

HOW MUCH CREDIT CAN A FARMER AFFORD TO USE  
IN BUYING LAND?

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In Buying Land?

By

DESMOND LOUIS WILLIAM ANKER

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Peter Nelson

Adviser in Charge of Thesis

Peter Nelson

Head of the Department of  
AGricultural Economics

D. C. M. Tuttle

Dean of Graduate School

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## INTRODUCTION

A striking factor in the recent history of American agriculture has been the huge increase in the mortgage debt of farms, which has almost trebled since pre-war times. (Table 1) It is not the purpose of this study to analyze the causes for this condition. Let it suffice to say that the agricultural boom during and immediately following the World War, the purchase of farms at inflated values, the increased mechanization of the farm industry, followed by the startling disappearance of markets for farm products throughout the later twenties and early thirties, made it imperative that reform in the type of credit given to American farmers be forthcoming.<sup>1</sup> A huge agricultural credit machine was set up, culmin-

Table I

FARM MORTGAGE DEBT, U. S. AND OKLAHOMA, 1910-1930  
(Millions of Dollars)

	U. S.	Okla.
1910	3320	78
1920	7858	189
1925	9361	219
1928	9469	229
1930	9241	214

Source: Yearbook of Agriculture, 1935.

ated in the creation of the Farm Credit Administration in 1933, which co-ordinated all the existing farm credit agencies under one head, removed the inefficient units, and added in

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<sup>1</sup> For further information on the farm mortgage debt problem see "The Agricultural Situation", by G. F. Warren and F. A. Pearson, and "The Farm Mortgage Debt Problem", House Document No. 9, 73rd Congress, 1st Session.

their place organizations better fitted to tackle the problem.<sup>2</sup>

Few students of agricultural economics, therefore, will refuse to admit that we have to-day in America an efficient organization to handle all types of farm credit, and to meet all the demands for credit a farmer may have. The problem to which there has not yet been given much attention is whether the farmer can afford to have all this credit at his command. Is he capable of repaying the loans he receives and still maintain a decent standard of living? This question is particularly important in the case of long term loans, where one has to consider the possibility of several bad years occurring, with low or no farm incomes. It is this question which the writer hopes to answer in this study.

We must recognize a great need for co-operation between the agricultural credit experts and the farm management specialists in adjusting farm credit supply to ability to repay. Not only must farmers be instructed to adopt farm programs that will give them higher incomes, but they must be told how to use credit. In this line a beginning has been made by the Farm Credit Administration, and since it is in effect a farmers' cooperative organization, it is well suited to help farmers in this respect.

Dr. T. N. Carver<sup>3</sup> recognizes four main principles in the

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<sup>2</sup> A full treatment of the history and organization of the Farm Credit Administration is given in "Farm Credit Administration", published by the American Institute of Banking.

<sup>3</sup> "How to use farm credit". U. S. D. A. Farmers Bulletin 593.

use of farm credit:

1. It must be for a productive purpose.
2. The term of the loan should be related to the productive life of the asset.
3. The repayment plan should provide for the gradual reduction of principal.
4. The interest rate should be as low as possible.

Dr. L. S. Ellis<sup>4</sup> sees the problem in much the same light:

1. The earning capacity of the farm business is of prime importance. One should determine how much credit a particular farm business can stand, and this point should not be exceeded.
2. The amortization principle of repayment should be used, making annual payments of principle necessary.
3. The interest and principle payments should not require all the income during the better years. Reserves or a sinking fund should be built up during better years.
4. Advance payments should be permitted so that extra payments may be made in good years.

It should be noted that attention was given to these points in setting up the Farm Credit Administration. The Federal Land Banks and other agencies under the Farm Credit Administration will allow loans for productive purposes only; their interest rates are low; payments are made on an amortization principle; the productive life of the asset and the earning power of the farms are considered. But in the early history of the Federal Land Banks, before the experience which was used in setting up the Farm Credit Administration was acquired, and in the case of some of the other lending agencies, criticism could be made against them for being too liberal in the amount of credit they supplied. This fact is brought out by the increase in the number of bankruptcies a-

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<sup>4</sup> "Farm Credit and its Use". Current Farm Economics, Vol. 8, No. 2.

mong farmers and the number of farms changing hands due to forced sales and other defaults (see Tables 2 and 3) and the number of country bank failures.

Table 2

## BANKRUPTCIES AMONG FARMERS, 1920-1935

	U.S.	W.S.C.*		U.S.	W.S.C.		U.S.	W.S.C.
1920	997	95	1926	7769	764	1932	4849	308
1921	1363	124	1927	6296	567	1933	5917	371
1922	3236	264	1928	5679	561	1934	4716	329
1923	5940	539	1929	4939	484	1935	4311	307
1924	7772	788	1930	4464	375			
1925	7872	650	1931	4023	282			

\* West South Central District.

Source: Agricultural Statistics 1936

Table 3

## NUMBER OF FARMS CHANGING OWNERSHIP BY FORCED SALES AND RELATED DEFAULTS, PER 1000

	U.S.	W.S.C.		U.S.	W.S.C.
1926	21.4	18.6	1931	26.1	22.4
1927	23.3	19.9	1932	41.7	40.2
1928	22.8	18.5	1933	54.1	51.2
1929	19.5	15.2	1934	39.1	34.3
1930	20.8	16.8	1935	28.3	22.9

Source: Yearbook of Agriculture, 1935, 1930.

Farms which go bankrupt or are foreclosed are in that position in many cases because the amount of credit that was made available to them was out of proportion to their ability to pay, and the loaning agencies were to blame for loaning more than the farm could be expected to repay under normal circumstances.

The starting point for reform in the supply of credit made available to farmers is found in methods of appraisal, and here the Federal Land Banks, as part of the Farm Credit Administration, are taking a leading part. Before a loan is made, the farm is appraised by a Federal Land Bank appraiser,

who is thoroughly familiar with the district in which the farm is located. In the appraisal, an attempt is made to set a "normal agricultural value" on the farm. In order to obtain this figure, the earning power of the farm, measured in terms of the average yields which may be expected in the community over a period of thirty years or more (the term of the loan), and normal prices (at present an average of the 1910-1914 level) are considered. Possibilities of soil depletion and other losses of fertility are taken into consideration. Then a "use" value is set on the insurable buildings on the farm; a building is given no more value than it has use to the farm. Finally, the personal characteristics of the borrower are considered: his ability, ambition, capacity for work, experience, training, and many other factors. The appraiser also recognizes the possibility of the farm changing hands during the term of the loan, and for this reason weight is given to the earning capacity of the average farmer, as against the individual. Throughout the appraisal comparison is made between the farm under review and others in the community as to ability to pay off a mortgage; and when the final estimate is made, the value set on the farm has a definite relation to the earning power of the farm over a period of years, and the ability of the farmer to repay the loan.

