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CHIEF CAUSES OF MORTGAGE DISTRESS, RECENT ADJUSTMENTS, AND CONTINUING PROBLEMS

FARM mortgage distress in the United States during the interwar period cannot be explained by any one cause, or even by any specific combination of causes. Although most of the distress had its origin in the World War I boom and the two postwar slumps, there were other important contributing factors, which are evidenced by the pronounced variations in distress that occurred among geographic areas and even among individual farms within areas. Among the contributing causes are: differences in price behavior and in inflation of land values and debts; problems of settlement in new areas; natural hazards such as weather and insect pests; high fixed costs; technological changes; and the common difficulty of properly differentiating between good land and poor land in making loans. Complicating factors in many instances were unwise loan practices and unsound financial condition of banks and other lenders.

Differences in Price Behavior

Farm prices, incomes, and debts did not increase equally in all parts of the country during the wartime boom, nor did prices and incomes decline equally in the depression years. Prices of food grains and meat animals, for example, averaged higher during the period 1915-19 in comparison to the prewar level than did prices of dairy products, but after the war their relative decline was much the greater (Table 29). The price of cotton rose to comparatively higher levels during the war years and remained at higher levels during the early twenties than did prices of dairy products, but its decline during the thirties was more severe.

These differences in price behavior partly account for differences in the severity of distress that developed in various parts of the country. They help to explain, for example, why debt distress developed early and was more severe in the Great Plains, which produces livestock and grain, than in the Northeast, which produces large quantities of dairy products. They also help to explain why the great cotton-producing areas of the

TABLE 29

Index Numbers of Prices Received by Farmers for Selected Crops and Livestock Products, 1915-39

(1910-14 = 100)

Product	*1915-19*	*1920-24*	*1925-29*	*1930-34*	*1935-39*
Dairy products	147	159	161	105	119
Meat animals	162	121	145	83	117
Food grains	193	147	141	70	94
Cotton	175	197	150	77	87
Tobacco	183	189	169	117	172
Fruit	126	157	146	98	95

From *The Agricultural Situation* (Bureau of Agricultural Economics), Vol. 37, No. 1 (January 1953), page 15.

delta country avoided acute distress until the thirties. They do not, however, explain why distress came to the eastern Cotton Belt a whole decade earlier than it came to the delta area; nor do they entirely account for the severity of debt distress in the Great Plains.

Inflation of Land Values and Debts

Shortly before 1900 American agriculture entered a period of general prosperity, which had a pronounced effect on the level of land values. Prices of agricultural products rose more or less steadily for a period of approximately twenty years culminating in the World War I boom. Naturally, farm incomes followed suit. Land values also rose—mainly because of improved farm incomes, partly because of generally rising prices, and also because relatively little land was available for homesteading after 1900. The average value of farm land and buildings in the United States, as reported by the census, was approximately $20 per acre in 1900, $40 in 1910, and $69 in 1920.[1]

But rises in land values varied greatly throughout the nation, just as price rises varied greatly among products. Large percentage increases in land values between 1910 and 1920 were especially conspicuous in the cotton and tobacco areas of the Southeast; in a small but intensive cotton area in the delta region of northwestern Mississippi; in the cotton areas of northeastern Texas and southeastern Oklahoma; in the northwestern part of the Corn Belt; and in a number of fruit and vegetable

[1] *Historical Statistics of the United States, 1789-1945* (Bureau of the Census, 1949), p. 95.

areas in Florida, southern Texas, and central California (Figure 3, Chapter 1). In some of those areas, moreover, the rapid rise in land values was clearly a speculative phenomenon, accompanied by a marked increase in farm mortgage debt. An example is the northwestern section of the Corn Belt, which is an excellent farming area. In contrast with the Great Plains and the eastern Cotton Belt, the northwestern Corn Belt was not confronted during the interwar period with major adjustments in size of farm and in type and methods of farming, nor was it confronted with serious production problems except during the drought years of the thirties. But the heavy debts that had been piled up during the period of high wartime prices and sharply rising land values became a serious burden to farmers in the northwestern Corn Belt. Although most of these debts might have been carried, and even slowly retired, under the price level that prevailed during the twenties, they could not be carried under the price level that existed in the thirties.

