</sup>

*D Loans and Losses on Loans.* The first regressions were between D loan numbers and D loan numbers charged off, and next between D loan amounts and losses on loans. Table 9 gives the results of the pooled regression obtained when D loan numbers charged off are regressed upon D loan numbers. The latter was used with three

<sup>5</sup> The regression results in the text do not include the coefficients for the year dummy variables.

alternative lags: zero, one, and two years. Table 10 shows the results when dollar losses on loans are regressed upon D loan amounts, again using the same system of lags for the independent variable.

In Table 9, the regression coefficient in the first column indicates that, for each change of one in the number of D loans, the number of these loans charged off changed by .23 of a loan in the same direction. This estimate corresponds to the 23 per cent average of D loans charged off over the 1945-61 period shown in Table 8. Seventy-five per cent of the variance in D loans charged off was associated with the variance in these loans and in the dummy variables discussed above. The ratio of the regression coefficient to its standard error, 22.75, means that the regression coefficient is significantly different from zero, statistically. The elasticity of charged-off loans to D loans of .99 means that a 10 per cent increase (decrease) in D loans is associated with a 9.9 per cent increase (decrease) in charged-off loans. This elasticity was computed at the arithmetic means of the two variables, and thus takes into account the base of each.

When next year's charge-offs are related to this year's D loans, (second column) a regression coefficient of .22 is obtained: and when charge-offs two years hence are used, it is .18. Analytically, these lagged relationships are more interesting because they indicate the possibility of using current D loans to estimate future loss rates. The coefficients compare with .23 obtained with current-year D loans.

The regression results for amounts of losses regressed upon D loan amounts are given in Table 10. These results are based upon more data than the disposition data on D loan amounts given in Table 8 in that 1962 data are included and the loss data for all twelve districts were available.<sup>6</sup> The magnitudes of the regression coefficients in this case are consistent with the results obtained when numbers were used, and, except for the reason just stated, with the simple average estimate given in Table 8. The unlagged regression coefficient indicates that a one-dollar increase in D loan amounts is associated with a 13 cent increase in losses, on the average.

*C Loans and Losses on Loans.* The second set of relations examined

<sup>6</sup> The figures were obtained from aggregative data compiled by the Farm Credit Administration in a form that could be used in these calculations, but not in the form used in Table 8.

TABLE 11

Regression of Number of Loans Charged Off Upon Number of C Loans  
Under Three Alternative Lags, All PCA Districts, 1945-61

	<i>No Lag</i>	<i>One-Year Lag</i>	<i>Two-Year Lag</i>
Regression coefficient	.010	.011	.010
Regression coeff. ÷ stand. error (t)	3.92	3.65	2.93
Elasticity <sup>a</sup>	.69	.67	.57
Coefficient of determination (R <sup>2</sup> ) <sup>b</sup>	.14	.12	.10
Number of observations	204	192	180

Note: Calculated from pooled data.

<sup>a</sup> Computed at the arithmetic means of the two variables.

<sup>b</sup> Includes contribution from year dummy variables.

correspond to those given in Tables 9 and 10, with C loans substituted for D loans as the independent variable. The regression results obtained in this case (Tables 11 and 12) show that changes in C loan numbers and amounts were associated with changes of the same sign in charged-off loans and losses. The regression coefficients and correlations obtained, while significantly different from zero, were much lower than for D loans. The elasticities, however, are not greatly different from those found for D loans.

TABLE 12

Regression of Dollar Losses on Loans Upon Amounts of C Loans Under  
Three Alternative Lags, All PCA Districts, 1945-62

	<i>No Lag</i>	<i>One-Year Lag</i>	<i>Two-Year Lag</i>
Regression coefficient	.005	.006	.007
Regression coeff. ÷ stand. error (t)	3.67	3.65	3.67
Elasticity <sup>a</sup>	.78	.79	.81
Coefficient of determination (R <sup>2</sup> ) <sup>b</sup>	.20	.19	.17
Number of observations	216	204	192

Note: Calculated from pooled data.

<sup>a</sup> Computed at the arithmetic means of the two variables.

<sup>b</sup> Includes contribution from year dummy variables.