The continuation and improvement of such a policy will do much to improve the credit position of the American farmer. The wider experience and broader outlook of the loaning agencies makes it preferable that they should be the ones to restrict the amount of credit to be given to farmers, if that is

necessary, since farmers are not in as good a position to judge for themselves. Each individual case needs separate investigation, but this study takes a group of farmers together, and the results are only expected to be a general reflection of what individual analysis would show.

## REVIEW OF EARLIER LITERATURE ON THE PROBLEM

There has been little written on the problem of how much credit farmers can afford to use. Dr. George Stewart, of the Agricultural Experiment Station at Logan, Utah, made a study of it, and published his results in two articles entitled "Can the Farms of the United States Pay for Themselves?" and "The Size of the Initial Payment Required to Permit the Purchase of a Farm in a Given Time".<sup>5</sup> Dr. Stewart analyzed the whole nation as a unit, and also geographical regions separately, and concluded that average farmers did not earn a large enough income to buy their farms in twenty years at normal prevailing interest rates. Farmers of a few regions could do so in thirty years with a small cash balance left for family use, but their living would be frugal. No farm could pay for itself in 10 years and have any money left for family use; three out of twenty-six could in 20 years, and twelve out of twenty-six in thirty years, when five farms would have two hundred dollars left, one, five hundred, but none as much as six hundred dollars. These results are particularly illuminating when it is considered that the study was published in 1920 and covered the years 1915-1919, when the agriculture of the country was in good condition.

Another study was made by Dr. Peter Nelson of the Department of Agricultural Economics, Oklahoma Agricultural and Mechanical College, Stillwater, and was entitled "How Much

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<sup>5</sup> Journal of Farm Economics, Vol. 2, p. 177, Vol. 3, p. 122.

Credit Can a Farmer Afford to Use?"<sup>6</sup> Dr. Nelson used data from farm and home accounts of a group of farmers in Northwest Oklahoma for the years 1929 to 1933, and concluded that with farm income at the 1933 level, it would take a farmer fifty years to acquire full title to his farm. This figure was arrived at by subtracting from farm income a figure covering household and personal expenses, and using the balance as being available to pay interest and retire the debt. It was assumed that the farmer would borrow a sum equal to the total investment in his farm.

In this study the writer has continued Dr. Nelson's study for the later years, and having more data to work with than Dr. Nelson, he has been able somewhat to enlarge on it. The writer wishes to acknowledge that he has, for the most part, used the same method as that employed by Dr. Nelson and with his permission.

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<sup>6</sup> Current Farm Economics, Vol. 8 No. 2 p. 38.

DESCRIPTION OF GARFIELD COUNTY, OKLAHOMA, AND  
SOURCE OF DATA USED.

Garfield County is situated in the northwest part of Oklahoma, in the rich wheat growing area of that state. The soil in this area is of the Red Prairie type, is dark in colour, and in some instances has a rather tight subsoil. The rainfall averages approximately 30 inches a year, and is distributed seasonally to suit winter wheat production. The topography is generally level or slightly rolling, and well adapted to the use of large machinery. Physical factors are, therefore, suited to the production of wheat.<sup>1</sup> In 1935 96.1% of the land was in farms, and these farms were chiefly cash grain farms. The size of farms in Garfield County in 1935 was 213.5 acres, compared with the state average of 165.6 acres, and the value per farm of land and buildings was more than twice that of the state, \$8,889 compared with \$3,677.<sup>2</sup> As regards tenancy, Garfield had more full owners, but less tenants, than the state as a whole. These and other figures are shown in tables 4 and 5.

The data used for this study were taken from farm accounts kept by a group of Garfield County farmers from 1930 to 1936. The keeping of these accounts was supervised by the Farm Management specialists of the Oklahoma Agricultural and Mechanical College and the Extension Service at Stillwater, Okla-

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<sup>1</sup> P. H. Stephens and C. Rauchenstein, "Systems of Farming in Oklahoma", Oklahoma Agricultural Experiment Station Bulletin 199, April, 1931.

<sup>2</sup> U. S. Census of Agriculture, 1935.

TABLE IV

PERCENTAGE OF FARM LAND IN SELECTED CROPS AND PASTURE, AND  
NUMBER OF SELECTED CLASSES OF LIVESTOCK PER 100 ACRES  
OF FARM LAND, GARFIELD COUNTY OKLAHOMA, 1930.

Percentage of Farm Land in		Livestock per 100 Acres of Farm Land	
crops	66.7	horses and mules	1.9
corn	3.5	cattle	6.0
wheat	48.1	cows and heifers	
oats	4.8	(milk products)	1.8
hay	3.1	swine	1.8
cotton	.2	sheep and lambs	2.3
sorghum	1.9	chickens	38.8
other crops	.8		
idle, fallow,			
pasture	4.3		
pasture	29.6		
other farm land	3.3		

TABLE V

PROPORTIONATE DISTRIBUTION OF FARMS BY CLASSES IN GARFIELD  
COUNTY, OKLAHOMA, 1930

General	17.1	Dairy	3.0
Cash Grain	61.9	Animal Specialty	3.3
Cotton	.7	Stock Ranch	.1
Crop Specialty	.5	Poultry	2.7
Fruit	.2	Self-Sufficing	1.8
Truck	-	Abnormal	4.9
		Unclassified	3.7

Source: Dr. Peter Nelson, "Geographical Variability in Types of Farming in Oklahoma", Current Farm Economics Vol. 9, No. 1, February 1936, and Taken from U. S. Census of Agriculture, 1930.

homa, and summarized each year by the Department of Agricultural Economics. The farms included in the group were rather better than the average for the county, their average value being more than twice as high, and the average size one and a half times as large, in 1935. There were in 1935 no farms in the group under 160 acres in size. A larger proportion of the farmers were part owners or owners additional, and the number of tenants was considerably lower than for the county, the number of full owners also being lower. (See tables 6 and 7)

TABLE VI

TENURE, PROPORTION OF LAND IN FARMS, AVERAGE SIZE OF FARMS, AND AVERAGE VALUE PER FARM OF LAND AND BUILDINGS IN OKLAHOMA, GARFIELD COUNTY AND FARMS STUDIED, 1935

	Okla.*	Garfield*	Farms Studied
No. of Full Owners	27.6%	34.1%	30%
No. of Part Owners	10.8	17.2	40
No. of Managers	.4	.4	--
No. of Tenants	61.2	48.3	30
Proportion of Land in Farms	79.6	96.1	--
Average Size in Acres of Farms	165.6	213.5	335
Average Value per Farm of Land and Buildings	\$3,677	\$8,889	\$18,851

\* United States Census of Agriculture, 1935.

