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THE CORN BELT

MOST of the Corn Belt is located within the five states of Ohio, Indiana, Illinois, Iowa, and Missouri, though some of it spills over into contiguous states (see the color map in the back of the book). Because of the favorable combination of soils, topography, and climate that makes the area suitable for intensive crop and livestock farming, these five states contain a remarkable concentration of the nation's agricultural wealth (Figure 31). In 1930 (the midpoint of the interwar period on which our study concentrates) they accounted for 25 percent of the value of all farm real estate, livestock, and equipment in the United States.[1]

The Corn Belt states also account for a sizable proportion of the nation's farm mortgage debt. When the debt reached its peak in 1923, farm mortgage loans in the Corn Belt states amounted to $3.3 billion, or about 30 percent of the total.[2] Although the outstanding debt in the five states has shrunk greatly since that time, it still aggregated about one-fifth of the total for the nation at the beginning of 1953.[3] Hence mortgage loan experience in the Corn Belt during the twenties and thirties was highly significant for farmers, lenders, and the economy at large.

Physical Characteristics

The Corn Belt has an excellent climate for crop production. Average annual rainfall ranges from around 26 inches in the northwest corner of Iowa to over 45 inches in some parts of the Ohio and Missouri River valleys (Figure 25, Chapter 2). The occasional dry spells are seldom serious, and are not comparable to the devastating droughts that occur from time to time in the Great Plains and Mountain region. Furthermore, adequate rainfall is usually associated with a long, hot growing season, necessary for good corn yields.

Like other parts of the country, the Corn Belt has soils that

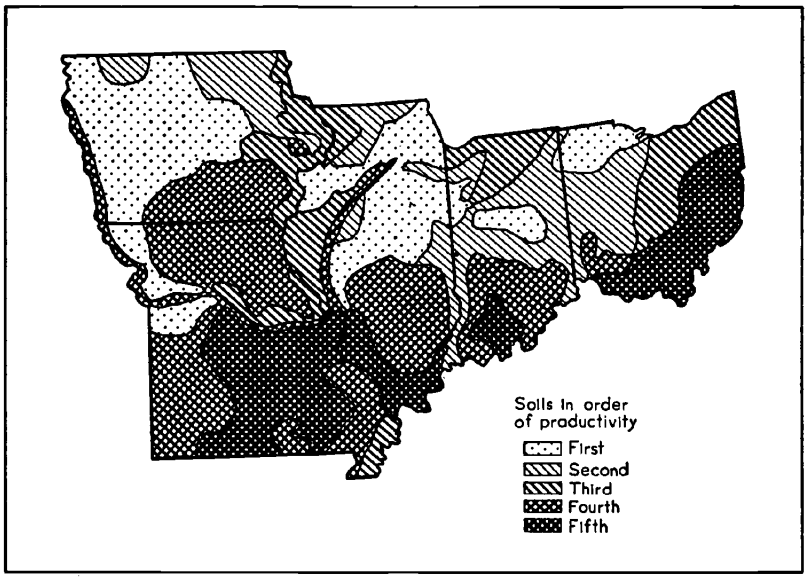
[1] *Statistical Abstract of the United States: 1935*, p. 560.

[2] Donald C. Horton, Harald C. Larsen, and Norman J. Wall, *Farm-Mortgage Credit Facilities in the United States* (U.S. Department of Agriculture, Misc. Pub. No. 478, 1942), p. 220.

[3] *Agricultural Finance Review* (Bureau of Agricultural Economics), Vol. 15, Supplement May 1953, Table 17, p. 27.

vary widely in productivity. Topography likewise varies from the level prairie of central Illinois and Iowa to the rough and hilly country along the Ohio River. The more productive areas lie in western Ohio, central Indiana, central and northern Illinois, and northern and western Iowa (Figure 32). They are almost entirely in glaciated territory, and the soils are younger geologically and much richer in humus content than those farther south. Since the land is level, or nearly so, it is relatively free from erosion and adapted to efficient machine methods of production, but much of it requires drainage.