When both D and C loans were used in the same multiple regression, similar estimates of the relationship were obtained (Tables 13 and 14). The inclusion of C loans in the regression does not appreciably increase the explained variance compared with the use of D loans alone (see Tables 9 and 10). The most interesting aspect (in Table 14) is the improvement in the statistical significance of the regression coefficient for C loan amounts in the lagged over the unlagged relationship, together with a failure of the regression coefficients to decline in magnitude as the lag increases. This result is consistent with the direct observation from the data that AB loans go bad over time, often moving from AB to C to D to charge-off or loss. These relationships are also consistent with the conclusion previously obtained that new D loans are slightly less likely to be charged off by the end of the year than old D loans.

*C Loans and D Loans.* The final relations computed were between C loans as the independent variable and D loans as the dependent

TABLE 13

Regression of Number of Loans Charged Off Upon Numbers of C and D Loans Under Three Alternative Lags, All PCA Districts, 1945-61

	<i>No Lag</i>	<i>One-Year Lag</i>	<i>Two-Year Lag</i>
Regression coefficient, number of D loans	.23	.22	.17
Regression coeff. ÷ stand. error (t)	22.53	17.84	10.72
Elasticity <sup>a</sup>	.97	.90	.70
Regression coefficient, number of C loans	.005	.005	.004
Regression coeff. ÷ stand. error (t)	3.67	2.48	1.47
Elasticity <sup>b</sup>	.34	.28	.22
Coefficient of determination (R <sup>2</sup> ) <sup>c</sup>	.77	.69	.48
Number of observations	204	192	180

Note: Calculated from pooled data.

<sup>a</sup> With reference to the variable  $x_1$ , number of D loans.

<sup>b</sup> With reference to the variable  $x_2$ , number of C loans.

<sup>c</sup> Includes contribution from year dummy variables.

TABLE 14

Regression of Dollar Losses on Loans Upon Amounts of C and D Loans  
Under Three Alternative Lags,  
All PCA Districts, 1945-62

	No Lag	One-Year Lag	Two-Year Lag
Regression coefficient, amounts of D loans	.13	.09	.06
Regression coeff. ÷ stand. error (t)	13.11	6.14	3.67
Elasticity <sup>a</sup>	1.13	.65	.41
Regression coefficient, amounts of C loans	-.0004	.0015	.0030
Regression coeff. ÷ stand. error (t)	.41	.97	1.46
Elasticity <sup>b</sup>	-.07	.21	.35
Coefficient of determination (R <sup>2</sup> ) <sup>c</sup>	.57	.32	.23
Number of observations	216	204	192

Note: Calculated from pooled data.

<sup>a</sup> With reference to the variable  $x_1$ , amounts of D loans.

<sup>b</sup> With reference to the variable  $x_2$ , amounts of C loans.

<sup>c</sup> Includes contribution from year dummy variables.

variable. The results in this case, given in Tables 15 and 16, for numbers and amounts, respectively, suggest that increases in D loans are associated with increases in C loans. The relation is closer for amounts, and the regression coefficients are larger when the lagged relations are used. This suggests that the same forces which generate D loans generate C loans, and that C loans are more likely than AB loans to generate D loans.

### *Federal Land Bank Loans*

#### *Land Bank Loan Data*

The real estate loan study is restricted to analysis of data on lending activities in New York State by the Federal Land Bank of Springfield, Massachusetts. The available data allow examination of the characteristics of loans closed and disposed of in each year. No information is available, however, on the loans during the period between date of closing and the date of disposition.

TABLE 15

Regression of Number of D Loans Upon Number of C Loans Under Three Alternative Lags, All PCA Districts, 1945-61

	<i>No Lag</i>	<i>One-Year Lag</i>	<i>Two-Year Lag</i>
Regression coefficient	.020	.018	.019
Regression coeff. ÷ stand. error (t)	2.20	1.75	1.74
Elasticity <sup>a</sup>	.32	.27	.27
Coefficient of determination (R <sup>2</sup> ) <sup>b</sup>	.06	.05	.05
Number of observations	204	192	180

Note: Calculated from pooled data.

<sup>a</sup> Computed at the arithmetic means of the two variables.

<sup>b</sup> Includes contribution from year dummy variables.