TABLE VII

## DISTRIBUTION OF FARMS BY SIZE, 1935, FOR OKLAHOMA, GARFIELD COUNTY AND FARMS STUDIED

	Okla.*		Garfield Co.*		Farms Studied	
	No.	Percent	No.	Percent	No.	Percent
All Farms	213 325	100	3 056	100	50	100
Under 50 acres	51 811	24.3	402	13.2	--	--
50-99 acres	49 078	23.0	235	7.7	--	--
100-219 acres	75 659	35.5	1298	42.4	17	34
220-379	22 866	10.7	764	25.0	13	26
380-499	6 189	2.9	228	7.5	14	28
500 acres and over	7 722	3.6	129	4.2	6	12

\* United States Census of Agriculture, 1935.

The data used in this study, being obtained from actual farm accounts, kept by farmers, may be relied upon for accuracy. They do not suffer from the disadvantage of survey data, namely, that figures are based on estimates of farmers in many cases, for which allowance would have to be made, were survey records being used. The results are applicable particularly to the farms studied, but it is hoped that they will give some indication of the amount of credit farmers can afford to use in districts where conditions are similar.

In some cases it was found necessary to resort to the making of assumptions. Although these assumptions have a logical foundation, they may not correspond with actual conditions; and results obtained and deductions made must be interpreted in the light of these assumptions.

## NUMBER OF YEARS REQUIRED AS FARM HAND AND TENANT

One purpose of this study is to show how long we may expect a farmer to take in reaching full ownership of his farm, starting from the very bottom of the "tenure ladder", that is, as a farm hand. A survey of farms taken in the Stillwater Creek area in 1933<sup>1</sup> indicated that the average age of starting as a farm hand was sixteen. Although there is a considerable difference in the types of farming in the area mentioned above and in Garfield County, there would seem to be no reason why this same age should not apply to the latter.

The Stillwater Creek area survey revealed that on the average, farmers in that area were able to become tenants<sup>2</sup> at the age of twenty-one, and that they started with a net wealth figure of approximately three hundred dollars, indicating that they saved from their wages about sixty dollars a year. These figures would not hold true for Garfield County. In the first place the average operating investment per farm (machinery, horses, feed, seed, and supplies) for the Stillwater Creek area in 1933 was \$416 compared with \$2777 for the Garfield County farms studied, or a ratio of almost seven to one. This would tend to indicate that the net wealth of a man starting out as a tenant in Garfield County would have to be nearly seven times as high, or about

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<sup>1</sup> Unpublished data collected by the Extension Division, Oklahoma A & M College, and summarized by Mr. W. J. Fessler.

<sup>2</sup> The term tenant in this study refers to cash tenants and share tenants, but not share croppers. Tenants are those farmers who manage the farms they rent.

\$2,000.

There is also a difference in the wages for hired labor in the districts. Over a period of years from 1926 to 1936 the average monthly wage with board was \$20.50 for the area in which the Stillwater Creek district is located, and \$27 in the Garfield County area. (See Table 8) assuming that a la-

TABLE VIII

MONTHLY WAGES OF HIRED LABOR ON FARMS WITH BOARD IN TWO CROP REPORTING DISTRICTS OF OKLAHOMA, 1925-1936<sup>1</sup>

	Dist. 2 <sup>2</sup>	Dist. 5 <sup>3</sup>		Dist. 2	Dist. 5
1926	\$ 35.0	\$ 26.1	1932	\$ 18.6	\$ 14.2
1927	36.0	26.8	1933	16.9	13.1
1928	35.8	27.0	1934	18.3	14.5
1929	34.6	27.0	1935	21.3	14.6
1930	33.2	26.1	1936	22.7	17.0
1931	24.8	19.1	Average	27.0	20.5

1. Source: U. S. D. A., Field Service, Bureau of Agricultural Economics.
2. Includes Alfalfa, Garfield, Grant, Kay, Major, Noble, Woods, Woodward Counties.
3. Includes Canadian, Cleveland, Creek, Grady, Kingfisher, Lincoln, Logan, McClain, Okfusgee, Oklahoma, Payne, Pottawatomie, Seminole Counties.

borer in Garfield would save the wages he makes over and above the Stillwater Creek wages, then a Garfield farm hand would save \$60 (assuming he works nine months out of the year) more than the Stillwater Creek farm hand, or a total of \$120 a year. The fact that the wages in the one district are higher than in the other because of the better type of labor used, rather than higher living expenses, gives strength to this assumption. In any case, the wages considered included board, and expenses outside of board are not likely to change a great deal in two areas so close together. The above calculations would set the farmer's age at 32 when he is ready to rent a farm.

The next step was to determine how long a tenant must rent the farm he wishes to buy before he can accumulate enough to pay for part of the value of the farm in cash when he is ready to purchase. Here we will assume that he is going to buy his farm through a Federal Land Bank. The latter loans as a maximum a sum equal to 50% of the value of the land, and 20% of the insured value of the buildings. Let us assume that in the case of the farms studied, which are of a good type, the average sum loaned is the maximum allowed.<sup>3</sup> Then the prospective buyer will have to furnish 50% of the value of the land, and 80% of the value of the buildings, besides cash for operating investments. During the years 1930 to 1936 the average investment of the farms studied was \$24,384, (see table 9), of which \$17,974 was

TABLE IX

Average Total Investment in Farms. Studied, 1930-36.

1930	\$32,513	1934	\$21,124
1931	26,841	1935	23,405
1932	23,126	1936	23,393
1933	20,290	Average	24,384

represented by land, and \$3,859 by buildings, including residence. Subtracting the amount loaned from these figures leaves a balance of \$14,625, which is the amount the tenant

<sup>3</sup> The policy of the Federal Land Bank is to loan a maximum of 20% of the use value of the insured buildings. Also the amount loaned on land is a maximum of 50% of the normal agricultural value of the land, as determined by the appraiser. Accordingly the figures used here would not correspond exactly with the actual amounts loaned by a Federal Land Bank.

has to have in cash.

To determine the amount one might expect a tenant to save, the following procedure was used. The tenant's share of the farm income<sup>4</sup> on tenant farms was taken for the years 1930-1936, and these figures for each year were divided into two groups, the profitable and the unprofitable. An average over the whole period was taken for these two groups and for all tenants as a whole, and the household and personal expenses<sup>5</sup> figure, not including return on investment in farm dwelling and depreciation on the same, since those charges would be met by the landlord in most cases, was subtracted. The balance was taken as being available for saving, and dividing it into the figure \$14,625 above, gave the number of years required to save sufficient to make a cash payment on a farm. For the average group this figure was approximately twenty-nine years, for the profitable group twelve years, but for the unprofitable group the farm income was not large enough to cover family living expenses, so that this group could not be expected to make any savings. The age of the farmers, when ready to buy a farm, would be sixty-one in the case of the average group, forty-four in the case of the profitable group. The figures illustrating

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<sup>4</sup> For an explanation of the term farm income see footnote to tables in appendix.

<sup>5</sup> For an explanation of this item see footnotes to tables in the appendix. These figures are average figures, and the same figures were used for the three groups of farms average, profitable and unprofitable, there being no conclusive evidence to show that profitable farms had higher living expenses than average or unprofitable farms.

the above analysis are shown in Table 10.