A state by state comparison of the World War I land boom with subsequent debt distress is afforded by Table 30, which gives the percentage increase in mortgage debt from 1910 to 1920, the percentage increase in land values from the 1912-14 base to 1920, and the average number of distress transfers in 1925-34 per thousand mortgaged farms in 1930. It is clear that distress transfer rates are positively related to the increases in mortgage debt and slightly less closely related to the increases in land values.[2] Nevertheless, the relationships are not as striking throughout as they were shown to be for the Corn Belt (see Table 12, Chapter 3), where soils, climate, and types of farming are far more uniform than in the United States generally.

A graphic comparison between distress transfers and the rise in mortgage debt during the decade 1910-20 appears in Figure 39. The scatter diagram shows most of the states—indicated by unidentified dots—forming a consistent pattern in which distress transfers are closely related to previous debt increases. Ten states—indicated by name—fall far outside the pattern.

[2] The product-moment correlation coefficients work out to +0.60 between distress transfers and rise in debt, +0.46 between distress transfers and rise in land values, and +0.15 between rise in debt and rise in land values. The statistical significance of these coefficients and particularly of the differences between them is doubtful at best. Moreover, the standard tests of significance are not strictly applicable here because conditions in one state are usually related to conditions in the surrounding states.

TABLE 30

World War I Inflation and Subsequent Debt Distress
(states arranged in order of percentage increase in mortgage debt)

State	*Increase in estimated farm mortgage debt 1910 to 1920*[a]		*Increase in estimated land values per acre from 1912-14 to 1920*[b]		*Average annual distress transfers, 1925-34, per 1,000 mortgaged farms in 1930*[c]	
	Percent	Rank	Percent	Rank	Percent	Rank
Rhode Island	12%	1	30%	3	11.4%	2
New Jersey	33	2	30	4	18.3	4
Pennsylvania	48	3	40	10	29.1	7
Massachusetts	52	4	40	11	13.4	3
New Hampshire	52	5	29	2	21.2	6
New York	56	6	33	6	31.9	9
Maine	61	7	42	14	37.3	12
Connecticut	63	8	37	8	10.1	1
Delaware	66	9	39	9	32.6	10
Maryland	81	10	66	25	40.5	16
Vermont	93	11	50	17	21.1	5
Indiana	93	12	61	23	49.1	25
Michigan	94	13	54	19	48.0	24
Ohio	97	14	59	21	47.6	22
Illinois	99	15	60	22	57.6	30
Missouri	103	16	67	27	66.1	36
Kansas	111	17	51	18	58.4	32
West Virginia	130	18	54	20	56.6	29
Wisconsin	136	19	71	30	38.6	14
Washington	161	20	40	12	42.2	19
Louisiana	161	21	98	39	55.4	27
Iowa	176	22	113	42	72.5	43
Oregon	176	23	30	5	36.4	11
Texas	181	24	74	32	37.5	13
South Carolina	189	25	130	48	78.1	46
North Dakota	192	26	45	16	62.3	34
Alabama	194	27	77	34	52.5	26
Virginia	202	28	89	38	72.2	42
Mississippi	203	29	118	45	70.9	41
Nebraska	215	30	79	36	58.1	31
Kentucky	222	31	100	40	66.9	37
Minnesota	236	32	113	43	64.5	35
Oklahoma	245	33	66	26	47.1	21

(continued on next page)

TABLE 30 (continued)

State	*Increase in estimated farm mortgage debt 1910 to 1920*[a]		*Increase in estimated land values per acre from 1912-14 to 1920*[b]		*Average annual distress transfers, 1925-34, per 1,000 mortgaged farms in 1930*[c]	
	Percent	Rank	Percent	Rank	Percent	Rank
South Dakota	272%	34	81%	37	88.8%	48
California	276	35	67	28	40.2	15
North Carolina	293	36	123	47	72.5	44
Georgia	296	37	117	44	72.7	45
Tennessee	312	38	100	41	69.5	39
Colorado	314	39	41	13	60.9	33
Nevada	345	40	35	7	45.6	20
Wyoming	383	41	76	33	41.5	18
Arkansas	384	42	122	46	56.5	28
Florida	459	43	78	35	40.9	17
Idaho	483	44	72	31	47.6	23
Utah	493	45	67	29	29.2	8
New Mexico	556	46	44	15	88.3	47
Arizona	689	47	65	24	70.5	40
Montana	906	48	26	1	67.9	38

[a] Calculated from mortgage debt figures as of January 1 presented in *Farm-Mortgage Credit Facilities in the United States*, by Donald C. Horton, Harald C. Larsen, and Norman J. Wall (U.S. Department of Agriculture, Misc. Pub. No. 478, 1942), Table 64, pages 219 ff.