Figure 32. Soil Productivity in the Corn Belt



Based on general productivity of soil association groups adjusted according to long-term average corn yields, average land values per acre, and various soils data published by the state agricultural experiment stations. The areas of best soils are rated "first," of poorest, "fifth."

The southern sections of Ohio, Indiana, and Illinois, which border on the Ohio River, contain much poor land. Most of it is unglaciated, and in many localities the soils are residual sandstone and shale, with low fertility. The subsoils are often impervious and the drainage inadequate, so that in wet weather the topsoil becomes waterlogged, and in dry weather the hard layer prevents contact between the roots and the subsoil moisture. Another adverse factor is the topography, which varies

from rolling to rough and broken, thus limiting the proportion of land that can be put into crops and affecting the ease with which land can be tilled and crops harvested. Erosion is a serious hazard, and in some sections of southern Ohio it has caused so much damage that crop farming has been discontinued and occasionally farms have been abandoned. Naturally, the unfavorable conditions in the Ohio valley have had a pronounced effect on type of farming. Strictly speaking, the section does not belong to the Corn Belt, although it produces some corn. It is more an area of general farming, with many small farms of the self-sufficing or part-time type.

There is also a sizable area of comparatively poor land in southern Iowa and northern Missouri. In southern Iowa the topography is generally rough, cropland is scarce, and yields are relatively low. There, too, erosion is a serious hazard, and in many areas much of the topsoil is gone. In northeastern Missouri the topography is smoother, but the soils are rather infertile, and the subsoil is typically impervious, which affects production adversely in both wet and dry periods. The large area of the Ozarks in southern Missouri is also poor, and, in the main, suitable only for subsistence farming.

Types of Farming

Corn and livestock are the two basic farm enterprises in the Corn Belt. Although large amounts of corn are produced for sale outside the region, most of the crop is used within the Corn Belt for raising or fattening livestock. Numerous other crops are grown—for example, wheat, oats, soybeans, and hay—in most cases as part of a rotation with corn. Dairying occurs in conjunction with corn and livestock in many areas.

Within the Corn Belt, combinations of enterprise vary considerably from farm to farm. Some farms specialize, usually either in cash grains or in growing or fattening livestock. Most farms, however, engage in a combination of enterprises. To some extent the different combinations of enterprises, or types of farm, are located in specific areas. In central Iowa and central Illinois, cash corn and small grains are important sources of income. In the Missouri valley area of the region, which includes parts of Iowa and Nebraska, and again in the Mississippi valley area, which includes parts of Illinois and Iowa, livestock raising and fattening predominate.

Speculative Inflation of Land Values

The most significant characteristic of the World War I boom in the Corn Belt was its greater impact on the westerly sections than on the east. By states, the increase between 1910 and 1920 in average value of farm real estate per acre ranged from 64 percent in Ohio to 136 percent in Iowa (Table 10). The increase in dollar amount for Iowa was from $96 to $227.

The expansion of farm mortgage debt during the same decade was even more marked. The 176 percent rise for Iowa was again

TABLE 10

Average Value of Farm Real Estate per Acre for the Corn Belt States, 1910 and 1920

State	*1910 (April 15)*	*1920 (January 1)*	*Increase 1910-20*
Ohio	$69	$113	64%
Indiana	75	126	68
Illinois	108	188	74
Iowa	96	227	136
Missouri	50	88	76
United States	$40	$69	72%

Data for the states are from the 16th Census: 1940, *Agriculture*, Vol. 1, Parts 1 and 2. Figures for the United States are from *Agricultural Statistics, 1948* (U.S. Department of Agriculture), page 528.

the largest for the region (Table 11). In some sections, particularly in the west, the debt expansion was caused in part by an increase in the proportion of farms mortgaged. Of most importance, however, was the rise in the average debt per farm. Estimates compiled by the Bureau of Agricultural Economics show increases in the average size of new mortgages between 1917 and 1920 ranging between 49 and 55 percent for all the Corn Belt states except Iowa, where the increase was 69 percent. That brought the average size of new loans in Iowa in 1920 to the high level of $11,080, when the United States average was $4,270.[4]

An abundance of credit made the debt expansion possible. Much of the credit was attracted from outside sources by the general feeling of optimism over the future of Corn Belt agri-

[4] *Average Size of Farm-Mortgage Recordings of Selected Lender Groups* (Bureau of Agricultural Economics, mimeo., November 1940), pp. 3, 22 ff., and 28 f.