TABLE X  
TENANTS' ABILITY TO SAVE

	<u>Average of all Tenants</u>							
	1930	1931	1932	1933	1934	1935	1936	Average
Farm Income.	-45	455	130	1084	2113	2000	1292	1000
Household and Personal Expenses. <sup>1</sup>	600	500	424	411	395	508	600	491
Amount Available for Saving.	-	-	-	673	1718	1492	692	509
Number of Years Required to Save \$14,625.								29
	<u>Profitable Tenants</u>							
Farm Income.	666	1086	515	1840	2883	3114	1943	1721
Household-Personal Expenses.	600	500	424	411	395	508	600	491
Amount Available for Saving.	66	586	91	1429	2488	2606	1343	1230
Number of years required to Save \$14,625.								12
	<u>Unprofitable Tenants</u>							
Farm Income.	-815	-145	-255	328	1343	887	641	279
Household and Personal Expenses.	600	500	424	411	395	508	600	491
Amount Available for Saving.	-	-	-	-	948	379	41	-
Number of Years Required to Save \$14,625.								?

<sup>1</sup> See tables in appendix for explanation of this item; these figures do not include return on investment and depreciation on residence.

## PAYING FOR THE FARM

Our farmers have now got to the point where they have paid part of the purchase price of the farm, and have to pay the balance over a period of years from their earnings as owners. We will first assume that they have made a loan for this balance through a Federal Land Bank, and that they are paying off the loan over a period of thirty-four and a half years at five and a half percent interest, on the amortization principle. The farms studied are divided into three groups, the most profitable, the least profitable, and the average of all farms in the group, the basis of this division being labor income and rate earned on investment. The least profitable group will hereafter be disregarded, since it has been shown that they cannot leave the tenant stage.

First it was determined for each of the years 1930 to 1936 for each of the groups whether an amortization payment as described above could be made. The procedure was as follows: from the farm income for the year was subtracted the household and personal expense figure. The balance had to be sufficient to allow the payment of an amount equal to 50% of the value of the land and 20% of the value of the buildings, including residence.<sup>1</sup>

For the most profitable farms, only in 1932 was it im-

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<sup>1</sup> The results of this procedure, and additional description of the method used are shown in the tables in the appendix, to which the reader is referred.

possible to make the payment, and even this could be made up in the following year. In the case of the average group no payments could be made in the years 1930, 1931, 1932, but in 1935 the resulting backward indebtedness could be cancelled, so that over the whole period each payment could be made. (These figures are shown in table 11 below) The average for the whole period was also considered, and although it was found that the least profitable farms could not make the payments, and that the most profitable and the average group could; it was not clearly indicated that in the better years provision had to be made for making the payments that were not able to be made in the bad years.

The analysis was carried further by determining what percentage of the farms could make payments each year, but due to the nature of the data it could not be carried to the point of seeing how the farms would make up for payments in arrears. In the most profitable group 100% could make the payments in 5 out of the 7 years, and in 1932, when the group as a whole could not, 30% were able to meet the charge. In the average group the percentage varied from 92% in 1934 to 6% in 1932. (See table 11) The fact that 1934 was such a good year from the point of view of payments may be explained by the fact that throughout the period under review the farmers were decreasing their investment on account of the bad times, and in 1934 this reduction, together with a good sized farm income, made the amortization payment easy to make. Similarly, 1932 was a bad year because of the low farm income figure for that year.

TABLE XI

BALANCE LEFT AFTER MAKING AMORTIZATION PAYMENT OVER A PERIOD OF  $34\frac{1}{2}$  YEARS AT  
 $5\frac{1}{2}\%$  AND PERCENTAGE OF FARMS ABLE TO MAKE PAYMENTS

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	<u>Balance Left</u>							
	1930	1931	1932	1933	1934	1935	1936	Average
Most Profitable Farms	1051	142	-41	2193	2806	2302	1532	1442
Average Farm	-904	-1845	-2812	-2300	-846	423	256	81

	<u>Percentage Able to Pay</u>							
	1930	1931	1932	1933	1934	1935	1936	Average
Most Profitable Farms	100	70	30	100	100	100	100	86
Average Farm	30	16	6	56	92	74	63	48

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Note--This is a summary of the tables in the Appendix.

Federal Land Banks are, however, not the only source of funds, nor are a term of  $34\frac{1}{2}$  years and an interest rate of  $5\frac{1}{2}\%$  the only choices a farmer has in making a loan to buy a farm. Accordingly the analysis was made to include amortization payments over periods of ten and twenty years, with interest rates at 4%, 5%, and 6%. Commercial banks, mortgage companies, and insurance companies use 50% of the value of the land as a basis for making loans, and accordingly this figure was used in the analysis. The annual payments necessary were calculated from the formula  $R = \frac{Ai}{1 - (1 - i)^{-n}}$  where R equals the annual payment, A the amount of the loan, i the interest rate, and n the number of years during which payments are made.

In the case of the most profitable farms, payments could be made in all cases for the years 1933 to 1936 inclusive, as a matter of fact every farmer in the group had a good balance left. In 1932 no payments could be made, not a single farmer in the group being able to make a payment under the ten years at 6% plan. In 1931 the group as a whole could not manage the ten year payment, although half of the farmers could. The balance left over in 1933 was in each case large enough to take care of the payments in arrears. (See table in appendix)

In the average group, under the 20 year plan, at interest rates of 4% and 5%, although payments for the year could be met in only four out of the seven years, by the end of the period the back payments could be cancelled. In a 20 years at 6% interest, and terms of 10 years for

all three interest rates, the balances in the good years were not large enough to pay for the bad years, and so at the end of the 7 year period these farms bore an added indebtedness. The same results were obtained by analyzing these farms on the basis of an average for the period. (See table in appendix)

Having determined the ability of the farms studied to make payments under the various plans discussed above, the next point to consider was in what length of time could these farms pay for themselves under varying conditions. For this purpose the farm income for each year of the two groups of farms was taken, and from it subtracted the item for household and personal expenses. The balance was then the annual amount available for the amortization of the loan. The resulting figures indicate how long it would take these groups of farmers to pay off their debt under varying farm income, household expenses, and investment conditions. Here again, 50% of the value of the land was taken as the amount of the loan. The seven years were also considered as a unit, and average figures worked out on that basis. The number of years required to pay off the loan was obtained by use of the formula

$$n = \frac{-\log \left( 1 - \frac{A}{R} i \right)}{\log (1+i)}$$

where n equals the number of years, A the amount of the loan, R the annual payment, and i the interest rate, here taken as being 5%.