[b] Calculated from price indexes as of March 1 given in *The Farm Real Estate Situation, 1946-47*, by A. R. Johnson (U.S. Department of Agriculture, Circular No. 780, March 1948), Table 1, page 4.

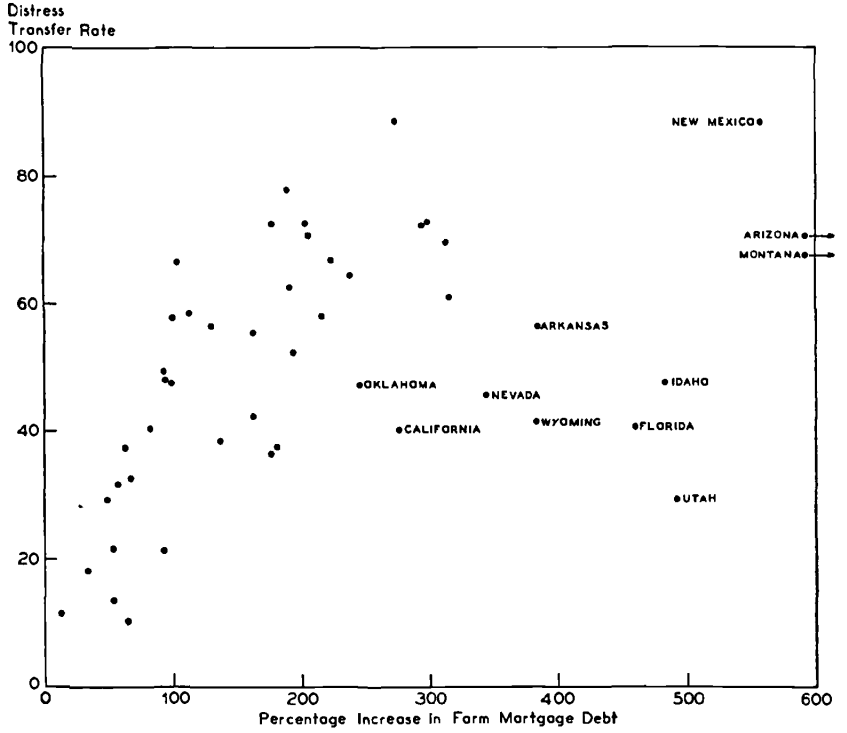
[c] See Figure 7.

Virtually all of the latter are states like Montana, where a large amount of land was being settled. In such states the mortgage debt outstanding in 1910 was small, and a very large percentage increase could easily occur during the ensuing decade, even without an undue amount of real estate inflation. Utah probably affords the best example of an area where a large percentage increase in debt was built upon a sound agricultural basis.

In Table 30 there appears to be virtually no relation between the rise in mortgage debt and the rise in land values. In fact, the state with the largest increase in debt, Montana, had the smallest increase in land values. Among numerous explanations that can be found for this apparent contradiction, two are note-

worthy. The first, already mentioned, is that in recently settled states a relatively small increase in the absolute volume of the debt may be a very large increase percentagewise. The second is that land values in the recently settled states probably rose

Figure 39. Relation between Increase in Farm Mortgage Debt, 1910-20, and Distress Transfers of Farms, 1925-34



Distress transfer rate is the average annual number of foreclosures, and assignments to avoid foreclosures, over the period 1925-34 per thousand mortgaged farms in 1930; see Figure 7. Data on mortgage debt are from Table 30. For comment on the states named, see text.

more rapidly than the index indicates, because the most recent land to be taken into cultivation tended to be the poorer and cheaper land, which pulled downward, in the average, against the more expensive, previously settled land.

Newly Settled Areas

Some of the worst mortgage trouble spots that developed during the interwar period were in areas that had been settled from 1900 through the middle 1920's by people unacquainted

with the physical limitations of the regions in which they located. In some of the newly settled areas the natural productivity of soils and climate was too low to permit any type of arable farming on a profitable basis. In others, the physical limitations of the region called for the adoption of specialized farming practices, which were developed only after painful experience with unsuitable methods. It is true that the prices of wheat and other grains rose sharply during and immediately after World War I and greatly stimulated the increase of crop acreage, land values, and farm debts in the Great Plains. It is also true that the prices of grains declined very rapidly in the early twenties. But the rapid rise and fall in the price of one of the principal products of the Great Plains does not fully account for the severity of the debt distress there during the interwar period.