TABLE 11

Farm Mortgage Debt in the Corn Belt States, 1910 and 1920

(dollar figures in thousands)

State	*1910*	*1920*	*Increase 1910-20*
Ohio	$114,874	$226,458	97%
Indiana	113,276	219,141	93
Illinois	267,361	530,222	98
Iowa	430,690	1,187,185	176
Missouri	207,279	421,051	103
Total Corn Belt	$1,133,480	$2,584,057	128%
United States	$3,207,863	$8,448,772	163%

From *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), pages 219 f. Data as of January 1.

culture. Life insurance companies were heavy lenders in the region because of the opportunity of making large-sized loans on good farm land. Eastern mortgage companies were active as well. The competition of numerous lenders for farm loans was not always conducive to sound lending.

Great expansion also occurred in the local credit and banking system, particularly in the western Corn Belt. In Iowa the number of banks increased from 1,455 to 1,676 between 1914 and 1919. By June 1920 there were 1,763 active banks—more than in any other state.[5] Furthermore, there was an abundance of second mortgage money from regular lenders as well as from sellers who took a mortgage as part of the sales price. Thus credit inflation made it possible for farm operations to expand, for land values to rise to high levels, and for farmers to incur debt burdens that could be carried only with the continuation of highly favorable farm incomes. Naturally, there were many foreclosures and forced sales when the commodity markets eventually broke.

The causes of the Iowa land boom are difficult to explain—as difficult as the stock market and Florida real estate booms of the twenties. Fundamentally, of course, Iowa contains as much high grade land as any other place of similar size in the world.

[5] *Banking and Monetary Statistics* (Board of Governors of the Federal Reserve System, 1943), Table 8, p. 26; Comptroller of the Currency, *Annual Report* for 1920 (Treasury Department), Vol. 1, p. 256.

TABLE 12

World War I Inflation and Subsequent Debt Distress in the Corn Belt States

State	*Increase in farm mortgage debt, 1910 to 1920*	*Increase in land values per acre, 1910 to 1920*	*Average distress transfers, 1925-34, per 1,000 mortgaged farms in 1930*
Ohio	97%	64%	47.6
Indiana	93	68	49.1
Illinois	98	74	57.6
Missouri	103	76	66.1
Iowa	176	136	72.5

From Tables 10 and 11, and Figure 7.

A large proportion of the land can be planted to crops; soils are generally good; there are few climatic hazards; and yields are high year after year. Moreover, land values and farm incomes had been rising almost continuously since 1900. All this justified confidence in Iowa's future, but not the extreme optimism that actually developed. Much the same favorable conditions existed in other Corn Belt states, but the boom was far less extreme. A summary comparison of World War I land and credit inflation with subsequent debt distress in the Corn Belt states is shown in Table 12.

The Price Collapse

The collapse in agricultural prices and incomes that occurred in 1921 was severe in the Corn Belt, but not much more so than in the nation at large. Between 1919 and 1921, decreases in the price index of all farm products ranged from 39 percent in Ohio to 50 percent in Iowa (Table 13). These compare with 42 percent for the entire United States.

The collapse in agricultural prices after 1929 was more severe. By 1932, farm prices in Ohio and Illinois were 58 percent below the 1929 level; and in Missouri, Iowa, and Indiana the declines were 59, 60, and 61 percent, respectively. These all exceeded the decline of 54 percent for the United States as a whole. Farm cash receipts, however, do not necessarily increase or decrease by the same percentage as farm prices, since production also affects receipts. Production actually increased in the Corn Belt during the period under review; consequently, receipts de-

TABLE 13

Index Numbers of Agricultural Prices in the Corn Belt States, 1919 and 1921, 1929 and 1932

(August 1909–July 1914 = 100)