In the most profitable group, the number of years required varied from three years in good years to 28 in 1932, and the average analysis gave a figure of five years for the period as a whole. No figure could be obtained for the least profitable group, since the farm income was not large enough to cover household and personal expenses except in one year. (For this one year the term would be 16 years). In the case of the average group there was no balance in three out of the seven years, but the figure for the period as a whole was 19, while the term for the individual years that could be analysed varied from four to fourteen. (See table 14)

TABLE XII

## MINIMUM TIME REQUIRED TO PAY OFF AMORTIZATION

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	1930	1931	1932	1933	1934	1935	1936	Aver.
Most Profit- able farms	8	18	28	4	3	3	4	5
Average Farms	-	-	-	9	4	5	14	19
Low Profit- Farms	-	-	-	-	16	-	-	-

---

Note--This is a summary of tables in the Appendix, which see.

## ANALYSIS OF OTHER GROUPS OF FARMS

The data used in the foregoing analysis are the only figures available in Oklahoma which give the information required over a period of years. It is recognized by the author that the farms studied are not representative of the county or the state as a whole, and it will be helpful, therefore, to make analyses of other groups of farms, even though in these cases survey records must be relied upon, so that results obtained will be applicable particularly to the year in which the survey was taken.

It has been pointed out previously that a survey of farms in the Stillwater Creek area indicated that farmers started as farm hands when they were 16 years old, and that they began to rent farms at the age of twenty-one. Carrying this analysis further, we find that the farm income of tenants for all tenants averaged \$260 for 1933, the year of the survey. Family living expenses, however, amounted to \$352,<sup>1</sup> which means that the average tenant did not make enough to cover his living expenses, let alone to leave him a surplus to use as savings toward the initial payment on the purchase of a farm. Figures for the state of Oklahoma as a whole in 1935 showed little better conditions: farm income was

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<sup>1</sup> Obtained from O. D. Duncan, Department of Rural Sociology, Oklahoma A. and M. College, Stillwater, from the Stillwater Creek survey, and represent cash expenditures for family living, including household operation, groceries, clothing, automobile, investment, advancement, health, personal and miscellaneous expenses.

\$465,<sup>2</sup> and household and personal expenses \$460,<sup>3</sup> which did not permit farmers to make any savings.

But not all farms in the Stillwater Creek area were in the same plight as the average figures cited above indicate. An investigation was made of fifty-five of the most profitable farms in this survey, which included 555 farms all together. Of these fifty-five farms thirty-seven were tenants, and seven owners additional. The average tenant's share of the farm income of this group of tenants and owners additional was \$721. Subtracting the family living expenses figure of \$352 leaves a balance of \$369, which is the amount the tenant could save. The average total investment of these fifty-five farms was \$4,792; investment in land was \$3,258, and in buildings \$720. Assuming that the amount of the loan the farmer will receive when he is ready to purchase the farm is 50% of the value of the land, and 20% of the value of the buildings, then the amount of that loan would be \$1773, which, when subtracted from the total investment figure, leaves as a balance \$3,019, the amount of the cash payment necessary. Therefore, if the tenant could save \$369 each year, it would take him approximately eight years to save the amount mentioned above, and he would be 29 years old at the time of purchasing a farm.

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<sup>2</sup> Unpublished data collected by Dr. Peter Nelson, Department of Agricultural Economics, Oklahoma Agricultural and Mechanical College, from figure appearing in "Farm Value, Gross Income, and Cash Income from Farm Production".

<sup>3</sup> From Oklahoma home accounts collected by the Home Management service of the Extension Division, Oklahoma A. and M. College.

The average farm income for the group of fifty-five farms was \$1,055. Subtracting from this figure \$352 to cover family living expenses leaves a balance of \$703, which is the amount to be used for paying off the mortgages on an amortization principle. The amount of the loan is 50% of the investment in land, or \$1,29. Using the same formula as was used in the last chapter to determine the number of years require to pay off the mortgage we get a figure of almost three years. These farmers, then, will have attained full ownership of their farms at the age of 32. The figures used in the above discussion are given below:

Total Investment	\$4792	Family living expenses	\$352
Investment in		Amounts tenants can	
Land	3258	save per year	369
Investment in		Amount of cash payment	
Buildings	720	necessary	3019
Farm Income	1055	Number of years required	
Tenants share of		to save that amount	8
Farm Income	721	Amount available for	
		amortixation payment	703
		Number of years required	
		to retire loan	3

The above discussion points out the fact that the average farmer in Garfield County farms studied is considerably better off than the average farmer in the Stillwater Creek area or in Oklahoma as a whole. On the other hand, the profitable farmers in the Stillwater Creek area have a much easier time reaching full ownership of their farms. This is because the investment in farms in this area is much less than in the Garfield area, and those farmers who can make high farm incomes have much lower sum to accumulate before buying their farms. It should be noted that the average size of the Stillwater Creek farms was 172.3 acres, compared with 213.5 acres in the case of the Garfield farms.

## SUMMARY AND CONCLUSION

Of the farms here studied, the most profitable group could pay off a mortgage equal to half of the value of their land and part of the value of the buildings in ten years, the average group could manage in twenty years, and the least profitable group could not even manage a  $34\frac{1}{2}$  year amortization plan. The age of the first group when their farms were paid for would be 49, that of the average group 80. It is impossible to say how old the least profitable group would be. These figures are shown in the table below, and in Figure 1.