To be profitable over the long run, crop farming in the plains must be carried on by extensive, dry-farming methods and on relatively large units. During the period of heaviest settlement (1900-1920) rainfall over large sections was above average, and the year to year distribution was somewhat better than normal. This, together with the high prices for wheat during the World War I period, not only encouraged the introduction of crop farming into areas unsuited for it in the long run, but in many cases encouraged inexperienced settlers from farther east, where rainfall was both more plentiful and more dependable, to settle on farms that were much too small to constitute economic units in a semiarid region. Adaptation of size of farm to the needs of an extensive agriculture was greatly hindered by the Homestead Act, which even as liberalized in 1909 and 1916 limited each settler to 320 acres for crop farming and 640 acres for stock raising.

Not only were the typical sizes of farms and much of the early farming technology in the Great Plains unsuited to that region, but the banking and credit institutions introduced to finance agriculture were, if anything, even less well adapted. In 1914 there were 4,712 commercial banks in the twelve Great Plains and Mountain states.[3] By 1919 the number had increased to 5,484. Most of them were small local institutions. Even in 1919, deposits averaged only $416,000 per bank. A substantial proportion of the banks' assets consisted of loans to local

[3] *Banking and Monetary Statistics* (Board of Governors of the Federal Reserve System, 1943), pp. 24-33.

farmers and ranchers—this in a region subject to violent fluctuations in both production and prices.

Nor were insurance companies, mortgage loan companies, or federal and joint stock land banks much better organized to make sound loans in the Great Plains during the World War I boom. The land banks were newly organized and inexperienced in making loans; and many insurance and mortgage loan companies were still buying farm mortgages from local brokers or making mortgage loans through local agents or loan correspondents. Most brokers and local representatives of eastern lenders were engaged in other activities, including the sale of farm real estate, and few of them had extensive experience either in farm appraisal or in making farm loans. Although there is no direct evidence on the point, it appears that lenders shared in the general optimism of the borrowers and made loans that in the light of future developments were far out of line with the long-term earning power of the farms and ranches financed.

In the cut-over areas of the Lake states, where settlement continued into the twenties, and in southeastern Oklahoma, mistakes were made during the World War I period that were in some respects similar to those made in settling the Great Plains. Usually there was not the problem of adjusting size of farm and production practices to the requirements of a semiarid climate, although in southeastern Oklahoma many farm units were established that were much too small for efficient operation. But there were limitations both in the cut-over country and in southeastern Oklahoma imposed by the character and quality of the soils, which, over large areas, are relatively unproductive. A short growing season and occasional dry years constitute additional limitations in parts of the cut-over country. The settlers seem not to have recognized those limitations; at least they did not take them sufficiently into account. During the long period of rising agricultural prices and land values that culminated in the wartime boom of 1915-20 they eagerly bought land and contracted debts in both areas on a basis that could be justified only on the assumption that agricultural prices would continue at high levels. Under the impact of less favorable prices in the twenties and the price collapse of the thirties, farm incomes fell to a point where borrowers in these sections of relatively low yields could not meet their obli-

gations, and lenders acquired a large amount of farm real estate.

For the most part, agriculture in the Pacific Coast states during the interwar period appears to have been rather well adjusted to the widely varying soils and climatic conditions of the region. Mistakes were made, however, during the period 1910-20 in settling some of the areas in Washington and Oregon east of the Cascades. Under the impetus of wartime prices and favorable weather, crop farming pushed into a number of semi-arid areas unsuited for it in the long run, just as it did in parts of the Great Plains. Cut-over areas were settled that proved capable of supporting little more than a subsistence type of agriculture in normal times. In still other areas, irrigation works were installed at considerable expense. Although production was not usually a problem in the irrigated areas of the Northwest, except where drainage difficulties were encountered, taxes for operation, maintenance, and debt service of irrigation districts plus debt service on individual farm mortgages frequently proved a greater financial burden than could be carried during periods of low agricultural prices. In some areas, such as the Wenatchee fruit section in central Washington, many individual farm units were too small for efficient operation, and in some cases orchards were planted on soils that proved to be submarginal for fruit production except during periods of high prices.

Natural Hazards

Unfavorable weather, noxious weeds, plant diseases, and insect pests added greatly to farmers' debt difficulties in some sections of the United States during the twenties and thirties. In periods when agricultural prices are reasonably well adjusted to costs, natural handicaps to production are seldom the sole cause of farm mortgage foreclosure, although they are frequently a contributing cause. In normal times, most farmers can survive an occasional dry year or a season in which hot winds, hail, frost, weeds, insects, or diseases reduce crop yields or even cause a complete crop failure. But a series of poor crops, or even a single crop failure following a number of years in which agricultural prices have been at low levels, may result in financial disaster.