State	1919	1921	Decrease 1919-21	1929	1932	Decrease 1929-32
Ohio	218	132	39%	151	63	58%
Indiana	215	127	41	159	62	61
Illinois	220	116	47	151	63	58
Iowa	224	112	50	152	61	60
Missouri	209	118	44	147	60	59
United States	215	124	42%	149	68	54%

From *Farm Economics* (New York State College of Agriculture, Cornell University), No. 160 (April 1948), page 4137.

creased somewhat less than prices, according to estimates of the Bureau of Agricultural Economics. In fact Iowa was the only Corn Belt state where cash receipts decreased more than prices, or where receipts decreased more than in the United States generally (Tables 13 and 14).

Mortgage Experience

Compared with the Great Plains, where mortgage experience was predominantly bad, the Corn Belt stands out as a region

TABLE 14

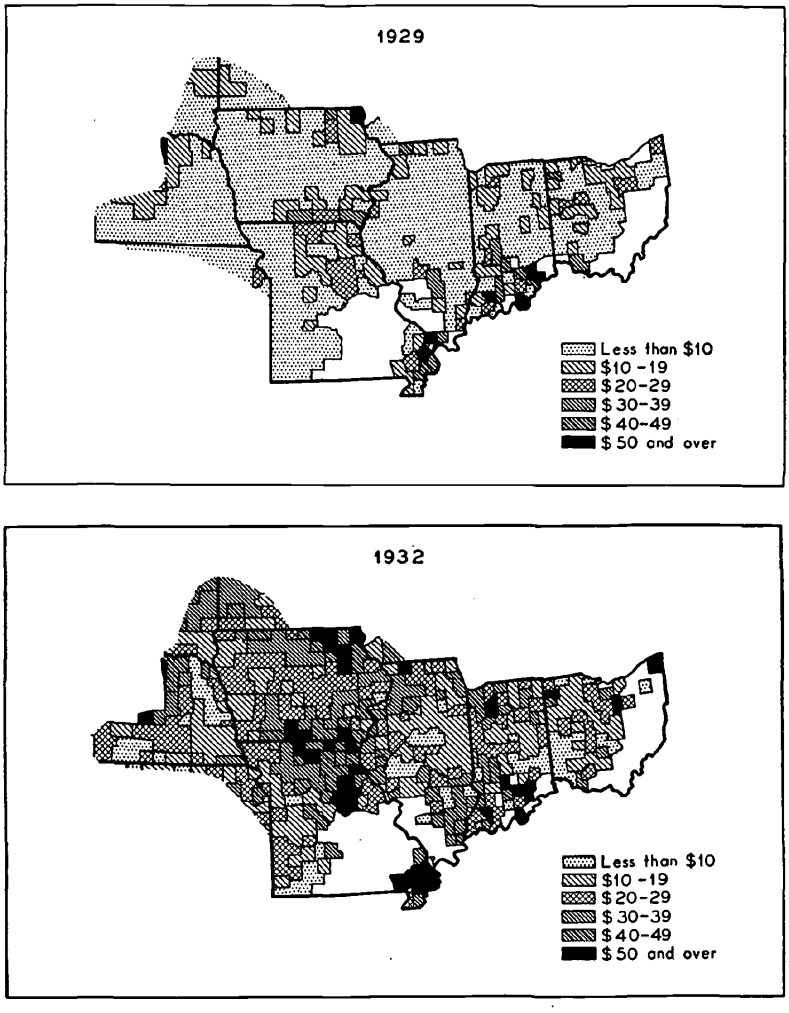
Cash Receipts from Farm Marketings in the Corn Belt States, 1929 and 1932

(dollar figures in thousands)

State	1929	1932	Decrease 1929-32
Ohio	$377,034	$180,937	52%
Indiana	327,291	145,792	55
Illinois	593,544	256,129	57
Iowa	763,085	282,799	63
Missouri	391,742	167,937	57
Total Corn Belt	$2,452,696	$1,033,594	58%
United States	$11,302,889	$4,746,815	58%

From *Cash Receipts from Farming, by States and Commodities, Calendar Years 1924-44* (Bureau of Agricultural Economics, January 1946), Table 6, pages 37 f., 40 f., 43 f., 56 f., and 60 f.