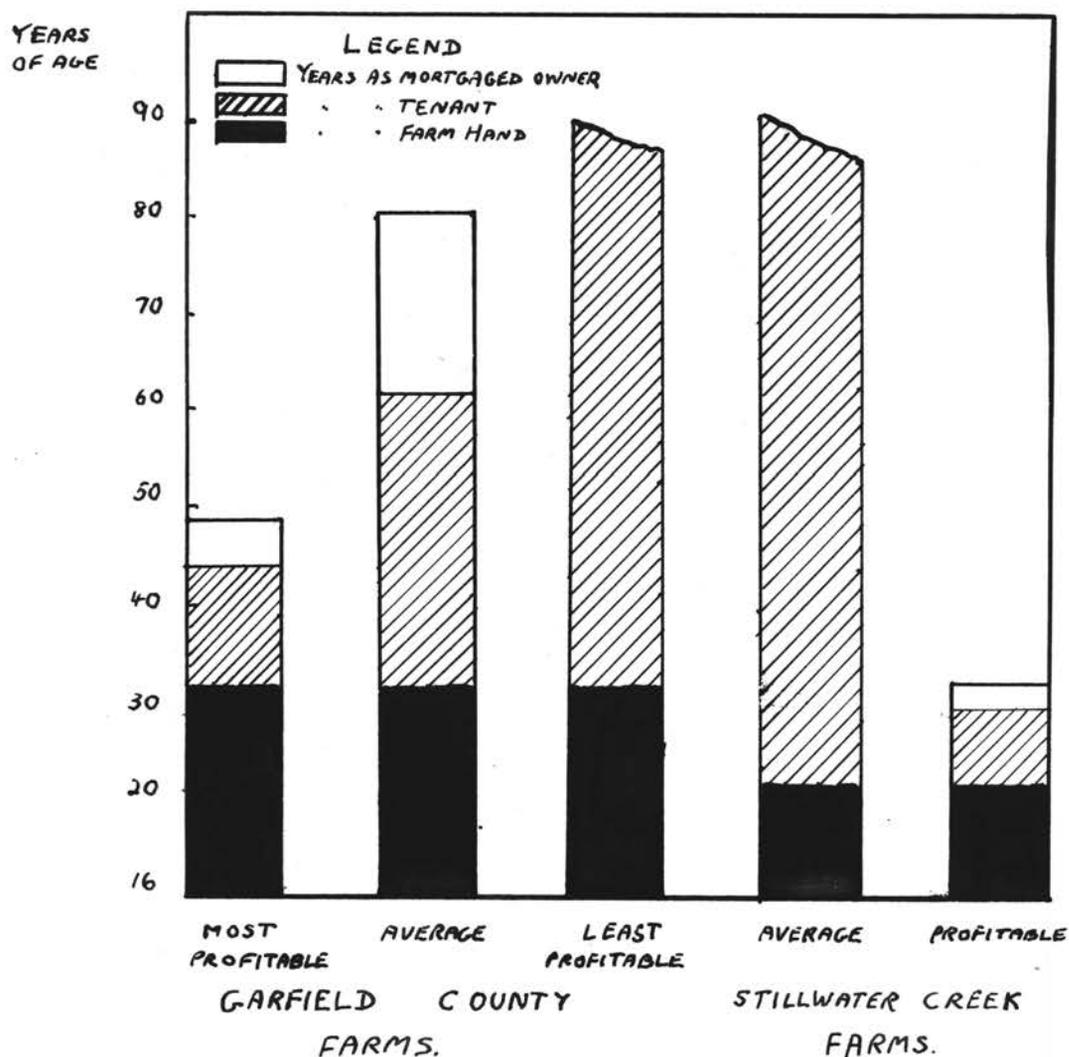
TABLE XIII

AGE OF FARMERS AND NUMBER OF YEARS IN EACH TENURE STAGE

Most Profitable Farmers	Age at Beginning of Tenure	Number of years in Tenure
Farm Hand	16	
Tenant	32	16
Owner (Mortgaged)	44	12
Owner (Free From Mortgage)	49	
Average of all Farmers		
Farm Hand	16	
Tenant	32	16
Owner (Mortgaged)	44	12
Owner (Free From Mortgage)	49	
Least Profitable Farmers		
Farm Hand	16	
Tenant	32	16
Owner (Mortgaged)	?	?
Owner (Free From Mortgage)	?	

FIGURE 1.

AGE OF FARMERS AT EACH TENURE STAGE.



Even the most profitable group are almost 50 years old when they acquire full ownership in their farms, and it has taken them 33 years to reach this stage, starting from the farm hand stage. The average group is 80 years old when they finish paying for their farm, and they had to start paying for it when they were 61, 12 years after the first group had finished paying for it. It would seem that before ownership has been reached retirement or death would occur. The least profitable farmers, as far as this study is concerned, could never leave the tenancy stage, let alone attain full ownership of their land.

The table also indicates that whereas it takes the average group not quite twice as long to get out of the tenant stage as it does the most profitable group; it takes them almost four times as long to pay off their mortgage, nineteen years as against five. This is because the lower farm income means a smaller annual amortization payment, resulting in a more than proportionally longer term of payment, since interest charges mount up when born over a longer period of time. Table 14 shows that there is not a great difference between the amount of the loan in the case of the most profitable and the average groups, \$9340 compared with \$8987, but the amount of the annual payment is \$2098 compared with \$738. It is therefore the size of the annual payment, which is determined by farm income, which is of primary importance. (This is illustrated graphically in figure 2).

The results shown in Table 13 clearly point out the great problem facing agricultural credit in this country to-