In almost every year during the thirties some part of the Great Plains was affected by drought, and in 1934 and 1936 the entire region suffered from droughts of unusual severity.

Even if agricultural prices had not been at low levels, it seems clear that large numbers of farmers and ranchers would have been unable to meet their financial obligations because of crop failures. As it was, the combination of low prices and poor crops resulted in severe and widespread farm mortgage distress in the Great Plains between 1930 and 1940, and there was even an emigration from the areas most affected.

Although drought does not appear to have been the direct cause of many distress farm transfers outside the Great Plains and Mountain states during the interwar period, it was undoubtedly a contributing factor in other areas, especially during the first half of the thirties, when agricultural prices were still relatively low and drought was widespread. In the same period hot winds, hail, and frost reduced crop yields in a number of areas and added to existing debt difficulties caused by low agricultural prices. Severe winters in the middle thirties killed large numbers of apple trees in western New York and citrus trees in Florida, which undoubtedly led to some foreclosures that would not otherwise have occurred.

Insect pests, noxious weeds, and plant and animal diseases exact a heavy financial toll each year from American agriculture. In some cases this toll takes the form of reduced production; in others it takes the form of cash outlays to cover the cost of control measures. Occasionally, an insect pest or disease presents such a serious control problem that it forces far-reaching changes in the agriculture of an area. The boll weevil appears to have precipitated such a change in parts of the Cotton Belt during the interwar period. During World War I cotton yields were good and farm incomes high in the eastern cotton-producing states of Georgia and South Carolina. Both land values and farm mortgage debt increased sharply in the two states. Then came the price break of the early twenties, which happened to coincide with severe boll weevil damage. It is estimated that in Georgia the reduction in cotton yields caused by the boll weevil was 45 percent in 1921, 44 percent in 1922, and 37 percent in 1923. In South Carolina the greatest reduction was in 1922, estimated at 40 percent. At the same time, prices received by farmers for cotton, which had averaged 35.3 cents per pound during the 1919-20 marketing season, averaged only 15.9 cents per pound during the 1920-21 season and 17.0 cents per pound during the 1921-22 season.[4]

[4] *Agricultural Outlook Charts—1950* (Bureau of Agricultural Economics, 1949), p. 71.

Confronted with low cotton yields on the one hand and relatively high costs and debt service charges on the other, farmers in the eastern Cotton Belt were in serious financial straits during the twenties even though cotton prices recovered from the early postwar break and averaged 20.2 cents per pound during the marketing seasons 1922-23 to 1929-30, inclusive. The need for a shift from almost complete dependence on cotton as the principal source of farm income in the eastern cotton states was clearly indicated. But the problems of agricultural adjustment were greatly complicated by the fact that the boll weevil forced the beginnings of such a shift during a period of agricultural depression. It is not surprising that there were many financial failures in the eastern Cotton Belt during the interwar period and that farm mortgage foreclosures and loss rates there were among the highest in the United States.

High Fixed Costs

Virtually all types of farming in the United States are characterized by fixed costs in varying degree, but there are certain types of farming where fixed costs are high enough to contribute substantially to farmers' financial problems in periods of declining prices. Probably the most spectacular examples of debt distress during the interwar period resulting from high fixed costs were those in intensively farmed areas with expensive drainage or irrigation projects. High taxes in drainage districts were an important contributing cause of debt distress in the delta areas in Arkansas and Mississippi. Farmers in some of the irrigated sections of the Pacific Coast states found themselves faced with a combination of high irrigation assessments and extremely high mortgage debt charges, which contributed to acute debt distress in that region.

Technological Change

Technological progress is commonly recognized as a primary cause of American productivity and prosperity; yet it often brings with it maladjustments that result in great hardship for individuals. During World War I and the interwar period, progress was rapid, both in agriculture and industry, and it produced a number of notable maladjustments either by reducing demand for specific products and services or by reducing unit costs for some producers, who were then able to undersell their less fortunate competitors.

An important technological advance in the twentieth century was the development of synthetic fibers by the chemical industry, including rayon and nylon, which have partly taken the place of natural fibers. Undoubtedly the synthetics exerted a depressing effect on the price of natural fibers, including cotton, and may, therefore, have contributed in a small way to some of the distress that occurred in the Cotton Belt.