At the time a loan is closed, information relevant to it is recorded. For the period since 1933, this information includes measures of grade of the farm and grade of the area where the farm is located, size of loan, market value, normal agricultural value, and number of acres. The grade of farm and area classifications were assigned by the appraisers employed by the Land Bank, and reflect economic productivity criteria. When the loans are paid or otherwise disposed of, a record is kept of losses, loans paid at foreclosure, loans foreclosed, and loans paid in full or refunded.

TABLE 16

Regression of Amounts of D Loans Upon Amounts of C Loans Under Three Alternative Lags, All PCA Districts, 1945-62

	<i>No Lag</i>	<i>One-Year Lag</i>	<i>Two-Year Lag</i>
Regression coefficient	.038	.049	.059
Regression coeff. ÷ stand. error (t)	5.84	6.39	6.43
Elasticity <sup>a</sup>	.75	.83	.83
Coefficient of determination (R <sup>2</sup> ) <sup>b</sup>	.35	.36	.35
Number of observations	216	204	192

Note: Calculated from pooled data.

<sup>a</sup> Computed at the arithmetic means of the two variables.

<sup>b</sup> Includes contribution from year dummy variables.

TABLE 17

Credit Services Provided by the Federal Land Bank in  
New York State, 1917 to April 30, 1958

<i>Loan Experience</i>	<i>Number of Loans</i>	<i>Percent- age of Number</i>	<i>Amount of Loans (\$ thousand)</i>	<i>Percent- age of Amount</i>	<i>Average Size (dollars)</i>
1. Loans closed	35,738	100.0	135,575	100.0	3,790
2. Outstanding, April 30, 1958	11,262	31.5	57,748	42.6	5,130
3. Paid in full or refunded	20,953	58.6	64,846	47.8	3,090
4. Foreclosed	2,795	7.8	10,731	7.9	3,840
5. Paid at foreclosure	728	2.0	2,250	1.7	3,080
6. Unsatisfactory loans (lines 4 and 5)	3,523	9.9	12,981	9.6	3,680
7. Net losses <sup>a</sup>	2,633	—	-3,303	—	—

Source: Computed from data provided by the Federal Land Bank of Springfield, Massachusetts.

<sup>a</sup> Loss indicated by minus sign.

The activities of the bank and subsequent loan results for the period 1917-58 are summarized in Table 17.<sup>7</sup> Unsatisfactory loans (line 6, Table 17) fall into two categories: loans foreclosed and loans paid while in the last stages of the foreclosure process. This latter category of loans was unsatisfactory in that although the borrower was able to pay eventually, thus preventing the Land Bank from taking title to the farm, he was unable or unwilling to make payment as called for in the original contract. Loans that were actually foreclosed were unsatisfactory in the sense that when the borrower did not meet the terms of the original contract, the Land Bank took title to the mortgaged property and sold it on the market.<sup>8</sup>

The basic data for this part of the study are summarized in two

<sup>7</sup> The amounts in this table and in all tables that follow in this section refer to the original amounts for loans closed. No adjustments have been made for partial repayments. These partial repayments were significant, because almost all Land Bank loans were amortized and substantial advance payments were made.

<sup>8</sup> Some farms were acquired by the Land Bank by deed and did not go through the foreclosure procedure. In addition, a few loan balances were charged off where efforts to collect the small amounts involved would merely add to the loss.



tables. The number of loans in each collateral grade is given in Table 18 and the corresponding amounts are given in Table 19. A comparison of the numbers obtained "by year of loan closing" with those obtained "by year of loan disposition" (given in parentheses) provides some indication of the level of accuracy maintained in the tabulation of the 35,738 loans. Elimination of all tabulation errors would have resulted in numbers in parentheses identical with their counterparts. The tabulation errors have been held to relatively low percentages; and while the number of observations of loan numbers and amounts in unsatisfactory types of dispositions are perhaps lower than desirable from a statistical viewpoint, they are still useful.

All of the loans on which collateral grades were known were closed during the period 1933-58.<sup>9</sup> Of the 35,738 loans that were made during the entire period, area and farm grades were recorded on 20,601. On the remaining 15,137 loans, area and farm grade information was either incomplete or entirely missing.