FIGURE 2

FARM INCOME, HOUSEHOLD EXPENSES, AND BALANCE LEFT TO PAY INTEREST AND PRINCIPAL ON LOAN

GARFIELD COUNTY FARMERS, 1930-36

AMOUNT IN DOLLARS

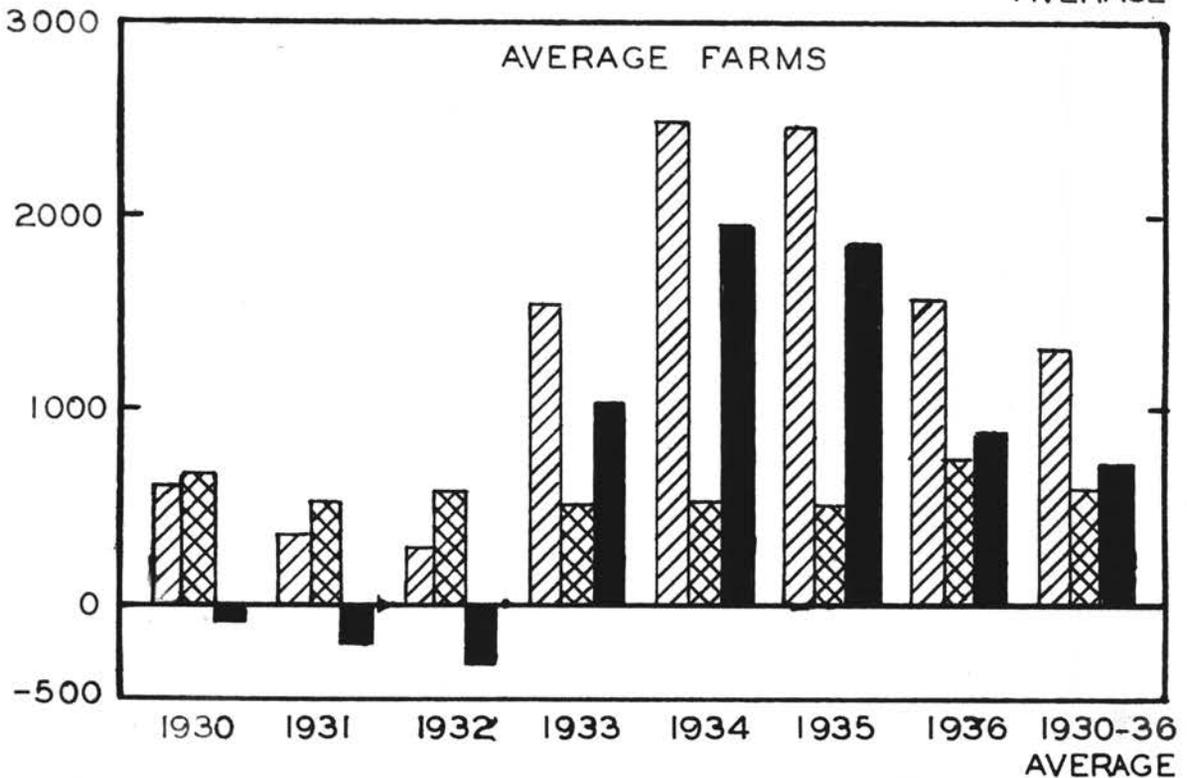
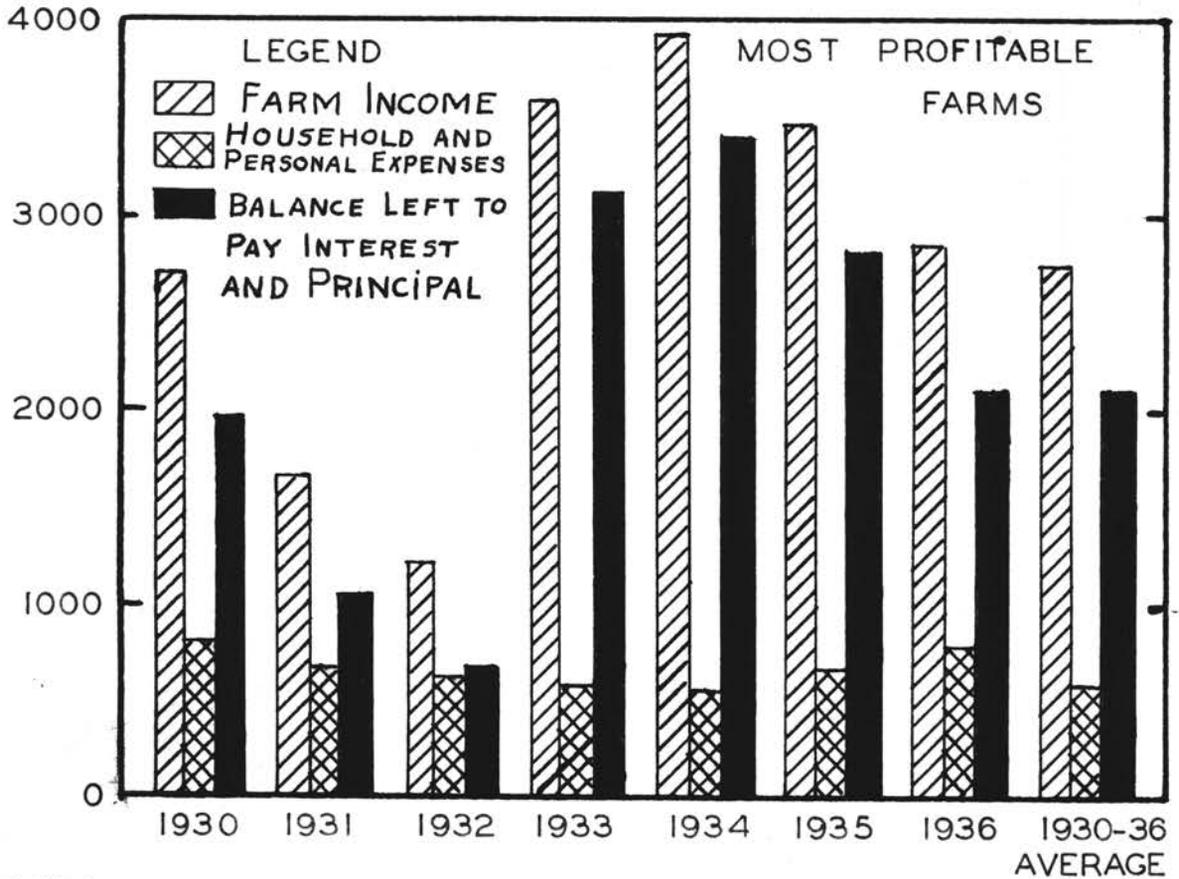


TABLE XIV

## NUMBER OF YEARS REQUIRED TO PAY OFF MORTGAGE

	Amount of Loan	Farm Income	Household and person- al Expense	Balance (Amount Available for Amortization)	Number of Years Required to Pay Off Loan
Most Profitable Farmers	9340	2703	605	2098	5
Average of All	8987	1343	605	738	19
Least Profitable	6449	14	605	--	--

day. The best farms, and the best farmers, can well afford to use all the credit available; the farm organization and the ability of the farmer is such that large sums can be repaid within a reasonably short length of time. But it is likely that they do not need credit; they are in a position to save sufficient in the course of a few years to obviate the necessity of borrowing. The average group is in a much less favorable position. They cannot begin to borrow money to buy a farm until they have reached the age of 60, and at that late age they face the task of repaying the loan over a period of more than 20 years. They have passed their period of greatest physical strength, and their business ability is probably on the decline too. True, they might be expected to have the help of grown sons and sons-in-law, or they can sell the farm before it is paid for, but such considerations do not minimize the importance of the fact made, that the meeting of their indebtedness obligations is a task of no small magnitude. Yet these farmers at least stand a fair chance of being able to repay their loans.

When we come to the least profitable group, we are up against the real problem. This study shows that they will never be able to leave the tenancy stage, but it must be assumed that some of them do, and that some of them borrow money to buy a farm, with very little chance of being able to pay back the loan. What is to be done with these farmers? The easiest way out would be to induce them to remain tenants. But to many farmers ownership of their farm is their dream, the goal for which they have been working all their

lives, and considerable persuasion would be necessary to convince these farmers that they would be better off as tenants; there at least they would be able to make a living. Some degree of assistance would perhaps be given to them if our vocational agriculture and extension workers made greater efforts with this group. It is recognized that these farmers are the very ones who make least effort to avail themselves of such help, but this should not make it impossible to give it, and it may be that, by showing them better methods of farming, and means of preserving and replenishing soil fertility, their position could be improved. If it is found that it is impossible for farmers to make their farms pay for themselves due to the poor quality of the land, rather than to the ability of the farmer, then it may be necessary to find better land for them. This problem is now receiving the attention of the Resettlement Administration, and it is a very difficult one, since the amount of good land available in this country is now very limited, and in many cases it is so far from the farmer's old farm, that farmers are unwilling to move such great distances from "home", and face the prospect of farming under entirely new conditions and environment. Another alternative sometimes suggested is to move the farmers into other fields of occupation. In the first place such fields are hard to find; unemployment figures indicate that even if there were chances of employment, they would be taken by the unemployed first. In the second place, few farmers, once they have reached maturity, would be able to adapt themselves to other

occupations, and be able to meet the competition of thousands of others with better training in the field.

It has been shown that in the case of the poorer type of farmers, any help given must necessarily be in the nature of a subsidy until means have been found to increase their farm income. Under present conditions these farms are not able to carry any burden of indebtedness, they cannot afford to use credit, and credit should not be made available to them.