The development of automotive power had widespread effects on agriculture. It had an immediate effect on farmers who produced hay for sale in cities and in deficit hay-producing areas such as the South. There were many commercial hay growers in the Northeast, some of whom were able to turn their farms to other uses, while others were forced out of business entirely. But automotive power had an even more important effect on methods of production and hence costs. Tractors supplanted work animals on the farm, which reduced costs in many cases and released thousands of acres of land previously used for growing feed for draft animals.

The shift to tractor power clearly increased the efficiency of farmers who were able to take full advantage of the new machine methods. Conversely, those who were unable to use modern machinery to advantage, either because of topography, or of small holdings, or for other reasons, were placed at a competitive disadvantage.

Many technological advances seem to have had the effect of increasing differentials in the economic value of different grades of land being used for the same type of farming. There is considerable evidence that within type-of-farming areas, technological changes during the interwar period increased operating incomes relatively more on farms with few production handicaps than on less well adapted farms. The introduction of hybrid seed corn, for example, effected the greatest increases in corn yields and farming returns in those parts of the Corn Belt with climate and soils best adapted to corn production. Likewise, better control of plant diseases and insect pests and use of commercial fertilizers increased the production of marketable fruit per acre more for orchards with deep, well-drained soils than for orchards with poorly drained soils. Such developments may explain in part the better than average loan experience on the more productive land classes. Even if earning coverage had been the same on comparatively poor as on good land in 1920, it appears that by the early thirties the poor land in

many type-of-farming areas would have been at a decided disadvantage through its lesser share in technological gains.

There are examples, of course, of technological changes that increased the earning power of land with physical production handicaps more than the earning power of land with few such handicaps; but within type-of-farming areas there appear to have been few cases of that kind compared to the number where the reverse situation developed.

Mistakes in Making Loans

Much of the debt distress that developed during the interwar period is traceable to overlending, particularly during the World War I period. Loans were made that seemed sound at the time, but later proved excessive in terms of long-term earning power. Furthermore, there is substantial evidence that overlending occurred more frequently on farms and in areas with marked production limitations[5] than on farms and in areas with few limitations. Studies of farm income, including those reviewed in Chapter 7, offer numerous examples of type-of-farming areas where farms on the less productive grades of land earned a lower rate of return and had less loan carrying capacity than farms on the better grades. And statistical studies of lending experience have shown repeatedly that mortgages made on the less productive farms within an area were more likely to end in foreclosure and serious loss than mortgages on the more productive farms.

It is often suggested that the poor financial experience observed on less productive farms and in less productive areas is due to an inability of the farm land market, at least in the past, to differentiate adequately among individual farms in an area or among neighboring areas with different degrees of productivity. Failure to allow fully for differences in productivity seems likely to be especially important in newly settled areas and during periods of rapid technological and economic change. As a result of such failures, it is argued, farms in the less productive land classes are likely to sell in many instances for more than their long-term earnings prospects would justify even after appropriate adjustments for differences in home values and related amenities; and if loans are made on these farms on the basis of appraised market value, they are almost certain to be excessive loans.

[5] Limitations imposed by soils, climate, topography, or location.

But why should the farm land market have difficulty in setting values that accord with earnings prospects? Farm land is a highly variable commodity, with no two farms exactly alike. Differences in soils and climate, which may have an important bearing on farming returns, are not always recognized by the prospective buyer, or if recognized, may not be taken sufficiently into account in arriving at an offering price for a particular farm. Even if information concerning past earnings is available, which is seldom the case, it is difficult to disentangle and give proper weight to factors that may alter earning power in the future. Under the circumstances it is not surprising that even professional appraisers should make mistakes in estimating the earning prospects of individual farms, or even of whole areas. Although mistakes of all sorts may occur, there is one type that is particularly likely to result in eventual mortgage difficulty. It is the overappraisal of a marginal farm. The opposite type of error, which occurs when a high grade farm is underappraised or sold at a bargain price, is naturally much less likely to result in difficulty.

Accurate appraisals are especially difficult in areas where soils are highly variable or in areas characterized by local variations in climate. An example is the fringe area between the cut-over country and dairy belt of the Lake states, which has highly variable soils. Much of the distress that developed there during the interwar period appears to have been the result of the failure of the early settlers and lenders to distinguish the better agricultural land from land with serious production limitations.

But the frequency with which overpricing of poor land seems to occur suggests that there is more involved than mere random errors of appraisal or lack of knowledge on the part of new settlers. Some writers have argued that the errors of appraisal are not random at all, but are biased in the direction of overvaluation of poor land and undervaluation of good land. A possible alternative view is that overvaluation of poor land is apt to occur mainly in periods of prosperity and inflation. It is a plausible view because, obviously, land that is inferior or marginal in the long run may earn a very handsome rate of return during temporary periods of high prices for agricultural products. If, in addition, land values in general are undergoing a speculative rise, the values of inferior or marginal land are almost certain to rise too.