The area classifications identify the highest to lowest qualities of area with a 1, 2, 3, 4 ranking system.<sup>10</sup> A comparable system of grading farms was followed in which an A, B, C, D ranking system was used, with A farms of highest quality. These grades are combined and referred to as collateral grades.<sup>11</sup> For the main parts of the analysis, the grades of area and of farm classifications were reduced to four classes identified as follows: 12AB loans in the best areas and on the best farms, 12CD loans in the best areas but on the worst farms, 34AB loans in the worst areas but on the best farms, and 34CD loans in the worst areas and on the worst farms.

#### *Analysis of the Experience of Loans in Different Collateral Grades*

Analysis of the loan experience of the Federal Land Bank, in relation to the grading system, is different from that of the Production Credit Association because of dissimilarities in their loan classification systems and available data.

The PCA loan grading system is used as part of the loan inspection

<sup>9</sup> This information was not collected on loans closed prior to 1933.

<sup>10</sup> For internal purposes, these grading systems during some periods used pluses and minuses as a means of refining the classification.

<sup>11</sup> This terminology is not precise since the loans made by the Land Banks are made with the provision of recourse to property in addition to the farm proper. We use the phrase "collateral grade" as a useful definitional abbreviation.

## Some Measures of Agricultural Credit Quality

TABLE 18

Number of Loans by Disposition and Collateral Grade, Derived From Data Collected at the Time the Loan Was Closed, All Land Bank Loans in New York State, 1917 to April 30, 1958

Type of Disposition	Total	Grade Unknown <sup>a</sup>	Total Known Grades	12AB	12CD	34AB	34CD
1. Total	35,738	15,137	20,601	6,319	1,885	1,777	10,620
2. Outstanding	11,262	1,224	10,038	2,057	631	613	6,737
3. Total of known type of disposition	24,476 (24,448)	13,913 (13,943)	10,563 (10,505)	4,262 (4,255)	1,254 (1,240)	1,164 (1,163)	3,883 (3,847)
4. Paid in full	19,298	10,333	8,965	3,672	1,059	993	3,241
5. Refunded	(19,292)	(10,378)	(8,914)	(3,665)	(1,046)	(992)	(3,211)
	1,655	460	1,195	412	143	127	513
	(1,656)	(468)	(1,188)	(412)	(142)	(127)	(507)
6. Subtotal of lines 4 and 5	20,953 (20,948)	10,793 (10,846)	10,160 (10,102)	4,084 (4,077)	1,202 (1,188)	1,120 (1,119)	3,754 (3,718)
7. Foreclosed <sup>b</sup>	2,795 (2,794)	2,632 (2,631)	163 (163)	58 (58)	16 (16)	21 (21)	68 (68)
8. Paid at foreclosure <sup>b</sup>	728 (706)	488 (466)	240 (240)	120 (120)	36 (36)	23 (23)	61 (61)
9. Subtotal of lines 7 and 8	3,523 (3,500)	3,120 (3,097)	403 (403)	178 (178)	52 (52)	44 (44)	129 (129)
10. Losses	2,633	2,504	129	44	13	17	55
11. Loss rate: line 10 ÷ line 3	10.8	18.0	1.2	1.0	1.0	1.5	1.4

Note: Figures in parentheses are totals of tabulations "by year of loan disposition"; other figures are totals of tabulations "by year of loan closing."

Source: Computed from data provided by the Federal Land Bank of Springfield, Massachusetts.

<sup>a</sup> Grades were assigned beginning in 1933.

<sup>b</sup> When loans of unknown grade are included, 2,795 were foreclosed and 728 were paid at foreclosure, corresponding to the numbers given in Table 17. All of the loans of known grade were made after the grading system was adopted in the 1930's; most of the unknown grade were made in the 1920's and very early 1930's.