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Table A.  
ANALYSIS OF MOST PROFITABLE  
FARMS

Year	:	:	:	:	:	:	:	:	:						
:	1930	:	1931	:	1932	:	1933	:	1934	:	1935	:	1936	:	Average
:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Number farms	6		10		10		10		10		10		10		--
Total inventory	\$34,579		\$30,504		\$23,083		\$28,710		\$22,009		\$18,840		\$19,536		\$25,323
Inventory, land	24,903		22,954		17,571		22,156		15,900		12,946		14,326		18,679
Inventory, buildings <u>1/</u>	4,827		4,331		3,693		3,524		2,735		3,171		2,890		3,596
Farm Income <u>2/</u>	2,622		1,572		1,158		3,537		3,892		3,405		2,732		2,705
Household and personal expenses <u>3/</u>	700 <u>6/</u>		600 <u>6/</u>		572		526		514		622		700 <u>6/</u>		605
Term of 34 $\frac{1}{2}$ Years at 5 $\frac{1}{2}$ Percent															
Amortization payments <u>4/</u>	871		800		627		767		552		461		500		656
Balance <u>5/</u>	1,051		172		-41		2,203		2,826		2,322		1,532		1,442
Percent of farms able to pay	100		70		30		100		100		100		100		86
Term of 20 Years at 4 Percent															
Amortization payments <u>7/</u>	888		814		666		814		592		444		518		666
Balance	1,034		158		-80		2,117		2,786		2,339		1,514		1,432
Percent of farms able to pay	100		70		20		100		100		100		100		84
Term of 20 Years at 5 Percent															
Amortization payments <u>7/</u>	960		880		720		880		640		480		560		720
Balance	962		92		-134		1,997		2,738		2,303		1,472		1,378
Percent of farms able to pay	100		70		20		100		100		100		100		84

Continued

Table A continued

Year	: 1930	: 1931	: 1932	: 1933	: 1934	: 1935	: 1936	: Average
Term of 20 Years at 6 Percent								
Amortization payments <u>7/</u>	1,044	957	783	957	696	522	609	783
Balance	878	15	-197	1,857	2,682	2,261	1,423	1,315
Percent of farms able to pay	100	70	20	100	100	100	100	84
Term of 10 Years at 4 Percent								
Amortization payments <u>7/</u>	1,476	1,353	1,107	1,353	984	738	861	1,107
Balance	446	-381	-802	856	2,394	2,045	1,171	1,991
Percent of farms able to pay	67	50	10	100	100	100	100	75
Term of 10 Years at 5 Percent								
Amortization payments <u>7/</u>	1,560	1,430	1,170	1,430	1,040	780	910	1,170
Balance	362	-458	-1,042	539	2,338	2,003	1,122	928
Percent of farms able to pay	50	50	10	100	100	100	100	73
Term of 10 Years at 6 Percent								
Amortization of payments <u>7/</u>	1,632	1,496	1,224	1,496	1,088	816	952	1,224
Balance	290	-524	-1,162	353	2,290	1,967	1,080	874
Percent farms able to pay	33	50	0	100	100	100	100	69
Minimum time required to <u>8/</u> pay off loan at 5 percent	8	18	28	4	3	3	4	5

Continued

Table A, continued.

- 1/. Includes farm residence.
- 2/. Farm income equals gross receipts less total farm expenses except operator's labor.
- 3/. Secured from the Home Management Specialist, Extension Division, Oklahoma A. and M. College, and represent actual expenditures by families in northwest Oklahoma for food, clothing, fuel, light, telephone, health, dentist, toilet articles, household furnishing and supplies, church, social welfare, education, school supplies, magazines, newspapers, recreation, and gifts. From this figure was subtracted the value of farm products used by the farm family, but an amount equal to  $7\frac{1}{2}$  percent of the value of the farm residence was added to cover interest on investment and depreciation. Figures for 1934 and 1935 were interpolated from figures for the State, and for 1930, 1931, 1936 figures were estimated on the basis of value of farm products used.
- 4/. This represents the total of two semi-annual payments necessary to amortize a loan equal to 50 percent of the value of the land, and 20 percent of the value of the buildings, including residence over a period of  $34\frac{1}{2}$  years, at  $5\frac{1}{2}$  percent interest. The amount of the loan was taken to the nearest hundred dollars, and payments worked out on that basis from tables prepared by the Federal Farm Loan Board.
- 5/. Where the balance is negative, this negative amount is subtracted from the next balance.
- 6/. Estimated.
- 7/. Annual payment necessary to amortize a loan equal to 50 percent of the investment in land.
- 8/. The loan is considered to be equal to 50 percent investment in land, and the annual payment the balance left after subtracting household and personal expenses from farm income.

Table B.

## ANALYSIS OF AVERAGE FARMS

Year	: 1930	: 1931	: 1932	: 1933	: 1934	: 1935	: 1936	: Average
Number farms	18	57	49	50	39	50	55	--
Total investment	\$35,513	\$26,841	\$23,126	\$20,290	\$21,124	\$23,405	\$23,393	\$24,384
Investment, land	23,559	20,462	14,290	15,384	15,364	16,945	16,815	17,974
Investment, building	4,853	4,475	4,020	3,381	3,300	3,426	3,556	3,859
Farm Income	628	390	233	1,584	2,508	2,508	1,557	1,343
Household and personal expenses	700	600	572	526	514	622	700	605
Term of 34½ Years at 5½ Percent								
Amortization payments	832	722	628	546	540	608	601	657
Balance	-904	-1,836	-2,803	-2,291	- 837	439	256	
Percent of farms able to pay	30	16	6	56	92	74	63	48
Term of 20 Years at 4 Percent								
Amortization payments	888	740	666	592	592	592	592	666
Balance	-960	-1,910	-2,915	-2,449	-1,047	245	265	
Percent of farms able to pay	30	16	4	56	93	74	58	47
Term of 20 Years at 5 Percent								
Amortization payments	960	800	720	640	640	640	640	420
Balance	-1,032	-2,042	-3,101	- 2,683	-1,329	-85	132	
Percent of farms able to pay	30	13	4	54	93	68	58	46

Continued.

Table B, continued.

Year	1930	1931	1932	1933	1934	1935	1936	Average
Term of 20 Years at 6 Percent								
Amortization payments	1,044	870	483	696	696	696	696	483
Balance	-1,116	-2,196	-3,318	-2,956	-1,658	- 470	-309	
Percent of farms able to pay	30	11	4	50	93	60	58	44
Term of 10 Years at 4 Percent								
Amortization payments	1,476	1,230	1,107	984	984	984	984	1,107
Balance	--	--	--	--	--	--	--	--
Percent of farms able to pay	20	8	1	42	83	56	42	36
Term of 10 Years at 5 Percent								
Amortization payments	1,560	1,300	1,170	1,040	1,040	1,040	1,040	1,170
Balance	--	--	--	--	--	--	--	--
Percent of farms able to pay	15	8	1	36	77	54	40	33
Term of 10 Years at 6 Percent								
Amortization of payments	1,632	1,360	1,224	1,088	1,088	1,088	1,088	1,224
Balance	--	--	--	--	--	--	--	--
Percent of farms able to pay	10	8	0	36	74	54	40	32
Minimum of time required to pay off loan at 5 percent	--	--	--	9	4	5	14	19

For footnotes, see Table A.