Figure 33. Distressed Assets per $100 of Farm Investment in the Corn Belt by 14 and 15 Life Insurance Companies, 1929 and 1932



Distressed assets include pending and completed foreclosures as in Figures 12 and 13, of which these are sections. In areas shown in white, few or no loans were reported.

of varied experience. Statewide figures on distress transfers indicate a pronounced increase in the severity of distress from east to west (Figures 6 and 7, pages 28 f.). From 1925 (the first year for which estimates are available) to 1939,[6] the yearly average number of foreclosures and other distress transfers per

[6] The exact period covered is from March 16, 1925 through March 15, 1940.

thousand farms was 14.9 for Ohio, 18.9 for Indiana, 20.3 for Illinois, 27.6 for Missouri, and 30.7 for Iowa. These compare with a high of 49.1 for South Dakota, and an average of 19.8 for the United States. County data on distress transfers in percent of mortgaged farms (Figure 8, Chapter 1) indicate the same east to west variation in the Corn Belt. In Ohio, Indiana, and Illinois, most of the Works Progress Administration sample counties were in the 20-39 percent class interval, and the remainder were in the 40-59 interval. In Iowa and Missouri, however, most of the counties were in the 40-59 and 60-79 percent intervals, and three counties were in the 80-99 percent interval.

Probably the best single indicator of the location of distressed areas within the several states of the Corn Belt is the experience of life insurance companies, which were very heavy lenders throughout the region. They were much more active than the land banks, for example. In 1930 the proportion of all farm mortgages held by life insurance companies ranged from 21.7 percent in Ohio to 41.9 percent in Iowa. Land bank holdings ranged from 6.8 percent in Iowa to 17.7 percent in Indiana.[7]

Distressed farm assets of a number of large life insurance companies in 1929 and 1932, given as percentages of their total farm investment, are shown in Figure 33 for counties and groups of counties in the Corn Belt. The map for 1929 shows that at that time serious difficulty had begun to develop in only a few scattered areas. The most conspicuous of them was along the Ohio River, particularly in southern Indiana. Another trouble spot, which later became much worse, was northeastern Iowa. In southern Iowa and nearby counties in northern Missouri trouble was developing too.

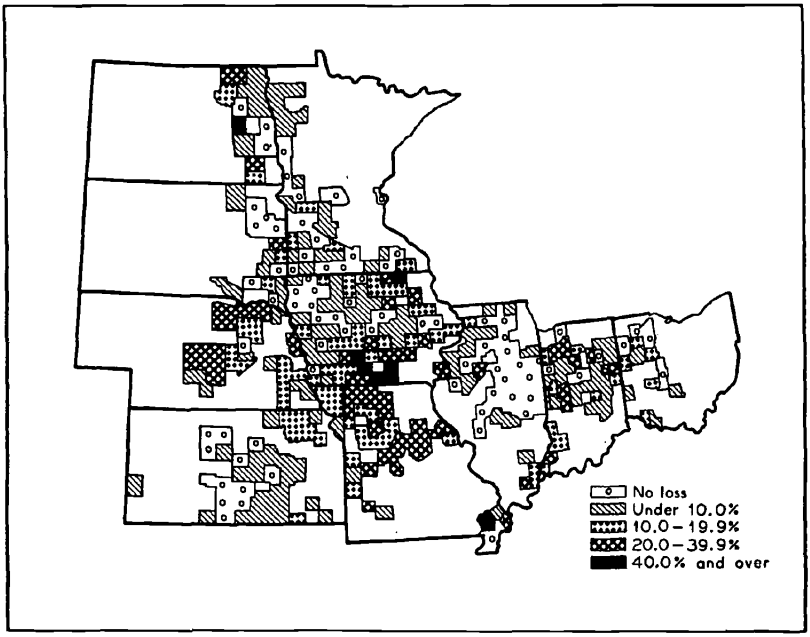
By 1932 the pattern of distress had taken definite shape. The southern Indiana area had increased somewhat and now included adjacent counties in Illinois. But the most conspicuous trouble spot was southern Iowa and northern Missouri, the area already referred to in Chapter 1, and designated G in Figure 23 (Chapter 1). Mortgage difficulties in northeastern Iowa had also expanded. In fact, high foreclosure rates had become so general that the areas of relatively satisfactory experience began to stand out. Among them was the area comprising central Illinois and parts of central Indiana and western Ohio