TABLE 19  
 Amounts of Loans by Disposition and Collateral Grade, Derived From Data Collected at the Time  
 the Loan Was Closed, All Land Bank Loans in New York State, 1917 to April 30, 1958  
 (amounts in dollars)

Type of Disposition	Total	Grade Unknown <sup>a</sup>	Total Known Grades				
			12AB	12CD	34AB	34CD	
1. Total	135,574.6	47,602.6	87,972.0	31,471.2	6,603.6	9,062.5	40,834.7
2. Outstanding	57,748.0	4,204.4	53,543.6	14,832.4	3,106.2	5,389.8	30,215.2
3. Total of known type of disposition	77,826.6 (77,750.9)	43,398.2 (43,550.9)	34,428.4 (34,200.0)	16,638.8 (16,605.7)	3,497.4 (3,452.5)	3,672.7 (3,670.6)	10,619.5 (10,471.2)
4. Paid in full	58,757.1 (58,744.9)	30,192.9 (30,366.4)	28,564.2 (28,378.5)	14,074.2 (14,038.7)	2,931.3 (2,892.6)	3,015.7 (3,013.4)	8,543.0 (8,433.8)
5. Refunded	6,089.0 (6,089.8)	1,435.2 (1,480.9)	4,653.8 (4,608.9)	1,892.0 (1,892.2)	445.1 (438.9)	544.9 (545.1)	1,771.8 (1,732.7)
6. Subtotal of lines 4 and 5	64,846.1 (64,834.7)	31,628.1 (31,847.3)	33,218.0 (32,987.4)	15,966.2 (15,930.9)	3,376.4 (3,331.5)	3,560.6 (3,558.5)	10,314.8 (10,166.5)

(continued)

TABLE 19 (concluded)

Type of Disposition	Total	Grade		Total Known Grades	12AB	12CD	34AB	34CD
		Unknown <sup>a</sup>	Known					
7. Foreclosed	10,730.8 (10,745.7)	10,233.7 (10,246.4)	497.1 (499.3)	519.4 (221.6)	43.6 (43.6)	51.5 (51.5)	182.6 (182.6)	
8. Paid at foreclosure	2,249.7 (2,170.5)	1,536.4 (1,457.2)	713.3 (713.3)	453.2 (453.2)	77.4 (77.4)	60.6 (60.6)	122.1 (122.1)	
9. Subtotal of lines 7 and 8	12,980.5 (12,916.2)	11,770.1 (11,703.6)	1,210.4 (1,212.6)	672.6 (674.8)	121.0 (121.0)	112.1 (112.1)	304.7 (304.7)	
10. Losses <sup>b</sup>	-3,303	-3,349	+46.8	+18.8	+3.5	+6	+23.8	
11. Loss rate: line 10 ÷ line 3	-4.2	-7.7	+14	+113	+100	+016	+224	

Note: Figures in parentheses are totals of tabulations "by year of loan disposition"; other figures are totals of tabulations "by year of loan closing."

Source: Computed from data provided by the Federal Land Bank of Springfield, Massachusetts.

<sup>a</sup> Grades were assigned beginning in 1933.

<sup>b</sup> Loss indicated by minus sign.

process to identify loans headed for trouble; the Federal Land Bank loan collateral grading system is used to judge the quality of the farm and area at the time loans are made. The Federal Land Bank must make a judgment on loan collateral to enable it to make loans on all types of farms; the grading system is used in determining which loan applications to accept and the amount to loan. It is unlikely that a change in grade will occur during the period of the loan.

The difference in the grading systems means there will be different inferences drawn from a stable relation between grades and losses in each case. For example, a high correlation between unsatisfactory loans (charged-off) and lower-grade loans for Production Credit Association loans means that the grading system is useful for identifying changes in loan quality, assuming lower grades have higher charge-off rates. A significant correlation between unsatisfactory loans and the Federal Land Bank grading system for loan collateral would mean that, at the time loans were closed, inadequate account was taken of differences in farm quality and area quality to bring about the same loss rates for all groups of loans. A nonsignificant correlation would suggest that either the Federal Land Bank grading system was meaningless or that proper account of the differences in farms and areas had been taken in the decision of how much, if any, to lend on a farm.

This analysis is summarized in the following three questions: (1) Was the loan experience for each collateral grade similar or different? (2) What were the similarities and differences in the characteristics of the loans in each collateral grade? (3) Which, if any, of the characteristics of the loans were systematically associated with disposition rates?

*Variation in Loan Experience Among Collateral Grades.*<sup>12</sup> Since loss rate is not considered a useful criterion for examining the loan experience of the Federal Land Bank over this period, the criterion of type of loan disposition is used.<sup>13</sup> Table 20 gives the percentage

<sup>12</sup> Loan collateral grades were assigned only after 1933. Thus the following generalization takes no account of loans previously closed or closed after 1933 for which the grade data were missing.