The argument has to be taken largely on its logical merits, for there are no series showing movements of land values for different grades of land. Nevertheless, there is evidence that just such a development occurred in northern Missouri and southern Iowa (area G in Figure 23, Chapter 1) where foreclosures were notoriously high during the interwar period. The area is better than marginal, but at the same time it is definitely inferior to central Iowa, because of rough topography or poor drainage. Yet when the speculative land boom struck central Iowa, southern Iowa and northern Missouri were greatly affected, and eventually land values reached levels that might have been justified under World War I prices for corn and hogs, but proved thoroughly unsound under prices prevailing for the next two decades. It is generally believed that a similar phenomenon of temporary speculative overappraisal occurs repeatedly in the stock market. During a bull market and business revival, normally low-priced securities of corporations with poor long-term earnings prospects are likely to rise rapidly as earnings reports begin to show substantial improvement. Ordinarily the low grade securities rise much faster than the rest of the market, which gives rise to the famous "square root" law.[6] But as soon as the market decides that the period of high earnings is temporary and that the low grade securities are, therefore, overvalued, they fall in price, perhaps even more rapidly than they rose.

Not all of the mistakes in making mortgage loans on land with production handicaps result from improperly appraising the market value of such land, however. People buy farms for many reasons besides obtaining a financial return, and the nonfinancial considerations also influence land values. Furthermore, some buyers may appraise properly the differences be-

[6] The law states that prices of variously priced stocks rise in such a way that changes in their square roots tend to be constant. Thus, in a strong bull market, the likelihood that a low-priced stock selling at $9 will eventually reach $36 is as great as the likelihood that a high-priced stock selling at $81 will eventually reach $144. The increase in the square root for the $9 stock ($\sqrt{36} - \sqrt{9} = 6 - 3 = 3$) is the same as the corresponding increase for the $81 stock ($\sqrt{144} - \sqrt{81} = 12 - 9 = 3$); yet the price increases amount to 300 percent for the $9 stock and only 78 percent for the $81 stock. Cf. "The Relationship between Price Change and Price Level for Common Stocks," by Zenon Szatrowski, in *Journal of the American Statistical Association* (Vol. 40, No. 232, Part 1, December 1945, pp. 467-83), and "Finding Actual Price Distortions: Simple 'Square Root' Formula Equalizes Varying Percentage Movements," by Harry D. Comer, in *Barron's National Business and Financial Weekly* (Vol. 24: March 13, 1944, p. 16; March 20, 1944, p. 7).

tween farms in earning capacity and yet have insufficient purchasing power to compete for the better ones. If well-informed buyers with limited capital compete for the cheaper farms, instead of retiring from the land market altogether, the result is that farms with recognized production limitations may consistently sell for prices that are high in relation to earning power. It does not follow that these farms are overpriced or that market appraisals of them for loan purposes are erroneous. The problem here is one of adjusting size of loan to debt paying capacity, which can be achieved by limiting the amount loaned to a smaller fraction of appraised market value than that considered safe for the more productive properties.

Recent Adjustments

Since 1914, when the outbreak of World War I began to set the stage for the debt distress following 1920, there have been a number of developments in American agriculture that appear to have mitigated, at least to some extent, the price and production hazards of farming. A few of these may be mentioned.

1. Government farm price support programs have been introduced, which, if continued, will have a stabilizing effect on the prices of the products supported. Many farm products are not eligible for price support, however. Nor is it by any means certain that prices can or will be supported at levels that will permit farmers to pay off heavy debts contracted during inflationary periods such as the present.

2. Great advances have been made in controlling plant and animal diseases, insect pests, and weeds. Control measures are often costly, but they promise greater freedom from catastrophic losses in the future.

3. Although science has been able to do nothing yet to prevent recurring droughts in the Great Plains and elsewhere, it has provided better varieties of wheat, new techniques of conserving moisture, and machine methods that facilitate combining small holdings into units of economic size. All these tend to mitigate the effects of drought. In areas where rainfall is sometimes excessive, it has been possible through the use of modern farm machinery to reduce production losses substantially by expediting operations during intervals between periods of bad weather.