[7] Harald C. Larsen, *Distribution by Lender Groups of Farm-Mortgage and Real Estate Holdings, January 1, 1930-45* (Bureau of Agricultural Economics, August 1945), Tables 17, 18, and 22, pp. 60, 62, and 68.

designated B in Figure 23. Other areas of fairly good experience were southeastern Nebraska and parts of western Missouri. Experience in the highly productive areas of central and western Iowa, while not good, stands out in contrast to the heavy foreclosure rates for the remainder of the state.

For the most part insurance company losses proved heaviest

Figure 34. Loss Rates on Farms in and near the Corn Belt Sold by 13 Life Insurance Companies, 1929-37



From unpublished data supplied by major life insurance companies. Loss rate is the percentage by which receipts from sales failed to cover investment and costs. For coverage and other details see pages 40 to 43.

in the areas where foreclosure rates were high. Actual loss experience for thirteen life insurance companies in the more important counties of the Corn Belt is shown in Figure 34.[8] The

[8] Reporting companies provided the following data for acquired farms sold during 1929-37: (1) capital investment in acquired farms, including unpaid principal of loan, interest to date of acquisition, attorneys' fees, and other actual expenses to date of acquisition; (2) cost from acquisition to date of sale, including maintenance, improvements, and taxes, less income; and (3) receipts from sales of acquired farms. Loss rates were determined by computing the percent by which sales (item 3) failed to cover capital investment plus costs (items 1 and 2). Only those counties were included for which capital investment in farms sold (item 1) exceeded $100,000.

data reflect only completed sales of farms, of which there were 8,784 from 1929 to 1937 inclusive in the five major Corn Belt states. This compares with 16,366 farms remaining to be sold at the end of 1937. Naturally, the quality of the remaining farms and the trend of land values during subsequent years could have had a substantial effect on the ultimate loss rates.

Although the federal land banks had a smaller volume of loans in the Corn Belt during the twenties than did life insurance companies, in the main they experienced difficulty in the same areas. Land bank foreclosures and losses were heaviest in southern Iowa and northern Missouri (Figures 9 and 10, Chapter 1) and relatively light in Ohio, central Indiana, and northern and central Illinois.

Differences in farm mortgage distress between the eastern and western Corn Belt states appear to have resulted largely from differences in the intensity of the World War I speculative boom. On the other hand, variations within states are closely associated with local conditions affecting productivity, such as soil quality, drainage, and topography. As was pointed out earlier, the most conspicuously poor experience occurred in three areas: southern Iowa and northern Missouri, northeastern Iowa, and southern Indiana. Although it is difficult to believe that the relatively low productivity of these areas was not clearly recognized before and during the World War I boom, it seems quite likely that the degree of inferiority was inadequately appraised. As a result there was a tendency to overvalue land and overextend credit.

For example, the roughness of topography and the scarcity of good cropland in south central Iowa and north central Missouri were readily apparent; moreover the relatively low crop yields and the seriousness of the erosion hazard could not have been entirely overlooked. Nevertheless, this poor area is close to some of the best farming land in the nation. When the World War I boom began to raise land values in the better sections of Iowa, the inflation spread throughout most of the surrounding fringe areas. All over Iowa, land values and debt burdens reached heights that were not justified under normal production and price conditions, but the overextension was more extreme in the less productive areas. As a result, foreclosures and losses were heaviest in such areas during the interwar period. This is illustrated by Table 15, which includes average corn yields, voluntary farm transfer rates in 1919-20,