<sup>13</sup> The data on loss rates do not give a clear-cut indication of whether 12AB, 12CD, 34AB, or 34CD loans have the most satisfactory loan experience, primarily because profits were realized in all collateral grades. The selling price of farms

TABLE 20  
 Loan Disposition by Collateral Grade, as Percentage of Total Loans Closed and Loans Disposed of,  
 All Land Bank Loans in New York State, 1933 to April 30, 1958

Type of Disposition	Based on Number of Loans				Based on Amounts of Loans			
	12AB	12CD	34AB	34CD	12AB	12CD	34AB	34CD
	<i>Percentage of Loans Disposed of</i>							
Foreclosed (line 7)	1.4	1.3	1.8	1.8	1.3	1.2	1.4	1.7
Paid at foreclosure (line 8)	2.8	2.9	2.0	1.6	2.7	2.2	1.7	1.1
Refunded (line 5)	9.7	11.4	10.9	13.2	11.4	12.7	14.8	16.7
Paid in full (line 4)	86.2	84.4	85.3	83.5	84.6	83.8	82.1	80.4
Total disposed of (line 3)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	<i>Percentage of Loans Closed</i>							
Total disposed of (line 3)	67.4	66.5	65.5	36.6	52.9	53.0	40.5	26.0
Outstanding (line 2)	32.6	33.5	34.5	63.4	47.1	47.0	59.5	74.0
Total closed (line 1)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Tables 18 and 19; line numbers refer to those tables.

distribution of loans disposed of among foreclosed, paid at foreclosure, refunded, and paid in full, for each of the loan collateral grades. For both number and amount, a larger proportion of loans closed was still outstanding for 34CD loans than for the other collateral grades. The proportion of 34AB loan amounts still outstanding was also larger than for the best area loans. These differences may be reflected in the characteristics of the loans disposed of, since the final disposition is known for a much smaller proportion of the 34CD loans than the rest, but we have no way to determine what effect it might have.

Loans on the poorest farms in the poorest farm areas had a higher rate of foreclosure than did loans on the best farms in the best areas. The opposite held for loans paid in full. These two criteria are unambiguous in reflecting good or bad loan experience; they indicate that experience was better for loans on the best farms in the best areas.

Loans paid at foreclosure are both an indication of trouble and an ability to get out of trouble. Refundings are often designed to avoid foreclosure. Thus, both of these criteria are ambiguous in reflecting good or bad loan experience. The proportion of loans refunded is larger, and the proportion of loans paid at foreclosure is smaller, for loans on the poorer farms in the poorer areas. If payment at foreclosure is preferable to refunding, from the Land Bank's point of view, then it also appears from these criteria that loan experience was poorer for the worst farms in the worst areas.

While the loan experience for the worst farms in the worst areas is poorer than for better farms in the better areas, the degree of similarity in experience is of interest.<sup>14</sup> This similarity in experience

taken over as a result of foreclosure (including some acquisitions by deed) more than covered the original amounts the borrowers owed the Land Bank, on the average. Loans on which grade data were available were for the most part closed during or after the Great Depression and profits resulted from the upward trend in land values following it. Since profits resulting from foreclosure did not represent intentional lending policy of the Land Bank, loss rate in this context does not seem to be an appropriate criterion for judging loan experience.

<sup>14</sup> The grade of area appears to be more closely related to loan experience than is grade of farm, based on Chi-square analysis of the information on loan disposition given in Tables 18 and 19. This finding holds for both loan numbers and loan amounts, although the latter appear to be a more significant difference. The primary difference, for either farms or areas, was in the proportion of loans refunded and paid at foreclosure. The best farms and areas had proportionately

would be expected if lending policies were adequately adapted to grade of farm and farm area by the Bank. Additional information on the relation between grade of loan collateral and loan experience is examined in the next two sections, where the analysis centers upon loan characteristics.

*Characteristics of Loans in Each Collateral Grade.* At the time Land Bank loans were closed, a record was made of the amount loaned on the farm, its normal agricultural value, its present market value, and its size in acres. Table 21 compares these and certain derived characteristics of the loans in each collateral grade. These characteristics are based on the loans of known grade that were disposed of by April 30, 1958.