4. Government crop insurance schemes may eventually enable farmers to avoid part of the heavy financial losses resulting

from catastrophic crop failure. At present, however, crop insurance is on an experimental basis; it is available in a rather small number of counties, and it covers only a few staple crops. Naturally, insurance premiums are high in areas of high risk, but since they are a budgetable expense, they could be a help to borrowers and lenders in the attempt to adjust loans to farm incomes. So far, however, farmers in high risk areas have been reluctant to pay the necessary premiums.

5. A great deal more is known today about production limitations imposed by soils and climate than ever before. Soil maps and weather records are more generally available, and those who are willing to take pains in using them can avoid the worst errors of purchasing farms or making loans on land with production limitations. During the past twenty-five years a great deal of effort has been expended on improving appraisal practices and loan standards.

6. In the South (a chronic trouble area during the interwar period) adjustments have been made possible by wartime prosperity and shifts of population, by research, and by federal farm programs. These adjustments have had the effect of reducing dependence on a single crop, and will, no doubt, diminish future price and production risks for southern farming to some extent.

7. One interesting development during the World War II boom has been the apparent awareness of both borrowers and lenders of dangers in overborrowing. This was particularly noticeable in the Great Plains, where substantial reductions in mortgage debt occurred (see Tables 3 and 4, in Introduction). Certainly reduced mortgage debts do not affect the likelihood of production failures or price declines in the future, nor do they relieve farmers from the necessity of going in debt in case of future difficulties; but the existence of a moderate debt structure does increase the ability of agriculture to withstand future hardships that are almost certain to develop. It remains to be seen, of course, whether the awareness of borrowers and lenders of the dangers in overexpansion of credit is temporary or permanent.

8. Recognition of the fact that mortgage default is often the result of failure to adjust mortgage terms to probable repayment ability, or of broad economic or climatic forces over which the individual farmer has no control, has resulted in institutional arrangements intended to reduce the probability of legal

default and to temper the consequences of such default. Farm mortgages in increasing proportion are being written on a long-term amortized basis with instalments better adjusted to the probable flow of farm income available for debt service charges. Many mortgages carry provisions for deferment of payments if the farmer, through no fault of his own, is unable to meet them. Some mortgages provide for variable payments directly geared to fluctuations in farm income. During the thirties the federal government refinanced large numbers of distressed farm mortgages, and provision undoubtedly will again be made for refinancing operations of that kind in the event of another major depression or widespread crop failures. Most states passed moratorium legislation during the thirties, and in a few instances deficiency judgments were outlawed or restricted as to terms. Legislation providing for the insurance of farm mortgages has been passed, but has not been used extensively so far. Mortgage insurance would no doubt reduce the lender's risk: whether it would reduce the borrower's is another question.

These and other adjustments will naturally be expected to exert a considerable influence on the incidence of farm mortgage distress in the future. Possibly they will tend to reduce the general severity of distress, as is hoped, and probably they will alter the geographical pattern of distress that characterized the interwar period. But the amount of reduction and the extent of the alteration are necessarily uncertain. It is relatively easy, in reviewing the past, to point out most of the forces that have contributed to heavy foreclosures and losses, and the counteractive adjustments that have developed. But it is less easy to determine whether the same forces are still operative, and it is extremely difficult to ascertain the effectiveness of the adjustments—especially since many of them have not yet been tested in the fire of a severe agricultural depression.

Continuing Problems

It is obvious that, in the last analysis, farm mortgages default and are foreclosed because farm incomes fail to achieve expectations. A review of farm mortgage loan experience in the United States during the interwar period indicates many causes for mortgage distress, which have one common characteristic. In one way or another they all contribute to the instability and uncertainty of farm incomes, so that prospective buyers, borrowers, and lenders are unable to make accurate forecasts.

It is clear that the central problem of farm mortgage lending has been and continues to be the forecasting of future trends of agricultural prices and incomes. Although production failures, notably in the Great Plains, have contributed greatly to farm mortgage difficulties, nevertheless the widespread financial distress in agriculture during the interwar period was primarily the result of failure to anticipate the extent of price declines from previously existing levels.

In addition to the problem of forecasting the long-term agricultural outlook, farm lenders are confronted with the uncertainties created by rapid technological change in an industry with millions of small producing units, no two of which are exactly alike and no two of which are affected in precisely the same manner by new developments. This situation greatly complicates the problem of obtaining accurate appraisals, on either a market value or a capitalized earnings basis. There is every reason to believe that the twin problems of making accurate appraisals and adjusting loans to repayment ability will continue to be difficult in the future, even if less difficult than in the past.