TABLE 15

Distress Transfer Rates 1920-35, Voluntary Transfer Rates 1919-20, and Corn Yields 1929-44, for WPA Sample Counties in Iowa

County	*Distress transfer rates 1920-35*[a]	*Voluntary transfer rates 1919-20*[b]	*Corn yields 1929-44*[c]
Appanoose	89.3	21.8	31.5
Decatur	86.4	19.5	32.0
Jefferson	82.4	16.9	39.9
Hamilton	78.5	16.7	50.9
Greene	72.1	17.5	47.8
Lucas	68.8	20.8	33.0
Woodbury	68.8	19.6	36.5
Clay	67.7	18.7	48.1
Humboldt	65.0	16.8	51.6
Monroe	64.9	17.0	33.2
Benton	59.8	12.2	52.5
Harrison	59.5	18.0	36.0
Cass	54.0	18.7	41.8
Mitchell	53.7	17.7	44.2
Audubon	51.8	14.6	45.3
Delaware	49.5	16.1	50.0
Des Moines	48.1	14.8	47.1
Cherokee	46.3	14.4	45.5
Cedar	38.7	13.3	56.4
Calhoun	36.0	16.0	50.9
Buena Vista	34.8	17.1	50.1
Winneshiek	25.6	11.0	48.0

[a] Number of foreclosures, and assignments to avoid foreclosure, during 1920-35, per hundred farms mortgaged in 1930. For sources and method of estimating mortgaged farms by county, see pages 27 and 31, with footnotes 3 and 4.

[b] Average number of voluntary transfers in 1919-20 (from *Transfers of Farm Real Estate*, Bureau of Agricultural Economics, mimeo., August 1939) per hundred farms in 1920 as given in the 1920 Census of Agriculture.

[c] In bushels per acre; based on unpublished data supplied by the Bureau of Agricultural Economics.

and foreclosure rates during the twenties and early thirties, in WPA sample counties. At the peak of the World War I boom, voluntary transfer rates were highest in counties with low corn yields. In the aftermath, foreclosure rates were highest in those

counties.[9] Feverish real estate activity apparently was accompanied by failure on the part of both farmers and lenders to distinguish sufficiently between low-yield and high-yield corn land with respect to long-term debt-carrying capacity.

It is important to note that the tendency to overvalue unproductive areas was not universal. Two very poor sections of the Corn Belt states are southeastern Ohio and the Ozark area of southern Missouri. There the productive limitations were sufficiently obvious to be fully recognized. Both sections have rough topography and poor soils; they are best suited for a self-sufficient type of farming that neither needs nor can carry much credit. Insurance companies made very few loans in either area, and the experience of the land banks indicates that they also were cautious lenders. Although WPA data for Ripley and Reynolds counties in southeastern Missouri indicate numerous distress transfers, experience there was no worse than in some of the better areas of Missouri, or even in some of the best counties of central Iowa.

[9] This naturally raises the question whether the extremely poor experience in counties like Appanoose, Decatur, and Jefferson was due primarily to low corn yields, or primarily to speculative activity. In an effort to answer the question, multiple correlation was applied to the three variables in Table 15. With the foreclosure rate as x_1, the voluntary transfer rate as x_2, and the average corn yield as x_3, the multiple regression is

$$x_1 = 23.2 + 3.426\ x_2 - 0.486\ x_3$$

The simple correlation coefficients

$$r_{12} = +0.68$$
$$r_{13} = +0.58$$
$$r_{23} = -0.69$$

are all statistically significant, and of roughly the same magnitude. The multiple correlation coefficient

$$r_{1.23} = +0.69$$

is very little higher than r_{12}, suggesting that the combination of two variables in the regression equation is little more effective than one of the variables taken singly. The partial correlation coefficients are

$$r_{12.3} = +0.47$$
$$r_{13.2} = -0.21$$

The coefficient $r_{12.3}$, between foreclosures and voluntary transfers, is significant by the 5 percent criterion; the coefficient $r_{13.2}$, between foreclosures and corn yields, is not significant. This may lend some small support to the view that excessive speculation was the primary cause of distress in the poorer sections of Iowa.