Some rather systematic variations appear in the average loan characteristics among loan grades. Loans are largest on the best farms in the best areas and are larger on the best farms in the worst areas than on the worst farms in the best areas. The worst farms in the worst areas have the lowest average size of loan. Average normal agricultural value and average present market value rank in the same way as average size of loan.<sup>15</sup> Both best and worst farms in the worst areas were larger in acreage than those in the best areas. More was loaned per acre in the best areas. The ratio of amount loaned to normal agricultural value varied between .44 for the best farms in the best areas to .50 for the worst farms in the worst areas. However, the ratio of the amount loaned to present market value was very uniform, ranging between .39 and .41 for the four collateral grades.

*Relation Between Loan Characteristics and Final Loan Disposition.* Loans paid in full, foreclosed, and paid at foreclosure were examined to determine the relationship between loan characteristics and final loan disposition. Comparisons were made for average size of loan, normal agricultural value, and loan to normal agricultural value ratio. This last characteristic is referred to as loan-to-value ratio and is the inverse of the equity ratio.

There are three possible results of these comparisons; thus for each more loans paid at foreclosure and proportionately less loans refunded than the worst farms and areas. The differences in proportions of loans foreclosed and paid in full were not significant between best and worst farms and areas.

<sup>15</sup> Normal agricultural value is based upon average yields and normal price conditions. As the going price of land in the market (present market value) rises, the normal agricultural value lags behind.



TABLE 21

Characteristics of Loans Closed, All Land Bank Loans of Known Collateral Grades Closed and Disposed of in New York State, 1933 to April 30, 1958  
(amounts in dollars)

<i>Characteristic</i>	<i>All</i>					<i>12AB as</i>
	<i>Loans</i>	<i>12AB</i>	<i>12CD</i>	<i>34AB</i>	<i>34CD</i>	<i>Percent-</i> <i>age of</i> <i>34CD</i>
	(1)	(2)	(3)	(4)	(5)	(6)
1. Average size of loan	3,300	3,900	2,800	3,200	2,700	144
2. Average normal agricultural value of farm	7,021	8,789	6,158	6,812	5,372	164
3. Average present market value of farm	8,131	9,616	7,194	7,689	6,903	139
4. Average number of acres	136	134	115	154	139	96
5. Dollars loaned per acre	24	29	24	21	20	145
6. Ratio of amount loaned to normal agricultural value	.470	.444	.455	.470	.503	88
7. Ratio of amount loaned to present market value	.406	.406	.389	.416	.391	104

Source: Computed from data provided by the Federal Land Bank of Springfield, Massachusetts.

loan characteristic, each disposition group was given a rank of 1, 2, or 3. A rank of 1 was assigned to the type of disposition (paid in full, foreclosed, or paid at foreclosure) for which the average size of loan was largest. A rank of 2 was assigned to the disposition with the second largest average size loan; and a rank of 3 to the third. A similar procedure was used for average normal agricultural value, and for average loan-to-value ratio. This ranking was done for each year.<sup>16</sup> If all three types of disposition did not occur in a year, the year's observations were deleted from this ranking. Equal magnitudes

<sup>16</sup> For example, in 1936 the average size of loan for all loans paid in full was \$2,700; all loans foreclosed, \$3,600; and all loans paid at foreclosure, \$2,800. Thus the ranks assigned are 3, 1, and 2, respectively.

were treated as equal ranks, so that in some cases a rank of 1.5 was assigned to two, or 2.5 was assigned to two, of the magnitudes.<sup>17</sup>

The ranks for all years were then summed and averaged by dividing by the number of years included. Interpreting these data for each loan characteristic shows that a high average rank indicates a small-size loan, a small normal agricultural value, and a small loan-to-value ratio (high equity) relative to the magnitudes of these characteristics for the other two types of final dispositions. Conversely, a low average rank indicates a large loan, a large normal agricultural value, and a large loan-to-value ratio.

Table 22 gives the results of applying this procedure; first when the results for each ranked year are for loans closed in that year, and next when the results are for loans disposed of in that year. The former reflects conditions during the period when loans were made and the latter reflects conditions during the period when loans were disposed of, although not exclusively in either case.

The most consistent pattern appears for the loan-to-value ratio. Foreclosed loans had relatively high loan-to-value ratios, or low equity (low average ranks). Loans paid in full had relatively higher equity than foreclosed loans, while loans paid at foreclosure were intermediate for this characteristic. This generalization holds for the observations according to year of closing or disposition and for loans of unknown grade as well as for loans of known grade. It also holds, as a rule, for each collateral grade taken separately.

Foreclosed loans also tended to be of relatively larger size and with intermediate or high normal agricultural values, although the evidence is not as clear. This is consistent with the results for loan-to-value ratios, which take account of both of these characteristics. Loans paid at foreclosure were sometimes larger and sometimes smaller than loans paid in full, and generally smaller in normal agricultural value.

The important conclusion to be gained from Table 22 is that loan experience is related to loan-to-value ratio, apart from the grade of the collateral on which the loans have been made.

*Summary.* Loan experience did not vary widely among the collateral grades, but there was a tendency for the loans on the worst farms

<sup>17</sup> When two ranks of 1.5 were assigned, the third rank was 3. When two ranks of 2.5 were assigned, the third rank was 1.

TABLE 22  
Average Rank Assigned to Characteristics of Loans in Each of Three Dispositions, All  
Land Bank Loans Closed and Disposed of in New York State, 1917-57

	Loan Size			Normal Agricultural Value			Loan-to-Value Ratio			
	Number of Years Included	Paid in Fore- closed	Paid at Fore- closure	Paid in Fore- closed	Paid at Fore- closure	Paid in Fore- closed	Paid in Fore- closed	Paid at Fore- closure	Paid in Fore- closed	
Loans by year closed										
All loans, 1917-57	36 <sup>a</sup>	2.2	1.6	2.2	2.0	1.9	2.1	2.6	1.4	2.0
Loans of known grade, 1933-57	19	2.1	1.8	2.2	1.7	2.1	2.2	2.4	1.6	2.1
12AB	12	2.0	1.7	2.2	1.9	2.0	2.1	2.4	1.8	1.8
12CD	4	2.3	1.0	2.8	2.0	1.3	2.8	2.5	1.3	2.3
34AB	8	1.8	2.1	2.1	1.7	2.0	2.3	2.6	1.6	1.8
34CD	14	2.1	1.7	2.1	1.9	1.8	2.3	2.3	1.7	2.0
Loans by year disposed of										
All loans, 1917-57	36	2.5	1.5	2.0	2.2	1.9	2.0	2.7	1.5	1.8
Loans of known grade, 1933-57	15	2.1	2.0	1.9	1.8	2.2	2.1	2.3	1.7	2.0
12AB	5	2.0	1.4	2.6	1.8	1.6	2.6	2.8	1.6	1.6
12CD	1 <sup>b</sup>	2.5	1.0	2.5	2.5	1.0	2.5	2.0	1.0	3.0
34AB	3	2.3	2.7	1.0	2.0	2.7	1.3	2.3	2.0	1.7
34CD	9	1.8	1.8	2.3	1.6	1.9	2.5	2.4	1.6	2.0

Note: For each year when all three types of disposition occurred, the disposition with the largest magnitude for the loan characteristic was ranked 1, the second largest 2, and the smallest 3. Years not having all three types of disposition were deleted. The average of ranks is the total of the ranks assigned to each disposition for all years included, divided by the number of years included.

Source: Computed from data provided by the Federal Land Bank of Springfield, Massachusetts.

<sup>a</sup> For loan size, thirty-seven years.

<sup>b</sup> For normal agricultural value, two years.

in the worst areas to have higher foreclosure rates. However, the evidence is somewhat ambiguous because of the uncertainty concerning the final disposition of loans still outstanding and the interpretation of loans refunded or paid at foreclosure.

Loans in the poorer collateral grades tended to be of smaller size, but larger in relation to normal agricultural value of the farm. The differences were smaller and less systematic with respect to the equity ratio based on present market value of the farm.

Finally, when loan characteristics are related to loan experience for each collateral grade, the chief result is that high ratios of loan to normal agricultural value are associated with foreclosures in each of the collateral grades. The use of the grading system evidently does not eliminate the differences in loan experience associated with differences in loan-to-value ratios, and the higher foreclosure rates on the poorer grades may be attributable to their higher loan-to-value ratios.